



<b>Project</b>	<b>INSC Project MC3.01/13</b>
<b>Title</b>	<b>Training and Tutoring for experts of the National Regulatory Authorities and their Technical Support Organisations for developing or strengthening their regulatory and technical capabilities</b>
<b>Contract</b>	<b>N° NSI/2014/343-969 (between the EC and ITER-Consult)</b>
<b>Subject</b>	<b>Sub-Task 2.1: Trainings</b>

### **Sub-Task 2.1: Trainings - EU Dedicated Training Course**

**"Management of Spent Fuel and Radioactive Waste"**

**Mannheim (Germany) - April 18 - 22, 2016**

#### **Minutes**

- **Objective of the Training**
- **Synthesis of the training activity**
- **Conclusions**
- **Annexes**

**Objective of the Training** - The objective of the dedicated training was to provide a comprehensive presentation and discussion of :

- activities for management of spent nuclear fuel (SF) and radioactive waste (RW) and related safety aspects from regulatory point of view,
- national and international safety standards concerning management of spent nuclear fuel (SF) and radioactive waste (RW),
- transfer EU and international approaches and know how in management of spent nuclear fuel (SF) and radioactive waste (RW) and regulatory role;

The participants, a group 16 trainees, were from 10 Partner Countries, namely: Armenia (2), Belarus (1), Brazil (1), Malaysia (2), Mexico (1), Nigeria (2), South Africa (2), Thailand (1), Ukraine (2) and Vietnam (2).

The training was carried out according to the attached program (Annex 1). The daily list of participants is also attached (Annex 2).

**Synthesis of the training activity** - The training was opened by the TPL (Mr. Madonna/ITER) followed by a warm welcome from Mr. Huger, TÜV SÜD ET. Mr. Madonna presented the objective of the training and the program underlining the importance to conduct the training activity in an interactive way in order to ensure the best transfer of knowledge and good practices. He anticipated to the trainees that for this purpose in the program two afternoons are dedicated to practical applications and one hand-on exercise is foreseen too.

The training activity started with an introduction on the role of the nuclear regulatory authority for nuclear safety and related licensing activities. The EU framework in the field of nuclear and radiation safety was presented and discussed.

In particular the following topics were introduced, explained and discussed:

- Regulator's role and functions
- Introduction to European Union policy for SF & RW management
- Type and generation of RW
- Classification of RW
- Fuel cycle for NPP and SF management
- IAEA Safety Standards and Security Guidelines
- EU requirements (Directives, ENSREG and WENRA) and best practices
- National rules and regulations for SF & RW
- Hands-on training on dose calculation, shielding law, exposition time and measurement equipment
- RW management facilities, and safety requirements, for sorting, treatment, conditioning
- Safety Design basics for RW facilities and examples
- Technologies for handling and conditioning of radioactive waste and safety requirements
- Technologies for handling of SF and current options for storage and related safety issues
- Regulatory control and licensing in relation to decommissioning and waste management
- Design basis and safety requirements for RW storage (LILW and HLW)
- Disposal of radioactive waste (according to specific safety requirements of IAEA)
- RW Repositories worldwide today
- Transportation of radioactive waste
- Licensing of RW near surface disposal facility
- Public communication in relation to RW management and disposal



The specific lectures, according to the program, were given by experts from ITER and TÜV SÜD ET involving 15 different lecturers for a total of 22 lectures, two practical applications and one hands-on exercise.

Each lecture was followed by a discussion with the trainees answering their questions and providing additional clarifications.

Each day was concluded with a summary of the activity performed and related key aspects.

By the end of the training a summary of the training week was presented by the Training Coordinator, Mr. L. Holt, TÜV SÜD ET.

A detailed multiple-choice questionnaire consisting of questions recalling the main concepts from the training week was prepared by the lecturers and submitted to the trainees. The Questionnaire is anonymous even if the trainees are encouraged to put down their names. The questionnaire approach has the objective to evaluate the level of comprehension of the transferred knowledge.

The trainees' opinions were collected by the end of the training. Their feedback is important as it serves as a basis for the future training activity improvement.

The training was closed with a certificates awarding ceremony.

**Conclusions** - The training activity was carried out covering in detail, with effective examples and experiences the topics related to the activities for management of spent nuclear fuel (SF) and radioactive waste (RW) and related safety aspects from regulatory point of view, national and international safety standards, international approaches and know how.

The team of attending trainees (16 people from NRAs and TSOs of 10 partner countries:

Armenia (2), Belarus (1), Brazil (1), Malaysia (2), Mexico (1), Nigeria (2), South Africa (2), Thailand (1), Ukraine (2) and Vietnam (2) has shown to be very motivated and interactive. They have expressed their appreciation and satisfaction for the organization, for the program of the training and for the content of the lectures.

They enjoyed the practical side of the training week organised as hands on exercise and practical applications.

The material of the training has been provided to the trainees in electronic and paper copy.

## ANNEXES

- Annex 1 Training Program
- Annex 2 List of participants
- Annex 3 List of lectures/presentations

Mannheim, 22.04.2016

A. Madonna (TPL)

L. Holt (Course Coordinator)

Trainee	Organiz.& Country	Signature
Ms. Satine VARDANYAN	ANRA/Armenia	
Mr. Nairi BAGHDASARYAN	NRSC/Armenia	
Ms. Alina RYLKOVA	Gosatomnadzor/ Belarus	
Ms. Vera Lucia CAVALCANTE	CNEN/Brasil	
Mr. Raja Mohd Hairi Shanaz R SHARIN	AELB/Malaysia	
Ms. Sofia Aida NGAH	AELB/Malaysia	
Mr. Roberto Alejandro SUAREZ ALVARADO	CNSNS/Mexico	
Mr. Faruk Yartsakuwa DALHATU	NNRA/Nigeria	
Ms. Zainab Abdullahi OSOBA	NNRA/Nigeria	



Trainee	Organiz.& Country	Signature
Mr. Teboho Cyprian MOTSWARE	NNR/South Africa	
Mr. Tebatso Gaven MADISHA	NNR/South Africa	
Mr. Todsadol SANTAWAMAITRE	OAP/Thailand	
Ms. Svitlana NEMTSOVA	SNRIU/Ukraine	
Mr. Oleksandr SOLOVIOV	SNRIU/Ukraine	
Ms. Thi Thanh Nga NGUYEN	VARANS/Vietnam	
Mr. Quoc Hoai TRUONG	VARANS/Vietnam	