



INSC Project MC3.01/13

EC Contract N° NSI/2014/343-969

“Training and Tutoring for experts of the NRAs and their TSOs for developing or strengthening their regulatory and technical capabilities”

TASK 2

Tutoring Module

on

“Management of Spent Fuel and Radioactive Waste”

April 25th – May 20th, 2016

TÜV SÜD ET – Germany

Tutoring Programme

draft

March 2016



**INSC Project MC3.01/13
EC Contract N° NSI/2014/343-969**

TASK 2

“Management of Spent Fuel and Radioactive Waste”

Duration: 1 month - April 25th – May 20th, 2015

Venue: TÜV SÜD ET - Germany

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The tutoring activity has been conceived as “on the job training” at TÜV SÜD ET – Germany in the area of Management of Spent Fuel and Radioactive Waste.

It will contribute to a real and practical “build-up” of knowledge allowing a sustainable transfer of approaches and methods.

Tutoring objective and expected achievements

The key aspects of Nuclear fuel management at a NPP and processes for RW management (classification, treatment, conditioning, storage, disposal), which are the main objectives of this tutoring, will be presented.

Tutoring content:

The tutoring course (1 month organized for 2 tutees) is a back to back to a one week training on the same topic.

It will cover the key aspects of Nuclear fuel management at a NPP and processes for RW management (classification, treatment, conditioning, storage, disposal). The course illustrate elaboration of policy and strategies for SNF and RW management, development plans, funding requirements, technological processes and phases of decommissioning activity of NF.

Direct evidence of regulatory review function, and technical support, during the licensing process, on-site visits. Familiarization with regulatory requirements, applicable standards and international binding legal instruments is foreseen.

The tutoring will include:

- Familiarization with regulatory requirements, applicable standards and international binding legal instruments
- Elaboration of policy and strategies for SNF and RW management
- Funding requirements, technological processes and phases of decommissioning activity of NF Content of SAR and PSA
- Familiarization with regulatory review function
- Onsite visits will be organized as far as possible.
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Achievement

Consolidate knowledge of management activity of RW and SNF, related policy and strategy and international legal binding instruments. Familiarization with the regulatory evaluation, control and oversight.

WEEKLY PROGRAM

Technical area & Presentation	Tutors
Part I – Management, Segregation, Treatment, Conditioning and storage of radioactive waste	
Identify and summarize relevant IAEA Safety Standards, IAEA Safety Guides and IAEA auxiliary documents	Dr. Stefan Kirsch, Jörg Fitting, Jérôme Lucas and as backup Helmut Huger
Identify and summarize relevant NEA documents	
Compare selected IAEA & NEA standards and proposed methods with standards and methods of the own country	
Summarize methods and technologies seen on onsite visits. Compare them with methods and technologies of the own country	
Practical Work: Prepare a Power-Point presentation presenting the results of the tasks mentioned above	
Part II – Clearance measurements in Germany according to paragraph 29, Radiation Protection Ordinance	
Identify and summarize the principle for clearance in the German Radiation Protection Ordinance	Dr. Florian Lietzmann and as backup Helmut Huger
Compare the different measurement techniques for clearance measurements	
Participate in clearance measurements on-site (if possible)/Leakage Testing	
Perform evaluation of clearance measurements according to national standards and compare those with the methods of the own country	
Practical Work: Prepare Powerpoint presentation, measurements in laboratory, on-site visits	
Part III – Facilities for treatment, conditioning and interim storage of radioactive waste	
Internet search on origin of home country specific radioactive waste.	Fabian Engeser, Dr. Bauerfeind, Dr. Bastian Schulz and as backup Helmut Huger
Internet search on management of home country specific radioactive waste in association with applicable regulations.	
Comparison of home country regulations with the “ESK guidelines for the storage of radioactive waste with negligible heat generation” of the German Nuclear Waste Management Commission (ESK)	
Role-play: Planning of a radioactive waste storage from the perspective of an operator versus preparation and evaluation of an assessment of the operator’s planning work from the regulator body’s perspective.	
Role-play: Planning of a radioactive waste treatment facility from the perspective of an operator versus preparation and evaluation of an assessment of the operator’s planning work from the regulator body’s perspective.	
Part IV – Handling of fissile material – criticality safety – Handling of high level liquid waste - vitrification	
Criticality Safety: Critical Experiments, Available Codes, Validation and Verification -	Andreas Verst, Jörg

Liquid Solutions of fissile material, fuel assemblies and spent nuclear fuel	Fitting and as backup
Practical Work: Internet research on critical experiments, computer codes for criticality safety analysis and their validation and verification, documentation of results.	Helmut Huger
Practical Work: Calculations based on data from literature concerning criticality safety for liquid solutions of fissile material, fuel pin arrays and models for spent fuel.	
Identify and summarize different vitrification methods and technologies.	

At the end of the Tutoring Module the Tutees will elaborate a common Report containing the following:

- **INTRODUCTION**
- **TUTORING OBJECTIVE**
- **TUTORING PROGRAM**
- **ACTIVITIES PERFORMED**
- **MAIN RESULTS**
- **CONCLUSIONS**

The Tutees Report will be agreed with the main tutoring coordinator.
