



**EU-27 Regulators' Peer Review
to the effectiveness of
STUK's regulatory infrastructure for waste safety**

Plan and invitation to participate

**2.-6.11.2009
STUK, Helsinki**

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1. Introduction

The safety of spent fuel managements and safety of radioactive waste management have been intensively developed in Finland over the past years. Most of the activities, resources, progress and substantial results were related to the regulatory control and implementation of the spent fuel final disposal project.

The project has proceeded as planned with major developments, good progress and substantial results. The construction of the underground rock characterisation facility, ONKALO, which is foreseen to be used as a part of the repository, started in July 2004. As of 9.2.2009, the access tunnel excavation has progressed to the length of 3376 m and to the depth of 319 m. Also, two ventilation shafts were constructed to the depth of 290 m. Despite of the complexity of the work and challenges involved, no unexpected delays or problems have been encountered.

Posiva, the company responsible for the spent fuel disposal project, continued to expand and strengthen its activities and resources. Progress has been achieved in the areas of site studies; features, events, processes (FEPs); evolution studies (climate, site, and repository); scenarios; engineered barrier system (copper canister, bentonite buffer); radionuclide transport; biosphere; safety assessment and the safety case methodology. Posiva has continuously submitted large number of RD&D and construction documents and materials to STUK for regulatory review.

STUK re-organized and expanded its staff and operations in response to the progress of the disposal project and expanding operations of Posiva in constructing the first phase of the repository, "ONKALO" and in preparing to review the disposal facility (encapsulation facility and repository) construction license application expected to be submitted in 2012. In particular, STUK developed and started implementing a new regulatory approach for inspecting ONKALO and Posiva's safety case activities. STUK's inspection program for Onkalo utilizes a graded approach based on safety importance of the repository's structures, systems and components.

The Finnish nuclear legislation and regulatory guidance have also been developed further. This work takes into account international guidance such as IAEA safety standards.

VTT Technical Research Centre of Finland continued to support effectively the regulatory body in safety assessment work, providing safety analysis capabilities and tools e.g. via the regulatory research programmes, and performing reviews of safety analyses.

Regulatory effectiveness faces challenges, mainly related to keeping up with the timely construction progress made. R&D-programs have a challenge to produce results which are related to Olkiluoto-site, EBS and safety case and are needed to justify the construction licence application planned to be submitted 2012. Posiva and STUK invest in their processes and resources to ensure that all safety related regulatory and implementation tasks are correctly scheduled and of high quality.

Other challenges to STUK's regulatory effectiveness in the waste safety are include:

- The retirement of post-war large age groups will affect public administration throughout, including STUK. The above activities require additional manpower and efforts from the nuclear power utilities and waste management company Posiva and regulatory body for strengthening their actives.
- Communication will become an increasingly important success factor for STUK, Posiva and power companies. Interest in radiation and nuclear safety topics will continue to increase. The media plays an important role in communication.

2. Motivation: Why this peer review and who should benefit from it?

International cooperation and transparency belong to the cornerstones of the development of the national solutions for spent fuel and waste safety

in Finland. In addition to active participation in international and bilateral forums (IAEA, EU, WENRA, OECD/NEA), foreign consultants continued to participate both in regulatory reviews and Posiva's development work.

This peer review is intended to strengthen and enhance the effectiveness STUK's regulatory infrastructure in waste safety¹. This is to be accomplished with consideration of regulatory technical and policy issues and with comparisons against IAEA safety standards and where appropriate, good practices elsewhere in EU-27.

Other aims/objectives of the PeR are to provide two way learning process in improving WS; the reviewers and STUK will benefit from peer discussions, views, advice, etc.

- improve WS related quality management system at STUK and peer regulators
- to identify opportunities for improvement,
- identifying successful strategies that can be shared with other EU Member States
- improve self-harmonization in the regulatory area of WS
- increase transparency and openness in WS in EU.

It is emphasized that this peer review is not an inspection. The peer review provides a useful and cost-effective way for improving regulatory effectiveness and cooperation. All participating regulators are expected to demonstrate an attitude of openness, constructive challenge and a genuine commitment to make improvements as recommended by peers. The key goal for each Party in this peer review is to collect as many useful ideas and lessons as possible for further WS enhancements. Where as the Joint Convention process reviews WS on broad terms, this PeR goes in details of the aspects identified in the section 4 "Scope of Mission".

Therefore, all EU-27 Member States and the Commission should benefit from participating in the Per.

3. Time and Places

The peer review will take place at STUK Headquarters (Laippatie 4, Helsinki, Finland) from 2.-6.11.2009 including a visit to Olkiluoto repository construction site (ONKALO). Representatives from the Ministry of Employment and Economy (MEE) and State Research Centre VTT will be available to be interviewed.

4. Scope of Mission

¹ for reason of practicality, the acronym WS -"Waste Safety" - is used in this report for "improving spent fuel and radioactive waste management"

Main focus of the PeR will be targeted to STUK's regulatory effectiveness concerning the spent fuel final disposal project. This includes funding scheme. Minor part will be targeted to the LILW issues. NORMS and decommissioning activities are excluded.

The basic criteria and framework for the review are those of the IAEA. Namely, the IAEA has established fundamental safety principles that provide the basis for the IAEA safety standards and its safety related programmes. The IAEA Safety Standards Series publication "Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety, Safety: Requirements", No. GS-R-1 (2000) provides for requirements for legal and governmental infrastructures to fulfil its regulatory functions. Other documents such as WS requirements (WS-R-1, -2, -3 and 4) provide additional the requirements and guidance for an appropriate legal and governmental infrastructure in WS. Naturally, these criteria are meant to guide and support the PeR, but all other useful and value add views, observations and comments are welcomed.

The review is structured in eight modules and mainly based on GS-R-1. The PeR consists of the following modules:

Common Requirements:

- Legislative and governmental responsibilities (*national legislative and administrative structure*); responsibilities and Responsibilities and function of the regulatory body (*regulatory organizational structure and independence*) (module 1)
- Organization of the Regulatory Body (*staffing and training, advisory bodies, national coordination and international cooperation*) (module 2).

Activities of the regulatory body:

- Authorization process and requirements on the applicant(s)/licensee(s) (module 3);
- Review and Assessment procedures (module 4);
- Inspection and Enforcement (module 5);
- Development and implementation of regulations and guidance (module 6);
- Management system of the regulatory body (module 7).

Stake-holder relationships:

- Stake-holder relationships and public involvement (module 8)

Annex 1 indicates applicable review criteria per each of the modules to be reviewed.

5. Methodology

5.1 Initial agreement

STUK has taken the decision to carry out this PeR 12.1.2009 and agreed upon it with the Ministry of Health and Social Affairs.

5.2 Preparatory Phase

5.2.1 Resource Plan

The PeR Mission is open for all EU-27 countries to participate on the principal one participant from each country. Each participating regulatory organization carries its travel, accommodation and other costs. There will be no conference type of fees.

STUK will cover costs of

- site visit to Olkiluoto site,
- material preparations,
- meeting rooms.

The review work will happen in small groups (each group dealing with one or more modules) and each group will have a STUK counterpart and necessary experts to discuss and support the PeR work.

The final report will be published by STUK on its expense.

5.3 Pre-Mission Phase

5.3.1 Recruitment of the peer review team

STUK will invite PeR Team leader and open one slot for participation in the PeR Team to each EU-27 Member State nuclear and radiation safety regulator. The first announcement and call for participation will be made through ENSREG and WENRA. Since the PeR is of safety technical nature, regulatory peers having such competences are expected to participate.

Once STUK has received contacts of potential team members, STUK will contact them in order to provide background material and other instructions.

5.3.2 Team Members Instructions

Review tasks and responsibilities will be discussed and assigned to team members (see modules above; reviewers are divided into small groups and each group is then assigned one or modules to review).

5.3.3 Background Information Provided to Team Members

STUK will provide background information to the team members. The initial documentation to be sent well in advance of the mission includes:

- this document;
- relevant information related to regulatory technical and policy issues of STUK in waste safety area;

- Finland's advance reference material on waste safety;
- IAEA Safety Standards that are relevant to the PeR;
- STUK's self-assessment results regarding waste safety;
- other selected STUK's regulatory documents.

The working language, including materials to be sent, is English.

5.4 Conduct of the Mission

5.4.1 Team Briefing

When all the team members have arrived in the host country, they will meet to discuss the specifics of the mission and the methodology for the review and the evaluation. It is very important that all team members have a common understanding of the background, context and objectives of the Peer Review (PR). The PR Team Leader will remind the team of the need to finish and agree on the report before the end of the mission. Team members may also report their first impression on the advance reference material.

5.4.2 Entrance Meeting

It is recommended to hold an entrance meeting with senior officials from the host country. At such a meeting, both sides are expected to mention their primary objectives for the PR. The PR Team Leader should provide a brief outline of the plan, approach and expectations for the PR, highlighting the fact that it is not intended as an inspection, but will be conducted in cooperation with the host country's organizations.

5.4.3 Daily Meetings

At the end of each day, the team should meet and discuss the main observations of the day.

The following agenda is suggested:

- summarize the day's key observations by each member;
- share insights and observations regarding the implications of the identified regulatory technical and policy issues to the technical review area;
- identify gaps, overlaps and areas where the information gathered that day is not clear;
- identify any inconsistencies between the information gathered that day and information provided earlier;
- analyse the observations and highlight significant concerns or positive features; these may form the basis for recommendations, suggestions or good practices;
- identify issues which need to be brought to the attention of the whole team, especially those that have a bearing on the remainder of the PR;
- identify any matters that the PR Team Leader needs to refer to the host country's contact person; and

- determine the status of each team member's written input to the draft PR report.

5.4.4 Meetings for Analysis of Observations and Report Drafting

At the earliest practical opportunity, the PR Team Leader should hold a team meeting to discuss and formulate the team's agreed conclusions, and identify potential recommendations, suggestions and good practices (based on analysis of team's observations).

Each team member should make preliminary evaluations for those areas of the PR for which he/she has been assigned, and aim to gain an adequate understanding and share information in other relevant review areas

When discussing each team member's input, the PR Team Leader should ensure team agreement on the broad conclusions and recommendations, suggestions and good practices to the host country

When a team member's results are agreed upon by the team, the PR Team Leader, should solicit the team member's written input to the PR report and begin formulating the PR report.

5.5 Exit Meeting

The PR mission concludes with an exit meeting. This consists of a presentation by the team of the main results, followed by a discussion with the key representatives from the host country on possible ways to resolve the issues that are raised.

The PR Team Leader summarizes the main results of the mission. The PR team members provide a brief verbal report of the results in their own subject review areas.

The PR report is published by STUK in STUK's report series.

5.6 Peer Review Process

5.6.1 Review of Written Material (including information additional to the advance reference material)

The review of the written material takes place in two stages. Prior to the start of the mission the reviewers are expected to read through the information provided by the STUK as part of the background information. Throughout the mission itself additional material in the form of regulatory body documents, presentations and examples of their work will be reviewed. This information should be reviewed and taken into consideration when the reviewer is analysing and formulating conclusions, recommendations, suggestions, and good practices.

5.6.2 Interviews

It is expected that during the interviews the reviewers will use the initial regulatory policy issues and the PR Questionnaire as a guide to ensure a complete and systematic review of the subject area. In line with the review of the relevant written material, the interviews with the counterparts and other personnel should be linked to assessing aspects of the STUK's self-assessment.

5.6.3 Site visit

A following visit will be organized:

- site visit to the Olkiluoto site (to "ONKALO" construction site)

The main purpose of the visit is obtaining insights and information related to regulatory technical and policy issues and verifying the regulatory body's functions. Direct observation of regulatory activities are complementary to the review of written material and the interviews. The observation of activities should cover regulatory technical and policy issues, safety practices, use of procedures, drawings and instructions, regular and specific reporting and quality control measures in use, and should include a review of key elements for regulatory policy issues, safety assessments and management control of work.

From these observations, the reviewer will form a view of:

- how regulatory technical and policy issues are or are not being addressed;
- how the regulatory and administrative procedures are put into effect at the point of work;
- the technical knowledge and skills of the regulatory staff;
- the attitude, morale and safety culture of the regulatory staff;
- their commitment to safety objectives;
- the effectiveness of the regulatory staff in influencing and enhancing nuclear, radiation, radioactive waste and transport safety and security of radioactive sources;
- the formal traceability of safety assessments and the decision making process.
- whether there is need to make a recommendation or suggestion supported by the observations made.

Team members are accompanied by STUK counterpart to facilitate the meeting.

5.7 Review report and Conclusions

During the latter part of the mission, the PR Team Leader with the support of the STUK Team Coordinator compile a PR report based on input from the PR team to capture the results of the review of STUK's regulatory infrastructure and any regulatory technical and policy issues. The counterparts are invited to comment on this report during the mission

to ensure technical accuracy and clarity of understanding of the results reported.

Upon receipt of any comments from STUK, the PR Team Leader in conjunction with the STUK Team Coordinator will produce the final PR report. STUK will publish this report in its formal STUK-Report series.

To the extent possible, observations should be objective and supported by the evidence. Conclusions are based on evaluations of the evidence, in particular, comparisons of observed regulatory practices with review criteria presented in Annex 1. They identify strengths, areas for improvement and inconsistencies.

Conclusions logically form the basis for development of recommendations, suggestions and good practice statements.

5.7.1 Recommendations

Recommendations are necessary for those parts of the system being assessed that are identified as being likely to have a detrimental impact on nuclear, radiation, radioactive waste and security. Recommendations should be specific, realistic and designed to result in tangible improvements and must have a basis in Agency standards. The PR report must indicate the basis for each recommendation.

5.7.2 Suggestions

A suggestion either is an additional proposal in conjunction with a recommendation or may stand on its own following a discussion of the associated background. It may indirectly contribute to improvements in national regulatory arrangements but it is primarily intended to address regulatory technical and policy issues, to make the regulatory body's performance more effective, to indicate useful expansions of existing programmes and to point out possibly superior alternatives to current work. In general it should stimulate the regulatory body's management and staff to consider ways and means of addressing regulatory technical and policy issues and enhancing performance.

5.7.3 Good Practice

A good practice is an indication of an outstanding organization, arrangement, program or performance, superior to those observed elsewhere. Good practices that address regulatory technical and policy issues should contribute to the sharing of experience and exchange of lessons learned on an EU basis.

5.8 Action Plan

STUK will develop an Action Plan to address the recommendations, suggestions, and other findings of the PeR report.

6. Additional Information, registration

For additional information, please contact

- Kaisa-Leena Hurti, Peer Review Coordinator, STUK
kaisa-leena.hutri@stuk.fi, tel +358 9 75 9881

To register, please send an e-mail as early as possible and not later than by 15.9.2009 indicating willingness to participate to

- wastep eerreview@stuk.fi

ANNEX 1

INDICATIVE REVIEW CRITERIA*General*

The main review criteria are those presented in the following IAEA safety standards relevant to the regulator in the area of waste safety

- IAEA's Safety Requirement GS-R-1 (The Management System for Facilities and Activities with supplementary requirements by STUK)
- IAEA's Safety Guide GS-G-3.1 Application of the Management System for Facilities and Activities
- WS-R-1;
- WS-R-2
- GS-R-3
- IAEA Safety Standard GS-G-1.1 on organization and staffing of the regulatory body for nuclear facilities

The criteria are meant to guide the peer discussions and review and not to intended to be used in a prescriptive or strict way. Also, any good practice, all useful and value add views, observations and comments from EU-27 regulatory colleagues are welcomed.

Criteria for each module

Legislative and governmental responsibilities (module 1) and Organization of the Regulatory Body (*staffing and training, advisory bodies, national coordination and international cooperation*) (module 2)

National plan

GS-R-1 § 3.4; WS-R-2 § 5.3, 5.5

Waste acceptance criteria

WS-R-1 § 5.1-5.12; WS-R-2 §5.31-5.32

Waste classification

WS-R-2 § 3.5

*National inventory**Disposal*

WS-R-1; DS354

Independence of the regulator

IAEA Safety Standard GS-G-1.1 on organization and staffing of the regulatory body for nuclear facilities

Authorization process and requirements on the applicant(s)/licensee(s) (module 3)

WASTE FACILITIES (*excluded from the scope are discharges, decommissioning, chronic exposure & remediation*)

Predisposal Management and Storage of Radioactive Waste

GS-R-1 5.1, 5.3, 6.8, 6.9;
WS-R-2 2.1-5.30

Disposal

GS-R-1 §5.3, 5.4, 5.5, 5.7, 5.9;
WS-R-1 2.1-2.12

Review and Assessment procedures (module 4);

Predisposal Management & Storage of Radioactive Waste

WS-R-2 2.1-3.16; 7.2-7.5

Disposal

WS-R-1 3.8-3.11

Inspection and Enforcement (module 5);

4.3.2. Inspection

GS-R-1-1 §5.14, §5.15, §5.16, §5.17

4.3.3 Enforcement

GS-R-1 §5.18- §5.23

Development and implementation of regulations and guidance (module 6);

GS-R-1 Sections §5.25- 5.28

Waste facilities

GS-R-1 §5.25; WS-R-1; WS-R-2; WS-R-3

Radiation Protection

GS-R-1 §5.25, 5.26, 5.27; SS115 I

General safety provisions

GS-R-1 §5.25, 5.26, 5.27; SS115 2.23-2.26; Schedule II, App I.III; WS-R-2, 5.5-5.8, 2.2-2.7, 3.5, 5.15; WS-R-1 4.1-4.9

Clearance and recycling

WS-R-2, §3.8, 3.17, 5.8, 5.9

Disposal

§5.25, 5.26, 5.27; WS-R-1 2.1-2.10

Management system of the regulatory body (module 7)

GS-R-1: §1.4, § 2.1, §2.2, §2.3, §2.4, §2.5, §2.8, §3.1, §3.2, §3.4, §3.7, §3.8 -§3.11, §3.12, §4.3, §4.4, §4.5, §5.1- §5.10, §5.12, §5.14, §5.17, §5.18, §5.21 - 22, §5.23 - 25, §5.26, §5.27, 6.1 - §6.16, §6.17 , §6.18,

GS-R-3

Stake-holder relationship, public involvement (module 8)

Information and communication GS-R-1 3.3 (6)