Nuclear Regulation
NEA/CNRA/R(2016)2/ADD1
June 2017
www.oecd-nea.org

Proceedings of the 13th International Workshop on Inspection Practices

13th International Nuclear Regulatory Inspection Workshop
17-21 April 2016
Bruges, Belgium

OECD
BETTER POLICIES FOR BETTER LIVES

NEA
NUCLEAR ENERGY AGENCY

Unclassified **NEA/CNRA/R(2016)2/ADD1**

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

15-Jun-2017

English text only

NUCLEAR ENERGY AGENCY
COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES

NEA/CNRA/R(2016)2/ADD1
Unclassified

Proceedings of the 13th International Workshop on Inspection Practices

13th International Nuclear Regulatory Inspection Workshop

Appendix of Responses
17-21 April 2016
Bruges, Belgium

JT03416081

English text only

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 35 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

NUCLEAR ENERGY AGENCY

The OECD Nuclear Energy Agency (NEA) was established on 1 February 1958. Current NEA membership consists of 31 countries: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Norway, Poland, Portugal, Russia, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission and the International Atomic Energy Agency also take part in the work of the Agency.

The mission of the NEA is:

- to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally sound and economical use of nuclear energy for peaceful purposes;
- to provide authoritative assessments and to forge common understandings on key issues, as input to government decisions on nuclear energy policy and to broader OECD analyses in areas such as energy and the sustainable development of low-carbon economies.

Specific areas of competence of the NEA include the safety and regulation of nuclear activities, radioactive waste management, radiological protection, nuclear science, economic and technical analyses of the nuclear fuel cycle, nuclear law and liability and public information. The NEA Data Bank provides nuclear data and computer program services for participating countries.

COMMITTEE ON NUCLEAR REGULATORY ACTIVITIES

The Committee on Nuclear Regulatory Activities (CNRA) shall be responsible for the programme of the Agency concerning the regulation, licensing and inspection of nuclear installations with regard to safety. The Committee shall constitute a forum for the exchange of information and experience among regulatory organisations. To the extent practical, the Committee shall review developments, which could affect regulatory requirements with the objective of providing members with an understanding of the motivation for new regulatory requirements under consideration and an opportunity to offer suggestions that might improve them or avoid unwarranted disparities among member countries. In particular, it shall review current management strategies and safety management practices and operating experiences at nuclear facilities with a view to disseminating lessons learnt. In alignment with the NEA Strategic Plan, the Committee shall promote co-operation among member countries to use the feedback from this experience to ensure high standards of safety, to further enhance the efficiency and effectiveness of the regulatory process and to maintain adequate infrastructure and competence in the nuclear safety field.

The Committee shall promote transparency of nuclear safety work and open public communication. The committee shall maintain an oversight of all NEA work that may impinge on the development of effective and efficient regulation.

The Committee shall focus primarily on existing power reactors and other nuclear installations and the construction of new power reactors; it may also consider the regulatory implications of new designs of power reactors and other types of nuclear installations. Furthermore, it shall examine any other matters referred to it by the Steering Committee. The Committee shall collaborate with, and assist, as appropriate, other international organisations for co-operation among regulators and consider, upon request, issues raised by these organisations. The Committee shall organise its own activities. It may sponsor specialist meetings and working groups to further its objectives.

In implementing its programme the Committee shall establish co-operative mechanisms with the Committee on the Safety of Nuclear Installations to work with that Committee on matters of common interest, avoiding unnecessary duplications. The Committee shall also co-operate with the Committee on Radiation Protection and Public Health and the Radioactive Waste Management Committee on matters of common interest.

FOREWORD

This appendix provides the complete compilation of responses received to the questionnaire issued in conjunction with the workshop announcements. The responses are provided as received, with changes made only to the formatting.

The OECD Nuclear Energy Agency (NEA) Committee on Nuclear Regulatory Activities (CNRA) Working Group on Inspection Practices (WGIP) sponsored the 13th International Workshop on Nuclear Regulatory Inspection Activities. The workshop was hosted by the Bel V and FANC, in Bruges, Belgium on 17 -21April 2016.

The three workshop topics that were addressed were as follows:

- Inspection Activities During the Transition from an Operating Reactor to a Defueled Status with a Commitment to Cease Power Operation
- Inspection of Modifications
- The Inspectors' Role in the Enforcement Process

Each of the respondents was given the following instructions in relation to their response:

- Only one response per country is required. If more than one person from your country is participating, please co-ordinate the responses accordingly.
- Please provide responses on separate sheet and clearly identify the questionnaire part and topic.

For preparation of the workshop, participants are invited to supply their national inspection approaches used in inspection of events and incidents according to the surveys. Actual issues that were discussed during the workshop were generated by the topic leaders based on the responses submitted by participants with their registration forms. This formats helps to ensure that issues considered most important by the workshop participants are covered during the group discussions.

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QUESTIONNAIRE A
INSPECTION ACTIVITIES DURING THE TRANSITION FROM AN OPERATING REACTOR TO A DEFUELED STATUS WITH A COMMITMENT TO CEASE POWER OPERATION

Introduction

When the decision to permanently cease power operations is made, new safety issues may arise. Regulatory bodies (RB) must be aware of these issues and be prepared to respond/address them through their inspection programmes. Areas such as organisation, human, technical and financial[1] may require different inspection approaches.

The purpose of the task is to identify commendable practices and share information about methods, procedures and criteria used to inspect a licensee transitioning from an operating reactor to a defueled status, with a commitment to permanently cease power operations.

It should be recognised that the end point of this workshop topic was difficult to establish. However, for the purposes of the workshop topic, it was determined to limit the scope to the transition phase, which is defined as the time frame between the licensee's commitment (announced or unannounced) to permanently cease power operations and final defueling of the reactor vessel. This workshop topic excludes physical security.

Questions below relate to both regulatory framework and inspection activities.

The focus of this workshop topic is to identify commendable inspection practices by RBs to verify that a licensee maintains safety during the transition phase.

Questionnaire

For preparation of the workshop, participants are invited to supply their national inspection approaches used according to the following questionnaire:

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

b. Describe how risk is considered when changing the inspection programme.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

[1] Financial resources to continue safe operation of the NPP till the end of life. This does not cover funds for decommissioning activities.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

3. SCOPE of INSPECTIONS

3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)			
Corrective action programme			
Design basis inspections (e.g. systems, structures, components)			
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)			
Environmental issues			
Equipment qualification (e.g. maintaining level of requirements)			
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection			
Housekeeping			
In service inspections (periodic tests)			
Industrial safety (personal safety)			
Licensee interaction with external stakeholders			
Maintenance activities			
Management of contractors			
Modifications (permanent			

and temporary)			
Organisation and general management			
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)			
Quality assurance			
Radiological protection			
Safety culture (e.g. motivation of staff, staff turnover)			
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)			
Sub-criticality and fuel safety			
Training programmes			
Waste management			
*Other:_____			
*Other:_____			
*Other:_____			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

Are there any other important topics that you would like to be considered at the workshop?

BELGIUM

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

RB = FANC + Bel V (responsible for nuclear safety and regulations) + NIRAS (responsible for waste management)

- NIRAS : Final Decommissioning Plan (Royal Decree 18.3.1981) 3 years before end of activities
- FANC:
  - Article 17 of the Royal Decree of July 20th, 2001, describes the process for notifying the regulatory body in case of permanent shutdown of a facility. The licensee has to communicate an inventory of radioactive sources and waste, the measures to keep the installation safe when awaiting the start of decommissioning activities, planned modifications to the installation and the maintenance and control program, planned changes in human resources, the preliminary planning of the decommissioning and the impact on the installations that are still in operation
  - During transition phase, the licensee must continue to comply with operational licence and SAR requirements, adapt SAR where necessary (art. 17 Royal Decree 20.7.2001 & Royal Decree 30.11.11).

Example: Phases of NPP Doel1/2 (DSZ = Definitive Shutdown) project

Fase	**End**	**Decay Heat Removal**	**Tech Specs**
DSZ-1 (few months)	2 reactors unloaded + All fuel in pools (outside containment)	Shutdown cooling + Pool cooling	Current Tech Specs
DSZ-2 (period up to 5 years after final shutdown)	All fuel and irradiating waste extracted from pools + Primary circuit(s) decontaminated	Pool cooling	Adapted Tech Specs
DSZ-3	Last irradiating filters/resins removed + final cleanup finished + licenses for dismantling obtained	Not necessary anymore	Adapted Tech Specs

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

When the decommissioning license is granted (requires prior removal of fuel and operational waste) which will also revoke the operating license.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

- NIRAS: Final Decommissioning Plan (RD 30.3.1981 art.5) 3 years before end of activities.
- FANC:: The licensee must inform the RB in 2 steps:
    - Immediate formal notification of ceasing activities (art. 17.1 RD 20.7.2001),
    - Formal application for decommissioning license (art. 17.2 RD 20.7.2001)

In practice, informal discussions are held between the licensee & the RB long before the official shutdown date

For the Doel 1&2 the final shutdown date was initially imposed by the government in a nuclear phase out law (which has been recently modified to allow long term operation).

The timeframe for the submittal of the final decommissioning plan could not be respected.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

Transition activities are taken into account when elaborating the yearly inspection programme for the facility by introducing inspections on topics linked with the transition phase

b. Describe how risk is considered when changing the inspection programme.

Inspection programme is based on shifting of risks within the facility. For example, since the criticality risk has been reduced, the inspections concerning this theme can be omitted from the inspection programme.

2.*4 Describe how your RB modifies its inspection programme in the following instances:*

a. with significant advanced formal notification or informal awareness (years); and

Defined in integrated control- & inspection programme (GIC) by FANC and Bel V.

b. with minimal advanced formal notification or informal awareness (months).

Flexibility is foreseen in GIC to introduce specific inspection topics, e.g. unforeseen events.

In the case of Doel1&2, due to the constant changing legal framework (Long term operation to DSZ and again to LTO) the RB had to put more emphasis on motivation of personnel, availability of resources, … during inspections.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

There are no regulatory requirements regarding this issue. In practice, the inspection programme is adapted as described in 2.4.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

The RB performs a systematic analysis of these concerns based on the safety functions to be maintained in the transition phase. E.g. Safety Injection concerns are no longer considered in the transition phase, pool cooling safety concerns need to be resolved until emptying of fuel pools.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

Yes, the GIC is formally revised on a yearly base. In case of important changes in the installation and its operational status, an intermediate revision of the GIC is foreseen.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	*0*	*-*	
Corrective action programme	*0*	*0*	
Design basis inspections (e.g. systems, structures, components)	*-*	*0*	Only remaining safety systems are taken into account
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	*0*	*0*	Depends on other operating facilities on site. Scope of operator might decrease, inspection scope and effort are maintained.
Environmental issues	*0*	*0*	
Equipment qualification (e.g. maintaining level of requirements)	*-*	*0*	Post-accidental qualification NA.
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	*NA*	*NA*	
Fire protection	*+/-*	*+*	Change of scope from protection of safety equipment to discharges More effort needed to inspect more dispersed fire hazards and regularly modified fire protection system.
Housekeeping	*+*	*+*	Increase of work sites
In service inspections (periodic tests)	*-*	*-*	
Industrial safety (personal	*0*	*0*	Not in regulatory scope of RB

safety)			
Licensee interaction with external stakeholders	+	+	Stakeholders might lose interest in ceasing activities.
Maintenance activities	-	*0*	
Management of contractors	+	+	
Modifications (permanent and temporary)	*0*	+	More modifications are expected
Organisation and general management	*0*	+	Licensee organization can be adapted to better reflect the needs of an installation in shutdown phase.
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	+	+	Shift in activities introduces shift in license qualification criteria. New functions need new criteria and might need new staff
Quality assurance	*0*	*0*	
Radiological protection	+	+	
Safety culture (e.g. motivation of staff, staff turnover)	+	+	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	+	+	
Sub-criticality and fuel safety	-	-	
Training programmes	*0*	*0*	
Waste management	+	+	
**Other:_ Project management*	+	+	
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB
b changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

The Regulatory Body (FANC & Bel V) have started in 2014 an action plan to better prepare itself to an environment where more nuclear facilities would be shut down and decommissioned.

In addition to a general training program on decommissioning, this action plan includes a number of specific actions dealing with inspection practices:

- Definition of inspection strategy for facilities in shutdown or decommissioning phase
- Definition of inspection scope for specific thematic inspections which were deemed important during these phases: human & organisational factors, waste management, risk reassessment,…

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

- System of cross-inspections with other RB (e.g. ASN, ENSI, …)
- Visit of plants under decommissioning
- Participation in international workshops
- Eurosafe (TSO)

Are there any other important topics that you would like to be considered at the workshop?

The fact that some plants are bouncing between continued or long term operation and shutdown is challenging (not only for Belgium). How can nuclear safety be guaranteed in a political/economical unstable environment? Can a RB oppose/influence a governmental decision, to ensure that safety aspects are taken into account in these decisions in a timely manner?

CANADA

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

For the entire duration of the transition phase, there are no changes to the operating license (unless the licensee requests an amendment to the license). Therefore, regulatory requirements are the same as for an operating reactor. The licensee may apply for a decommissioning license once the reactor has been permanently shutdown and completely defueled.

- CSA standard N294-09 Decommissioning of facilities containing nuclear substances
- CSA standard N286-05 Management System Requirements for NPPs, Annex E, Supplementary requirements for decommissioning

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

This is still the object of debate within the CNSC. A distinction between operating facility and operating reactor should be made.

The factors/criteria in determining when a reactor is no longer considered an operating reactor have not been defined and documented. However, it is generally agreed that it is no longer an operating reactor once the core is completely defueled and the licensee has implemented measures to ensure new fuel cannot be reintroduced into the reactor.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

CNSC has no requirements.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

Yes, but it is not a formal process.

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

Reduce inspections in certain areas and augment inspections in other areas.

Experience has shown that certain activities are done as fast as possible to minimize costs to the licensee. This leaves very little time to prepare for traditional inspections. During the transition phase of the G-2 NPP, CNSC moved away from the traditional inspection program and increased surveillance & monitoring activities (e.g. attend licensee meetings, verify station logs, verify problem identification & resolution reports raised via Corrective Action Process), spot checks and reactive inspections. This allowed the CNSC to be more responsive to rapidly changing licensee priorities, staffing levels and organizational structure.

b. Describe how risk is considered when changing the inspection programme.

CNSC does not have a formal approach.

Inspection may be cancelled on systems, structures and components that will no longer be required when the reactor is in the guaranteed shutdown state.

A decrease in staffing levels may have an adverse effect on safe operations.

Some activities may occur only once in the life of the NPP, and for this reason alone may carry more risk.

~~*2.3 No question - error*~~

2.4 Describe how your RB modifies its inspection programme in the following instances

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

The CNSC does not distinguish between these two instances. In both cases, changes to the CNSC's inspection work plan are by and large based on the licensee's End of Operations Plan, which describes milestones, their associated activities and provides a timeline.

When the permanent shutdown of G-2 was announced, the CNSC insisted that the licensee submit an End of Operations Plan, which included items such as:

- Which systems would be taken out-of-service, and when
- Which systems would be dried
- Which systems would remain in service, and for how long
- Which systems would be modified for partial service
- Which activities required an ALARA plan
- Long term plan for minimum shift complement
- Which activities involved releases to the environment
- Activities necessary to reach safe storage state
- When will dismantling begin and end

When modifying the inspection program, RB's should consider the need to implement a process to enable the issuance of inspection reports only days after the end of the inspection.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

CNSC does not have a formal approach.

Closure of the G-2 NPP was announced roughly 3 months before the reactor was permanently shutdown. Almost immediately after the announcement, the CNSC revised its inspection work plan. However, because the closure was unexpected, the licensee did not have an End of Operations Plan, in which activities necessary to put the NPP into safe storage state are defined. Once these activities had been defined, the CNSC revised its work plan once more.

Legally, the licensee has an operating license and should be subject to the same inspection program. Practically, you may not want to inspect systems, structures and components that will be permanently out-of-service 6 to 12 months out.

You have to weigh the value of conducting inspections that may lead to the issuance of corrective actions which may never be resolved (i.e. NPP permanently shutdown before corrective actions are implemented). But you also have to consider that the licensee may reverse its decision and continue operating, after all, they have an operating license that allows them to do just that.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

CNSC does not have a formal approach. CNSC staff categorized all regulatory commitments, including enforcement actions from inspection reports, into three groups:

- Not required
- Dormancy (if NPP were ever to return to service, would become active)
- Active

CNSC then met with licensee personnel to discuss and confirm the status of all regulatory commitments.

3. SCOPE of INSPECTIONS

3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences in the scope and level of effort of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.

CNSC does not have a formal approach. In the case of the G-2 NPP a combination of common sense, experience, professional judgement, available resources and licensee activities were used to identify the scope and level of effort of inspections conducted during the transition phase and beyond.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Some responses below are dependent on whether you have significant or minimal advance notification. CNSC responses are based on our experience with G-2 (i.e. minimal notification).

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)	-	-	Most critical systems permanently out-of-service.
Corrective action programme	0	-	Reduced level of overall activities. Most in-service equipment is non-safety related. Protection of workers still important and necessary.
Design basis inspections (e.g. systems, structures, components)	-	-	Most critical systems permanently out-of-service.
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	-	-	Reduced level of risk.
Environmental issues	0	0	No change in the importance of this area.
Equipment qualification (e.g. maintaining level of	-	-	Reduced level of risk.

requirements)			
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	+	+	Does the licensee maintain appropriate staffing levels relative to the number of on-going activities?
Fire protection	0	0	Risk hazard may be reduced (systems de-energized, drained of oil).
Housekeeping	0	0	Same requirements.
In service inspections (periodic tests)	-	-	Scope of the program is greatly reduced upon reactor shutdown.
Industrial safety (personal safety)	0	0	Same requirements.
Licensee interaction with external stakeholders	+	+	During transition phase, there is more interaction between the RB and politicians, media, trade unions, etc.
Maintenance activities	-	-	Less maintenance activities are conducted given most systems will not need to operate for much longer.
Management of contractors	0	-	Unless dismantling begins soon after permanent shutdown, work done by contractors will be greatly reduced.
Modifications (permanent and temporary)	-	-	Permanent shutdown results in a significant decrease in modifications.
Organization and general management	+	+	Rapidly changing licensee organizational structure.
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	0	0	No changes to qualification of licensee staff (e.g. authorized personnel) and of contractors during the transition phase.
Quality assurance	0	-	No changes to quality assurance requirements.
Radiological protection	0	0	As important.
Safety culture (e.g. motivation of staff, staff turnover)	N/A	N/A	CNSC does not conduct “safety culture” inspections. The results of all inspections are used to establish an image of the safety culture at the NPP.
Staffing levels (e.g. minimum shift complement,	+	+	Verify changes to staffing levels do not have adverse effect on safe

Emergency Response Team, etc.)			operations.
Subcriticality and fuel safety	0	0	No change in the importance of this area.
Training programmes	-	-	Most training programs will be discarded during and/or soon after completion of the transition phase.
Waste management	+	+	Draining systems of fluids which may contain radioactive isotopes or harmful chemicals.

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

Immediately before the transition phase for the G-2 NPP, there were 4 resident inspectors, 2 regulatory program officers (licensing) and 1 director.

The transition phase began on 20 September 2012 and ended on 4 September 2013. The G-2 regulatory program division underwent some changes during this time and was completely disbanded 12 months thereafter.

Changes to RB staffing levels:

- Spring 2013, one regulatory program officer (licensing) relocates
- Spring 2013, one resident inspector relocates
- Summer 2013, one resident inspector relocates
- Summer 2014, the remaining two resident inspectors relocate (the resident inspector's office was permanently closed in July 2014).
- Summer 2014, the remaining regulatory program officer (licensing) relocates (all headquarter staff were reassigned by August 2014).

b. changes to the number of inspectors

CNSC management established that all resident inspectors had to relocate before March 2015. Out of the four resident inspectors at G-2:

- Two relocated during the transition phase (spring and summer 2013)
- Two relocated 12 months following the end of the transition phase (summer 2014)

c. training of inspectors

No changes during the transition phase.

d. safety culture (e.g. motivation of RB inspectors)

Resident inspectors were assured employment in other areas of the CNSC.

Lessons learned will be applied for the next NPP closure to facilitate/improve conditions for resident inspectors.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

CNSC has established an OPEX clearinghouse to review events from the IAEA's International Reporting System for Operating Experience (IRS) database and determine their applicability within Canada. If international events are deemed relevant, they are communicated to CNSC management, who then decides if and what actions inspectors must take (e.g. reactive inspection, augmented surveillance & monitoring, etc.). The same is also true for OPEX obtained through participation in international forums.

Are there any other important topics that you would like to be considered at the workshop?

How does a RB adapt inspection practices to facilitate the planning, conducting, reporting and regulatory follow-up during the transition phase?

Practices used during the operational phase are formal, structured and rigid. In the case of the G-2 NPP, these practices were not suited to the quickly changing conditions of a NPP in transition from operations to dormancy

FRANCE

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

Chapter III of title IX of book V of the Environment Code contains a creation authorization procedure, which may be followed by a number of licensing operations throughout the life of a Basic Nuclear Installation (BNI), from its commissioning up to final shutdown and decommissioning, including any modifications made to the facility.

Once the licensee has decided to cease operations in its installation in order to proceed with final shutdown and decommissioning, it is no longer covered by the framework set by the licensing decree nor the baseline safety requirements system associated with the operating phase. In accordance with the provisions of chapter III of title IX of book V of the Environment Code, final shutdown and then decommissioning of a nuclear facility are authorised by a further decree, issued after consultation of ASN.

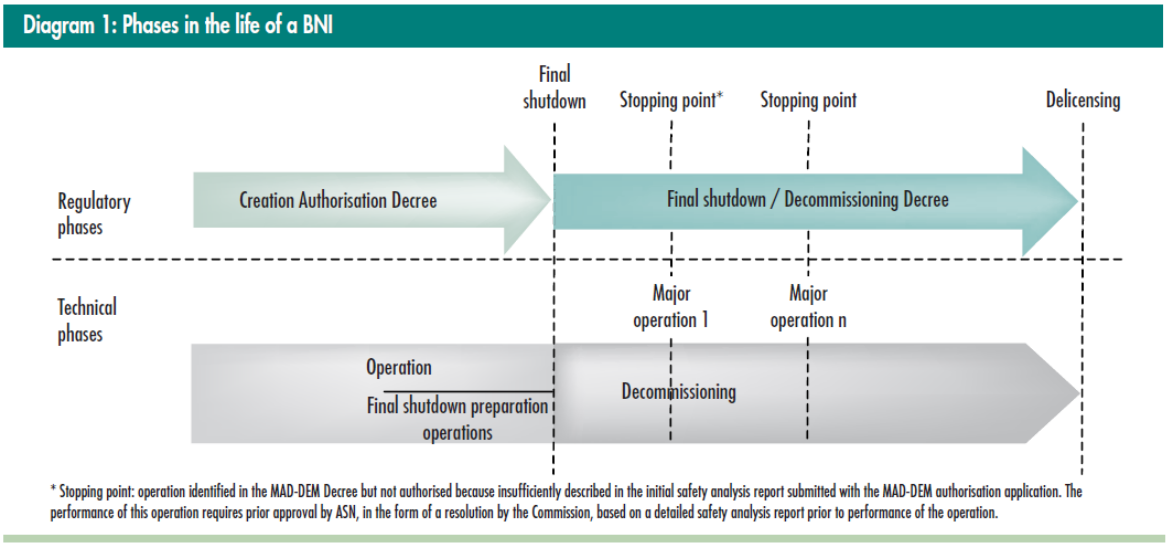
So far the transition phase itself was not covered by specific regulatory requirements: the requirements related to operations are still governing the running of the facilities during the transition phase.

The Energy Transition for Green Growth Act (adopted on august the 17th 2015) changed the deal in its article 127. The framework of the transition phase is strengthened: when the licensee plans to definitively stop the operation of all or part of its installation, it must notify the Minister responsible for Nuclear Safety and ASN at least two years before the planned shutdown date, or as quickly as possible if the shutdown is implemented with shorter notice for reasons justified by the licensee. This declaration contains some updated documents such as the updating decommissioning plan. When this declaration is done, the license has up to 2 years to transmit the full file of the decommissioning of the facilities. After this transmission, ASN must review it with a view to publishing the final shutdown and decommissioning within 3 years.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

Once the licensee has decided to proceed with final shutdown and decommissioning of its facility, it can no longer refer to the regulatory framework set by the Creation authorisation Decree nor the baseline safety requirements associated with the operating phase.

Since the TSN Act came into force, the final shutdown and decommissioning of a nuclear facility is authorised by a new decree, issued after consulting ASN. Decree 2007-1557 of 2nd November 2007 concerning BNIs and the regulation of the nuclear safety of the transport of radioactive substances issued in application of this Act describes the associated regulatory procedure:



However, the decree 2007-1557 of 2nd November 2007 has to be changed with the adoption by the Parliament of the Energy Transition for Green Growth Act (adopted on august the 17th 2015).

In 2014, about thirty nuclear facilities of all types (electricity generating or research reactors, laboratories, fuel reprocessing plants, waste treatment facilities, etc.), were shut down or were undergoing decommissioning in France. Among those facilities, the last reactors that were shutdown ceased their operation about 20 years ago. Among the French nuclear fleet currently in operation (19 sites; 58 reactors), only one site may be closed in the next few years (the Fessenheim NPP): neither ASN nor EDF (the licensee for reactors) have a recently experienced a "transition phase" (the "final shutdown preparation operations" set in the above diagram) for a reactor.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

In France, there is unique licensee for reactors, EDF, which belongs to the State (Government).

The Government is also in charge of the energy policy.

The energy transition for green growth act adopted by the Parliament sets that France's nuclear generating capacity is capped at the current level of 63.2 GWe. That means that when the EPR reactor of Flammanville 3 starts operation, two 900 MWe reactors of the current EDF fleet will have to be shutdown. But the law does not set which ones.

So, except for safety reasons, the decision of the shutdown of a French NPP is a combination of both political and legal reasons, since EDF has to comply with the energy transition for green growth act and since EDF belongs to the Government.

So far, among the EDF fleet, the closure of a NPP is raised for the Fessenheim NPP.

The Fessenheim Nuclear Power Plant is located in the Fessenheim commune in the Haut-Rhin department in Alsace in north-eastern France: it is the oldest operational nuclear power plant of the EDF fleet.

In November 2011, François Hollande made the announcement of shutdown of Fessenheim NPP as the oldest plant within his mandate if he is elected. After his victory in the 2012 Presidential Election, François Hollande confirmed his plan to close the plant in 2017. In September 2012, he ordered to close the plant by the end of 2016. In September 2015, Ségolène Royal (Minister of Ecology, Sustainable Development and

Energy since April 2014), said a closure before the end of the term of François Hollande (that ends in May 2017) would furthermore be her intention.

According to the last developments, the French Governement would like that some irreversible steps are taken before the end of the term of François Hollande. Taking into account the process described in answer 1.1, this would lead EDF to declare its intention to permanently cease operations at the Fessenheim NPP before the end of 2016.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

b. Describe how risk is considered when changing the inspection programme.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

Common Answer to questions 2.2 to 2.6

In the field of reactors, ASN has no recent experience of a real recent shutdown.

However, due to the announcements made concerning the shutdown of the Fessenheim NPP, ASN decided in 2013 that 2 aspects had to be considered during the controls carried out by ASN on this NPP:

- Maintenance and technical aspects : ASN considers that safety has to remain at top priority of EDF on the site;
- Human factors: what is the state of mind of the staff?

Maintenance and technical aspects

The shutdown announcement was very close in time with the ASN decisions to authorize the operation of the reactors after their third periodic safety reviews. These decisions contained a significant list of retrofits and modifications to be performed. ASN has followed very closely that the implementation of these requirements were done in a timely and proper manner: ASN performed 8 inspections on this issue in 2 years.

ASN paid also high attention to the examination on the modifications presented by EDF satisfy ASN's requirement prior to their implementation: ASN wanted to be sure that licensee kept high safety ambitions.

It is the same for the implementation of the post-Fukushima modifications programme: ASN issued a series of resolutions dated 26th June 2012 requiring EDF to implement a huge modification programme. So far, the Fessenheim NPP has met all the regulatory deadlines and its commitments.

Inspections themselves focused very strongly on rigor of implementation, and commitment to engagements: the inspections included a lot of controls on the field (stronger than usual).

Human Factors

According to ASN internal rules, inspections on "human factors" are carried out every year on each EDF NPP.

In addition, the ASN regional office in charge of the Fessenheim NPP (the ASN Strasbourg division) has decided to introduce the analysis of various « non technical parameters » throughout every inspection. This set of indicators, inspired through cross border relations with the regulator of Baden-Württemberg, is filled out by the inspectors after each inspection. Therefore, ASN generated a table with 19 parameters that have to be graded by the inspector, such as: the relations with the regulator, housekeeping and climate in the company/on site.

3. SCOPE of INSPECTIONS

3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences in the scope and level of effort of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.

To ASN, the shutdown of the Fessenheim NPP is a political decision, with no link to the safety. ASN is waiting a very concrete decision and official announcement from both the Government and EDF. Therefore, so far there has been no evolution of the doctrine of inspection. The Strasbourg division of ASN is applying the national directives issued by the ASN Nuclear Power Plants Department that apply to all the other 18 French NPPs of the EDF fleet. And this is consistent with the fact that so far the NPP is still under normal operations.

Should the permanent shutdown be confirmed, in the first years following the announcement and the real shutdown, we believe that the volume of inspections would remain globally the same. But the inspection items would certainly evolve. We believe that the volume of inspections would decrease maybe in the 4 or 5 years following the real shutdown.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

This table has been fulfilled with the ASN inspectors from the Strasbourg division's view. Please note that this is NOT an ASN official position.

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)			
Corrective action programme			
Design basis inspections (e.g. systems, structures, components)	-	-	
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	-		
Environmental issues		+	Waste management
Equipment qualification (e.g. maintaining level of requirements)	-		
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection			
Housekeeping			
In service inspections (periodic tests)	-	-	We believe that the number of devices that have to be available for safety reasons is expected to decrease.
Industrial safety (personal safety)			
Licensee interaction with external stakeholders			
Maintenance activities	-	-	
Management of contractors			
Modifications (permanent and temporary)		+	
Organization and general management		+	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)			

Quality assurance			
Radiological protection		+	
Safety culture (e.g. motivation of staff, staff turnover)	+	+	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)		+	
Subcriticality and fuel safety	-	-	
Training programmes			
Waste management		+	
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANIZATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a organizational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

We believe that the organisation of the ASN regional division which is in charge of the control of the Fessenheim NPP would not evolve fundamentally. The inspector's training would certainly have to be adapted.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

Are there any other important topics that you would like to be considered at the workshop?

GERMANY

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

For each Nuclear Power Plant (NPP) in Germany a date is fixed in the Atomic Energy Act when it has to cease power operation at latest. The remaining 8 NPP in power operation have to cease power operation latest at the end of 2017 (1 NPP), 2019 (1 NPP), 2021 (3 NPP) and 2022 (3 NPP).

If the operator of a grid-relevant power plant (including NPP) intends to final cease the power operation, a notification to the authority responsible for the grid stability will be necessary 6 months in advance.

A national regulatory requirement specific for the transition phase for NPPs does exist in Germany. However, the *Länder* Committee for Nuclear Energy has decided that the licensees have to provide a special safety assessment for plants in the post-operation phase, the period between the final shut down and the issuance of the licence for decommission and dismantling (see also answer 1.2). The details have been settled 2014 in a "List of issues for carrying out an assessment of the actual safety status of a plant in the post-operational phase". The requirements for the transition phase are the same which are valid for the power operation.

The RBs in the *Länder* (federal states) which are responsible for the supervision of NPPs have plant specific annual inspection plans. In these inspection plans the specific plant status is taken into account.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

According to the Atomic Energy Act the operation licence is valid until a new licence for decommission and dismantling is issued.

The period between the final shut down and the issuance of the licence for decommission and dismantling is called post-operation phase. In this time, the NPP is formally still treated as an operating plant. However, some requirements for the power operation phase are not applicable any more (e.g. specific periodic tests with high pressure) and some requirements are lowered (e.g. number, competence and training of the control room personnel). The adjustment of the requirements are carried out by approvals of the RB. Criteria are mainly the possible accidents, required safety relevant systems and reduced nuclear risk.

In Germany, a NPP in the "transition phase" discussed here is still considered as an operating plant.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

Informally: as early as possible (when the issue is considered in the executive board of the company and when a decision is made by the company)

Formally: simultaneously to the notification to the authority responsible for grid stability noted in answer 1.1 (every application to another authority has to be sent in copy to the nuclear RB).

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

The baseline inspection programme (of the RB including the inspections performed by technical support organisations) is not modified. Based on the baseline inspection programme for each NPP a plant specific annual inspection plan exists. This plan takes the plant status into account. Dependent on the plant status

and the activities in the plant, the inspections are adjusted and additional inspections are performed. The areas for these additional inspections have changed, e.g. less inspections in the area of technical issues like modifications and backfitting, more inspections in the area of organisational changes and staffing.

In the transition phase human and organisational changes take place and therefore inspections considering those aspects become more important. Thus, additional inspections (focussed inspections) are planned. Furthermore the scope and focus of inspections in a given inspection field change more or less. Especially during an inspection in a given inspection field (e.g. radiation protection, modifications, quality assurance) the issue "consequences of the shut down decision" is addressed. In talking with the plant personnel the inspector looks for information which changes already took place and which changes may occur in future in the inspection field.

In sum the inspection effort is moderately enhanced.

b. Describe how risk is considered when changing the inspection programme.

The nuclear risk resulting from technical systems is the same as before. However, the human and organisational factors (distraction, attention, staff reduction, additional tasks) may raise the nuclear risk. By inspections the RB has to verify that maintenance, operation feedback etc. remain on the previous level and the technical safety level is not decreasing. Therefore the inspection effort is moderately enhanced.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

This is the situation we have in Germany now. Due to the Atomic Energy Act amended in August 2011, the individual dates to shut down the NPPs are fixed for years in advance. Before this the residual electricity volumes were fixed for each plant.

Focussed team inspections have been planned and performed: short term and long term staff planning, communication and motivation, perpetuation of competences, contractors, financial resources, organisational changes etc.

The focussed team inspections can be adjusted in the following years.

b. with minimal advanced formal notification or informal awareness (months).

This was the situation in Germany in March 2011: within a few months after the Fukushima accident the Atomic Energy Act was amended and the decision was made to finally shut down several NPP.

In that situation high level meetings were held. With this meetings and additional inspections, it was verified that the plant management is aware of possible safety implications of the special situation and that adequate measures are taken.

2.*5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?*

It would be advisable to start at least 5 years in advance.

In the last years, the specific inspections dealt with post-operation plants or with double unit plants where one unit is in post-operation and the other unit is in operation (transition phase).

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

The general procedure is that the licensee makes a proposal how the problem is remediated (including a deadline) which is agreed by the RB. If the licensee intends to modify the agreed proposal, he has to make a new proposal and discuss this with the RB.

The experience is that safety relevant problems are remediated even though the remaining operation time is short (example: post Fukushima measures, optimizations in the instrumentation based on experience feedback).

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

The adjustment of the plant specific inspection plan to the plant status is the task of the organisational unit responsible for the supervison of that plant. Within this unit inspections additional to the baseline inspections are planned. As mentioned above, the areas for these additional inspections have changed.

These additional inspections address e.g. financial aspects, staffing, qualification, contracting, long-term staff planning, communication, motivation, safety culture.

The specific inspection activities during a single baseline inspection are decided by the organisational unit, the inspector/inspection team. Within such an inspection the consequences / changes (resulting from the transition phase) in the inspection field are regarded. Human and organisational aspects within the different inspection fields become more important.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

The following answers describe a rough indication which areas increase, decrease or maintain the importance in general. There may arise slight differences with respect to the specific facility and also to the individual practice of the competent RB on the *Länder* level.

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)	0	0	
Corrective action programme	0	0	
Design basis inspections (e.g. systems, structures, components)	0	0	
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	0	
Environmental issues			Not within the competence of the nuclear RB
Equipment qualification (e.g. maintaining level of requirements)	0	0	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	+	+	Licensee has to start planning with decreasing financial resources for the future
Fire protection	0	0	
Housekeeping	0	0	
In service inspections (periodic tests)	+	+	More discussions with the operator about test intervals and exceptions of in-service inspections
Industrial safety (personal safety)			Not within the competence of the nuclear RB
Licensee interaction with external stakeholders	+	+	Preparation for the decommissioning and dismantling license procedure
Maintenance activities	0	0	
Management of contractors	+	0	Availability of competent contractors for the remaining operation
Modifications (permanent	-	-	Less technical modifications are

and temporary)			performed
Organisation and general management	+	+	Organisational changes and internal communication
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	+	+	Loss of motivation, competent staff is appointed to preparation of decommissioning and dismantling
Quality assurance	0	0	
Radiological protection	0	0	
Safety culture (e.g. motivation of staff, staff turnover)	+	+	Organisational changes, loss of motivation, job prospects
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	0	+	
Sub-criticality and fuel safety	0	-	Less modifications in fuel element design
Training programmes	0	+	New training programmes needed, e.g. for training in dismantling and waste management
Waste management	0	0	
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

Within the RB on the *Länder* level, one organisational unit is responsible for licensing, inspection and assessment and of a NPP. The final shut down of a NPP which is fixed by law (and partly took place) had no major consequences on the organisational structure of the RB. The number of inspectors remained unchanged; however personnel resources are required for the preparation of the decommissioning and dismantling license. After issuing those licenses the staff number will be reduced. This will be achieved by retirements, so there is no fear of job losses.

The training of inspectors also remained unchanged. However more team inspections are performed since the organisational changes in the NPP affect various areas. The awareness for human and organisational factors and safety culture issues is strengthened by the composition of the inspection teams.

Because of the severe changes in the social-political environment a discussion and self-reflection process of supervision culture (safety culture) of the RB was triggered. In some *Länder* workshops with all RB staff took place with the aim of self-assessing and fostering this issue.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

There are regular meetings of the Regulatory Body from the federal and the *Länder* level. The Working Group Decommissioning and the Working Group Supervision of NPP Operation deal with the transition from operation to decommissioning and dismantling. In these meetings national inspection experience is exchanged. Germany has an extensive operational Experience feedback process with involvement of TSO and Länder. Also information from international experience exchange is analysed passed. The national and international experience is used for the development of guidelines.

The RB of the Land Baden-Württemberg established a close information exchange with the Swiss ENSI which covers the transition phase as well.

Are there any other important topics that you would like to be considered at the workshop?

Experience exchange how issues like personnel planning, financing, organisational changes, motivation etc. are inspected.

INDIA

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

Answer: Transition phase is not recognised as a separate stage. Regulatory requirements for operation phase are applicable during transition phase also.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

Answer: The reactor is no longer considered as operating reactor when the utility decides for decommissioning of the reactor and completes defueling of the core. The criteria for such a decision is the commitment of the utility to no longer operate the reactor and status of the core is such that it has no further concern of nuclear safety.

2. INSPECTION PROGRAMME

a. Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

It is expected that when a decision is made by the utility to permanently cease power operation, RB will be communicated formally.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

The reactor is considered to be in the operating phase till decommissioning plan is accepted by the RB and decommissioning activities are being undertaken. Therefore till such time inspection programme may not change.

If additional activities are under taken by the utility for preparedness towards decommissioning, additional inspections may be planned by the RB to cover such areas.

b. Describe how risk is considered when changing the inspection programme.

There is no relaxation in the inspection programme during transition phase. The number and scope of inspections may be increased in case of requirements. If additional risk areas are discovered during safety reviews by RB on the challenges faced by the utility during transition phase, commensurate inspection with relevant experts will be undertaken.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

Refer answer to question 2.2

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

Based on the preparatory activities undertaken by the license for decommissioning of NPP, the scope and number of planned inspections may be increased.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

The license of NPP is renewed through review of PSR or limited scope PSR for a period up to a maximum of five year (i.e. up to the period for which the utility demonstrates that it is safe to operate the reactor). In the event of the licensee committing to permanently cease power operation, the unresolved safety concerns would be revisited for the remaining period of operation.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

RB has not separately identified or defined the differences in the scope and level of effort of inspections to be conducted during transition phase. The requirements of inspections during operation phase will continue to be applicable during transition phase.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)			
Corrective action programme			
Design basis inspections (e.g. systems, structures, components)			
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)			
Environmental issues			
Equipment qualification (e.g. maintaining level of requirements)			
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			

Fire protection			
Housekeeping			
In service inspections (periodic tests)			
Industrial safety (personal safety)			
Licensee interaction with external stakeholders			
Maintenance activities			
Management of contractors			
Modifications (permanent and temporary)			
Organisation and general management			
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)			
Quality assurance			
Radiological protection			
Safety culture (e.g. motivation of staff, staff turnover)			
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)			
Sub-criticality and fuel safety			
Training programmes			
Waste management			
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

Not applicable as there is no reduction in the inspection programme during inspection phase. If required, the scope of inspections may increase depending on the additional activities planned by the utility.

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

In India, resident inspectors are not posted at the NPPs. Inspections are carried out by a team inspectors from the RB headquarters. The change in status of NPPs from operation phase to transition phase may not significantly affect the organisational management of RB. However additional resources or training may be provided to the inspectors, if required, during transition phase of the reactor.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.
Answer: International experience is considered during preparation of regulatory requirements and guidance documents. Therefore, for the transition phase also international experience would be considered.

Are there any other important topics that you would like to be considered at the workshop?

Nil

JAPAN

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

The Reactor Regulation Act requires that the licensee shall prepare a Decommissioning Plan and modify Operational Safety Program, which includes a maintenance and management program of the rector facilities, from power operating period to decommissioning. Furthermore both plan and program have to be approved by Japanese RB(NRA) prior to starting decommissioning.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

Termination of power operation period is to obtain approval of Decommissioning Plan. Reactors are under regulatory control as power operation period until approval of Decommissioning Plan. Criteria for approval are to complete unloading spent fuel from reactor, to take measures not to reload fuel to reactor again, etc.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

Licensees notify to quit generating electricity to METI based on the Electricity Business Act. NRA may know that those reactors are supposed to be decommissioned. After that, when decommissioning is considered to take place, licensee has to submit decommissioning plan to NRA formally, based on the Reactor Regulation Act, and then its approval terminates power operation period and reactor goes to decommissioning (on the Reactor Regulation Act, the reactor is still in power operation period until approval of decommissioning plan). Informally, NRA will be informed about the submission of the decommissioning plan by the licensee, prior to the press release. In addition, licensee's decision to permanently cease power operations may be announced to the public, prior to the submission of the decommissioning plan.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

Inspection program for reactor in power operation period does not change until approval of decommissioning plan.

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

After approval of decommissioning plan, Facility Periodic Inspection (hardware inspection) is take place only when nuclear fuel is existing in facility. It is held for facilities only related spent fuel pool. Safety Inspection is required 4 times a year for reactors in power operation period and in case of decommissioning with existing nuclear fuel in facility, within 4 times a year for reactors in decommissioning without nuclear fuel in facility. Moreover, length of Safety Inspection is changed from 2 weeks to 1 week at approval of decommissioning plan.

b. Describe how risk is considered when changing the inspection programme.

Based on considerable risk about discharging radioactive gases from damaged spent fuel, leaking cooling water from pool and so on after approval of decommissioning plan, Facility Periodic Inspection is held for facilities related spent fuel pool. For the risk in other area, it is confirmed in judgement of decommissioning plan and Operational Safety Program.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

Inspection program is not modified even notification to quit generating electricity is submitted to METI, since reactors are still in power operation period until approval of decommissioning plan.

b. with minimal advanced formal notification or informal awareness (months).

Same as above.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

Licensees notify to quit generating electricity to METI on the Electricity Business Act, however reactors are still in power operation period until approval of decommissioning plan on the Reactor Regulation Act. Since inspection programs are under the Reactor Regulation Act, they are changed after decommissioning plan approval.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

Since to be sufficient for the prevention of disaster is one of the conditions to grant approval of decommissioning plan, decommissioning plan is not approved in case of existing some unresolved safety concern. The issues have to be resolved under regulation in power operation period and decommissioning plan should be modified.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

There is no transition state in law in Japan. Reactors are in power operation period until approval of decommissioning plan and they transfer decommissioning state after approval that plan in the Reactor Regulation Act.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	-	-	Only spent fuel pool is applied.
Corrective action programme	+	+	In addition to the quality assurance in power operation period, it related to decommissioning has to be provided.
Design basis inspections (e.g. systems, structures, components)	-	-	No requirement to maintain property after approval of decommissioning.
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	0	Same preparedness is required during nuclear fuel is existing.
Environmental issues	0	0	Same requirement for environmental control in between power operation period and during decommissioning.
Equipment qualification (e.g. maintaining level of requirements)	-	-	No requirement to maintain property after approval of decommissioning.
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	N/A	N/A	No regulation for detailed plan. Only total amount of funding has to be described.
Fire protection	0	0	Same requirement for fire protection in between power operation period and during decommissioning.
Housekeeping	N/A	N/A	No regulation
In service inspections (periodic tests)	-	-	After approval of decommissioning plan, no in service inspection is required.
Industrial safety (personal safety)	0	0	Same regulation in between power operation period and during decommissioning.
Licensee interaction with external stakeholders	0	0	Same regulation in between power operation period and during decommissioning.
Maintenance activities	-	-	Most of nuclear facilities can apply Break Down Maintenance.
Management of contractors	0	0	No change in QA
Modifications (permanent			No regulation change

and temporary)	0	0	
Organisation and general management	0	0	No regulation change
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	-	-	No requirement to name Chief Engineer of Reactors.
Quality assurance	+	+	In addition to the quality assurance in power operation period, it related to decommissioning has to be provided.
Radiological protection	0	0	No regulation change
Safety culture (e.g. motivation of staff, staff turnover)	0	0	No regulation change
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	-	-	To have enough number of personnel is required, however number itself can be reduced in decommissioning.
Sub-criticality and fuel safety	0	0	Even during decommissioning, regulation for spent fuel in pool is not changed.
Training programmes	-	-	Licensee makes training program during decommissioning and it should not be same as power operation period.
Waste management	0	0	No regulation change.
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

NRA secures necessary staffing to examine decommissioning plan. The number is enough and smaller than the number to examine power operation reactors.

b. changes to the number of inspectors

There is no specified inspector for decommissioning. Inspectors who are in charge of reactors in power operation plants are also in charge of decommissioning plants.

c training of inspectors

All inspectors attend classes of decommissioning in addition to regular classes for reactor in power operation period.

d. safety culture (e.g. motivation of RB inspectors)

Since every inspector is in charge of both reactors in power operation period and decommissioning, there should not be any deterioration of motivation.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

Information regarding malfunction, incident, etc., it is not only on decommissioning plants include power operation plants, from foreign country is notified all inspectors even in local offices by headquarter of RB. Furthermore, such kind of information is introduced at training class for inspectors.

Are there any other important topics that you would like to be considered at the workshop?

Regarding the inspection between notification to quit generating electricity and starting decommissioning, how different inspection program is being applied from power operation period? Changing point of inspection subject is not notification to quit generating electricity, but approval of decommissioning plan. Do you change inspection subject at termination of generating electricity?

KOREA

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

According to Nuclear Safety Act article 21(2), permanently shut-down going to the transition period is realized with the approval of the licence amendment (change permit), which is a part of operation phase with operating license. Therefore, the regulatory requirements governing the transition period fundamentally comply with the same requirements of operating reactors, although some of safety standards and measures may not be applied as reflecting the purpose of permanently shut-down and characteristics for permanently shut-down reactors according to Nuclear Safety Act article 21(2) and 26(5).

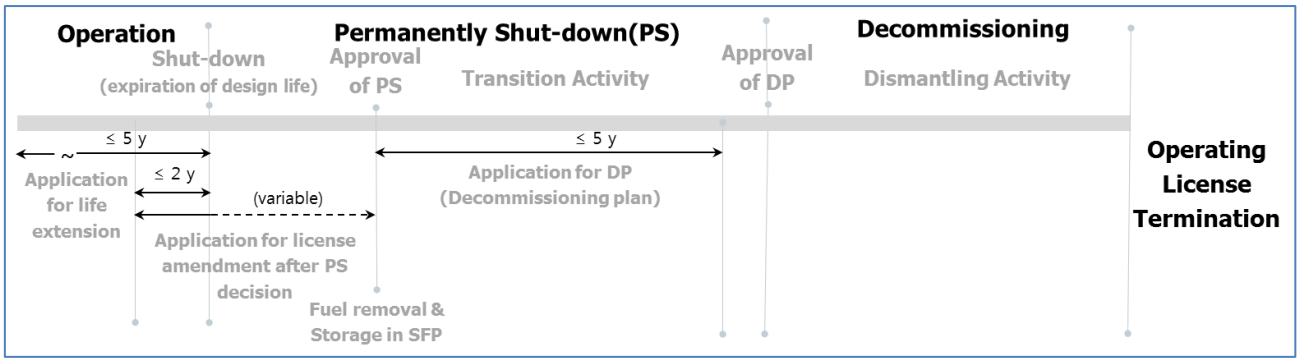
1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

Although the licensee could not legally operate a reactor and must guarantee the safety for reactor operation after the expiration date of design life, the reactor should sustain the status of operating phase and comply with the requirements according to Nuclear Safety Act. However, if the licensee applies the license amendment for a permanently shut-down reactor and the RB gives the change permit including the expected date, the fuel assembly should be defueled from a reactor within the (expected) date of permanently shut-down according to the license amendment.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

The RB may informally get an expectation due to the existing deadline(approximately 2 years ago before the end of design life) to apply for the extension of design life, whether a licensee decides the permanently shut-down(PS) of a reactor. Also, the RB is formally informed through the application of the license amendment for PS, even though the application has no deadline or timeframe and is legally dependent on the licensee.



2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

Our inspection programme is performed under Nuclear Safety Act and subordinate statute. Especially, NSSC (Nuclear Safety and Security Commission) notice 2014-30 states the inspection objects(11 facilities & 1 Field) and items. The inspection programme is not generally changed compared with the operating reactor case, and some of objects and items could be added or exempted.

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

(Scope) In case of a permanently shut-down reactor with defueled conditions, the inspection scope will be added or exempted according to the NSSC notice 2014-30 article 2(2) and the Enforcement Regulation article 19(1). Also, the inspection items in object will be chosen in accordance with the NSSC notice 2014-30 article 3(1). Focussing on the items chosen in the operating reactors, the operating facility (e.g. spent fuel pool) and operation ability based on amended documents(safety analysis report, technical specification, etc.) could be mainly selected for inspecting PS reactor.

(Frequency) According to the Enforcement Regulation Article 19(2), the regulatory inspection shall be performed within 20 months or the NSSC could designate the inspection period in consideration of the status or characteristics of a nuclear reactor. While the inspection period for operation of reactors usually has 18 months in the light of the refueling, it is expected to be varied for PS reactor.

(Duration) According to the Enforcement Regulation Article 19(3), the regulatory inspection shall be regularly implemented during the period of a regular maintenance (Overhaul or refuelling of an operating reactor). In case of PS reactor, it is expected to be newly suggested for the maintenance of operating facility such as spent fuel pool.

b. Describe how risk is considered when changing the inspection programme.

Our inspection programme could be changed and it depends on operating or non-operating system in the transition period. Also the inspection programme for safety and performance relevant to the risk could be only conservatively added according to the NSSC notice 2014-30 article 2(2).

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

According to the Enforcement Regulation 19(4), the licensee shall submit an application form (including detailed maintenance and test plans) to the NSSC no later than 30 days before the start of inspection. At that time, the licensee proceeds the overhaul process presentation to the RB. If the RB wants to modify the inspection programme, he will revise the regulatory inspection plan. Sometimes, for the additional risk-significant items among programme modification, the extra inspection activities are notified in the formal document.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

After the licensee submits an application form for the regular inspection, the regular inspection form is written by the RB and notified to the licensee prior to the beginning of the inspection.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

When the safety concerns and inspection finding were occurred, the licensee should submit the implementation plan with expected deadline. Then the RB will enforce and regularly check the implementation status through official documents. In spite of the decision or approval of permanently shut-down and decommissioning, the licensee should basically implement their original plan. If it is impossible to implement or resolve them until the committed date of permanently shut-down, the RB will revisit safety analysis report and/or relevant documents for the remaining operation period and technically review them. For the remaining safety concerns during the transition period, the RB will continuously trace the licensee's implementation.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

Our inspection during the transition phase is same with operation phase in point of Nuclear Safety Act. Only some of safety standards and measures may not be applied as reflecting the purpose of permanently shut-down and characteristics for permanently shut-down reactors according to Nuclear Safety Act article 21(2) & 26(5). The scope of these non-application is varied on the status of PS reactor. If the SSCs (systems, structure or components) relevant to the existing inspection items are to be operated or maintained in the transition period, the inspection programme will not be changed.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	0	0	
Corrective action programme	+	0	Inspection for additional activities in transition phase
Design basis inspections (e.g. systems, structures, components)	0	0	
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	-	-	Scope reduction for emergency preparedness due to PS
Environmental issues	-	-	Scope reduction of analysis and source term
Equipment qualification (e.g. maintaining level of requirements)	0	0	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	-	-	Resource reduction due to PS
Fire protection	+	+	Reassessment of fire hazard is needed
Housekeeping	0	0	
In service inspections (periodic tests)	0	0	
Industrial safety (personal safety)	0	0	

Licensee interaction with external stakeholders	+	+	Interaction for Decommission activities or preparedness with local peoples
Maintenance activities	-	-	Operating facility reduction
Management of contractors	0	0	
Modifications (permanent and temporary)	0	0	
Organisation and general management	+	+	Organization for proper management of PS reactor and decommission plan
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	0	0	
Quality assurance	0	0	
Radiological protection	+	+	ALARA management for radiation area
Safety culture (e.g. motivation of staff, staff turnover)	0	0	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	0	0	
Sub-criticality and fuel safety	+	+	Additional accident analysis for fuel handling
Training programmes	0	0	
Waste management	+	+	Management for waste occurred in operating phase
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

Our RB is organized the NSSC and KINS (Korea Institute of Nuclear Safety). In the NSSC, the nuclear safety policy division is in charge of organizing and developing the statute for permanently shut-down and decommissioning. Also the division is preparing and managing the administrative review for the license amendment of PS reactor. The KINS had organized the spent fuel & decommissioning team including PS concerns. The review of the license amendment and the development of regulatory guidance are performed by the division of regulatory inspection of KINS.

b. changes to the number of inspectors

No change is expected prior to the first approval of PS

c. training of inspectors

No change is expected prior to the first approval of PS

d. safety culture (e.g. motivation of RB inspectors)

No change is expected prior to the first approval of PS

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

For preparedness of the regulation, the international activities and experiences were investigated, and we have referred to lots of regulation cases of foreign countries for maintaining and developing the regulation for PS reactor.

Are there any other important topics that you would like to be considered at the workshop?

None

MEXICO

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

Since the inception of Laguna Verde Nuclear Power Station (LVNPS) Project, government authorities decided that, in addition to applying the regulations of the IAEA, the regulations of the nuclear steam supply system supplier's country of origin would be equally applied. This requirement is stated in Condition No. 3 of the Commercial Operation License for both LVNPS Units. For this reason, Title 10 "Energy" of the United States of America (US) Code of Federal Regulations (CFR), and all industry standards and guidelines issued from this title were established as a regulatory requirement. Similarly the Regulatory Guidelines issued by the US Nuclear Regulatory Commission (NRC) have been adopted. The Regulatory Body will use for decommissioning LVNPP reactors the 10 CFR 50 section 82.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

When the licensee has determined to permanently cease operations and once the fuel has been permanently removed from the reactor vessel then the decommissioning permit is issued, based in the fact that no longer is considered an operating reactor.

The factor and criteria used are based on the Code of Federal Regulations, 10CFR50 section 82.

2. INSPECTION PROGRAMME

2.*1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).*

Once the licensee has decided permanently to cease operations with final shutdown and decommissioning of its facility, one year before this date the licensee must formally ask for a decommissioning authorization. This should be formally addressed through an official letter of request for decommissioning at the highest level.

2.*2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?*

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

Until the fuel has been permanently removed from the reactor vessel, the scope, the frequency and the number of inspections in some areas must be change increasing or decreasing according with the conditions of the installation.

b. Describe how risk is considered when changing the inspection programme.

As mentioned in 1.1 all the Regulatory Guidelines issued by the US Nuclear Regulatory Commission (NRC) have been adopted, so our inspections are performed according with the Reactor Oversight Process (ROP) and our inspection program will be adjusted to the conditions where all the nuclear fuel is in the spent fuel pool.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

For both cases the base-line inspection programme is used for the continuous verification of plant safety, and it is totally implemented every two years; but an annual revision is made for any adjustment of such inspection programme.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

As mentioned above every year the inspection programme is prepared, for such reason if the notification is received one year before we will have enough time to modify the inspection programme before the nuclear fuel will be located in the spent fuel pool.

3. SCOPE OF INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

No, during the transition phase the inspection procedures applicable are the same that are used during the operation of the NPP.

3.*2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.*

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	**0**	**0**	
Corrective action programme	**-**	**-**	Reduced scope only apply to the systems related with the spent fuel pool
Design basis inspections (e.g. systems, structures, components)	**-**	**-**	Reduced scope only apply to the systems related with the spent fuel pool
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	**0**	**0**	
Environmental issues	**0**	**0**	

Equipment qualification (e.g. maintaining level of requirements)	**0**	**0**	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection	**0**	**0**	
Housekeeping	**0**	**0**	
In service inspections (periodic tests)	-	-	Reduced scope only apply to the systems related with the spent fuel pool
Industrial safety (personal safety)	**0**	**0**	
Licensee interaction with external stakeholders	**0**	**0**	
Maintenance activities	-	-	Reduced scope only apply to the systems related with the spent fuel pool
Management of contractors	**0**	**0**	
Modifications (permanent and temporary)	**0**	**0**	
Organisation and general management	**0**	**0**	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	**0**	**0**	
Quality assurance	**0**	**0**	
Radiological protection	**0**	**0**	
Safety culture (e.g. motivation of staff, staff turnover)	**0**	**0**	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	**0**	**0**	
Sub-criticality and fuel safety	**0**	**0**	

Training programmes	-	-	Reduced scope only apply to the systems related with the spent fuel pool
Waste management	**0**	**0**	
**Other:*			
**Other:*			
**Other:*			

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

The RB doesn´t consider that the permanently cease power operations can affect its organization

b. changes to the number of inspectors c. training of inspectors

The RB doesn´t consider that the permanently cease power operations cause changes in the number of inspectors neither in the training

c. safety culture (e.g. motivation of RB inspectors)

The RB inspectors follow their procedures accordingly in which safety culture is already embedded.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

For the moment we are in the phase of revision of the request of Laguna Verde NPP for life extension license, so we are not considering the permanently ceased of power operations of this plant.

Are there any other important topics that you would like to be considered at the workshop?

None.

RUSSIA

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

We have not special requirements for transition from an operating reactor to a decommissioning reactor.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

When decision to decommission is accepted by Management Body (State Corporation «Rosa tom»), appropriate changes have been made to the operating license, approved by RB and reactor is shut down forever (0 power).

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

When Rosatom accepts the decision of decommissioning, RB (Rostehnadzor) expects from licensee (Rosenergoatom Concern OJSC - electric power division of Rosatom) the submission of changes to the conditions of operating license with appropriate safety justifications for approval.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

b. Describe how risk is considered when changing the inspection programme.

No.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

No difference.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

After stopping of power operation. There are no certain time requirements.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

For approving changes to the conditions of operating license by RB, the licensee (Rosenergoatom) must jusify the safety of this changes.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

No.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	**Scope** (use +, 0, -)	**Level of Effort** (use +, 0, -)	**Comments**
Control of foreign material (FME)	*0*	*0*	
Corrective action programme	*0*	*0*	
Design basis inspections (e.g. systems, structures, components)	-	*0*	***Less equipement, systems in operation***
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	*0*	*0*	
Environmental issues			***This issue is in the competence of Ministry of Natural Resources and Environment***
Equipment qualification (e.g. maintaining level of requirements)	-	*0*	***Less equipement, systems in operation***
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			***This issue is in the competence of Rosatom***
Fire protection			***This issue is in the competence of EMERCOM (Ministry of Emergency)***
Housekeeping	*0*	*0*	
In service inspections (periodic tests)	-	*0*	***Less equipement, systems in operation***
Industrial safety (personal safety)	-	*0*	***Less equipement, systems in operation***
Licensee interaction with external stakeholders			***This issue is in the competence of Rosatom***

Maintenance activities	-	*0*	***Less equipement, systems in operation***
Management of contractors	*0*	*0*	
Modifications (permanent and temporary)	*0*	*0*	
Organisation and general management	*0*	*0*	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	-	*0*	***Less staff***
Quality assurance	*0*	*0*	
Radiological protection	*0*	*0*	
Safety culture (e.g. motivation of staff, staff turnover)	*0*	*0*	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	*0*	*0*	
Sub-criticality and fuel safety	*0*	*0*	
Training programmes	*0*	*0*	
Waste management	*0*	*0*	
*Other:_____			
*Other:_____			
*Other:_____			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

No

b. changes to the number of inspectors

No. We have not separate permanently ceased power operations units, only in the NPP (1, 2 units Beloyarsk NPP).

Resident inspectors supervise all units of NPP.

Scope of comprehensive inspections(in accordance with schedule) – all units of NPP.

Also RB is carrying out target inspections.

c. training of inspectors

No

d. safety culture (e.g. motivation of RB inspectors)

No

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

We try to use inspection experience, gained at the international meetings, IAEA training courses in the inspection of all NPP (for example check of personal safety culture).

Are there any other important topics that you would like to be considered at the workshop?

No

SPAIN

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

By law/regulations, the bearer of an operating permit shall inform the Ministry of Industry and Energy with at least one year's notice of his intention to definitively terminate the activity for which the installation was conceived.

Prior to the awarding of the authorisation for dismantling the bearer of the operating permit shall:

a) Have unloaded the fuel from the reactor and storage pools or, in the absence of the latter, have available a spent fuel management plan approved by the Ministry of Industry and Energy, following a report by the Nuclear Safety Council.

b) Have conditioned the wastes generated during operation.

There are not specific requirements for a transition period but there is a Royal Decree, where in its Chapter VI, approve the regulations governing nuclear and radioactive installations, authorisation for dismantling and decommissioning.

The Nuclear Safety Council (CSN) has also a Safety Instruction, IS-04, for regulating the transference, filing and custody of documents relating to the radiation protection of the workers, the general public and the environment prior to the transference of the licensee ownership of the nuclear power plants for dismantling and decommissioning, as well as the Safety Instruction IS-13, on radiological criteria for the release of Nuclear describing the criteria required by nuclear facilities to obtain an authorization for dismantling and the subsequent statement of decommissioning.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

After the cessation of activities for which the installation was conceived, the operating permit entitle the licensee, under the terms established by the declaration of cessation, to carry on the activities imposed by the administration prior the dismantling authorization.

The Spanish NNPPs must be always under a specific authorization, either for siting, construction, operation or decommissioning.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

Operating permits have been granted so far in Spain for a period of 10 years. The Operation Permit, (OP), itself, specifies that a future request for renewal of the OP shall be submitted three years before it expires. Therefore, a cessation of operation of a NPP will be always communicated in a formal way.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

Yes, it changes to be adapted to the situation of cessation of operation.

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

In Spain the inspections are performed according SISC methodology (similar to NRC ROP, reactor oversight process). In the case of the declaration of cessation the inspection program is adjusted to the situation where all the nuclear fuel is in the spent fuel pool.

b. Describe how risk is considered when changing the inspection programme.

The inspections related to the Probabilistic Safety Analyses (PSAs) are adapted to the situation where all the nuclear fuel is in the spent fuel pool.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

The inspection plan for each NNPP is reviewed annually, so one year in advance.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?.

Every year an inspection program (PBI) is prepared for each installation, therefor an inspection program will be already designed the previous year to the declaration of cessation of operations.

2.6 escribe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

The inspection procedures applicable to the inspections carried out after the declaration of cessation of installation procedures are the same as those for NPP in operation with a reduced scope adapted to the current situation.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	0	0	
Corrective action programme	-	0	CAP follow-up actions related to the operation are suspended ***** Reduced scope. (Nuclear fuel in the spent fuel pool)
Design basis inspections (e.g. systems, structures, components)	-	0	*****

Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	0	
Environmental issues	0	0	
Equipment qualification (e.g. maintaining level of requirements)	0	0	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection	-	0	*****
Housekeeping	-	0	*****
In service inspections (periodic tests)	-	-	*** + Out of ASME XI**
Industrial safety (personal safety)	0	0	
Licensee interaction with external stakeholders	0	0	
Maintenance activities	0	0	
Management of contractors	-	0	*****
Modifications (permanent and temporary)	0	0	
Organisation and general management	0	0	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	0	0	
Quality assurance	0	0	
Radiological protection	0	0	
Safety culture (e.g. motivation of staff, staff turnover)	-	+	Concerns of RB related to the motivation of licensee staff
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	-	0	*****
Sub-criticality and fuel safety	0	0	
Training programmes	-	0	*****
Waste management	0	0	

**Other:*_____			
**Other:*_____			
**Other:*_____			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

The decision of this Spanish NPP with cessation of operations is to apply for returning to full operation and not for dismantling permit.

a. organisational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

N/A

Are there any other important topics that you would like to be considered at the workshop?

It would be interesting that RBs develop some specific regulations to govern the inspection programs for a NPP during and after long-term safe shutdown. Similar to those applied in Fort Calhoun station in USA.

SWEDEN

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

When a licensee has made a decision on the final shutdown (permanent shutdown) of a facility within a certain period of time, an integrated analysis and assessment of how safety is to be maintained during the time remaining until the facility's closure, shall be conducted without delay. Included in this analysis and assessment should also be the need to organizational changes and the number of human resources needed during the different stages of decommissioning. The analyses, assessments and measures emanating from these shall be documented and reported to the RB.

At the latest one year after permanent shutdown of the facility, licensee shall submit to RB an updated general report explaining objectives and measures, for decommissioning. The updated report should include an account of which plant components and equipment that will be needed during the decommissioning as well as the preparatory measures to be taken for the dismantling. Measures required to maintain the functions necessary for safety, security and radiation protection during subsequent stages of decommissioning, should be described in the safety report.

Before dismantling of the facility may be initiated, the updated decommissioning plan shall be incorporated into the facility's safety report, SAR. The updated SAR shall be reviewed and approved by RB.

Noteworthy is that the licensee also needs an approval from the Environmental Court before the facility permanently shuts down

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

According to the Act on nuclear activities a Reactor is permanently shut down when production of electricity have ceased with no intention to resume production again or if the reactor hasn't produced any electricity during a continuous period of 5 years. It is also forbidden to resume production of electricity in a reactor which is permanent shut down.

As long as there is nuclear fuel in the facility, safety arrangements need to be in place to protect and cool the fuel and protect environment and public from any releases from radioactivity in case of an accident.

Of great importance for the RB is the moment when all nuclear fuel is transported away from facility and hence the safety hazards are significantly reduced.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

In Swedish regulation there is no other requirements regarding providing information about the decision to close a facility than what is mentioned above regarding the requirement to report to the RB the analyses of how safety is to be maintained during the time remaining until the facility's closure. However RB expects to be informed as early as possible, ideally when the licensee starts discussing the subject and at latest when the licensee has decided (on a date) to permanently shut down the facility.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection program change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

There will be an extended supervision which focuses on the licensee's activities and measures to keep the safety at a sufficiently high level with no signs of degradation. The extended supervision shall be an addition to the existing normal inspection and oversight program. Special attention shall be given to issues concerning staffing and how the licensee keeps loss of staff at a level that does not negatively impact safety. Furthermore attention shall be given to the licensees program to encourage personnel to keep up high motivation in safety issues and to maintain a strong safety culture. Attention shall also be given to how the licensee keeps track of changes in the level of safety, i.e. which safety indicators are used.

b. Describe how risk is considered when changing the inspection programme.

A licensee's decision to close the facility might lead to personnel losing their motivation to do a god job. This could in next step result in an increased risk at the facility. This increased risk need to be managed by the licensee. The oversight program needs to confirm that licensee take their responsibility in this matter.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

There aren't many differences in the RB inspection programme for these two scenarios. Although there might be differences in the intensity in the RB oversight program. If there is a short timeframe the stress on licensee personnel could be higher and therefore the intensity in the RB oversight might need to be higher to confirm that the licensee take care of the issues that can arise from the higher stress on their personnel.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

As soon as the RB are aware of the decision to cease the operation. Ideally it should be in progress when the licensee informs the personnel about the decision.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

The RB expectation is that the licensee continues with improvements of their facility and their routines. Improvements need to be considered if they will affect safety in the future and if so they should also be implemented.

However there are changes and modifications where the safety benefit might not be significant enough, due to remaining time of operation, in relation to the amount of resources needed. In that case the RB needs to have routines for the licensee to apply for exemptions from the requirements.

On the other hand there are also changes that will have a significant safety significance even after the facility is shut down and therefore should be implemented.

3. SCOPE of INSPECTIONS

3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences in the scope and level of effort of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.

Inspections in other areas need to take in to account the impact the decision to cease the operation could have in their specific area and therefore it could be necessary to broaden the scope of planned inspections to also cover these aspects during the transition phase .

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope (use +, 0, -)***	***Level of Effort (use +, 0, -)***	***Comments***
Control of foreign material (FME)			
Corrective action programme			
Design basis inspections (e.g. systems, structures, components)			
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)			
Environmental issues			
Equipment qualification (e.g. maintaining level of requirements)			
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection			
Housekeeping			
In service inspections (periodic tests)			
Industrial safety (personal safety)			
Licensee interaction with external stakeholders			
Maintenance activities			
Management of contractors			
Modifications (permanent and temporary)			
Organisation and general management	+		
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)			
Quality assurance	+		
Radiological protection			
Safety culture (e.g. motivation of staff, staff turnover)	+		
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	+		
Sub-criticality and fuel safety			
Training programmes			
Waste management			

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

The Department of Nuclear Power Plant Safety is responsible for the oversight of operating plant. As long as there is nuclear fuel at the NPP this department will be responsible for the oversight of the licensee. When all fuel has been shipped away the responsibility will be handed over to the Department of Radioactive Material's Section for Operation and Decommissioning of Nuclear Facilities.

b. changes to the number of inspectors

As of today there haven't been any changes to the numbers of inspectors. There is an ongoing internal study regarding how the closure of several facilities in near future will affect the RB. Foreseeable is that the Department of Radioactive Material will need increasing numbers of inspectors. One possible way to increase the numbers is to move some inspectors from department of NPP Safety to the Department of Radioactive Materials when plants are shut down.

c. training of inspectors

Inspectors changing department or duties will get proper training before doing inspections on their own. This training depends on the individuals experience but will mainly consist of OJT under supervision of inspectors experienced in the area.

d. safety culture (e.g. motivation of RB inspectors)

The RB does not have a training program for retraining of inspectors regarding safety culture or motivation. As a trained inspector you are supposed to act with high motivation in a professional way.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

Are there any other important topics that you would like to be considered at the workshop?

In the late 90s the RB made a survey amongst other RBs how they handled a situation when a facility is going to shut down. This information is the foundation for the oversight in this area today.

SWITZERLAND

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

The regulatory requirements in the HOF area for the transition phase are the requirements applicable all along the operations phase. From the moment in which the NPP ceases operations additional requirements are described in ENSI's guideline G17 on decommissioning. As long as fuel is in the reactor the operating license is valid.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

The final shutdown is the definitive discontinuation of the operation of a nuclear installation for its intended purpose. When an installation is finally shut down, its owner is legally bound to decommission it. Normally, the cease of operation is equal to the final shut down of a nuclear installation. But the regulatory boundaries leave some space for interpretation (according to the individual situation). In the case for the planned decommissioning of the Mühleberg NPP the decommissioning begins with the cessation of power operation. Thereafter follows a phase to establish the technical transition period (e. g. to construct an independent cooling system for the spent fuel pool). Only after the completion of this preparatory works the NPP counts as finally shut down.

A research facility that is only from time to time in operation must declared finally shut down by its owner. The owner of a nuclear installation must notify ENSI in writing upon the decision of the final shutdown. This notification must include the (tentative) date when the installation will be finally shut down.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

No time limit is formally specified. ENSI was informed by the KKM NPP in 2013 that they would cease power operations in 2019. Information as soon as possible allows for preparation and early adaptation of inspection focus.

In the HOF area important issues such as staffing, qualification, motivation etc. are relevant from the moment the decision to cease operations is made and communicated.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

The inspection programme does not change in principle, but a stronger focus and additional activities are dedicated to the HOF issues related to staffing, maintenance of qualified personnel, motivation, safety culture, organisational change etc. as well as early preparation for decommissioning (organizational change, consideration of HOF in the decommissioning project etc.).

b. Describe how risk is considered when changing the inspection programme.

The Inspection Programme is a graded approach, adjusted to the safety relevance of systems, structures and components. Risk is considered.

The effectiveness of the inspection programme is reviewed periodically by annual reports and relevant indicators. ENSI's plant specific (annual) systematic safety assessment is a key element of the Integrated Oversight approach.

Probabilistic Safety Analyses are required as Part of the Safety Reviews (SR), which are done in a 10-years interval.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

ENSI uses a Basic inspection programme (BIP) for long term planning (10 years) and an annual inspection programme, which is fixed every year.

There are different types of inspections:

- programmed inspections: planned on a yearly basis according to the management system (majority of specialist inspections)
- reactive inspections:
  - *triggered by unexpected occurrences, like internal and external events (e.g. Fukushima), findings or difficulties.*
  - *Topics of inspections by site inspectors: chosen on a day-to-day basis*
- announced inspections (majority of specialist inspections)
- unannounced inspections (majority of site inspector inspections)

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

As soon as the decision to cease power operations is communicated.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

In the same way as during normal power operations.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	+	+	More foreign material on site
Corrective action programme	0	+	To avoid untimely corrective action implementation, poor prioritization, non-completion of corrective actions.

Design basis inspections (e.g. systems, structures, components)	0	0	
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	0	
Environmental issues	0	0	
Equipment qualification (e.g. maintaining level of requirements)	0	0	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	0	+	More direct attention to possible negative impact of cost pressure.
Fire protection	0	+	During the walk-downs in the plant by the site inspector general aspects of fire protection, such as evacuation routes or fire protection doors, are subject of the inspection.
Housekeeping	0	0	
In service inspections (periodic tests)	0	0	
Industrial safety (personal safety)	0	0	
Licensee interaction with external stakeholders		(+)	For instance increase in outsourcing of tasks that used to be performed on site by the licensee to the parent company.
Maintenance activities	+	+	Negative impact of cost pressure.
Management of contractors		(+)	For instance increase in outsourcing of tasks that used to be performed on site by the licensee.
Modifications (permanent and temporary)	0	0	
Organisation and general management	+	+	See 2.2
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	+	+	See 2.2

Quality assurance		+	Attention is dedicated to possible decay in quality due to lack of resources.
Radiological protection			
Safety culture (e.g. motivation of staff, staff turnover)	+	+	In the HOF area important issues such as staffing, qualification, motivation etc. are relevant from the moment the decision to cease operations is made and communicated.
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	0	0	
Sub-criticality and fuel safety	0	0	
Training programmes	+	+	Inspection topics: training programmes, requalification and training of licensed personnel, training and competence of other staff, drills of the emergency response organizations.
Waste management	0	0	
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB
b. changes to the number of inspectors
c. training of inspectors
d. safety culture (e.g. motivation of RB inspectors)

As a preparation for decommissioning, ENSI developed a Supervisory Concept for the Decommissioning of a Nuclear Power Plant. The supervisory concept is intended to enable ENSI to plan and implement the forthcoming work in connection with decommissioning a nuclear power plant lawfully and with safety as the priority in an effective, systematic, proportionate and flexible manner. The concept describes how ENSI's supervision in the preparation and during the de-commissioning of a nuclear power plant is to be organized and managed within ENSI. It describes the supervisory projects and the key activities, using the planned decommissioning of the Mühleberg nuclear power plant (KKM) as an example.

a) ENSI's organizational structure is specified by it's matrix organization and are described in the rules of procedure. The matrix structure enables the collaboration and support of various experts in house according to the different tasks. On this basis, the supervisory concept provides specific descriptions of the management and organization of supervision during the various phases of decommissioning.

b) The number of inspectors does not change after final shut down of a NPP. There still remains a site inspector who coordinates all inspections and technical discussions. But due to the ever changing situation in a NPP under decommissioning, the numbers of inspections will grow.

c) During decommissioning the aspect of occupational safety becomes more important. This implies an additional training in occupational safety for the ENSI inspectors.

d) The motivation of the inspectors is usually high, especially in a decommissioning project with constantly changing conditions. Safety culture includes those values, ideologies, behaviors and environmental features that determine or demonstrate how the members of the organization approach and deal with nuclear safety. ENSI considers safety culture as a basic issue of its supervisory function. That's why all employees of ENSI are regularly educated in aspects of safety culture.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

Our decommissioning guideline ENSI-G17 is consistent with the recommendations of the Western European Nuclear Regulators' Association WENRA and the International Atomic Energy Agency IAEA.

Contacts exists with various international organizations. Strong collaboration is with Germany (TÜV NORD and others).

Are there any other important topics that you would like to be considered at the workshop?

No

UNITED KINGDOM

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

ONR considers that the period between permanently ceasing power operations and final de-fuelling of a reactor to be 'operations', as defined in the conditions attached to the site licence (legal requirements for operation). Therefore the legal framework for de-fuelling is identical to at power operations.

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

When the reactor is fuel free.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

The ONR would expect to be informed of a licensee's intent to cease operations well in advance of final shutdown. The submission of periodic safety reviews indicate the planned period of remaining operation and timing of commencing de-fuelling. A safety case for de-fuelling operations must be in place in advance of their commencement. Routine regulatory interactions with the licensee would also provide information concerning the timing of cessation of operations. There is no strict legal requirement for a formal letter of notification to be sent, but it is normal practice.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

The scope of inspections undertaken and the frequency of inspections are reduced. There is increased focus on systems that are used for de-fuelling operations. Planned inspection programmes to check compliance with site licence conditions relevant to de-fuelling operations are prescribed by ONR.

A comprehensive and systematic verification process is implemented to confirm that reactors are free from irradiated fuel, prior to entering decommissioning.

b. Describe how risk is considered when changing the inspection programme.

The scope and extent of the inspection programme is proportionate to the nature and magnitude of hazard on the site. The hazard during de-fuelling is reduced, with a commensurate reduction in scope and frequency of inspection by ONR.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

The inspection programme is not modified until the facility ceases generation of electricity.

b. with minimal advanced formal notification or informal awareness (months).

This is unlikely to be the case. No change in approach.

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

There is no formal change. Inspection programmes in place during generation continue and transition to a reduced frequency and scope over a 6 month period, following shut down. Once de-fuelling operations are routinely established, the frequency of inspection visits is reduced to approximately a third of the number during power operations. The emphasis of ONR inspections is on changes to organisational arrangements and structure (de-manning), once power operations have ceased. There is also an emphasis on implementation of the de-fuelling safety case, staff training and organisational capability.

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

Safety concerns and improvements identified during power operations are followed-up, if they continue to be relevant during de-fuelling operations. The date for permanently cessation of operations may be uncertain and subject to change as it approaches. Hence during discussions with the licensee regarding unresolved safety concerns, the inspector/ONR must exercise judgement regarding what actions are reasonable to mitigate any risk gap.

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

The changes to planned inspections relevant to each of the 36 site licence conditions and site safety systems are individually prescribed in ONR internal documentation and not reproduced in detail here. Overall, the number of compliance inspections is reduced by approximately half and safety systems inspections by a third.

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope*** *(use +, 0, -)*	***Level of Effort*** *(use +, 0, -)*	***Comments***
Control of foreign material (FME)	-	-	
Corrective action programme	0	-	
Design basis inspections (e.g. systems, structures, components)	-	-	
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	-	The same number of emergency exercises are held, but the size of the inspection team is reduced.

Environmental issues	+	+	
Equipment qualification (e.g. maintaining level of requirements)	-	-	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)	+	0	
Fire protection	0	0	Increased activity due to preparations for decommissioning.
Housekeeping	+	+	
In service inspections (periodic tests)	-	-	
Industrial safety (personal safety)	+	0	
Licensee interaction with external stakeholders	-	-	
Maintenance activities	-	0	
Management of contractors	-	-	
Modifications (permanent and temporary)	-	-	
Organisation and general management	+	+	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	+	+	
Quality assurance	0	-	
Radiological protection	+	0	
Safety culture (e.g. motivation of staff, staff turnover)	0	0	
Staffing levels (e.g. minimum shift complement,	0	+	

Emergency Response Team, etc.)			
Sub-criticality and fuel safety	-	-	
Training programmes	0	0	
Waste management	+	+	
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANISATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organisational structure of the RB

No change. The ONR has a separate regulatory programme (Decommissioning, Fuel and Waste, DFW) that deals with de-fuelling and decommissioning facilities, staffed with an appropriate number inspectors. Facilities that are likely to/have moved to permanently cease power operations are transitioned to this programme.

b. changes to the number of inspectors

The number of ONR inspectors in the DFW Programme is commensurate with the number of relevant facilities to be regulated and the planned inspection programme.

c. training of inspectors

ONR inspectors who work in DFW are drawn from the same pool of regulatory inspectors and receive the same training as elsewhere in ONR. Inspectors are rotated on a regular basis between generating, non-generating sites and other regulatory work.

d. safety culture (e.g. motivation of RB inspectors)

Inspectors are non-resident and are moved to/from other work as the workload on de-fuelling/decommissioning facilities changes.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

ONR is involved in a wide variety of international groups and interactions, and takes cognisance of developments and approaches, as appropriate.

Are there any other important topics that you would like to be considered at the workshop?

None identified.

UNITED STATES

1. FRAMEWORK

1.1 What are your RB's regulatory requirements governing the transition from an operating reactor to a decommissioning reactor?

1.2 When is it no longer considered an operating reactor? Describe the factors and criteria used in this consideration.

Code of Federal Regulations, Title 10 (Energy), part 50, section 82 is the governing document for decommissioning reactor.

The Code of Federal Regulations is a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government.

50.82 Termination of License:

(a) For power reactor licensees

(1) (i) When a licensee has determined to permanently cease operations the licensee shall, within 30 days, submit a written certification to the NRC, consistent with the requirements of § 50.4(b)(8) - *Certification of permanent cessation of operations.* The licensee's certification of permanent cessation of operations, under § 50.82(a)(1), must state the date on which operations have ceased or will cease, and must be submitted to the Nuclear Regulatory Commission (NRC)'s Document Control Desk. This submission must be under oath or affirmation.

(ii) Once fuel has been permanently removed from the reactor vessel, the licensee shall submit a written certification to the NRC that meets the requirements of § 50.4(b)(9) - *Certification of permanent fuel removal.* The licensee's certification of permanent fuel removal, under § 50.82(a)(1), must state the date on which the fuel was removed from the reactor vessel and the disposition of the fuel, and must be submitted to the NRC's Document Control Desk. This submission must be under oath or affirmation.

2. INSPECTION PROGRAMME

2.1 Describe how and when your RB expects to be informed by the licensee that they commit to permanently cease power operations (e.g. informally vs. formally, timeframe).

When a licensee has determined to permanently cease operations the licensee shall, within 30 days, submit a written certification to the NRC.

2.2 When the licensee has committed to permanently cease power operations, does your RB's inspection programme change?

a. Describe changes to the inspection programme (e.g. scope, frequency, etc.).

b. Describe how risk is considered when changing the inspection programme.

2.4 Describe how your RB modifies its inspection programme in the following instances:

a. with significant advanced formal notification or informal awareness (years); and

b. with minimal advanced formal notification or informal awareness (months).

2.5 When are the changes to your RB's inspection programme implemented in relation to the date the licensee intends to permanently cease power operations?

2.6 Describe how your RB addresses unresolved safety concerns (e.g. those found in Periodic Safety Review, non-compliances, modifications, etc.) and inspection findings upon becoming aware that the licensee is committed to permanently cease power operations.

The NRC implements the reactor oversight program using Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program—Operations Phase." The NRC transitions to IMC 2561, "Decommissioning Power Reactor Inspection Program," following the certification date for the removal of all nuclear fuel from the reactor vessel (10 CFR 50.82(a)(1)(ii)). The NRC staff has determined that the implementation of IMC 2515 for the year prior to permanent shutdown should be modified to better align to the activities associated with the end of operation and preparations for shutdown and decommissioning.

Some of the changes include:

- Increasing the number of inspections in areas such as;
    - Equipment Alignment, Licensed Operator Requalification, Operability Determination and Functionality Assessments, Plant Modifications, Surveillance Testing
- Decreasing the number of inspection in areas such as;
    - Internal Flood Protection Measures, Heat Sink Performance, Maintenance Effectiveness, Maintenance Risk Assessment & Emergency Work Control, Post Maintenance Testing, EP Drill Evaluation
- No changes in Number of Inspections Performed in the areas such as;
  Adverse Weather, Fire Drill, Refueling and Outage Activities, Performance Indicator Verification, Problem Identification & Resolution, Event Follow Up, Plant Status
- Team inspections modified as follows;
    - EP Team Inspections, Security Team Inspections, Radiation Protection Inspection: No changes until certification of permanent removal of fuel
    - Problem Identification and Resolution Biennial Inspection: Recommend Reduced Scope
    - Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications: Recommend increased sample size due to increase number of temporary modifications
    - Component Design Basis Inspection: Not recommended or combine with Plant Modification
    - Triennial Fire Protection Inspection: Adjust schedule and scope based on licensee's schedule of decommissioning activities
    - In-Service Inspection: Not Recommended
    - Operations Training: Recommend in the 1st two QTRs to ensure adequate staffing and training

Furthermore, the staff performs focused inspection of the licensee's 10 CFR 50.59 reviews prior to the licensee beginning major modifications after the plant has been shutdown. The NRC found issues at several facilities as a result of changes to the definition of "safety-related SSCs" by the licensee and other misapplications of the 10 CFR 50.59 change process.

During the operational phase, the integration of inspection, performance indicator, assessment, and enforcement programs using the ROP will continue to be implemented in accordance with IMC 0305, "Operating Reactor Assessment Program."

3. SCOPE of INSPECTIONS

*3.1 Does your RB identify and define, by internal procedure/process or otherwise, differences **in the scope and level of effort** of inspections conducted during the transition phase (compared to the same inspections conducted prior to the transition phase)? If so, describe how the identified inspections are modified.*

3.2 With respect to the scope and level of effort of inspections, which areas increase in importance, which areas decrease in importance and which areas maintain their importance? Use "+" to indicate an increase in importance, "0" to indicate no change and "-" to indicate a decrease in importance, and give a brief comment explaining why.

Areas	***Scope (use +, 0, -)***	***Level of Effort (use +, 0, -)***	***Comments***
Control of foreign material (FME)	0	0	
Corrective action programme	0	0	
Design basis inspections (e.g. systems, structures, components)	-	-	Possibly combined with Plant Modification inspection
Emergency preparedness (e.g. programme, exercises, availability of emergency response facilities)	0	0	
Environmental issues	0	0	
Equipment qualification (e.g. maintaining level of requirements)	+	+	
Financial resources (e.g. cost reduction plans, staffing, materials, etc.)			
Fire protection	0	0	
Housekeeping	0	0	
In service inspections (periodic tests)	-	-	
Industrial safety (personal safety)	0	0	
Licensee interaction with external stakeholders	+	+	

Maintenance activities	-	-	
Management of contractors			
Modifications (permanent and temporary)	+	+	
Organization and general management	+	+	
Qualification of licensee staff or contractors (e.g. new staff, language challenges, preservation of knowhow)	+	+	
Quality assurance	0	0	
Radiological protection			
Safety culture (e.g. motivation of staff, staff turnover)	+	+	
Staffing levels (e.g. minimum shift complement, Emergency Response Team, etc.)	+	+	
Subcriticality and fuel safety	0	0	
Training programmes	0	0	
Waste management	0	0	
**Other:_____*			
**Other:_____*			
**Other:_____*			

*Any other specific areas not mentioned above

4. RB ORGANIZATIONAL MANAGEMENT

4.1 Describe how your RB manages internal changes to face new challenges resulting from a licensee's commitment to permanently cease power operations and to verify the continued effectiveness of its inspection capabilities. Include in your response a discussion of the following areas:

a. organizational structure of the RB

There aren't any particular changes to the organization.

b. changes to the number of inspectors

The resident inspector at the site is reduced to 1 inspector.

c. training of inspectors

There is not a specific training for decommissioning. NRC has separate branch for decommissioning inspectors.

d. safety culture (e.g. motivation of RB inspectors)

No safety culture requirement for inspectors.

4.2 Describe how your RB uses international inspection experience for nuclear power plants that have committed to and eventually permanently ceased power operations.

The NRC is continuously learning from the international community.

Are there any other important topics that you would like to be considered at the workshop?

QUESTIONNAIRE B
INSPECTION OF MODIFICATIONS

Introduction

The purpose of the task is to identify commendable inspection practices regarding the licensees' control of modifications, with particular attention to temporary modifications and changes to systems, structures and components (SSCs) related to obsolescence, or operational experience. The focus on temporary modifications takes account of earlier workshops already addressing permanent modifications and identifying associated commendable practices. (International WGIP-Workshop Helsinki, 23-25 May 1994, NEA/CNRA/R(94)4).

The task also considers the regulatory approach to the use of non-identical replacement parts. These types of changes are characterised by replacement of defective or obsolete equipment or components by items which appear identical in that they fit into the existing connections or components, they have the same shape, size, colour, etc., and they deliver the same role by functioning in a similar manner. However they are typically not a replacement part sourced from the Original Equipment Manufacturer (OEM), and some internal parts, material specifications, and other attributes could vary. The decision to regulate them as modifications, or replacements could impact on the degree of licensee and regulatory scrutiny.

Questionnaire

For preparation of the workshop, participants are invited to supply their national inspection approaches used according to the following questionnaire:

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Do you have other related topics that you want to be discussed during the workshop?

BELGIUM

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

Yes, temporary modifications are defined in the Royal Decree about WENRA RL's as being "modifications implemented for a limited time beforehand determined".

In practical the licensee distinguishes the temporary modifications and the temporary configurations. Temporary modifications answer to the definition mentioned here above and follow exactly the same process as the permanent modifications. Temporary configurations can have different origins like the modification of a set point or a parameter, the installation of a measurement device or the modification of an electrical circuit. The internal process for temporary configurations is slightly different. Therefore, in the answers hereafter, temporary modifications are to be interpreted as temporary configurations.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

According to the Royal Decree about WENRA RL's a process (applied by the licensees and by RB) equivalent to the process for the permanent modifications shall be followed. Nevertheless the process of the licensee for temporary modifications could be less stringent according specific circumstances (urgency or duration of the modification). The RB oversight process is also different because for temporary modifications the status (modification with or without impact on nuclear safety) and the bounded safety analysis are verified during the onsite inspection while for permanent modifications the verification is usually more detailed (according to safety importance) and occurs normally at the RB office (by experts assessment).

3. Does your RB inspect temporary modifications?

Yes, temporary modifications are inspected during the onsite periodic inspections. The adequacy of the status of the modification and the completeness of the safety analysis are systematically verified by the inspectors. Verifications of the correct implementation on the field are also performed by sampling.

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

RB inspector has to approve the internal approval by the Health Physics Department of the licensee. All temporary modifications are verified by RB inspectors (Health Physics Department approval) with special focus on temporary modifications classified as having an impact on nuclear safety.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

According to the Royal Decree about WENRA RL's, the number of simultaneous temporary modifications should be minimized. For each modification with safety impact a safety analysis is required to determine the potential consequences on the nuclear safety. In that way the interaction of each modification with the existing installation and the other modifications is deeply analyzed. All the temporary modifications are bundled in the main control room under the responsibility of the operation department to avoid inappropriate interaction between modifications. The RB inspector verifies systematically this topic during onsite inspections.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

Contrary to permanent modifications, the permission from the RB is not formally required for the implementation, extension or removal of temporary modifications. However the RB verifies systematically during the onsite inspections that the internal process of the licensee for temporary modifications has been strictly and correctly followed. As mentioned before an approval of the RB inspector remains required (a posteriori).

If a temporary modification is made permanent, the licensee has to introduce a request for permanent modification and to follow the corresponding process with the formal approval by the RB (a priori).

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

The inspections performed by the RB about temporary modifications consist in:

- the verification of the adequacy of the status of the modification: with or without impact on nuclear safety (for 100% of temporary modifications)
- the verification of the safety evaluation of the modification: identification of the potential consequences on the nuclear safety and of the compensatory measures (for 100% of temporary modifications)
- the verification of the safely implementation of the modification in the associated master documents in the main control room and on the field (by sampling)

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

The following difficulties or problems with temporary modifications have been identified by the RB:

- The internal process of the licensee for temporary modifications requires an approval by a qualified staff member before the implementation of the modification. For urgent temporary modifications out of the working hours, the RB notes some difficulties for the licensee to strictly follow his internal process.
- Lack of formalization of Health Physics Department approval.
- Temporary modifications are normally implemented for a limited time but the RB observes that some modifications remain implemented for a long time.
- Some discrepancies between master documentation and field verification.
- Lack of local identification of modified equipment on the field and/or removal of identification afterwards.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

According to the Royal Decree about WENRA RL's the replacement of equipment has not to be considered as a modification if the equipment is an identical equipment or if a safety analysis demonstrates the equivalent character of the new equipment.

In practical only replacement by identical equipment is accepted as replacement. All others are to be considered as modifications.

a. *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

The permitted variations compared to an original part in a replacement are only accepted during discussions between involved stakeholders (OEM, licensee, Health Physics Department, RB). The permitted variations still remain an evaluation based on the expert judgement of the licensee/Health Physics Department and the RB. The main challenge in that issue for the RB and the licensee is to be informed of the variations in the equipment (not always communicated by the supplier).

b. *What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

If a replacement of non-identical parts is considered as modification, the normal oversight process for modifications is followed. For the other replacement of parts, discussions during routine onsite inspections as dedicated inspections regarding "maintenance" and spare parts are regularly performed by the RB.

Do you have other related topics that you want to be discussed during the workshop?

Others interesting topics related to the issue "inspection of modifications" are:

- Transposition of generic modification to other "similar" units
- Software modification
- Organizational modification

CANADA

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

Canada's RB does not define a temporary modification explicitly, however the power reactor operating licence and its associated licence conditions handbook require the licensee to implement and maintain a pressure boundary program in accordance with CSA Standard N285.0 General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants; Section 14.5.4 Temporary modifications, sets out a definition for temporary modifications:

"14.5.4 Temporary modifications

14.5.4.1

A temporary modification is defined as a modification of an existing system or component for a period of time not exceeding one year, or one outage cycle where removal is not possible during plant operation. Temporary modifications include recurring modifications (i.e., the same modification implemented on the same system or component more than once during the life of the station)."

The power reactor operating licence and its associated licence conditions handbook require the licence to implement and maintain programs to ensure fitness for service of systems, structures and components in accordance with CNSC regulatory documents and CSA standards. CNSC Regulatory Document RD/GD 210 Maintenance Programs for Nuclear Power Plants, section 3.3.2 Corrective Maintenance states:

"When controlling and performing temporary repairs, licensees should demonstrate that the following criteria have been taken into account:

1. the licensee employs a process for controlling and performing temporary repairs, including proper approvals, equivalency assessments and definition of the time period until the permanent repair can be implemented or an approved modification made
2. temporary repairs are evaluated, controlled and tracked; the use of temporary repairs is minimized, and permanent repairs are made at the earliest reasonable opportunity
3. procedures are implemented to control the placement, removal and periodic review of temporary modifications for equipment, such as electrical jumpers, lifted leads, mechanical jumpers, hoses, pipe blanks and spool pieces
4. the limit of duration of a temporary repair for an existing system or component is specified and minimized, and a management action is generated to track removal of a temporary repair

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

As per the CSA N285 General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants definition provided above, temporary modifications are installed for a limited time and the licensee provides a regulatory commitment that CNSC uses to track removal of the temporary modification. With respect to permanent modifications, CNSC may approve the design change (if ASME Class 1) or delegates the approval to the Authorized Inspection Agency who registers pressure boundary systems. CNSC tracks safety significant modifications to completion such as those modifications made following the Fukushima Daiichi nuclear disaster.

As part of CNSC's baseline compliance verification program, inspections are conducted on the licensee's engineering change control, pressure boundary and modification processes to verify compliance with regulatory requirements. As part of these inspections, samples of both temporary and permanent

modifications (at various levels of installation) are taken when verifying compliance. Furthermore, system inspections are conducted at the NPPs where selected systems are inspected for adherence to regulatory requirements, including the licensees programs and processes. It is here, where specific temporary modifications on a system may be reviewed in-depth.

3. Does your RB inspect temporary modifications?

Both permanent and temporary modifications are inspected by either Canada's RB or its delegate, the Authorized Inspection Authority.

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

As part of CNSC's baseline compliance verification program, inspections are conducted on the licensee's engineering change control, pressure boundary and modification processes to verify compliance with regulatory requirements. As part of these inspections, samples of both temporary and permanent modifications (at various levels of installation) are taken when verifying compliance. Additionally, through the conduct of system inspections, temporary modifications for the system in scope are reviewed for adherence with the licensee's programs and processes, and regulatory requirements. Moreover, an augmented inspection may be conducted based on operating experience or an event (such as Fukushima) to verify that specific modifications have been installed, commissioned and are available for service.

In Canada the RB also requires that the licensee use an authorized inspection agency service to verify all pressure boundary repairs, replacements and modifications are completed as per the licensees approved quality assurance program irrespective of the ASME class of the system.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

Typically multiple modifications on the same system or component are all grouped together into one master modification package. It is here that the licensee will review the aggregation of the modifications in effect.

Through the conduct of CNSC's baseline compliance verification program, inspections are conducted on the licensee's engineering change control, pressure boundary and modification processes to verify compliance with regulatory requirements. As part of these inspections, samples of both temporary and permanent modifications (at various levels of installation) are taken when verifying compliance. Additionally, through the conduct of system inspections, temporary modifications for the system in scope are reviewed for adherence with the licensee's programs and processes, and regulatory requirements.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

Depending on the ASME Class of the system being modified, approval from either the RB or the Authorized Inspection Agency may be required.

The licensee shall ensure that plant design and changes to plant design are accurately reflected in the safety analysis. Furthermore, the licensee shall ensure that plant status changes (design modifications) are controlled such that the plant is maintained and modified within the limits prescribed by the design and licensing basis.

Aspects of design or equipment are considered safety and control measures if changes to them would:

- Invalidate the limits documented in the operating policies and principles or safe operating envelope referred to in condition 4.1,
- Introduce hazards different in nature or greater in probability or consequence than those considered by the safety analyses and probabilistic safety assessment and/or,

- Adversely impact other important safety and control measures, such as those related to operations, radiation protection, emergency preparedness, etc.

The licensee shall ensure that any changes to those aspects remain within the licensing basis. Changes outside the licensing basis, including those that would invalidate limits or introduce different hazards, and require prior written approval by the RB.

Furthermore, the design of the existing nuclear facility, and any modification, shall comply with applicable codes, standards and regulations, including adequate consideration for human factors.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

Through the conduct of system inspections, temporary modifications are reviewed for the system in scope to verify:

- that the station is tracking, reviewing and removing these changes in accordance with station expectations
- confirm any temporary changes have been removed within the approved time period
- if not, confirm any extensions are technically justified and appropriately approved.

7. .What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

The primary difficulty associated with temporary modifications is the use of the temporary alteration process (different from the temporary modification process) to circumvent the more thorough and in-depth temporary and permanent modification processes. In some instances where the temporary alteration process is used, extensions of the temporary alteration lead to it remaining in place for extended periods of time or indefinitely. The temporary alteration process is more desirable to use from the licensee's perspective, as it is a faster and less resource intensive process. An additional issue with the extensions of temporary alterations is that they will be granted assuming that certain compensatory actions or activities will continue to be performed over the life of the temporary alteration. These activities may include enhanced oversight, or the development of temporary procedures. It has been observed on occasion that these additional controls are not strictly adhered too and are not always documented as required.

When reviewing temporary alterations that have received extensions, CNSC observed that the appropriate licensee approvals are not always obtained or present on the documentation that is to be verified.

NON-IDENTICAL REPLACEMENT PARTS

8. .If the licensee does not utilize identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

Response:

The RB permits the change to be considered a replacement rather than a modification if there is no change to the design basis. Three options used by the licensee for replacements are:

- like for like replacement
- item equivalency evaluation
- non-identical component replacement but the same "Form, Fit and Function"

It should be noted that a non-identical component replacement can only be used if all of the applicable criteria of the process is met; otherwise the full risk based modification process is required to be followed.

With respect to the removal or abandonment of systems or components within a system, the permanent modification process is to be followed.

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

The power reactor operating licence and its associated licence conditions handbook require the licensee to implement and maintain a pressure boundary program in accordance with CSA Standard N285.0 General Requirements for Pressure-Retaining Systems and Components in CANDU Nuclear Power Plants. Section 14.3 Replacement Items, sets out the pressure boundary requirements for replacement items and states:

"14.3.1

A replacement item may be purchased to the original design specification or to a different design specification, provided that the design requirements for the original item are met. The effect on the existing system of any differences between the original item and the replacement item shall be reconciled with the original design reports. If these differences cannot be reconciled, updated design documentation shall be submitted to the authorized inspection agency in accordance with this Standard.

14.3.2

The classification of the replacement item shall be the same or a higher class than that required by the original design specification.

14.3.4

The replacement item shall be functionally, chemically, and metallurgically compatible with the system in which it is to be installed."

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

The RB does not directly monitor all temporary or permanent modifications. Through the conduct of system inspections, the status of temporary modifications for the system in scope is verified for compliance with licensee procedures, processes and other regulatory requirements. Furthermore, during inspections of the licensee's engineering change control, pressure boundary and modification processes, the RB will verify that extensions for temporary modifications are valid and have been appropriately approved.

The licensee is required to contract an authorized inspection agency that is approved by the RB. This authority is responsible for ensuring that modifications to pressure retaining vessels and pressure boundary, comply with the applicable engineering codes and standards.

Do you have other related topics that you want to be discussed during the workshop?

Use of operations controlled change processes (temporary alterations) to avoid following the temporary or permanent modification process.

CZECH REPUBLIC

TEMPORARY MODIFICATIONS

1. Does the Regulatory Body (RB) treat temporary modifications differently to permanent modifications?

The regulatory approach is the same.

The minor non-compliances that can and must be disposed immediately to keep the component´s function (e.g. drop leakage elimination using non-standard method, urgent flange correction) can be considered as temporary change depending on its nature. Such resolution is reported to RB next working day for following assessment.

2. Does the RB inspect and/or assess temporary modifications?

All modification, permanent or temporary, are subject to regulatory assessment and inspection. The scope of assessment depends on category of modification. The category is derived from CCS safety significance – specified in the list of selected components, and functional significance – safety function impact

3. Does the RB have a clear definition of a temporary modification, if so, can you supply a copy?

The definition of a temporary modification used by SUJB is based on IAEA Safety Guide No. NS-G-2.3. - Modifications to Nuclear Power Plants:

Modifications which are implemented for a limited period of time may be treated as temporary modifications. Examples of temporary modifications are temporary bypass lines, electrical jumpers, lifted electrical leads, temporary trip point settings, temporary blank flanges and temporary defeats of interlocks. This category of modifications also includes temporary constructions and installations used for maintenance of the design basis configuration of the plant in emergencies or other unanticipated situations. Temporary modifications in some cases may be made as an intermediate stage in making permanent *modifications.*

How does the RB inspector choose which temporary modifications to inspect? Is a graded approach applied?

As all changes and modifications shall be categorized regarding to their impact to safety the graded approach is applied. Inspectors are also involved in assessment of modification and have available list of planned modification for given operational period (outage, quarter of the year).

4. How is the aggregation of modifications considered by the licensee and by the RB?

The number of temporary modifications is kept to a minimum. The licensee has developed the internal procedures required to review interrelation of proposed temporary modifications and any existing permanent/temporary modifications and the effects of their parallel realization. This fact is described in documentation file sent to RB.

5. Is permission needed from the RB inspector before a temporary modification is started, extended or removed?

The SUJB permit is needed only for category 1 modifications. The definition of categorization is stated in Regulatory Guide No. 1.10 “Modifications to Constructions, Components, Systems and Procedures of Nuclear Installations. The permit to implement a temporary modification is the same as that for a permanent modification.

6. What inspections are performed during the lifetime of a temporary modification? E.g. Prior to installation; during operation including configuration control; during maintenance, and, on release and removal?

Depending on the scope of temporary modification, inspections are performed primarily by resident inspectors. The major modification, e.g. those needed to be realised in steps and include temporary modification in the course of its realization, are supervised by head quarter inspectors. This inspection include all modification phases.

7. What experience does the RB have of abnormal events associated with temporary modifications? Do you perform analysis of this experience and what are the most common causes of events associated with temporary modifications? Please provide a specific example

The abnormal events associated with temporary modifications are assessed and inspected with regard to its safety significance. Events are registered in feedback system. Any event is reported by licensee together with preliminary classification. SUJB use daily report of resident inspectors organised through videoconference.

Examples:

Temporary switch of electrical supply during maintenance of distributor and followed non-correct checking of reversion and adjustment

Close of valve during maintenance of the pump system and non-reopening after maintenance finishing.

Fit, Form, Function Changes

Does the RB consider "fit, form, function" changes as a modification and if so, how is the "normal" licensee modification process applied and regulated?

Yes. The review and assessment of any proposed change that have influence on safety related CCS is established in licensee internal procedure and is subject to SUJB supervision. Such changes are split in categories:

Reparation based on approved standard procedure (typically welding procedure)

Non-standard reparation based on specific procedure

Replacement by the identical item (from store or the same material/vendor)

Replacement by approved (by utility) equivalent – reported to SUJB for assessment

Change of component supplier – CCS carry out the safety function is subject to SUJB assessment and approval (using graded approach)

Change of important internal part of component, media or material - subject to SUJB assessment and approval (using graded approach)

Change of system –analog to digital I&C, additional feed water system line - subject to SUJB assessment and approval (using graded approach)

SW change - subject to SUJB assessment and approval (using graded approach)

If the RB does not consider "fit, form, function" changes as modifications, what regulatory processes are applied to ensure safety of such changes to plants?

FINLAND

TEMPORARY MODIFICATIONS

1. *Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.*

No. Temporary modifications are treated and qualified like permanent modifications.

Electrical and I&C system modifications in safety classified system may be started only after RB approval of system's pre-inspection documentation and when any requirements pertaining to the starting and supervision of work stated in the approval have been fulfilled.

For electrical and I&C equipment a suitability analysis concerning the suitability of safety classified electrical and I&C equipment or cables for their intended location of use shall be prepared as a part of the selection of replacement spare part. The installation of the equipment shall not be started before the suitability analyses have been submitted to RB and any documentation submitted for approval has been approved by the RB.

In some cases the operation of the plant can be continued without immediate repair of a broken component with temporary operational rules. Typical example is a broken measuring device in a slow chancing process that can be substituted by periodical manual surveillance.

2. *Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?*

See answer 1.

3. *Does your RB inspect temporary modifications?*

Temporary modifications are inspected like permanent modifications.

The licensee shall perform an installation inspection on the safety classified electrical or I&C equipment and cables installed. Next the licensee shall perform a commissioning inspection on the installed or modified safety-classified electrical or I&C systems. The commissioning inspection may be divided into two parts: the first part review that the system or component is ready for commissioning testing operation and the second part reviews the result documentation from commissioning testing. At its discretion, RB may perform its own additional commissioning inspection of electrical and I&C systems and equipment.

   a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

4. *How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)*

There is no simple answer or regulatory mechanism. In theory the original requirement specification is first updated in the start of design process. There must be some verification in the design process that the modified requirements don't override safety requirements that are coming to the system or component from upper levels. The design must then be done, verified, validated, analyzed and qualified according relevant principles of corresponding safety class. This principle relies on adequate detailed and up to date old requirement specification and also to the knowledge of how the original validation and testing was done. The weak point is that documentation of an old plant can sometimes be quite general.

Bigger modification works with many smaller modifications are inspected in upper level by a conceptual design plan. The contents of the conceptual design plan shall correspond to that of the preliminary safety analysis report. Additionally, the conceptual design plan shall contain a report on quality management principles, including design reviews and the competence of the design organisation. System and equipment level modifications are handled as described in answer 1 in addition to conceptual design plan document.

5. *Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?*

See answers 1 and 3.

6. *What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?*

   See answers 1 and 3.

7. *What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.*

NON-IDENTICAL REPLACEMENT PARTS

8. *If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?*

   a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

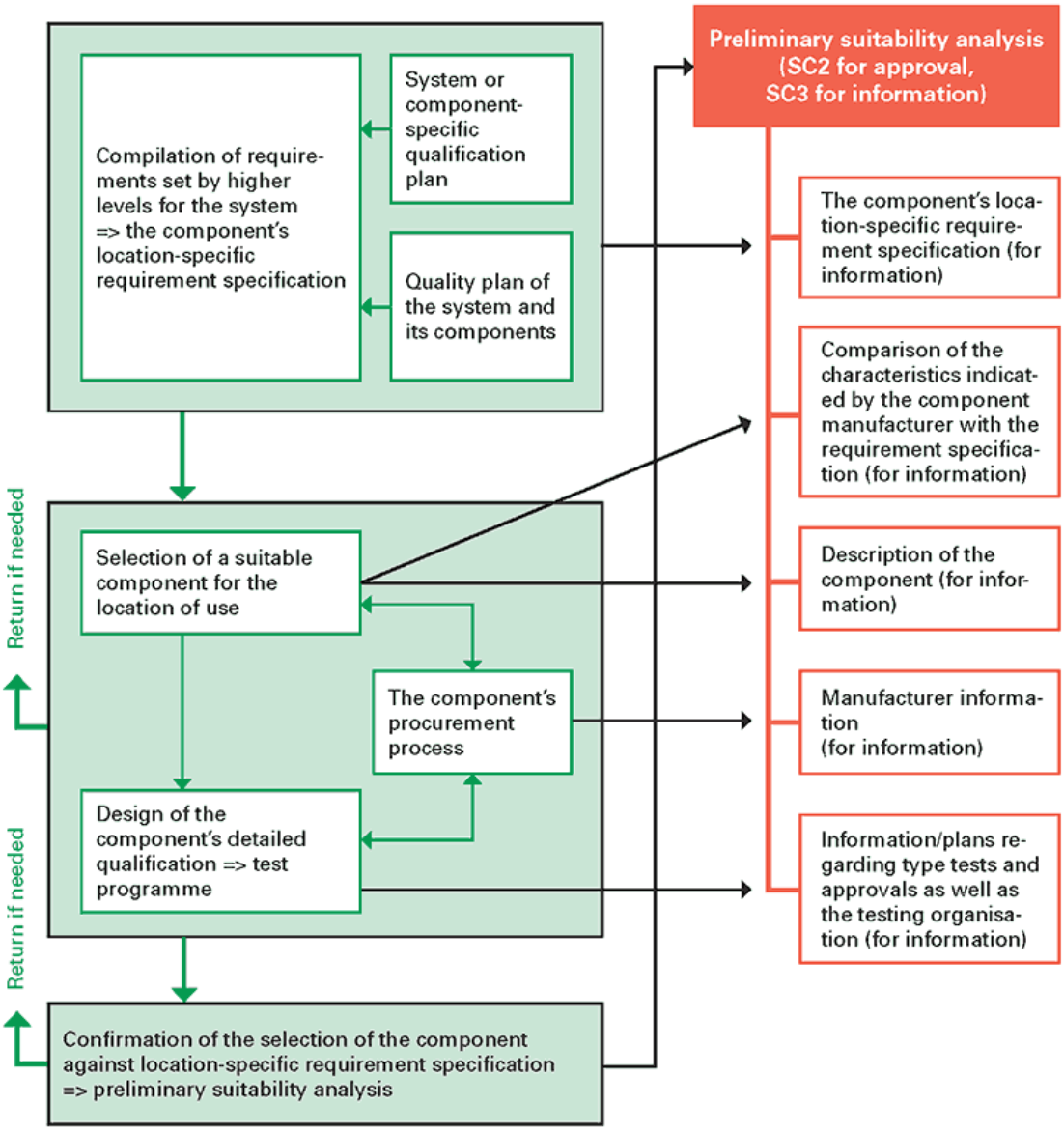
A spare electrical or I&C part is not considered an original part if:

- the performance values of the spare part related its safety function have deteriorated
- the spare part deviates in terms of the way of function, any software part or structural characteristics from the original
- the spare part does not match the original part in terms of environmental condition endurance
- the quality management level of the spare part does not fulfil the original level
- the manufacturer of the spare part has changed.

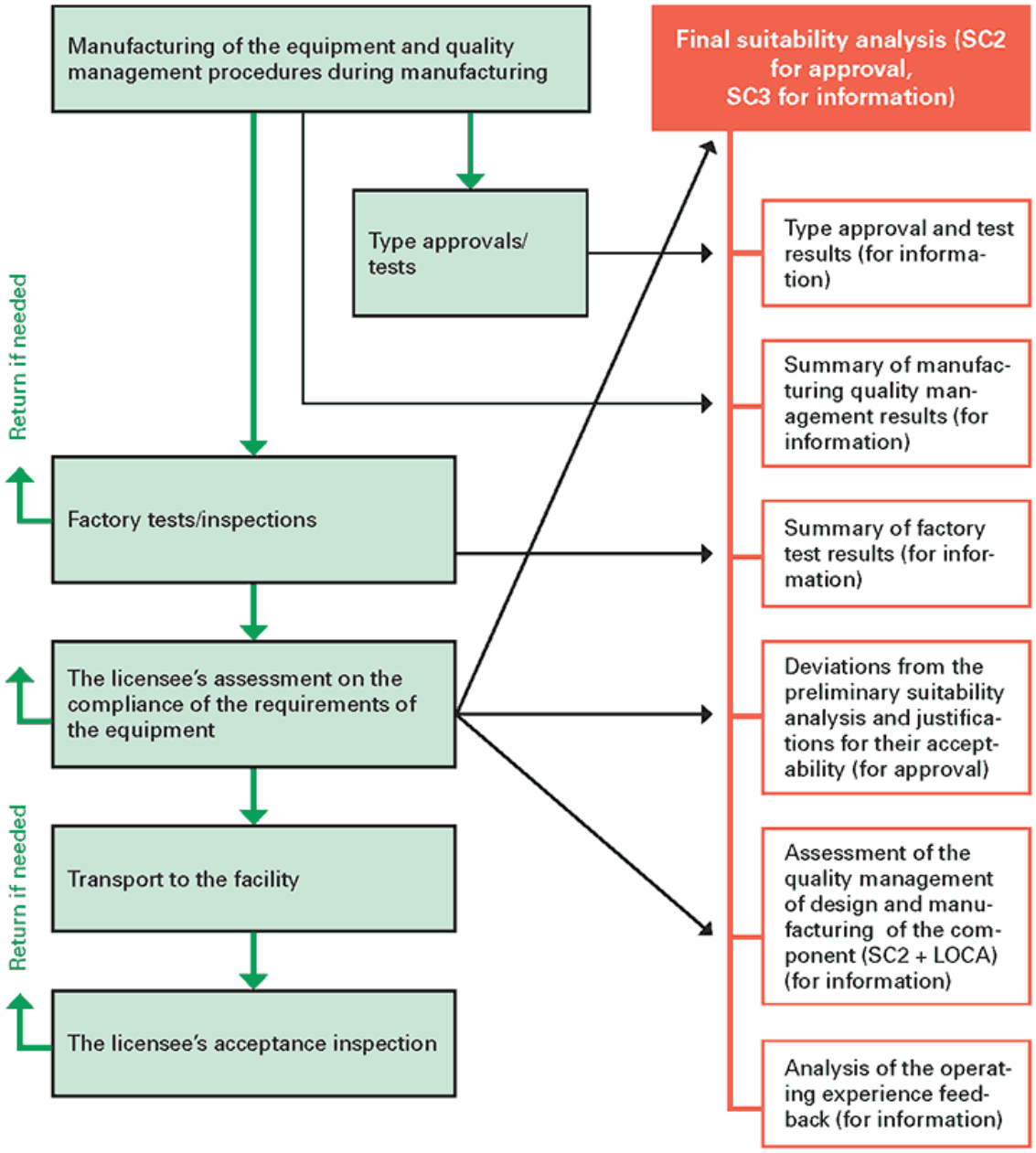
   b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

A preliminary and final suitability analysis concerning the suitability of electrical and I&C equipment and cables in safety classes 2 and 3 for their intended location of use shall be prepared as part of the selection of components for a system or the procurement of a replacement spare part. Suitability analyses are send to RB for approval in higher safety classes (2) and for information in lower safety class (3).

An example of licence holders component selection process and preliminary suitability analysis composing is described in a following picture:



An example of manufacturing, type testing/approval and composing of final suitability analysis is described in a following picture:



Do you have other related topics that you want to be discussed during the workshop?

FRANCE

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

The general legal framework for the modification process is set in the Decree 2007-1572 of 6th November 2007. The procedure set in this decree is valuable for all kind of modifications: physical modifications, modification of technical operating specifications and also chemical or radioactive releases.

Depending on the stakes involved and their scale, BNI modifications shall be the subject of:

- either a modification of the creation (or decommissioning) authorisation decree, after a public inquiry;
- or an ASN authorisation, which may involve participation by the public;
- or notification of ASN by the licensee.

This graduated system will thus allow processing appropriate to the risks and drawbacks of the facility and its modifications.

ASN released on May the 15th 2014 a resolution 2014-DC-0420 of 13th February 2014 concerning physical modifications to Basic Nuclear Installations (BNI) supplements the provisions of Chapter VII of title III of the BNI Procedures Decree of 2nd November 2007. It clarifies the provisions that the licensee of a BNI implements, on the one hand to assess and minimise the possible consequences for the protected interests of a physical modification to the facility and justify the acceptability of the remaining consequences and, on the other, to prepare for and then carry out this modification.

Some modifications only require notification of ASN under the terms of Article 26 of the BNI Procedures Decree of 2nd November 2007. Thus, when a licensee envisages modifications to its facility or its operating conditions that are not considered to be significant, in accordance with the above-mentioned criteria, it shall first of all notify ASN of them. It cannot make the modifications until a renewable period of at least six months has expired, unless ASN gives its express agreement. If it so considers necessary, ASN may stipulate requirements so that the envisaged modifications are reviewed or accompanied by additional measures to guarantee the protection of the interests mentioned in the first paragraph of Article L. 593-1 of the Environment Code.

This last case (modification that only needs notification but where ASN delivers express agreement) is the most common in the inspector's day-to-day routine for physical modifications.

Having said that, there is no definition of a temporary modification in the French regulation.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

No matters if the modification is temporary or not. The instruction procedure for temporary modifications and permanent modifications is the same. There is only one specific case: temporary modifications of technical operating specifications. Indeed, some modifications of technical operating specifications can be authorized by the licensee if he has implemented an independent dedicated structure authorized by ASN (art. 27 of Decree n° 2007-1557 of November 2nd 2007)[2].

[2] Chapter III of the General Operating Rules (RGE) contains reactor Technical Operating Specifications (STE). They determine the normal operating range of the reactor, in particular the acceptable range of operating parameters (pressures, temperatures, neutron flux, chemical and radiochemical parameters, etc.) and the equipment required depending on the status of the reactor. They also define the degraded mode operating range, more specifically what steps are to be taken in the event of overshooting the limits associated with the normal operating range and the measures to be implemented in the event of malfunction or unavailability of the required equipment.

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

ASN inspects by sample the modifications implemented by the licensee, included temporary modifications.

There is no specific guideline to choose a temporary modifications to inspect: it depends on operating experience feedback, on the inspector…

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

The impact of the aggregation of modifications is done by the licensee. The consequences on safety of the interaction of the modifications is analysed by IRSN (ASN's TSO) and ASN before giving its express agreement to the implementation of the aggregation of modifications.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

If the temporary modification is subject to the art 26 of Decree n° 2007-1557 of November 2nd 2007, the Licensee needs the ASN's express agreement to implement it or has to wait that a renewable period of at least six months has expired.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

We control that safety requirements (defined by licensee and/or ASN) are respected.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

The analysis of difficulties or problems associated with temporary modifications is performed by IRSN.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original v Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Do you have other related topics that you want to be discussed during the workshop?

Equipment qualification is the result of an analysis consisting of several steps, leading to the definition of the qualification requirements and the demonstration of compliance with them.

The accident operation requirements of an equipment item may, for example, necessitate compliance of materials, tightening torques, mechanical clearances, etc. related to the calculated temperature, pressure and radiation conditions for extreme accident situations very far removed from the normal situation.

EDF may be required to permanently modify the STEs to take account of its operating experience feedback, improve the safety of its installations, improve economic performance or incorporate the consequences of equipment modifications. Moreover, when EDF intends to deviate from the normal operation stipulated by the STE, during an operating phase or maintenance work, it must notify ASN of a temporary modification of the STE. ASN examines these permanent or temporary modifications, with the technical support of IRSN. It may ask the licensee to take additional measures if it considers that those proposed are inadequate.

In addition, maintenance of the qualification for accident conditions is difficult to demonstrate in normal operation, as it is then not possible to run qualification tests completely representative of accident conditions.

For these reasons, in the context of normal operation, and in particular that of maintenance, there is a risk of inadvertently indirectly degrading the qualification of equipment for accident conditions.

To avoid such a situation, requirements for qualified equipment have been compiled and made available to the NPPs.

These requirements have two objectives:

- To define the specific requirements to be taken into consideration during any work (unscheduled or preventive) on qualified equipment,
- To help detection of any deviations from conformity generated by past operation of qualified equipment.

GERMANY

TEMPORARY MODIFICATIONS

1. *Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.*

There is no overall definition of temporary modifications in the German regulation. So, it is due to the competent supervisory authority or RB on the Länder level to decide on a definition for temporary modifications. Most of them do not use a specific definition and treat temporary modifications as permanent modifications. Examples are test setups for operational monitoring, collection of operating experience to new or modified SSCs, or contingency measures for a temporary solution when the required placement part is not timely available.

In one RB, a few years ago a new concept "temporary modifications" was introduced, based on a definition including several aspects:

- Justification: A temporary modification is either necessary because of non-routine work related to in-service inspections/preventive maintenance or for other good reasons.
- Insignificance: A temporary modification must not be so essential that it would require a licensing procedure if it were permanent.
- Time limitation: A temporary modification must be strictly limited in time and should be in effect for several weeks at most. It must not realise (parts of) a planned permanent modification in advance. In the end, the original state should be re-established.

2. *Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?*

For the RBs in Germany, which do not use a definition for temporary modifications, there is also no different oversight process. All modifications shall be performed following a specified procedure, and this applies to temporary and permanent modifications. This includes the duty to inform the RB or the requirement of an approval by the RB, depending on the safety significance of the modification. A distinction in the use of evaluation criteria for temporary and permanent modifications does not take place. Temporary changes, which do not fulfil all requirements completely in the individual case, may be charged with additional obligations, such as extra inspections or reports.

For the RB using the new concept "temporary modifications", temporary modifications are limited, among others, to insignificant modifications (see answer 1). So, these modifications do not require an approval by the RB, just the duty to inform. Recently, the operator has implemented a more detailed procedure for temporary modifications in its operating manual. The regulatory authority agreed upon the respective document which is characterised as obligatory. Apart from that, the operator's activities that are related to temporary modifications are often also subject to license provisions of more general type. For example, there are license provisions that require a safety assessment or a written procedure for certain safety-related activities, which have to be reviewed by the RB, respectively. Accordingly, the oversight process of "license compliance control" might be triggered from temporary modification activities. So in sum there is a large amount of reviewing documents for each (temporary) modification which can be regarded as "inspection" or "assessment".

3. *Does your RB inspect temporary modifications?*

Yes.

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

Due to German regulations, temporary modifications shall be limited both in duration and number. So, in practice temporary modifications are very rare. They can be treated in an appropriate manner and be inspected as intensively as required during their lifetime. Within the RB they are assigned to the different RB inspectors according their areas of expertise. The RB inspector is free to choose which of these modifications to inspect on-site.

4. *How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)*

In reviewing applications for modifications, a complete check has to be made. This includes, among others that the modification do not interfere with other SSCs, especially if these also are subject to modification projects which have not been finished yet and are connected with the new project.

5. *Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?*

For the RBs in Germany, which do not use a definition for temporary modifications, the process of a temporary modification is in principle the same as for a permanent modification. The RB is involved in temporary modifications, including the separate steps as starting, extending and removing. Depending on the safety significance, a permission or an approval is needed from the RB.

For the RB using the new concept "temporary modifications", temporary modifications are limited, among others, to insignificant modifications (see answer 1). So, these modifications do not require a permission or an approval by the RB, just the duty to inform the RB in advance on the main issues related to starting, extending or removing a temporary modification. If a temporary modification would be made permanent, the normal procedure for permanent modifications had to be started from the beginning, but without bringing the plant back in the original state.

6. *What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?*

There is no scope defined specifically for temporary modifications. For modifications in general, the scope of oversight activities contains among others the assessment of the modification notice and related documents, on-site inspections of the performance of the modification e. g. with regard to compliance with the modification notice or necessary safety precautions. The on-site inspections include functional and acceptance testing and further on in-service inspections. Especially for temporary modifications, the interval of in-service inspections may be shortened.

7. *What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.*

As noted in answer 3, temporary modifications are rare exceptions in the facilities. Due to intensive inspections of temporary modifications and reporting obligations of the licensee, difficulties or problems are identified in an early stage. There is no systematic analysis on difficulties or problems associated specifically with temporary modifications up to now.

NON-IDENTICAL REPLACEMENT PARTS

8. *If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?*

As a matter of principle, replacement parts are used only if they are qualified. A replacement within the maintenance process is possible only for components identical in construction and design. The use of non-identical replacement parts is treated as a modification and requires a modification process, including an approval of the RB. For the evaluation the same criteria are applied as for the original. The requirements arise from nuclear regulations as KTA and specifications as BRAPUL or KONVOI, etc.

Under the following circumstances, the change of a safety-related component (or any of its parts) may be considered as a replacement rather than a modification if

- the change is due to a routine maintenance work and
- the new component/part is equivalent to the old one or better and
- the new component/part has been qualified.

b. *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

The criteria are based on nuclear regulation as KTA and specifications as BRAPUL or KONVOI, see above.

c. *What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

There are license provisions requiring that components or parts for replacement are manufactured according to documents (e. g. technical specifications or engineering drawings) that have been reviewed by the RB's Technical Support Organization (TSO) in advance. The TSO reviews if the documents for the manufacturing of the new component or replacement part are in accordance with the more general specifications of the licence and the recent nuclear regulation (e.g. KTA). Accordingly, the oversight process of "license compliance control" is triggered when the operator wants to purchase a replacement part that involves a change in these documents.

Apart from that, the topic might be part of the regular RB's and TSO's on-site inspections on "quality management".

Do you have other related topics that you want to be discussed during the workshop?

HUNGARY

About the Modifications

In Hungary the base of the regulatory framework is the Act on Atomic Energy.

In next level there are some Government decrees. The nuclear facilities like NPP, spent fuel storage (SPS) are regulated in the 118/2011. Govt. Decree.

This decree has got 10 annexes (Nuclear Safety Codes NSC), first is for the rules of the procedures for nuclear facilities.

Section 1.4. NUCLEAR SAFETY AUTHORITY SUPERVISION OF MODIFICATIONS

The nuclear safety authority supervision of modifications is accomplished by instruments graded according to nuclear safety importance, but it shall extend over all technical, documentation and organisational modification, furthermore to temporary modifications. (1.4.1.0500.)

There are several steps in the supervision. First step is the supervision of the categorization. The licensee inform the RB about the planned modifications with a completed modification form. The categorization could be 1st, 2nd or 3rd level, where the first level is the most important.

The RB supervise the categorization, if the RB disagree with the grading, ask a review.

The nuclear safety authority shall prepare supervision plan for the modifications. This plan contain the possible inspections during the modification.

For the 1st and 2nd categories, the RB give a modification license.

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

The NSC 4 is about the operation of NPPs. In this annex there is a definition for the temporary modifications in the section 4.8.1.0100.: *The intended change of the physical condition of the nuclear unit, the organizational structure or management system of the licensee, as well as of the technical and regulating documents is considered a temporary modification, if the change is temporary and as a modification if the change is permanent.*

And there is an amendment for the definition in section 4.8.5.0100.: *Temporary modifications shall not be in place for over one year as a temporary alteration, for that reason the licensee shall review them every 6 months. If the temporary modifications is required to remain in place for over one year it shall be classified as a modification and the remaining, unfulfilled requirements listed under Section 4.8.3 and 4.8.4 shall be realized without delay.*

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

There aren't differences between supervision of the temporary and normal modifications in 1st and 2nd categories.

Simplification is located in the section 4.8.5.0400. for the 3rd category modifications. *The regulation regarding temporary modifications in Category 3 shall be prepared by the licensee with consideration of Sections 4.8.5.0100 to 4.8.5.0300. The simplified regulation may deviate from the requirements enlisted under Sections 4.8.3 and 4.8.4, but shall contain the rules for the preparation and approval of mandatory analyses and evaluations.*

(4.8.5.0200. *All temporary modifications shall be clearly identified at their location, at all the control panels of the modified system or system component, and at related administrative or technical support work places.*

4.8.5.0300. Operational and technical support personnel shall be accurately informed of the temporary modifications and their effects on the operation of the nuclear power plant.)

3. Does your RB inspect temporary modifications?

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

The RB also inspect the temporary modifications.

The main supervision steps are wrote in the supervision plan, also the inspections. The RB send the details of planned inspection for the licensee, but the RB could hold unplanned inspections too. For the supervision plan the RB use the principles of the graded approach.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

The temporary modifications could be temporary for one year. With this time limit the licensee and also the RB couldn't forget the modifications. When the RB supervise the categorization, the RB could notice the possible interacts.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

The licensee inform the regulatory body about the planned modifications (categorization), also the temporary modifications. The regulatory body check the documents, and supervise the classification of the categorization. In the 3. level the RB could ask notice from the licensee about the start of the modification. In the 1st, 2nd level permission needed from the RB for the modifications. In the permission, the RB could give terms and obligations, for example "The licensee must inform the RB about the start of the modification before 24 hours."

If the licensee would like to change the range of the modification, need to inform the RB (categorization). The RB supervise, and proceed as above.

In category 3., the licensee could permit the modification self, but in this case, the licensee must keep to the sections 4.8.2.0500-0600.

4.8.2.0500. *Activities connected to modifications shall be performed and supervised by the licensee according to the regulations of its management system. The technical and safety suitability of modifications and the system of regulations that ensure the fulfilment of nuclear safety requirements shall be developed with consideration to the life cycle of the modifications and its significant phases.*

4.8.2.0600. *The licensee shall ensure the technical and safety suitability of modifications and the fulfilment of nuclear safety requirements with the application of the procedure of differentiated regulations based on modification categories. The regulation shall contain how the deterministic or probabilistic safety analyses applied or ones comprising a combination of such analyses shall be used both for determining whether the modifications are necessary and for evaluating their suitability.*

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

The scope of the inspection is that the modifications is according to the regulations (laws, permissions, management system, ect.)

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

The regulatory body realised a problem in the 3. category temporary modifications. Some of the modifications were force after one year. The regulatory body take an inspection and revealed a problem in the licensee's management system.

If the temporary modification couldn't terminated in the planned time (because unforeseen reasons), the licensee review the modification, and specify new termination time. In the procedure the numbers of the review of temporary modifications weren't limited.

The RB ask the lisensee to revise this procedure.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

b. *What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

The Hungarian legislation in supported, that the spare parts are identical (same material, construction, technology, shape, connection) the same manufacturer OEM.

If this is not possible, the two-stage authorization procedure is necessary.

The first step in determining the level of change.

Typical is the material changes (material name, mechanical property, chemical composition, other standard, quality assurance level or document, new company name, etc. In simple cases, based on the preliminary assessment of the authority returns the task to the licence itself to approve the amendments.

More complicated cases where the change is significant, for example, the safety function is changing, or safety classification is different or the failure (degradation) of the former equipment problem-led safety related events, licensing procedure should be started. The application contains manufacturer documents, all the relevant analysis, strength calculations, analysis of the safety function, and manufacturer's certification or references and submit all documents to the authority. It must be proved in the application safety level

These spare parts licence issued by the authorities.

Do you have other related topics that you want to be discussed during the workshop?

No.

INDIA

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

The term is not defined in safety glossary of the Regulatory Body. However, the term temporary modification is used in the RB Safety Code on operation with reference to changes in defeat of interlocks, jumpers, etc. The procedure for carrying out temporary modification is also included in the technical specification for operation of NPP, which is approved by RB.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

The regulatory oversight process for temporary and permanent modifications are different.

Permanent Modifications: in safety systems require prior review and approval from RB.

The global effect of all permanent modifications done over a period of time are again reviewed during Periodic Safety Review (PSR) of the NPP.

Temporary modifications: Do not require prior approval from RB. These are reviewed by regulatory body during inspections.

3. Does your RB inspect temporary modifications? If yes, how does the RB inspector choose which temporary modifications to inspect?

Yes.

The temporary modification are reviewed/inspected by RB during regulatory inspections. The temporary modification are chosen for inspection based on their safety significance.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

The temporary modifications are inspected and reviewed by RB during regulatory inspections. Also, these are considered while reviewing application for start-up of the plant after biennial shutdown/refueling outage. These are also reviewed during periodic safety review which is mandatory for renewal of license. If during these reviews any unsafe condition with respect to temporary modifications is detected, appropriate actions are initiated by RB.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

No permission is required from RB for implementing, extending or normalising of temporary modifications. In case it is to be made permanent and the modification is on safety system/safety related system, prior review and approval from RB is required.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

The scope of inspection of temporary modifications includes:(a) safety implication of temporary modification (b) availability of proper documentation system (c) process of implementation (d) number of modifications existing (e) existence of operator aids (like labels and tags), (f) time period of the modifications (g) report of periodic review of existing modification by utility, (h) awareness of operator about such modification (i) deviation from regulatory requirement if any.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

Sometimes a temporary modification may exist for extended period because of reasons such as waiting for suitable opportunity for correction, non-availability of required spares etc. The existence of temporary modification for long period may become a safety concern and has potential for operator error. However no specific analysis of this experience is carried out.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

No safety review or prior permission from RB is required if the spare is identical in specifications and meets the qualification requirements. RB has established the quality assurance requirements for the products and services of the suppliers. If the spare parts are not procured from the OEM, then utility checks suitability of the spares by additional tests or qualification process in line with the QA requirements of RB. All relevant records of manufacturing, testing & qualification are preserved and made available to the inspector on demand.

b. *What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

The replacement of original parts with identical parts from different supplier is not considered as modification. The QA records of such changes is checked during regulatory inspection.

Do you have other related topics that you want to be discussed during the workshop?

Nil

JAPAN

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

From the regulator's viewpoint, there is no distinction between temporary modifications and permanent modifications, and both modifications are subject to the same regulations for the obligation of conformity to the regulatory requirements.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

The oversight process is the same for temporary modifications and permanent modifications.

3. Does your RB inspect temporary modifications?

Temporary modifications are also inspected if they are the object of inspections. The Commercial Reactors Ordinance provides the object facilities of inspections.

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

The Reactor Regulation Act requires the licensees either to obtain the RB's permit for the modification of an establishment, or to notify such modifications to the RB in cases where such modifications will evidently not affect the conformity to the regulatory requirements.

That Act requires the licensees either to obtain the RB's approval for a construction plan or notify the RB of such a plan, before starting constructions. In the case that the licensees plan to modify construction plans after the RB's approval, the licensees shall again seek RB approval for the modifications.

That act requires the licensees to undergo the RB pre-service inspections for modified facilities and to submit the applications for pre-service inspections to the RB prior to the inspections. The scope of the modifications to inspect shall be clarified by the licensee's applications for construction plans and pre-service inspections.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

In the approval of construction plans, the RB reviews conformity to the regulatory requirements, including the impact on the performance and function of the existing facilities.

In addition, for the operating plant, the licensee is required to implement the maintenance management based on the operational safety programs, and the RB conducts operational safety inspections to check the compliance of licensee's activities with the operational safety programs.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

Permission or approval is needed from the RB before the modification is started, if the facility to be modified is the object of permission or approval.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

Regardless of the life time, pre-service inspections are conducted by the RB to verify that the modification is being carried out according to the approved detailed design, "Construction Plan", and that the established facility conforms to "technical standards".

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

It might be a burden for the licensee that no mitigation measures could be applied for the temporary modifications.

For example, in the case of countermeasures against the contaminated water issues of Fukushima Daiichi NPS, even if urgent temporary modifications needed, a similar regulatory process to permanent modifications is required for the approval of construction plans and the inspections.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

In the case of a different manufacturer, if the design specification is the same as that described in the construction plan, it is considered as the replacement parts.

In addition, in the Commercial Reactors Ordinance and the Guidance for Procedure on Approval of Construction Plan of Commercial Power Reactors, “installation”, “replacement”, “modification” or “repair” has been defined as follows.

1. Installation: the first setup of nuclear power reactor facilities in the location, newly installing works of the entire equipment (including installation of the entire equipment of different specifications after the removal of the existing entire equipment.)
2. Replacement: installation of the entire equipment of the same specifications after the removal of the existing entire equipment.
3. Modification: change the description of the construction plan and change the equipment to a new one, change the capacity, sharing the equipment between the units, removal of the equipment, change the number of equipment, and others.
4. Repair: if a problem is found during in-service, or if a preventive maintenance is implemented reflecting other experiences, it is carried out to rework some of the facilities or equipment, for the purpose of functional maintenance or recovery of the equipment. (To be restored to original specifications by the replacement, and others.)

a. *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

Change of matters not described in the construction plan is acceptable without the licensing and inspection procedures. It should be noted that the matters to be described in the construction plan have been defined in the laws, the ordinances and the guides, and that the licensees are allowed to use the nuclear reactor facilities after the approval of the construction plans and passing the pre-service inspections.

In addition, the scope of description for the specification of the equipment in the construction plans includes the name of such equipment, type, capacity, maximum operating pressure, maximum operating temperature, major dimensions, material, number, specifications of the attachment points, and others.

Manufacturer is out of the scope of description in the construction plans.

b. *What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

The RB checks for the licensee's facility maintenance activities through the pre-service inspection, the periodic facility inspection and the periodic safety management review, and for the licensee's operational safety activities through the operational safety inspection.

Do you have other related topics that you want to be discussed during the workshop?

Nothing in particular

KOREA

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

There is no definition of temporary modification in Korea. However, there is a special case that the licensee gave the appointment of the life-time of the modification. In Korea, the inspections of the modifications are performed according to the Notice of NSSC(NSSC Notice-2014-16, Article 10 Repair and Replacement).

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

There are no differences between temporary and permanent modification for safety related facilities.

3. Does your RB inspect temporary modifications?

Yes. The Koran RB inspects the temporary modification by same inspection process of the permanent modification.

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

Yes. The Koran RB inspects the safety related facilities.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

There are no formal criteria for the aggregation of modifications. However, the aggregated parts and interaction consideration are reviewed by expertise group of RB.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

The permission is need for modification of safety related facilities. For modification of non-safety facilities, the permission is not needed.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

The inspection scope is same as inspection of the permanent modification.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

We have is a specific example.

During the fall 2011 refueling outage, visual inspections of the steam generators at a Westinghouse-designed plant identified apparent defects in the channel head of one of the steam generators. This unit has been in commercial operation since 1987. The inspection showed indications of degradation in the cladding and divider plate to channel head weld, with exposure wastage of the channel head base material. The licensee decided to repair temporarily by welding of patch plate. The life time of this repair is just one cycle operation. Application of this repair method was the first case in Korea, so the life time prediction of installed patch plate was difficult for the RB. After one cycle operation, the RB assured the integrity of patch plate and then the licensee repaired the defect by permanent method.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

The RB has no permit criteria for replacement of OEM. If a licensee wants to utilise the OEM part, he should verify that OEM parts have the same performance compared to the identical parts.

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

If changing parts have quality class Q, the licensee must assess the identification of OEM parts to original parts. If the changing parts have not quality class Q, licensee has to do CGI Dedication.

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Oversight of the RB is performed by the quality assurance inspection based on the NSSC Notice 2014-23(Detailed requirement for quality assurance of nuclear reactor facility)

Do you have other related topics that you want to be discussed during the workshop?

None

MEXICO

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

We have two definitions related with the temporary modification:

Temporary Modification.-

Temporary modifications are minor modifications to structures, systems or components that change the design´s configuration. It expected that these modifications remain installed less than three months.

Urgent temporary modification.-

The temporary modification which, if not installed immediately, puts at risk the safe operation of the unit.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

Yes, the differences are the following:

The main difference between the temporary and permanent modifications are related to the quantity of the documentation, permanent modification have more detail in quantity; also the inspectors verify the time limit in which is implemented the modification.

3. Does your RB inspect temporary modifications?

Yes,

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

These inspections are based in a selection process. The first selection is the temporary modification done in a safety related SSC, the second selection is using the most risk significant plant SSC as established in the risk inspection guideline, and the third selection is if the modifications were required by the regulatory body.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

The aggregation of modifications is considered by the inspectors of the RB as a major modification; therefore, are inspected as well, considering the fact that "small" modifications can interact.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

If the safety evaluation (10CFR50.59) of any change on the licensee's bases requires a regulatory body authorization, then, it is necessary the permission of the regulatory body before a temporary modification is started, extended, removed or made permanent.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

The scope of the inspections is to verify the effectiveness of the holder to perform: 1) the implementation of temporary changes in the structure, equipment, systems and components; (2) modifications in the normal, abnormal and emergency operation procedures and other documents of operation that are important for safety; (3) changes in the tests or experiments, (4) modifications that may affect the design basis and operation of systems that may be potential failures of common cause; all of this in accordance with the 10CFR50.59.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

The main problems with temporary modifications are related with the time schedule required for implement the modification; also there are problems with the documentation's management.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

> ***a.*** *What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).*

It is permitted manufacturer variations if the new manufacturer is part of the list of authorized suppliers or vendors. The materials, technology, shape, size and connections are allowed if they don't impact in the safety functions.

> ***b.*** *b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?*

The oversight process covers the inspection to the following areas of the licensee: operation, engineering, suppliers and quality assurance. The RB inspectors verify that the licensee maintains the safety of such changes by revision of records, plant walkthrough and witnessing of post modification and surveillance tests.

Do you have other related topics that you want to be discussed during the workshop?

None.

POLAND

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

Our RB doesn't have definition of a temporary modification. We treat all modifications in the same way. So the answers to the next questions will concern only modifications as such.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

As we don't distinguish between temporary and permanent modification, we don't use different approach. We adapt oversight process to the complexity of modification and its significance for nuclear safety and radiation protection.

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

As above.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

During assessing and inspecting of modifications we use the graded approach. We focus on the changes which could have a serious impact on the nuclear safety and radiation protection. In case of many small modification at same time each one of them not potentially dangerous for nuclear safety, we take in consideration the global effect of all these changes and interactions between them.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

The licensee needs to get consent from the RB only for a serious modification, i.e. which has an impact for nuclear safety and radiation protection. He can begin work on it, but he can't start-up reactor again without the RB consent. If the licensee doesn't precise the milestones and the end date of the modification, RB will not set any of them. Licensee can change everything after implementation of modifications, eg. extend, remove etc., but then it has to apply once again for consent from RB.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

We generally evaluate how the licensee follows the internal and external regulations, eg. procedures (maintenance and emergency operating procedures), licence conditions (limits and conditions), radiation protections requirements, which are concerned in that case. Generally we check if all postulated and expected benefits or assumptions have been achieved as a result of the modification.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

For the last few years we have given several consents for modifications. Few of them concern additional equipment which was necessary to made some of experiments or measurements. We apply individual approach to each case, so we have to use different methods of assessment to get the best results of work. I think our biggest problem is inability to compare one to another, for example risk of implementing new in-core device for conversion from thermal to fast neutron is extremely different from modification of non-

interruption supply electricity system. We have no even a single example which comes from the same area.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

The RB can agree to replace a part by the licensee even if it is not from OEM, provided that the new part will comply with all functionalities and will have all features like redundancy, reliability, isolation etc., of the old part. The level of safety can't be downsized after this process. Safety must be on the same level or higher.

Do you have other related topics that you want to be discussed during the workshop?

What impact the process of ageing has on the modification decision making process? Does the specification of the replaced part, take in consideration the foreseen lifetime of this part versus expected time of operating NPP? For instance if we replace something (first time) in already 40 years old NPP, do we specify requirements regarding lifetime like for the new NPP(for next 40-60 years) or note that this plant will work just 5-10 years more and adapt our requirements adequately.

RUSSIA

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

No.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

No.

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

RB inspects any modification that affect safety.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact).

Before approving of modifications RB reviews corresponding change of operating license conditions.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

Yes, if it affects the safety.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

It depends on modification.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

No difficulties.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

All aspects are considered before approving.

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

The same process as for design basis inspections. If changes concern the manufacturing of safety important equipment, RB inspects this process in accordance with the schedule ("control points").

Do you have other related topics that you want to be discussed during the workshop?

No.

SLOVAK REPUBLIC

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

All modifications are treated the same way. Our legislation does not distinguish between temporary and permanent modification. According to our Atomic Act § 2 letter v) all modifications on systems that impact nuclear safety need to be approved by the regulatory body. According to § 2 letter w) all modifications that which if implemented might in some way impact nuclear safety need to be announced to the regulatory body before their implementation as soon as possible.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

*A*s said before we do not distinguish between temporary and permanent modification. The oversight process is there for the same for all modifications. Inspections are performed in accordance with our inspection plan. If necessary the regulatory body might perform unplanned or unannounced inspections. Also site inspectors might focus on recent modifications.

Once again according to our Atomic act (see previous answer) if there is a possible impact on nuclear safety all modifications need to be approved by the regulatory body or at least announced to the regulatory body. So the regulatory body is informed and might perform an inspection of the modification.

3. Does your RB inspect temporary modifications?

As said before in accordance with Atomic Act § 2 letter v) the UJD approves safety significant modification so the need of an inspection is smaller. However inspections of approved modifications are still carried out. The inspections of announced modifications in accordance with § 2 letter w) are carried out as well but it depends on the decision of the responsible inspector and his superior.

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

Inspectors choose according to their professional judgment and according to the instructions they receive from their superiors. Also the regulatory body decides to give more focus on some modifications that are performed in areas that were problematic in the past.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

This aspect is considered during the evaluation of the modification by inspectors (according to their experience and professional judgment). Also the licensee is obligated to perform a safety analysis of the modification and to submit it with his application to the regulatory body. To be more specific the regulatory decree no. 431/2011 Coll. clearly states what should be submitted with the licensees application for modification approval according to § 2 letter v) of Atomic Act or with the announcement of modification according to § 2 letter w) of the Atomic Act.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

As said before modification that have an impact on nuclear safety fall under the approval of the regulatory body and therefore cannot be performed before the regulatory body approves them. Modifications that

might have an impact on nuclear safety are without unnecessary delay announced to the regulatory body before they are implemented. However according to our Atomic Act the regulatory body might reclassify them, which would mean that the licensee would be informed that the modification needs to be approved by the regulatory body.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

It is the same as every modification. The documentation of modification is checked as well as the actual modification is checked on site (visual inspection). It is checked whether the modification has not caused any problems or if there has been any negative impact on other systems or nuclear safety in general.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

All modifications need to be justified, carefully planned and after their implementation evaluated (requirement of the UJD SR Decree no. 431/2011). Since our legislation does not distinguish between permanent and temporary modifications it is not possible to say whether there were any problems associated with temporary modifications.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

According to the ÚJD SR Decree no. 431/2011 all modifications are made according to the principles and requirements valid for the original equipment and documentation. If any deviations from original design requirements are introduced in new requirements it is necessary to justify them and document their acceptability with relevant analysis. This means that switching from one manufacturer to another on a part of safety significant system would be considered modification.

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

Theoretically speaking all variations are permitted if they fulfill original design requirements, quality plan for the equipment and all legislative requirements (this includes the requirements on safety systems, classified equipment, general nuclear safety requirements etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

The regulatory body approved safety significant changes and is informed about changes that might influence nuclear safety. Since any deviation from original design would be considered modification this allow us to some extend oversee such changes. Also site inspectors play a vital part in inspecting such changes.

Do you have other related topics that you want to be discussed during the workshop?

SLOVENIA

TEMPORARY MODIFICATIONS

1. *Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.*

Yes. RULES ON OPERATIONAL SAFETY OF RADIATION OR NUCLEAR FACILITIES (JV9): Temporary modification of a radiation or nuclear facility means any modification implemented for a limited time period. It may be implemented in cases where a permanent modification is not necessary or as a provisional step in the scope of a permanent modification.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

Yes. In accordance to Krško NPP temporary modifications is a minor change of SSC which is not in accordance to in drawings or other documents and does not change design function. SNSA usually reviews number (trends) of TMs, plant safety indicators connected to TM, ways and reasons for prolongation of long lasting TMs and the adequacy of transfer TM to permanent modification.

3. Does your RB inspect temporary modifications?

Yes. See answer 2.

a. *If yes, how does the RB inspector choose which temporary modifications to inspect?*

Long lasting TMs and these which are in category 2 (notification to RB in advance) in accordance to Ionising Radiation Protection and Nuclear Safety Act.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

Aggregation is not specifically addressed in Slovenian regulation. However, when SNSA identifies interaction of different changes, this is addressed within regular licensing process, or if needed, special regulatory inspection is performed.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

Usually not. Only if TM would be in category 2 or 3 but we usually do not have such cases. When modification would be of high safety importance (category 2 or 3) the NPP considers it as permanent.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

See answer 2.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

Majority of SNSA problems with TMs are connected to their duration. As a rule, TM's duration should be maximum 6 months. If reasonable technical reasons exist, the NPP can prolong it in accordance to their procedures. The process should be well documented. Finally, TM should be removed or transferred to permanent. Few years ago the SNSA experienced the case when TM lasted several years before it

transferred to permanent. Within special inspection we found out that the solution was relatively simple but there were a lot of difficulties in performing analysis to find proper solution and the NPP also had very negative experience with suppliers.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

SNSA permits direct (Like-for-Like) replacements - Replacements of one plant component with another from a different manufacturer, or the same manufacturer as the replaced item but with a different model number where replacement meets or exceeds the original component design requirements. This definition is included in the Kško NPP procedure which was reviewed by the RB.

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

Technical specification should consider original design specification but there could be requirements on better material, seals, lubricants, etc. Used standard shell be the same or when applicable newer revision. NPP can also apply stricter quality control. When technical specifications are not fulfilled the Krško NPP provides non-conformance (NCR) evaluation. Non-conformance issues are under inspection supervision.

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Periodical replacement, replacement due to degradation or obsolescence is part of NPP maintenance activities. SNSA periodically inspect following NPP activities:

- Preventive maintenance
- Predictive Maintenance
- Maintenance Rule program
- Krško NPP Corrective Program
- Non-conformance programme

Do you have other related topics that you want to be discussed during the workshop?

Status of post-Fukushima modifications .

SPAIN

TEMPORARY MODIFICATIONS

1. *Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.*

YES.

"Temporary modification: any alteration, direct or indirect, of functional characteristics of systems, equipment or components, temporary introduced in any operation mode, in order to:

a. Deal with temporary operation needs, not foreseen in previously approved procedures.

b. Give a temporary solution to detected malfunctions, until a permanent solution is put in place, such as its repair or the introduction of a definitive design change according to the UNE 73-103-92 rule."

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

NO.

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

YES.

There is a RB procedure (PT.IV.215) that provides guidance to carry out inspections regarding modifications (in general). Part of the scope of the procedure is the inspection of temporary modifications.

For temporary modifications, criteria for defining the inspection sample include: safety significance, importance to risk, and complexity of the modification.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

The guidance provided in the above mentioned procedure (PT.IV.215) concerning issues to be checked during the inspection includes: "if several temporary modifications affecting the same equipment or systems are in place at the same time, the inspector will check that the combined effects of the changes introduced have been assessed by the licensee, not only their individual effects.

Additionally, during the inspections, licensee procedures applicable to modifications are reviewed by the inspector. Specifically for this issue, the inspector checks that the procedure for temporary modifications, when dealing with criteria to carry out the modification safety analysis, takes into account the fact that other potential temporary modifications may be in place affecting the same systems or components.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

The Spanish regulation defines a process and applicable criteria to determine when a modification has to be approved by the RB. This process and criteria is applicable and basically the same for both, permanent or temporary modifications.

In this sense, a temporary modification would require RB permission when the Safety Evaluation of the modification (8 questions to be analyzed by the licensee to check if it may affect safety) concludes that way.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

Temporary modifications are inspected in the context of a periodic biannual inspection on plant modifications. In this inspection a sample of 3 to 5 temporary modifications is inspected.

The inspection procedure (PT.IV.215) identifies the following inspection issues, to be addressed concerning temporary modifications:

- To make sure that for the temporary modification are clearly defined the justification, scope and impact on safety.
- To check that the modification documentation (including previous safety analysis and safety evaluation) are available in the control room meanwhile the modification is in place.
- To check that the temporary modification documentation is according to the applicable plant procedures, and the modification is managed according to them.
- To check that the modification stablishes the maximum time of permanence, identifying the specific milestone for finishing the modification.
- To check that operation staff is clearly informed of the existing temporary modifications and their consequences in plant operation.
- To check that temporary modifications are clearly identified in its application point, and identification cards have been put in place.
- To check that Control Room drawings and documentation is marked to indicate the existence of the temporary modification.
- When existing several temporary modifications affecting the same equipment or systems, to check that the combined effect of all the changes has been assessed.
- For already closed temporary modifications, to check that the retirement of the modification has been carried out correctly, the configuration correctly updated, and needed tests verifying that after the retirement of the temporary modification the original plant configuration has been recovered have been carried out.
- To check that the number of simultaneous temporary modifications is kept as low as possible.
- To check that the licensee periodically reviews the existing temporary modifications in order to determine if they are still necessary.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

Several cases of long-time maintained temporary modifications, that have been renewed several times (every two-years they have to be reapproved), because of delays in putting in place a definitive solution.

Some cases where the Previous Safety Analysis or the Safety Evaluation does not adequately documented the technical justification for the modification.

One case where the temporary modification was implemented before the Safety Evaluation had been approved.

One temporary modification, elimination of internal components of a valve and the placement of a blind cap, was carried out without the completion of all the technical analyses required by the ASME Code (the

valve is Safety Class 1 because it belongs to the rector cooling pressure barrier). The analyses were completed and documented 2 years later, when the modification was treated as a permanent modification.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Spanish regulation does not specifically states criteria for substituting components by alternative replacements instead of a modification. It will go through a modification process when is required for the regulation stablishing criteria for modifications.

There are two possible situations, if the element is qualified, that is, if the supplier is included in the list of approved suppliers (suppliers that have been audited o that have demonstrated to manufacture according to nuclear quality standards) the substitution of equipment may be made throughout an alternative replacement process, but if the supplier is not included in the list is additionally necessary to go through a commercial grade dedication process.

In practice, Spanish licensees have their own procedures applicable to the use of alternative components replacement instead of a modification process. This process is based on the result of a technical evaluation, where critical characteristics of the equipment are evaluated and compared to the ones for the original equipment to determine if the new component is an alternative replacement to the old one. The result of the evaluation is a technical report showing that the component may be considered an alternative replacement because it complies with the needed technical requirements for the expected use and placement.

Such as procedures are reviewed by the RB in the scope of quality assurance inspections.

a. There is no such a list of specific permitted variations. The technical evaluation has to identify all the critical characteristics and to check that are maintained in the alternative replacement.

b. Substituted components by using an alternative replacement process are not covered by a RB systematic oversight process. Last years, the Spanish RB has carried out inspections to all the Spanish nuclear power plants in order to check how it was made the substitution of components by replacements, mainly as a result of problems detected with inadequate commercial grade dedicated components, and as part of such as inspections it has been also reviewed the use of alternative components.

SWEDEN

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

Today there is no explicit definition on temporary modifications. Modifications in general are mentioned in SSM regulations as follows:

"Technical and organisational modifications to a facility which can affect the conditions specified in the safety analysis report, as well as principal modifications in the safety analysis report, shall be subject to a safety review in accordance with Section 3.

SSM is developing a set of new regulations that contain a definition of a modification. The modification is defined as "**Technical or administrative action involving non-negligible change in the function, specification or performance of the structure, system or component**." Based on this definition the new regulations require also that temporary modifications have to be limited in time and number.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

The oversight process means that modifications in general shall be notified to SSM in advance (typically three months prior to implementation). Regarding the content of a notification the SSM regulations require that "**A notification shall contain a description of planned changes in relation to the previous design, the reasons for the change, safety review and radiation protection implications and the minutes or the equivalent of the independent safety review in accordance to Section 3**". At the SSM there is a permanent working group consisting of members from different departments that handle all notified modifications and suggest further treatment i.e. **review** or **no review**. Regarding the oversight of temporary modifications outside the requirement concerning notification, the established practice is that inspectors follow up the temporary modifications on a regular basis three times per year and reactor. The criteria considered during follow up is the kind of temporary modification, reason for the modification, the number and duration time. The follow up activity is taking place on site.

3. Does your RB inspect temporary modifications?

Yes

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

Beside the regular follow up mentioned above the temporary modifications are typically inspected within the Housekeeping inspection. The arrangement of the Housekeeping inspection and selection of rooms to be inspected are in this case governing the choice of temporary modifications being inspected. Occasionally inspector can also choose the modifications to inspect based on their safety significance.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

SSM is requiring that number and duration in time of temporary modifications have to be limited. Further requirement is that licensee has to continuously evaluate the total impact on safety the temporary modifications yield.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

No permission from the RB is needed to start, extend, remove or make permanent the major part of temporary modifications i.e. those for which the notification to the RB is not required. Those modifications that affect safety have to be notified to RB prior to modification being applied along with the necessary technical and quality assurance documentation. This requirement gives the opportunity to RB to review and if needed stop the implementation.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

As already mentioned the oversight of temporary modifications performed by SSM can be divided in two parts. First part is following up the kind, number and duration on a regular basis of temporary modifications. The other part is inspection on site typically as a part of Housekeeping. The scope of later is to check if the temporary modifications are properly marked in accordance with the labeling policy at the plant, if the temporary tags are providing the necessary information to operators and if there are established procedures allowing the operations personnel to easily outline the authorization and validity of modifications. In addition the inspectors check if temporary modifications are accompanied with a temporary instruction where appropriate.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

There are no analyses dedicated to the RB experience of problems associated with temporary modifications. SSM's experience however regarding some of the licensees is that a major part of the temporary modifications is due to the delayed qualification process during the replacement of the components with equivalent one. Other experience is that the majority of the temporary modifications concerns connection of temporary electrical measurement equipment or similar.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

As a guidance and explanation to the definition of modification in the SSM's regulation that are under the development the following text is added: "Plant Modifications can include both changes in the nuclear reactor configuration as the refurbishment of the plant and be either permanent or temporary. A change is not a maintenance action but intends modification of a facility's or part of a facility's intended function, specifications or performance. The change of specification includes for example, change of dimensions, mass, physical and chemical properties or of technology.

A change of less importance need not to be seen as a plant modification if an assessment has confirmed that it is corresponding to previous design.

For example, when a different version of a component replaces the original without function, specification or performance being changed, no modification has taken place, in accordance with IAEA NS-G-2.3. A change from analog to digital technology is however to be considered as a plant modification.

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

From time to time there have been discussions at SSM regarding the more detailed criteria for distinguishing a modification from replacement. The tangible result until now is general criteria stating that for something to be considered as a modification a facility's function, specifications or performance have to be changed.

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

Beside the requirement of notification to the RB and review of selected modifications SSM's oversight includes also inspection of the licensee's management system containing procedures and routines that govern plant modifications. Regarding the modifications involving mechanical devices much of oversight is done by third party operating on behalf of regulatory body.

SWITZERLAND

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

In the ENSI regulatory guidelines and inspection works there are no differences between temporary and permanent modifications.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

The requirements and standards are the same for both temporary and permanent modifications.

3. Does your RB inspect temporary modifications? If yes, how does the RB inspector choose which temporary modifications to inspect?

The licensee needs a permission from ENSI for the design and construction of safety relevant temporary modifications. ENSI perform random inspections to recheck the proper application of the modification based on the regulatory requirements. The scope of inspections depends on safety requirements and safety-related classification. For pressurized safety-related components inspections are also performed by the ENSI technical support organization (SVTI) based on the design approval documentation.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

A possible aggregation of modifications is considered in the scope and number of inspections.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

A permission is needed from ENSI for the design, installation and removal of the safety-related modification.

6. What is the scope of the inspection performed by the RB during the lifetime of a temporary modification?

Inspections are performed to prevent materials ageing, e.g. corrosion and to guarantee safe operation of the modified component.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are then main causes of problems associated with temporary modifications? Please provide specific examples.

To avoid leakage and mechanical vibration it is usual to improve or install additional supports, brackets and clamps. In some cases the design and construction of these auxiliary equipment is not conform to the nuclear requirements. In some cases there is no stress calculation to guarantee the structural integrity of the safety-related system.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilize identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than modification?

a. What variation compared to the original is permitted? (e.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

The definition of replacement and modification is given in the Regulatory Guide ENSI-B06. For replacement parts the design rules given in the specification as well as materials, quality standards, manufacturing process and manufacturing testing remain unchanged.

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

According to the requirements in the Reg.-Guide ENSI-B06 the licensee is responsible to review the design rules given in the specification of the replacement parts. If there is a need for changes in the manufacturing specification a new process for a modification starts. The reassessment of the manufacturing specification has to be documented by the licensee and accepted by ENSI.

UNITED STATES

TEMPORARY MODIFICATIONS

1. Does your RB have a definition of a temporary modification (e.g. limited in time)? If so, please supply the definition.

"Temporary modification" is not defined in NRC regulations. Guidance on how to handle modifications, including limited duration modifications, is provided in NEI 96-07, Revision 1, "Guidelines for 10 CFR 50.59 Implementation." Use of NEI 96-07, Revision 1 is endorsed by NRC Regulatory Guide (RG) 1.187. There is guidance in the inspection procedure for the inspectors in the field.

2. Does your RB have a different oversight process for temporary modifications and permanent modifications? If yes, what are the key differences?

No. Issues associated with any modification are handled in a similar manner under the Reactor Oversight Process (ROP). Depending on the modification in question, differing regulatory statutes may apply (i.e. 10 CFR 50.59, 50.65, Appendix B, etc.).

All the modifications are screened in accordance with Code of Federal Regulation, Title 10, Part 50, Section 59, Changes, Test and Experiments. The screening is to determine whether prior NRC approval is required before making temporary or permanent modification.

3. Does your RB inspect temporary modifications?

a. If yes, how does the RB inspector choose which temporary modifications to inspect?

Yes, temporary modifications are inspected in accordance with the guidance of Inspection Procedure 71111.18, Plant Modifications. The primary focus is to ensure that the safety function of equipment is maintained. A risk-informed focus is placed on mitigating systems and barrier integrity. Inspectors use risked informed insights together with other factors, such as engineering analysis and judgment, and performance history, to determine which temporary and permanent modifications should be selected for review. Preference is given to reviewing modifications as they occur and that occur during at power operations or increased shutdown risk configurations.

Temporary modifications may include jumpers, lifted leads, temporary systems, repairs, design modifications and procedure changes which can introduce changes to plant design or operations. Although the focus of this inspection is on active modifications, inspectors may choose to review a recently removed temporary modification for adequate restoration and testing.

4. How is the aggregation of modifications considered by the RB? (for instance the fact that multiple "small" modifications can interact)

All modifications, whether small, large, system independent, system interdependent, temporary, or permanent, are subject to the provisions of 10 CFR 50.59, "Changes, tests and experiments," to determine whether or not NRC prior approval is needed for the change. Focus is not placed on the whether the change is small or large, independent or interdependent, but rather on what the impact of the change will be.

5. Is permission needed from the RB before a temporary modification is started, extended, removed or made permanent?

The licensee is required to perform a screening prior to any modification performed in accordance with Code of Federal Regulation, Title 10, Part 50, Section 59, Changes, Test and Experiments. The screening is to determine whether prior NRC approval is required before making temporary or permanent modification.

6. What is the scope of the inspections performed by the RB during the lifetime of a temporary modification?

As indicated in question #3, the primary focus is to ensure that the safety function of equipment is maintained.

7. What experience does the RB have of difficulties or problems associated with temporary modifications? Do you perform analysis of this experience and what are the main causes of problems associated with temporary modifications? Please provide specific examples.

Most documented issues associated with temporary modifications are associated with procedural compliance. As a result, the temporary modification may not have been installed correctly or licensee staff may not have been aware of the temporary modification after shift turn-over.

NON-IDENTICAL REPLACEMENT PARTS

8. If the licensee does not utilise identical replacement parts sourced from the Original Equipment Manufacturer (OEM); under what criteria does your RB permit the change to be considered as a replacement rather than a modification?

a. What variation compared to the original is permitted? (E.g. considering the specification, manufacturer, quality standard, safety function, materials, technology, shape, size, connections, etc.).

b. What is the oversight process of your RB to ensure the licensee maintains the safety of such changes?

This issue involves the interface between the 10 CFR 50.59 process and the licensee's procurement process that implements the quality assurance requirements of 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services." The term "identical replacements," has the same meaning as the procurement process term "like-for-like replacements," which means "the replacement of an item with one that is identical." Replacement items are considered identical if purchased from the same vendor, provided all design, materials, and manufacturing processes are kept the same.

Licensee procurement processes specify that if a replacement item is similar, but not identical to, the item being replaced, an equivalency evaluation is necessary to determine if any changes in design, material, manufacturing process, safety, form, fit, function, or interchangeability could affect the alternative replacement item's ability to function."

Do you have other related topics that you want to be discussed during the workshop?

QUESTIONNAIRE C
THE INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

Introduction

One key function of the Regulatory Body (RB) is inspection for monitoring compliance with the regulatory requirements and the licence conditions, and to take enforcement action in the case of non-compliance. The WGIP already dealt with this topic in 2005 and published a report[3] called "Regulatory Inspection Practices to bring about Compliance". A main result was that in most OECD/NEA countries a series of graded enforcement options are available for the RB, depending on laws, regulations and national culture: giving advice, oral and written cautions, letters, requirement to make improvement, prohibition on activities, directly imposed fines, direction to shut down, refusal to approve or permission an activity, license withdrawal, prosecution in courts.

The topic of this workshop is focused on the inspectors' role in this enforcement process and to identify associated commendable inspection practices in the discussions. This comprises the specific role of the inspector in evaluating the findings, their role in the enforcement process itself as a key issue of the discussions and their role in the Follow-up of the licensee's response.

IAEA has issued a Safety Guide[4] GS-G-1.3 "Regulatory Inspection of Nuclear Facilities and Enforcement by the Regulatory Body" which has a chapter devoted to enforcement.

Questionnaire

For preparation of the workshop, participants are invited to supply their national inspection approaches used according to the following questionnaire:

Note: For the current questionnaire "inspector" is referring to the inspector identifying issues that can lead to potential enforcement.

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

2.2 Does the inspector have discretion to choose enforcement options?

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

[3](NEA/CNRA/R(2005)1), see http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=NEA/CNRA/R%282005%291&docLanguage=En

[4] (IAEA GS-G-1.3), see http://www-pub.iaea.org/MTCD/publications/PDF/Pub1130_scr.pdf

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

BELGIUM

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The enforcement process starts with a finding which can be considered as a violation of a legal disposition.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The first role of the FANC nuclear inspector (and the first evaluation that he/she has to perform in terms of gravity) is to take protection measures in case of immediate danger or when confronted with a situation which is insufficiently controlled by the operator.

The second role is to identify the nature of the violations. According to the result of this evaluation, the inspector has to :

- impose actions needed to correct potential other violations, which the protection measures, mentioned above, wouldn't have solved;
- decide if he/she is going to start a legal procedure for the Prosecutor that can lead to an administrative fine (depending on the internal procedures).

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The nuclear inspectors have a huge legal and administrative authority. They are competent on the Belgian territory and only to verify the respect of the Belgian legislation related to the protection against the danger of ionising radiation.

2.2 Does the inspector have discretion to choose enforcement options?

Yes

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

The nuclear inspectors are nominated by Royal Decree, after an internal process which consists in :

Recognition as expert (after complementary training to acquire the necessary nuclear expertise)

An accreditation as 'candidate nuclear inspector' (after training on legal tools and enforcement legal disposition)

A 'taking the oath' in front of the FANC General Manager who has received the delegation of the Minister for Internal Affairs

A publication of the name of the nuclear inspector in a Royal Decree

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

He/she imposes the protection measures (putting seals on installation, stop of activity, shutdown of installations, …..) in case of non-correction by the licensee or immediate danger

He/she verifies the completion of the actions imposed for the correction of the situation

He/she initiates the sanction process for the Prosecutor (depending on the internal procedures)

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

The establishment of an enforcement policy is ongoing. It is also foreseen that each section of FANC will describe its specific procedure to achieve the strategy in het policy.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

The consistency in the inspector's behaviour is ensured by :

The 25/04/1994 Law that states which powers and measures can be used by the inspectors ;

The enforcement policy that explains which strategy is implemented by FANC and the objectives to reach (under development);

Procedures for each section of FANC that will explain how the inspectors have to implement the policy in the different domains of activities (taking into account the graded approach);

Training on the legislation and practical aspects

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

See the answer above.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

After the finding of a violation, the inspector imposes one or more actions to fulfil the requirements. The action is associated to a deadline for its closure that cannot exceed 6 months. The report mentions a "warning" towards the operator. From 15 days before the end of the deadline, the inspector can send a 'recall' to the licensee.

After passing the deadline without fulfilment of the imposed action, the inspector has to take additional protective actions.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

We would like to have an effective example of enforcement procedure that considers the graded approach.

CANADA

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Enforcement actions are measures taken in response to observed regulatory non-compliances, for the purpose of encouraging or compelling a licensee back into compliance and to deter further non-compliances with the requirements of the regulatory framework. The enforcement process commences when there is an inspection finding that is non-compliant with any of the inspection compliance verification criteria such as regulatory legislation, the licensee's operating licence, regulatory documents and standards referenced in the licence and the licensee's internal governing procedures. The enforcement process may also commence immediately if an inspector makes an observation that poses an immediate risk to the safety of personnel, the public or the environment.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The inspector determines whether the non-compliance represents an immediate safety significant risk to the environment, health or safety of persons, maintaining national security or a non-compliance with Canada's international obligations. If there is an immediate safety significant risk then the inspector will take immediate action to address the situation. The inspector may also decide to use a graduated enforcement approach based on the safety significance of the non-compliance.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The type of enforcement action used depends upon the nature of the non-compliance, and varies from actions which may be initiated immediately under the authority of an inspector to those which require formal confirmation by the Commission. The graded approach to enforcement is based on risk significance. Inspectors enforce compliance through legal instruments such as issuing orders or recommending prosecution under the Nuclear Safety and Control Act.

2.2 Does the inspector have discretion to choose enforcement options?

Enforcement options have clearly defined criteria for application. However an inspector may determine that there is the need to increase the level of enforcement in accordance with the graduated enforcement approach. Various factors are considered including the significance of the non-compliance with respect to the health and safety of persons and the environment, security, and international obligations; the circumstances that lead to the non-compliance including acts of willfulness; previous compliance record; operational and legal constraints and industry specific strategies.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

The Nuclear Safety and Control Act is the legislative power that provides authority to the inspector to implement enforcement by issuing orders. CNSC processes allow inspectors to use other enforcement tools such as issuing action notices and directives.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The inspector prepares a report containing the enforcement action(s). The report is then issued to the licensee by the inspector's director. The inspector evaluates the licensee's response against the closure criteria for the enforcement action(s). Once the licensee has corrected the non-compliance, the inspector

evaluates its implementation, and if satisfied, recommends to his director to close the enforcement action(s).

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Procedures and a process map provide guidance on the selection and application of enforcement tools to inspectors. Enforcement tools, including the criteria for their use, are clearly defined in the selection and application of enforcement tools procedure.

Enforcement tools consist of action notices, directives, orders and administrative monetary penalties. Action notices are issued for licensee procedural non-compliances. Directives are issued for licensee non-compliances with the act, regulations, license and standards. Orders are issued for immediate safety significant concerns. Administrative monetary penalties are issued for willful violations by the licensee.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Inspectors are expected to follow the guidance outlined in the selection and application of enforcement tools procedure and to use the enforcement tools as per their definitions.

Inspection reports including enforcement actions are reviewed by the inspector's supervisor. Supervisors from each site meet regularly to discuss inspection activities including enforcement.

The inspection reports are also reviewed by division directors. Findings that resulted in enforcement are also discussed to ensure that their ratings are consistent with the rating of similar findings at other stations.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

All inspectors have to complete a formalized training program which has both a classroom and on the job training component. Classroom training includes training on the conduct of inspections and the inspection procedure which includes a component on enforcement. Mentors are assigned to inspectors during the on the job training component which reinforces the appropriate use of enforcement tools. Inspectors also attend regular training workshops that focus on inspection activities including enforcement.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

See response to 2.4

Once the licensee has corrected the non-compliance, the inspector evaluates its implementation, and if satisfied that the corrective action(s) will avoid recurrence, recommends to his director to close the enforcement action(s). During this process, the inspector may enlist the help of a technical expert in the subject area. The inspector may also perform field verifications to confirm that the corrective actions have been implemented by the licensee.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

What is the inspector's role in tracking the progress of corrective actions resulting from the enforcement process?

CZECH REPUBLIC

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

A finding during inspection process, description of non-compliance and specification of violation of legislative documents is the starting point for the enforcement process.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Comprehensive description of the finding and non-compliance with adequate details including safety significance evaluation, specification of violation the relating legislative documents, procedures, methodology, etc.. If inspectors find a serious non-compliance and there is a threat to humans or the environment, inspectors are expected to provide a warning to the inspected person and are required to inform senior RB management.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Limits of inspectors' authority are the following: giving advice, oral and written cautions, requirement to make improvement, requirement to rectify the situation in a prescribed time period. Reminding enforcement powers are empowered respective superiors of inspectors.

2.2 Does the inspector have discretion to choose enforcement options?

In case of serious non-compliance and there is a threat to humans or the environment – inspector does not have discretion to choose enforcement option, otherwise yes, he does.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Enforcement power is directly given by legislative framework (Atomic Act, Administrative Code, Act on State Inspection and Monitoring and indirectly by RB methodological guidelines.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspection findings are referred by inspector in inspection report including adequate enforcement actions. Enforcement process can continues on the base of licensee holder response again the enforcement specified in inspection report.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

RB issued methodological guideline for inspection performance VDS037. Document also specifies various enforcement actions and procedures for their utilization according to level of significance / seriousness of inspection findings.

RB also issued methodological guideline for imposing penalty VDS 029 describing procedure for this process.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

1) Each RB superior of respective inspectors reviews inspection report from formal point of view before issuing of the report and submitting the report to licensee.
2) Each inspection report is reviewed by inspection evaluation committee including enforcement actions for subsequent feedback to all inspectors performing RB inspections.
3) Existence RM methodological guidelines describing enforcement process.

2.7 Are the inspectors' specifically trained in the topic of enforcement? (If yes, please describe briefly.)

RB organize training especially for newcomers concerning inspection process including enforcement actions.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Inspectors' role is derived from their following inspectors' competence and authorization:

4) Inspectors shall carry out inspection at the premises of persons granted a licence under Section 9 para 1, section 21 para 2 of the Atomic Act at the premises of persons performing activities related to nuclear energy utilization and radiation activities not requiring either a licence or a registration, at the premises of persons responsible for preparation or implementation of remedial actions to reduce exposure to natural radioactive sources or exposure due to radiation incidents.
5) Inspectors shall check whether the persons referred to in para 1 are observing provisions of this Atomic Act and implementing regulations, and whether they are keeping to the subject and scope of the issued licence, including specified conditions.
6) Within the framework of their inspection activities, inspectors are authorised, in addition to the rights arising from specific regulations:

- To enter at any time facilities, installations, operational areas and other workplaces of inspected persons where activities related to nuclear energy utilization or practices resulting in exposure are being carried out,
- Check the compliance with requirements and conditions of nuclear safety, radiation protection, physical protection and emergency preparedness and inspect the nuclear installation conditions, adherence to limits and conditions and service regulations and to technical requirements on industrial safety of classified equipment,
- Demand evidence of fulfilment of all set of obligations for the provision of nuclear safety, radiation protection, physical protection, emergency preparedness of nuclear installation and industrial safety of the classified equipment,
- Take measurements and collect samples at the premises of inspected persons such as are necessary for checking the compliance with this Atomic Act and other regulations issued on its basis,
- Perform a physical inspections of nuclear items or ionising radiation sources, including the checking of their records,
- Verify professional competence and special professional competence under this Atomic Act,
- Participate in investigation of events with impact on nuclear safety, radiation protection, physical protection and emergency preparedness, including un authorised handling of nuclear items or ionising radiation sources.

- If inspector identifies deficiencies at the premises of an inspected person, he is authorised, depending on the nature of the identified discrepancy, to require the inspected person to remedy the situation, within a set time period, or charge the inspected person to perform technical inspections, reviews or testing of operation condition of the installations, their parts, system or their assemblies, if necessary for verification of nuclear safety, radiation protection, and further to monitor and implement remedial actions for reducing or mitigation of lasting exposures, or withdraw the special professional competence authorization issued to an employee of the inspected person, in the event of a serious violation of his obligations or his not fulfilling requirements of professional competence and physical and mental capability or propose the imposition of a penalty.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Benchmarking of the powerful enforcement power applied in the participated countries.

FINLAND

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Finding that has immediate effect on safety that cannot be corrected on the spot may lead to an inspector issuing enforcement action. More likely enforcement action can be issued when licensee has not acted according to regulators previous decision (eg. RB issued an action which has not properly been fulfilled)

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Inspector may evaluate the safety significance of individual finding and provide this as a basis for further action by the regulatory body. Regulatory Body will use internal process to evaluate the safety significance by additional experts before concrete enforcement actions are initiated.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Single inspector can give up to written cautions (enforcement action to do something on specified timeframe)

2.2 Does the inspector have discretion to choose enforcement options?

YES

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

INDIRECTLY by RB process.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspector is responsible to follow the actions to conclusion.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Internal guidance on regulatory body. Written cautions can be directly issued in database that has electronic signature by inspector and licensee. Same database is used for wide range of inspection protocols.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Mainly limiting the authority of single inspector to certain level. Internal quality manual.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly).

It is not very well trained skill, mainly because enforcement as we understand it, is very seldom used. There is RB decisions to bring about compliance which is in our language a little bit different thing than enforcement.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Inspector who has issued written cautions or have prepared a regulatory decision letter for enforcement (or similar action) is responsible to verify that licensee has carried out the necessary actions.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Monetary penalties issued by inspector or regulatory body

Using series of graded enforcement options instead of using fixed enforcement tools.

Any data on benefits/drhawbacks on using "strict" enforcement methods (like penalties)

FRANCE

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The inspector can propose to enter the enforcement process if he has found a non-compliance. But this has to be a significant non-compliance regarding a resolution from the regulatory body or a ministerial Order.

The inspector cannot decide alone to take enforcement measures (for instance, he cannot give a direct fine). The decision to enter the enforcement process is made by the regulatory body, in the case of ASN by the commission.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The inspector's role is to evaluate the significance of the non-compliance in order to decide whether or not he should decide to enter the enforcement process.

It is also his role to find the right regulation that would provide the appropriate enforcement action for the violation.

The inspector has to take into account:

The potential danger created by this non-compliance or violation (for example, if the situation were to persist, would there be a "real" risk for the plant, the workers or the environment, and how significant would this risk be?)

How long will/can the non-compliance continue? And how fast is the licensee trying to remedy the actual situation? (By the time the enforcement process is launched, would the licensee have complied with the regulation?)

Is the licensee regularly found in non-compliance? Is there an enforcement procedure going on against this licensee? Does the licensee consistently not respond to the regulatory body demands?

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The inspector can propose any enforcement option; it is the ASN's commission that has the final decision.

2.2 Does the inspector have discretion to choose enforcement options?

Not "to choose", "to propose". The proposition is usually made with the approval of the head of the office/inspectors team.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

The enforcement power is given to the inspector and to the regulatory body by legislative power. The regulatory body selects the agents that will become inspectors and that will have the enforcement power.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The inspector is associated with the enforcement process from the beginning to the end as he presents the procedure. The report presented to the commission to decide whether or not we should issue enforcement measures is made with the inspector. The inspector is also in charge of following the action made by the licensee to comply with the regulation.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

ASN has internal procedures and tools to help the inspectors in the enforcement process. There are administrative tools to ensure a correct writing of the documents related to the enforcement process.

There is also a database where inspectors can compare all the ongoing and completed procedures.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

As the decision is made by the ASN's commission, a general consistency is ensured when issuing enforcement measures.

For the inspectors, in addition to the specific training, there is the database of all the enforcement procedures that helps compare the actions taken regarding a type of non-compliance.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Yes, the inspectors have to follow a specific course regarding the inspection and enforcement process. The purpose of the training is to learn the regulation basis and the internal organization for the enforcement process. This training lasts about 2 days (it's integrated in a general course about inspections).

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The inspector's role is to check, at the end of the deadline given to comply with the regulation, that all the actions required and defined by the licensee have been done. The verification is made regarding the demands issued by the regulatory body. An on-field inspection has to be conducted to check the implementation of the measures.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

GERMANY

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Starting point can be any one of the above mentioned issues. Any source of information can lead to actions by the RB. The kind of enforcement action chosen by the RB depends on the severity of the issue.

Independently from the answer given above, the general approach in Germany may be described as follows: The main task of the RB and its inspectors is to ensure that the licensee fulfils his prime responsibility for the safe operation of his facility. This is carried out by an intense and continuous regulatory supervision. The licensee must be aware that any inadmissible condition in his facility will usually be detected at an early stage. As part of a good safety culture, he is willing to cooperate with the RB and its inspectors and to provide information about any possible non-compliance or violation in advance. So, at best there are no surprising findings in inspections and no strong enforcement actions have to be taken.

2.1 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

In general the inspector is the person who deals with the respective issue as a whole. So he/she also evaluates the safety significance. This can be done in cooperation with co-workers of the RB and/or with support by members of a Technical Support Organisation (TSO).

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

Preliminary remark: In Germany many routine inspections are performed by members of a TSO. The staff from the TSO do not have the competence to take enforcement actions. In case of any safety significant finding, the TSO informs the RB who will take enforcement actions if required. In urgent cases this will be done via on-call duty. When using the term "inspector" in the following always inspectors by the RB are meant.

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Regarding the enforcement options listed in foreword, imposing fines, license withdrawal and prosecution in courts are measures that involve a more formal and lengthy process. Consequently, these measures are not used by the inspector directly but rather by the RB as a whole or, in case of prosecution in courts, by the public prosecutor with support by the RB. All other measures can, in principle, be enforced by the inspector. In case of imminent danger the inspector can e.g. give direction to shut down the plant. However, in general there is sufficient time to evaluate what kind of measures are appropriate and therefore the inspector will give directions to the licensee after returning to office or after consultation with his superior. The extend of this depends on the relevance of the measure, e.g. an oral advice to the licensee will in general be given directly during the inspection while requirements to make improvements will be addressed via letter after consultation at the office.

2.2 Does the inspector have discretion to choose enforcement options?

Yes.

In general, all authorities in Germany have to exercise the principle of discretion, based on overall Administrative Procedure Acts. This principle of discretion is in compliance with the enforcement elements given by the Atomic Energy Act. So, the RB has discretion on whether to choose enforcement actions and which enforcement option is to be taken, taking into account the ban on arbitrary action and the

principle of proportionality. This belongs also to the inspector. However, in case of significant danger arising from the plant, there is no discretion on whether to take action.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Since the inspector acts as representative of the RB the enforcement power is given to him by law. Internal RB guidance describe in more detail how and under which circumstances the various enforcement options should be taken.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

As mentioned in answer 1.2 in general the inspector is the person in charge of dealing with the respective issue as a whole. So he/she is also in general in charge of the enforcement process. Exceptions are e.g. imposing fines (performed by the law division of the RB) or prosecution in courts (performed by the public prosecutor).

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Yes.

The overall framework for the RBs enforcement processes is provided by law and ordinances. For example, administrative offences that can result in fines are specified in the Atomic Energy Act. The Criminal Code describes offences that can be prosecuted in court. Based on this overall framework, the competent RBs of the Länder level have additional internal guidance, e.g. laid down in their management systems.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Consistency is ensured by the internal guidance mentioned above, by training and also by discussion of the issues that might require enforcement within the RB.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Knowledge on enforcement is part of the on-the-job training of the inspectors as well as of the specific training programme for newly appointed inspectors.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The inspector follows up the actions taken by the licensee and verifies the fulfilment. (See answer 1.2 and 2.4.)

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Experience of the inspectors on the necessity to use "harsh" enforcement actions compared to "mild" actions like oral advice.

What are the experiences about imposing fines? Are monetary fines considered to be a useful or useless measure?

INDIA

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The starting point of an enforcement action during inspection is observation of any deviation from regulatory requirements and station procedures.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Inspectors carry out preliminary safety assessment of the deviations observed during regulatory inspections and categorize the findings based on the safety significance.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Generally enforcements are not done by inspectors. However, in case of serious non-compliances affecting safety of the plant, workers, public or environment, the lead inspector is empowered to implement on-the-spot enforcement action in consultation with the competent authority.

2.2 Does the inspector have discretion to choose enforcement options?

Inspectors are not authorized to take enforcement actions on their own. Hence inspectors do not have discretion in choosing enforcement options.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.

The competent authority in RB (i.e. Chairman Atomic Energy Regulatory Board) authorizes lead inspector to take on-the-spot action in case of serious non-compliance after taking prior approval from Chairman, Atomic Energy Regulatory Board.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The deviations observed during regulatory inspections are reviewed by appropriate committees in RB for deciding the enforcement action. The inspectors participate in these review meetings. The inspectors verify NPPs compliance with the enforcement actions initiated by RB during subsequent inspections.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Yes, Safety Guide (AERB/SG/G-4) on 'Regulatory inspection and enforcement in nuclear and radiation facilities' and Safety Manual (AERB/SM/G-1) on 'Regulatory Inspection and Enforcement in Nuclear Power Plants and Research Reactors' provides written guidance to inspectors concerning the RBs enforcement processes.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

As brought out above, inspectors have only limited role in deciding enforcement action. The inspectors' observation and recommendations are considered in deciding enforcement action by the RB. Inspectors verify the compliance with enforcement actions of RB during inspections.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Yes. Inspector are trained on the statutory powers, responsibilities and functions of the regulatory body. They are given training on various regulatory processes, inspection methodologies and enforcement methods.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The inspection report along with utility action plan for addressing deviations are discussed in RB. The inspectors verify the implementation of this action plan at the NPP during inspections.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

What formal arrangements with relevant Government agencies exist in member state where enforcement action requires the involvement of the police, justice ministry, or other authorities?

JAPAN

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The enforcement process starts when the inspector confirms an issue that the licensees do not comply with the regulatory requirements, in the regulatory inspection.

In Japan, the regulatory inspections are two types roughly. One is an inspection for the reactor facilities to ensure they meet the regulatory requirements (inspection for the facility: pre-service inspection, fuel assembly inspection, welding safety management review, periodic facility inspection, and periodic safety management review). The other one is an inspection for the safety activities of licensees to check the activities have been done in compliance with the safety regulations (inspection for the safety activities: operational safety inspection).

In the case of the operational safety inspection, the enforcement process starts when the inspector confirms an issue that the licensees do not comply with the regulatory requirements (e.g. violations to operational safety programs).

On the other hand, when a non-compliance is identified in inspections for the facility, the inspection is suspended. The licensee is asked to implement the corrective action, and the inspection may be resumed only after the condition is fully resolved (and the inspection is subsequently completed). There are no additional enforcement activities conducted for these circumstances.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The role of the inspector is to examine the facts relating to the issues that do not comply with regulatory requirements that were identified in the regulatory inspection, and to report to the RB, Nuclear Regulatory Authority (NRA).

The NRA determines to take enforcement action in accordance with the safety significance of the issues which may impact the nuclear safety.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

On the basis of the Administrative Procedure Act, it is possible for the inspectors to perform the guidance for the improvement measures by licensee's any cooperation, but the inspectors are not authorized to order actions to address present or imminent safety issues. The inspectors would pursue such issues through communications with the licensee and promptly contact the NRA for assistance if needed to address the matter.

2.2 Does the inspector have discretion to choose enforcement options?

The inspector does not have discretion to choose enforcement options.

The NRA determines the enforcement options based on the safety significance of the issues that the inspectors were investigated.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

As mentioned above, on the basis of the Administrative Procedure Act, it is possible for the inspectors to perform the guidance for the improvement measures by licensee's any cooperation, but the inspectors are not authorized to order actions to address present or imminent safety issues. The inspectors would pursue

such issues through communications with the licensee and promptly contact the NRA for assistance if needed to address the matter.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

After the NRA has decided to execute the enforcement actions, the inspectors carry out the inspection on the basis of the instructions of the NRA, to ensure that the licensees adhere to the enforcement actions. In addition, the results of the inspection are reported to the NRA, to determine the execution of additional enforcement actions, if necessary.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

For the inspection for licensee's operational safety activities, indicators for evaluating the safety significance of the issues have been documented, and there is no written guidance for the inspectors concerning the RBs enforcement processes.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

The inspector does not have the authority to determine the corresponding measures in the enforcement processes. The corresponding measures in the enforcement processes are determined on the basis of the judgment of the NRA.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

The inspectors are not specifically trained in the topic of enforcement because they do not have the authority to determine the enforcement measures.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Through on-site inspections or periodic inspections, the inspectors confirm that the licensee's corrective actions have been completed, and report to the NRA, if necessary.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Scope of inspectors' authority in the enforcement process

Integrity of the inspector's authority and the licensee's rights

How to ensure consistency in the inspectors' judgment

Method of education and training for the inspectors who have the authority

KOREA

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The starting point for the enforcement process is to issue a finding or a recommendation after finding the non-compliances. After then, we are informing that request to the licensee for resolution preparation.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

After finding some non-compliances, the inspectors identify what the licensee is not complied with, e. g., laws or regulatory requirements, and evaluate the influences on safety of the nuclear installations. According to the evaluation results, they determine the safety significance of the non-compliances.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The inspectors can issue a finding or a recommendation, and give technical advises on the non-compliances to the governmental officers or the licensees.

2.2 Does the inspector have discretion to choose enforcement options?

No, the inspector shall identify the enforcement option only depending on the laws, legislations and regulatory requirement, etc.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

In Korea, NSSC (Nuclear Safety and Security Committee) have the direct enforcement power, and the inspectors of KINS (Korea Institute of Nuclear Safety) provide technical advices to the NSSC.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The inspectors evaluate the resolutions of the non-compliances, review a report of the enforcement action provided by the licensees, and, if necessary, give technical advices to the licensee. According to the review result of the inspectors, NSSC determines the closure of the enforcement process.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

NSSC has a Notice for processing the inspection findings of the nuclear installations, which describe the detailed process and management of the findings according to the Nuclear Safety Act.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

The inspectors' behaviours are confirmed through the internal process of the RB, in which the expert group reviews the adequacy and the consistency of the enforcement processes.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

No, they don't. The inspectors are trained regarding the general inspection processes or rules.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

If the licensee submits a report for the enforcement actions, the inspectors evaluate the technical relevance. If necessary, the inspectors may request additional information concerning the enforcement actions. The inspectors may also perform the check or examinations in the corresponding site. Finally, if there are no more issues or questions after confirming relevance of the enforcement actions, the follow-up action could be closed.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

None.

MEXICO

The purpose of the task is to identify commendable inspection practices regarding the licensees' control of modifications, with particular attention to temporary modifications and changes to systems, structures and components (SSCs) related to obsolescence, or operational experience. The focus on temporary modifications takes account of earlier workshops already addressing permanent modifications and identifying associated commendable practices. (International WGIP-Workshop Helsinki, 23-25 May 1994, NEA/CNRA/R(94)4).

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The starting point for the enforcement process begins with the identification of any violation during the inspections which is documented by means of a finding, or through a licensee event report, which have high safety significance.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Once a finding is documented, the inspector must evaluate its severity or significance (both real and potential), by filling a questionnaire in which there are questions as: Who know about the violation? How much time has the violation been? Is the finding safety significant? Etc. The evaluation and the questions are then sent to the review committee which is integrated by managers who review and approve the results and the severity of the violation, before taking any regulatory action to the licensee.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The limit of the inspectors´authority is, mainly, identify and assess the severity of the violation. But before defining the enforcement actions, it is required that the committee reviews and approves the severity of the violation.

2.2 Does the inspector have discretion to choose enforcement options?

No, the inspector does not have discretion to choose enforcement options. Other department of the RB organization is in charge to choose the enforcement options. This is done after review the information provided by the inspector and if it is necessary interviewing the inspector to obtain additional information.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Enforcement power is not given to the inspectors directly by legislative power neither by internal RB process.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

As it was mentioned before, the inspectors identify violations during the inspections, evaluate its severity or significance (both real and potential), filling a questionnaire and if it is necessary he must collaborate with the review committee and with the Department in charge of the enforcement investigations.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

No, there is not any written guidance for the inspectors concerning to the RBs enforcement processes.

2.6 How does the RB ensure consistency in the inspectors' behavior in the enforcement processes?

The review committee ensures consistency in the inspectors' behavior in the enforcement processes.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

No, the inspectors are not specifically trained in the topic of enforcement.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

During the inspections the inspectors must verify the implementation of the corrective actions taken by the licensee as a result of the enforcement actions.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Inspectors training in enforcement.

POLAND

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Depending of the type of the findings inspector has four options. In case of direct nuclear safety or radiological protection threat inspector can give order containing injunctions or interdictions addressing specified activities (e.g.: to stop the operation of a nuclear facility, to cease to perform specific works or operations). This order must be carried out immediately by operator during inspection. In other cases (no direct threat) inspector in the end of inspection will inform representative of operator about findings. After inspection all findings will be placed in inspection protocol and depending (report) of the type of finding inspector can decide to start enforcement process.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

If finding is not direct threat inspector will evaluate the safety significance of the finding during preparation of the inspection protocol. Decision about significance will be based on atomic law, safety documentation and inspectors experience.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

There is no limit in enforcement actions. In worst case for operator inspector has power if it is necessary to stop the operation of nuclear facility.

2.2 Does the inspector have discretion to choose enforcement options?

Yes, but this choice must be in harmony with mentioned below in point 2.5 enforcement guidance table. And if it is possible inspector should discuss his choice with rest of the inspection team.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Directly by legislative power. Types of possible enforcement actions and legislative background of process are described in appropriate articles of Atomic Law in Poland.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspector that conducted inspection with findings is responsible for almost whole enforcement process – preparation adequate part of inspection protocol with stressed findings and preparation of decision or statement requesting appropriate corrective actions within specific deadline. Decision or statement are finally signed by President of regulatory body.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Part of the inspection procedure describes enforcement process during regulatory inspection. Annex to this procedure is form of the enforcement guidance table with all possible enforcement actions. This enforcement guidance table contains also definitions and examples of findings and their categorisation.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Through using the inspection procedure with the enforcement guidance table.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Not yet. However before each inspection during inspection briefing one of discussed topic is possible enforcement actions. Also one possibility to gain knowledge for candidates for inspectors is observation of senior inspectors during inspection and enforcement process.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

All findings with requested by regulatory body corrective actions within a specified deadline are checked during next regulatory inspection or in special cases there are ad-hoc inspection after specified deadline.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Types and scope of guidelines related to enforcement process and evaluation of safety significance of findings.

RUSSIA

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Starting point for the enforcement process is finding of violation of (non-compliance with) the regulatory requirements and the licence conditions (no difference in Russian language between terms "finding, non-compliance, violation").

Term "wilful violations" is established by the Law "Codex about administrative offences" (more strong punishment).

2.1 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Inspector himself evaluates the safety significance of the finding.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Limit is established by the Law "Codex about administrative offences". Enforcement options of the RB listed in the Law "Codex about administrative offences". Inspector chooses option depending on the safety significance of the finding.

2.2 Does the inspector have discretion to choose enforcement options?

Yes.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Directly by the Law "Codex about administrative offences".

2.4 H*ow does the inspector participate in the enforcement process of the RB once it has started?*

After finding inspector:

Writes a Report (to fix a violation)

Considers the case about administrative offence ***and applies the measures of administrative punishment (for example impose a fine). For some articles of*** the Law "Codex about administrative offences" ***the consideration is within the competence of the inspector or other officials of RB (for example violations of Regulations) . For some articles of*** the Law "Codex about administrative offences" ***the consideration is within the competence of the court (for example violations of*** licence conditions).

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Now guidance (internal instruction of RB) is developed.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Teams of RB Headquarters check regional division (inspectors) supervision activity (including enforcement) in accordanceg with theschedule.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Yes in according with individual programmes.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Inspector follows up the fulfillment of prescriptions (***monitors the elimination of violations).***

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

SLOVAK REPUBLIC

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Two starting point might be considered. If a violation of a Decree, Atomic act or documentation is identified then the inspector formulates a finding which after a discussion with the licensee is transformed into corrective measures. The formulation of corrective measures might be considered an enforcement action.

The second starting point might be when inspector starts an administrative procedure in issuing a fine for violation identified during inspections. The starting point of the enforcement process would be considered the notification sent to the licensee by the inspector.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The inspector has a key role in evaluation of his finding. Every inspector is independent and there for it is up to him to evaluate the safety significance of the finding. He might consult with other inspectors but it is up to him to evaluate the safety significance of the finding.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

According to our Atomic act the inspector has several enforcement options to his disposal. He might order to keep the equipment, devices, workplaces, buildings and facilities in their current state until the end of investigation or to sufficiently document they current state. He also might order to collect samples of materials, to perform test, measurements and checks. He might withdraw license of selected personnel and giving it to the office for further administrative proceedings. Inspector might also impose corrective measures in the inspection protocol (protocol is issued if a violation of decree or act has been identified, otherwise the result of an inspection is an inspection report) after they have been discussed with the statutory representative of the licensee. The aim of these corrective measures is to correct deficiencies. Also the inspector might write a letter in the name of department general manager or division director that request information or draws attention to a certain issue. The authority to impose fines or withdraw license is in the competence of the office. Both of these enforcement activities would be perform within an administrative proceeding in which the inspector would participate.

2.2 Does the inspector have discretion to choose enforcement options?

Enforcement options are in the competence of the inspector. However it is a question of imposing a fine or ordering to decrease power it has to be done by a formal decision of the regulatory body. Decisions of the regulatory body are signed by the department's general manager

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

The powers of inspector and his competencies are described in § 31 of our Atomic Act (act no. 541/2004 Coll.).

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Regulatory body starts its enforcement process in the form of administrative proceedings. Inspector is usually a part of this proceeding. Either he participates upon the request of the person in charge of the proceeding or he is directly in charge of the proceeding.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Most of the guidance for the inspector regarding the enforcement process is given in our enforcement procedure which states whether or not an enforcement process should be started and in the general inspection procedure which states when a protocol shall be issued. Also the procedure on evaluation of nuclear safety might present some guidance. Otherwise the decision on enforcement actions is formulated in accordance with the Atomic act and relevant Decrees. Enforcement actions are also presented to the licensee who has the opportunity to give comments and objections.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

The consistency in enforcement process is in the responsibility of division directors and the department's general manager, since the department general manager is the one who represents the office if enforcement actions are undertaken.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Inspectors undergo training in administrative procedures, technical training on their respective field of activity in specialized facility and other training that ensures that they are competent to impose enforcement actions

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The licensee will inform the regulatory body in writing on fulfilment of any action given to him by the regulatory body (whether they were given to him as part of an enforcement process or as an request does not matter). The specific division director under whose competence the matter falls will designate any follow-up issues from an inspection to the inspector who performed the inspection they resulted from. This is also the case for verifying the fulfilment of any corrective measures. Then it is up to the inspector and his division director to evaluate the licensee's actions. Recently there is also an electronic database of inspection findings and corrective measures. This database notifies the inspector who enforced the corrective measure on the date when the corrective measure should be fulfilled.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

SLOVENIA

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

Inspections are carried out in accordance to yearly based and approved inspection plan which includes announced, unannounced and reactive types of inspection review. All safety areas are included into inspection plan.

All findings, non-conformances or violations found during inspection process should be described in inspection report. All of this can be starting point for the enforcement.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

SNSA inspectors are well qualified, trained and experienced and usually are capable to find out by themselves if finding is of serious safety significance or it is not in compliance with Technical Specifications, Legislation, regulations or procedures. But to accept final decision on the seriousness of the findings we usually practice meeting within special SNSA expert group. In case of minor non conformances Remedial actions are required by the inspector and they are written in the inspection report together with deadlines.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

In accordance to Slovenian legislation (Inspection Act, Minor Offences Act, Ionising Radiation Protection and Nuclear Safety Act) inspector theoretically does have no limitation in his authority and he is independent in his decisions. However, as it is mentioned in answer 1.2 in more serious enforcement team work is practiced.

2.2 Does the inspector have discretion to choose enforcement options?

Yes. Graded approach is required and used. If an inspector determines that warning is sufficient measure that non-conformance will not be repeated, he usually uses this option.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Directly by legislative power:

Ionising Radiation Protection and Nuclear Safety Act

Inspection Act

Minor Offences Act

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspector shell include all findings, non-conformances or violations found during inspection in inspection report.

In case of minor non conformances Remedial actions are required by the inspector and they are written in the inspection report together with deadlines.

When serious non-conformances or violations are found needed RB actions are discussed within SNSA expert group. Inspector is a team member.

If necessary, regulatory body issues a decree with requirements for corrective actions and due times or other possible enforcement actions (warnings, ordering measures to fix deviations, penalties, revoke of authorization, stopping of activities, and suspension of operation). This regulatory process is led by the inspector in accordance to Inspection Act, Minor Offences Act and Ionising Radiation Protection and Nuclear Safety Act.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

SNSA inspectors use provisions included in already listed legislation and some guidelines in the SNSA inspection manual and the SNSA inspection rules of procedure.

In the present practice the SNSA avoids using rigorous enforcing actions in the case of the NPP. Direction of the SNSA management is to convince licensees on professional basis to act in compliance with the legislation, standards and good practices.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

All inspectors are well qualified, trained and experienced in the field of nuclear technology and legislation. They are familiar with guidelines in SNSA inspection manual and the SNSA inspection rules of procedure. As it was already mentioned, in case of serious non-compliance or violations RB actions are discussed within SNSA expert group and management.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Yes. Inspectors are trained and must pass a special state examination in the field of Inspection Act, Minor Offences Act and Ionising Radiation Protection and Nuclear Safety Act. Periodically refreshing trainings are conducted.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The licensee is required to send to inspector in due time reports on implemented actions. Inspector reviews them and he has possibility to require some additional explanations, requires improvement of already implemented actions or close regulatory requirement.

If there are still important unresolved questions or the licensee even delays in implementation of required corrective actions follow-up inspection is conducted.

The SNSA developed its own commitment tracking system InfoSNSA which contains full scope inspection reports since 2000 together with inspection requirements and due dates.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Fukushima accident and RB enforcement process.

SPAIN

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

A deviation or finding that has been found by the inspector who performs the inspection, if the non-compliance is a requirement requested by law or mandatory regulation it could be end in a legal infringement

Only when the inspection has identified a finding safety significant is issued a specific report (inspection report) of the inspection with all the necessary justification explaining the findings and its classification, otherwise, a written document named "act" (affidavit) is made for each inspection and signed by inspectors. These documents are sent to licensees in two weeks for comments and licensees have to return the reports and comments if any in two more weeks. The inspectors have to analyze the licensee comments and write a paper with their position about them.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

Only when the inspection has identified a finding safety significant is issued a specific report (inspection report) of the inspection with all the necessary justification explaining the findings and its classification, otherwise, a written document named "act" (affidavit) is made for each inspection and signed by inspectors.

The initial proposals are made from inspectors and then, a management procedure about how to proceed has been established in the CSN.

As it is mentioned above if the inspector believes the non-compliance is a required by law or mandatory regulation it could be end in a legal infringement subject to civil penalties.

Inspectors may propose an initial degree of significance, by performing deterministic assessment or, in case of possibility to evaluate risk significance by probability assessment, through the significance determination process based in the Probabilistic Risk Assessments (PRAs) of each nuclear installation.

There is a procedure that assign a colour to the findings based in its safety significance in order to include the finding in a matrix which confer a graded enforcement. Therefor in this case the inspector only participate in the first steps of the process.

In general, enforcement activities are carried out from headquarters staff, following inspection findings, according with an action matrix, which establishes the reaction of the regulatory body depending on the safety significance of the findings.

Findings that are evaluated as having very low safety significance are normally addressed by the licensee.

When the events may constitute an infraction classed as minor, the Nuclear Safety Council may, alternatively to the proposal for opening disciplinary proceedings, warn the licensee of the facility and demand the appropriate corrective measures be taken, provided people or the environment are not directly harmed and the circumstances of the case so advise it. In the event said demand is not met, the Nuclear Safety Council may impose coercive fines for a sum that shall amount to, the first time, 10%, and, the second and successive times, 20% of the average value of the sanctions that it would be appropriate to impose, in its intermediate degree, in order to obtain the cessation of the active or omissive conducts that are the object of the demand.

Finally, and regardless of the sanctions that might be imposed on the licensee, the Nuclear Safety Council may admonish in writing those individuals who, due to gross negligence, are responsible for the execution of a bad practice from which the material execution of the events susceptible of sanction has stemmed.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

The inspectors participate in the process of enforcement reporting to his hierarchical chain the potential infringements detected during their inspection activities, after that it is a process developed by the management of headquarters

2.2 Does the inspector have discretion to choose enforcement options?

No. The inspector only can make an initial proposal in order to the safety significance of the finding.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

By LAW, (Regulations governing nuclear and radioactive installations):

The personnel of the Nuclear Safety Council appointed to perform inspections and checks of nuclear and radioactive installations shall be considered agents of the authority in everything relating to the performance of their mission.

In manifestly dangerous situations, the Nuclear Safety Council or its inspectors may demand the immediate cessation of the works, of the operation of the facility or of the activity. Likewise, in exceptional or emergency situations that might affect nuclear safety or radiation protection, the Nuclear Safety Council or its inspectors may demand the immediate cessation of the operation of the facilities, equipment, companies or activities that are not subject to the authorisation system of the nuclear legislation, adopting as many preventive or corrective measures are necessary.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspectors may propose an initial degree of significance, by deterministic assessment or, in case of risk significance through the significance determination process based in the Probabilistic Risk Assessments (PRAs).

Later on the inspector is called to explain his inspection finding to the committee that judge the importance of the non-compliance

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Inspectors may consult several inspection procedures which inform about the enforcement process.

Additionally there are some procedures with specific guidance and examples (i.e., PG.IV.03 and PG.IV.05) to help the inspector to classify a finding as a violation/infringement.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

There is an oversight through the hierarchical chain.

The main part of the enforcement process is carry out by a fix committee composed by CSN managers.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

No, but take into account the answer to previous question 2.5. (It is included in the inspection training and procedures)

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Inspectors are responsible for verifying the correct application of corrective actions.

Inspectors has to review the allegations of licensees if a enforcement procedure has been opened

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

SWEDEN

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a willful violation, etc.)?

Observations are made in a report for example in an inspection- or review report. (If there are some kind of event of significance RB have the possibility to do a fast information gathering or investigation, but still the observations are documented in a report.) From these observations the RB decide if there are violations against our regulations and decide about enforcement.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

It's in the inspector role to evaluate the safety significance in the reports she is responsible for and leave this as a recommendation to be approved by RB management. The inspector is usually part of an inspection team, and as a participant she is a part of the evaluation.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Inspectors have the authority to stop an activity on the site if there is an immediate safety issue, but the decision will be confirmed by RB management afterwards.

2.2 Does the inspector have discretion to choose enforcement options?

Reports and decisions have to be approved by RB management. The inspectors leave a recommendation.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

The RB is given enforcement power directly by law. Inspector has the enforcement power indirectly by the internal RB management system.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The inspector has the responsibility for handling the errand until the errand is closed.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

There are instructions that guide the inspector in how to evaluate the safety significance, assess the compliance with regulations and choose appropriate enforcement.

2.6 How does the RB ensure consistency in the inspectors' behavior in the enforcement processes?

By instructions and group discussions in the inspection team. Reports and decision go through consultation and approves by RB management. Education in procedures and the role of an inspector along with on the job training are provided by the RB.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Education in procedures and the role of an inspector along with on the job training are provided by the RB.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

It's the inspector's responsibility to follow up the decisions she is responsible for. If there were minor remarks the inspector can follow up the remark the next time she review the inspected scope. The inspector can hand over the responsibility and the follow up to another inspector for example if the follow up will be going on for a long period of time.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

SWITZERLAND

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

All kinds of deviations from the applicable requirements are starting points for the enforcement process. According to article 22 of the nuclear energy act the licence holder is responsible for the safety of the installation and its operation. Therefore the first step is to check whether measures already taken or planned by the licence holder are sufficient to restore compliance with the applicable requirements. If not, enforcement by the RB will take place.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

An initial evaluation of the safety significance is always performed by the inspector. Issues of low safety significance are definitively rated in the inspection report. Issues of higher significance are treated as events, including a thorough evaluation of the safety significance by a team of specialists.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Inspectors are not empowered to impose fines, to withdraw a licence or to trigger a prosecution in courts directly. On the spot enforcement by inspectors is limited to urgent cases requiring immediate action to prevent significant deviations from nuclear safety.

2.2 Does the inspector have discretion to choose enforcement options?

Art. 5 clause 2 of the Federal Constitution states: State activities must be conducted in the public interest and be proportionate to the ends sought. Inspectors have to choose the option suitable to reach the safety goal with the least impact. Giving advice is possible if a finding does not necessitate formal enforcement.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Art. 72 clause 2 and clause 3 of the Nuclear Energy Act give the enforcement power to the RB. Internal processes define the exertion of the enforcement power.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

After the fact-finding inspectors evaluate the need of enforcement. If no further analysis is necessary they define measures to restore compliance with the requirements. All inspections are terminated by a debriefing. Possible measures already taken or planned by the licence holder will be discussed. The licence holder has the opportunity to comment measures defined by the inspectors (right to be heard). If further analysis of the findings or additional activities of the RB are necessary, participation of the inspectors is determined from case to case.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

The general frame of enforcement is given by process "enforcement" of the management system. Ordering of measures and (triggering) prosecution are the main topics. Implementation of measures by the licence holder is tracked in a database. Specific guidance for inspectors is included in the process "inspection".

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Initial training and quality assurance of the inspection reports by the section head ensure consistency. If systematic problems would arise, they would be included in the refresher training and guidance in the management system would be adapted.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Enforcement is a topic of the initial training of inspectors. Case examples illustrate how to act in different situations.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The role of the inspectors is determined from case to case. Measures concerning other fields than the main focus of the inspection will be followed by the responsible section, e.g. an inspection of technical topics triggers measures in the field of human factors.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

Limit of the inspectors' authority with regard to on the spot enforcement.

UNITED KINGDOM

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The starting point for the enforcement process is the discovery of a non-compliance with legal requirements. The discovery may be made as a result of routine planned inspection, a review of compliance with requirements of the safety case, following the investigation into a site event, or other regulatory interaction.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

The inspector is expected to use regulatory judgement to determine the seriousness of the non-compliance, as an initial screen. If the matter is significant then formal evaluation is undertaken using a risk based approach (Enforcement Management Model, EMM – see below).

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Once a potential non-compliance with legal requirements has been identified, the inspector is required to determine the appropriate regulatory response. Verbal advice and routine written communications are drafted and issued by the inspector. Where the matter is significant (i.e. likely to require substantial cost and effort by the licensee to resolve; or involve the use of formal regulatory powers), then the ONR takes a corporate approach and management endorsement of action proposed by the inspector is required.

2.2 Does the inspector have discretion to choose enforcement options?

Inspectors are required to follow the ONR enforcement policy, which sets out the principles inspectors should apply when determining what enforcement action to take.

(http://www.onr.org.uk/documents/2014/enforcement-policy-statement.pdf).

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Inspectors are appointed (via a warrant) under Acts of Parliament with a wide range of legal powers, including: power of entry, power to require information and documents, power to issue legally binding enforcement notices for prohibition or improvement.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

The inspector leads the process.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

Guidance is provided on the choice of enforcement options via the Enforcement Management Model, EMM. This is a logical system which helps inspectors to make enforcement decisions in line with the Enforcement Policy Statement. The EMM requires the inspector to first determine the 'risk gap' between observed performance and the actual level of compliance achieved. Tables are provided to indicate the initial enforcement expectation, which may be varied depending on licensee performance and strategic factors. Guidance is provided on investigation methods (including gathering evidence) and the use of regulatory powers, such as enforcement notices.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

Via the Enforcement Policy, EMM and management oversight.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Legal training is provided to inspectors on the use of regulatory powers, investigation, gathering evidence, etc. The training is mandatory and must be successfully completed before a warrant is issued (enabling the use of legal powers).

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

The inspector is responsible for managing the follow-up and close-out of all regulatory actions on the site(s) they are responsible for. The ONR has a database of all regulatory issues which is used for tracking them through to resolution.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?

No specific issues.

UNITED STATES

1. INSPECTORS' ROLE IN EVALUATING THE SAFETY SIGNIFICANCE OF FINDINGS

1.1 What is the starting point for the enforcement process in regulatory inspections conducted by the inspector (e.g. a finding, a non-compliance, a violation, a wilful violation, etc.)?

The enforcement process begins with the identification of violations, either through NRC inspections or investigations, or through a licensee report, or by substantiation of an allegation.

1.2 What is the inspectors' role in evaluating the safety significance of the finding, non-compliance or any violation mentioned above?

After a violation is identified, the inspector will initially evaluate its severity or significance (both actual and potential). All violations require management review and approval prior to issuance.

2. INSPECTORS' ROLE IN THE ENFORCEMENT PROCESS

2.1 With respect to the graded enforcement options of the RB listed in foreword, what is the limit of the inspectors' authority?

Inspectors identify and assess the severity level of violations; however, all violations require management review and approval prior to issuance.

2.2 Does the inspector have discretion to choose enforcement options?

Enforcement discretion cannot be granted by an inspector. It can only be granted after coordination with the Office of Enforcement and management review and approval.

2.3 How is the enforcement power given to inspector? (i.e. directly by legislative power; indirectly by Internal RB processes; etc.)

Enforcement power is not given to an individual inspector as all violations require management review and approval prior to issuance.

The NRC derives its principal authority to license and regulate the civilian use of nuclear materials from two statutes: (1) the Atomic Energy Act (AEA) of 1954, as amended, which provides broad authority to license and regulate the civilian use of nuclear materials, and (2) the Energy Reorganization Act (ERA) of 1974, as amended, which established the Agency and its major offices.

The NRC's enforcement program is governed by its regulations. Title 10 of the Code of Federal Regulations (10 CFR) Part 2, "Rules of Practice for Domestic Licensing Proceedings and

Issuance of Orders," Subpart B, "Procedure for Imposing Requirements by Order, or for Modification, Suspension, or Revocation of a License, or for Imposing Civil Penalties," describes the formal procedures that the NRC uses to implement its enforcement authority.

2.4 How does the inspector participate in the enforcement process of the RB once it has started?

Inspectors identify violations, assess the severity or significance of violations in conjunction with NRC management, and disposition violations by documenting them in inspection reports that are approved by NRC management and the Office of Enforcement as necessary.

2.5 Is there any written guidance for the inspectors concerning the RBs enforcement processes? Please describe briefly what kind of guidance or technical tools are available to the inspectors.

The written guidance is provided in NRC Enforcement Policy and the NRC Enforcement Manual.

2.6 How does the RB ensure consistency in the inspectors' behaviour in the enforcement processes?

The NRC conducts internal audits of enforcement actions and provides management oversight to ensure consistency. Escalated enforcement actions receive a greater level of NRC management review and approval prior to issuance to ensure consistency.

2.7 Are the inspectors specifically trained in the topic of enforcement? (If yes, please describe briefly.)

Yes, Inspection Manual Chapter 1245, Qualification Program for New and Operating Reactor Programs, contains training on enforcement.

3. INSPECTORS' ROLE IN THE FOLLOW-UP ON THE LICENSEE`S RESPONSE, E.G. VERIFYING CLOSURE/FULFILLMENT OF LICENSEES ACTIONS

3.1 Please describe briefly inspectors' role.

Inspectors verify the adequacy of licensee's corrective actions taken as a result of enforcement actions.

4. WHAT ISSUE WOULD YOU LIKE TO DISCUSS DURING THE WORKSHOP?