



Independent Technical Evaluation and Review



EC DEVCO

INSC PROGRAM

INSC PROJECT - MC.03/10:

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

LOT 1

Financed by EC INSC Annual Action Program 2010

ITER/News July 2013

GENERAL INFORMATION

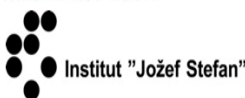
The consortium made of **ITER-Consult** "Independent Technical Evaluation and review" of Italy; **BNRA** - Bulgarian Nuclear Regulatory Agency; **ISPRA** - Italian Nuclear Regulatory Authority; **JSI** - Jožef Stefan Institute of Slovenia; **NRG** - Nuclear Research & Consultancy Group of The Netherlands; **SCK·CEN** - Studiecentrumvoor Kernenergie of Belgium; **SNSA** - Slovenian Nuclear Safety Administration; **STUK** - Nuclear Regulatory Authority of Finland constitutes the **Project Team** led by ITER-Consult in charge to implement the Project LOT1.



BNRA



SNSA



become reasonably self-sufficient in terms of management and technical capacity.

Specific objectives:

The specific objectives consist in enhancing the capability of NRA's staff, and of their supporting TSOs, to conduct independent in depth assessment and review of safety cases, to conduct inspections, to issue regulations and guides and to manage the authorization process and related decision making. These specific objectives are ensured by the programming and implementation of training and tutoring (T&T) activities based on the needs of the partner countries.

Expected results:

- Training and Tutoring (T&T) of staff of Nuclear Regulatory Authorities including their TSO;
- Developing a toolkit of training modules on the aspects of Nuclear and Radiation Safety;
- Promoting cooperation of Nuclear Regulatory Authorities between the EU and partner countries by exchange of experience;

Project wider objective:

The main objective is the enhancement of capacities of Nuclear Regulatory Authorities (NRA) of the Partner Countries, including their Technical Support Organizations (TSO), in order to allow the NRAs to

Project duration: 36 months starting from December 28, 2011,

MANAGEMENT

The management of the project carried out during the first half of the project, regarding the external relations, has dealt with the coordination of the interfaces with the EC Project Manager and the cooperation with the partner countries through the beneficiary organizations.

Regarding the internal activity it has dealt with: the coordination of the participating organizations; the coordination of the project tasks and their interfaces; the planning and schedule for implementation of the T&T activity; the monitoring of the progress of activity and the assessment of the results.

Moreover the project management has been responsible to: prepare and issue reports, monitor the quality of task output, ensure the interface with the T&T Committee, ensure the administrative management of the project, provide support for travel, visa arrangement and logistic of the trainees from the partner countries.

Some milestones:

- The contract between ITER and the EC was signed on December 28, 2011.
- A pre-inception meeting, among EC PM and the consultants for LOT 1 and LOT 2, took place in Brussels on January 16, 2012.
- The inception meeting took place in Brussels (EC DEVCO) on February 24, 2012
- The first progress meeting was held in Rome on July the 3rd 2012
- The list of 12 Training Courses, to be offered to the PCs, with a summary description of the content was defined early at start of the project.
- The list of 6 Tutoring Courses with description of the content to be proposed to the PCs was elaborated early at the start of the project. Contacts established with hosting regulators to organize and implement them
- The complete set of National Training Plan (11 countries initially plus other 4 later) has been elaborated, endorsed by the PCs and submitted to the EC Project Manager (EC-PM) as agreed during the Inception Meeting. Continuous updating is ensured.
- A dedicated website was created and made accessible through an EC link. The website is constantly updated in parallel with the organization and implementation of the training and tutoring courses.
- Administrative orders were issued by EC for approval of Non-Key-Experts (about 80 senior experts) from all partners of the project team.
- The Task 1 Report, first issued in September 2012, has been revised in June 2013;
- The second progress meeting was held in Paris on February 14, 2013

- The Task 3 activity has been carried out for each T&T course with drafting of evaluation reports;
- Progress reports have been issued every six months together with financial deliverables,
- The third progress meeting is scheduled for July 17, 2013 in Brussels;



IMPLEMENTATION

In the first half (18 months) of the project duration about 2/3 of the overall project T&T activity has been implemented.

This activity started soon after the Inception Meeting by developing the National Training Plans of the Partner Countries and continued with the development of detailed training/tutoring programs, their organization, implementation and evaluation.



Eight training courses have been implemented since the beginning for an overall duration of **9 weeks**. Six of them developed as "dedicated" and only two adopted as "existing".

The training courses included the first "*regional*" course of the EC Project, organized in cooperation with ANNuR and carried out in Hammamet (Tunisia) in April 2013 with the participation of 26 trainees..

Up to now a total number of **98 trainees** have been involved in the training activity coming from NRA/TSO of the following Partner Countries:

- | | |
|--------------|-----------------|
| 1. Armenia | 7. Malaysia |
| 2. Belarus | 8. Mexico |
| 3. Brazil | 9. Morocco |
| 4. Egypt | 10. Nigeria |
| 5. Indonesia | 11. Philippines |
| 6. Jordan | 12. Ukraine |

In the regional course in Hammamet “non-partner countries” members of ANNuR network were included: Libya (3 trainees), Mauritania (3 trainees), Sudan (4 trainees), Tunisia (3 trainees), Yemen (4 trainees).

Six tutoring courses were carried out at NRAs/ TSOs headquarters in EU (ISPRA/ITER, SNSA/JSI, STUK, SCK-CEN) for an overall duration of 11 months. Two selected staff from the PCs participated in each tutoring course for a total of **12 persons** coming from NRA of Ukraine, Brazil, Vietnam, Mexico, Armenia, Belorussia, Jordan and Malaysia.

A **total of 22 man-month** of tutoring activity has been implemented up to now.

for the **next semester** are planned four training weeks and five tutoring months.

From the Consultant side **about 80 senior experts** belonging to the organization of our project team (NRAs, TSOs and research institutes) have contributed to the activity performed.

ITER

Antonio Madonna, KE
 Marco Gasparini, KE
 Giampiero Orsini
 Rino Caporali
 Giuseppe Pino
 Katia Slavcheva
 Fausto Zambardi
 Vittorio Lucarelli
 Miroslav Gregoric
 Josef Misak
 Michele Laraia
 Ivo Tripputi
 Luis Valencia
 Lorenzo Antola
 Davide Mazzini

BNRA

Latchesar Kostov
 Nikolay Vlahov
 Marina Nizamska
 Alexey Alexiev
 Krassimir Avdjiev
 Svetla Kazakova

JSI

Matjaž Leskovar
 Andrej Prošek
 Andrija Volkanovski
 Rado Istenič
 Igor Jenčič
 Matjaž Koželj
 Tomaž Skobe
 Marko Čepin
 Leon Cizelj
 Ivo Kljenak
 Andrej Trkov
 Marjan Kromar
 Igor Lengar
 Luka Snoj
 Ivan Vrbanic
 Ivica Basic
 Mitja Kožuh

STUK

Janne Nevalainen
 Kirsi Alm-Lyzt
 Ilari Aro

Krassimir Grozdanov
 Lidia Katzarska

ISPRA

Chiara Bolognini
 Nadia Cipriani
 Mario Dionisi
 Marco Gervasi
 Giuseppe Maresca
 Carmelina Salierno
 Sandro Trivelloni
 Roberto Ranieri
 Solaria Venga

SCK-CEN

Johan Camps
 Tanja Perko
 Catrinel Turcanu
 Geert Olyslaegers
 Philippe Antoine
 Anne Laure Lebacqz
 Klaas Van Der Meer
 Luc Holmstock
 Nijs Robby

Hannele Aaltonen
 Marc Cederberg
 Ari Julin
 Lasse Kuosa
 Tapani Virolainen
 Risto Sairanen
 Anne Weltner

SNSA

Milorad Dusic
 Helena Janžekovič
 Michel Cindro
 Andreja Peršič
 Darja Slokan-Dušič
 Marjan Tkavc
 Andrej Stritar
 Igor Grlicarev
 Cimeša Siniša
 Djordje Vojnovič
 Matjaž Podjavoršek
 Tomaž Nemec
 Lovinčič Davor

NRG

C.M.. Ackerman
 J.L. Brinkman

HAVE ACQUIRED

KNOWLEDGE WITH

HONORS

Place Date Duration	Training Course on: “NPP siting regulatory requirements and licensing”
ITER Rome 1W July 2012	Mr. Gagik Manoyan (ANRA) ARMENIA Ms. Tatyana Bosenko (Gosatomnadzor) BELARUS Mr. Anatolii Dolotov (SNRIU) UKRAINE Ms. Soheir El-Hemamy (Egyptian NRA) EGYPT Mr. Muath Saadeh (JNRC) JORDAN Ms. Thi Dung Bui (VARANS) VIETNAM Mr. Manh Nguyen Tien (VARANS) VIETNAM Ms. Noraini Razali (AELB) MALAYSIA Mr. Pablo Ruiz López (CNSNS) MEXICO Ms. Patrícia Almeida (CNEN) BRAZIL Mr. Carl M. Nohay (PNRI) PHILIPPINES



Place Date Duration	Training Course on: “ Safety and regulation of nuclear power plants - Regulatory project management for a new build ”
STUK Helsinki 1W September 2012	Mr. Vladimir Pryazhko (Gosatomnadzor) BELARUS Mr. Zaitsau Siarhei (Gosatomnadzor) BELARUS Mr. Duong Quoc Hung (VARANS) VIETNAM Mr. Nam HaiLuu (VARANS) VIETNAM Mr. Pham Thanh Trung (VARANS) VIETNAM



Place Date Duration	Training Course on: “ Safety evaluation for Radioactive Waste and Decommissioning ”
ITER Rome 2W Sept. 2012	Ms. Nelli Aghajanyan (ANRA) ARMENIA Mr. Karen Haroyan (ANRA) ARMENIA Mr. Nikolai Mikhailov (Gosatomnadzor) BELARUS Ms. Iryna Forostenko (SNRIU) UKRAINE Mr. Tenglyu Lin (AELB) MALAYSIA Mr. Lai TienThinh (VARANS) VIETNAM Mr. Mohamed Abdel Geleel (NCNSRC) EGYPT Ms. Selma Parente de Jesus (CNEN) BRAZIL

Mr. Nerbe José Ruperti Júnior (CNEN) BRAZIL Ms. Mary Rose Mundo (PNRI – NRD) PHILIPPINES Ms. X. Nohpal Jiménez (CNSNS) MEXICO Mr. R. Fabian Ortega (CNSNS) MEXICO
--



Place Date Duration	Training Course on: “ Design safety and safety evaluation for NPP – SAR ”
SNSA & JSI Ljubljana 1W November 2012	Mr. Levon Hovhannisyan (ANRA) ARMENIA Mr. Aliaksandr Prykhodzka (Gosatomnadzor) BELARUS Ms. Sviatlana Kachan (BNTU) BELARUS Mr. Kostiantyn Zapisotskyi (SNRIU) UKRAINE Mr. Iurii Chepurnyi (SNRIU) UKRAINE Mr. Ridha Roslan (AELB) MALAYSIA Ms. Thi Loan Nguyen (VARANS) VIETNAM Mr. Ahmed Sayed Ahmed Khedr (NCNSRC) EGYPT Mr. Muath Darwish Saadeh (JNRC) JORDAN Mr. Richard Brandão Vital (CNEN) BRAZIL Mr. João de Deus Pinheiro Fiho (CNEN) BRAZIL Mr. Luis A. Domínguez (CNSNS) MEXICO Mr. Abdul Qohhar Prasetyo (BAPETEN) INDONESIA



Place Date Duration	Training Course on: “Radiation Protection and regulatory emergency preparedness”
SCK-CEN Mol 1W March 2013	Ms. Lusine Poghosyan (NRSC) ARMENIA Ms. Liudmila Vasileuskaya (Gosatmnadzor) BELARUS Ms. Nataliya Bizhko (SNRIU) UKRAINE Mr. Nik Mohd Faiz Khairudiin (AELB) MALAYSIA Mr. Nabil Dahbi (CNESTEN) MOROCCO Mr. Duong Hong Nhat (VARANS) VIETNAM Mr. Abou Bakr Ramadan Ahmed (ENRRA) EGYPT Mr. Amer Ghugeh (JNRC) JORDAN Mr. EssaKhalaf Alkhalaylah (JNRC) JORDAN Ms. Laura Alice Ribeiro (CNEN) BRAZIL Mr. Richard Brandão Vital (CNEN) BRAZIL Ms. Cecilia de Vera (PNRI) PHILIPPINES Mr. Edgar Christian Arriola (CNSNS) MEXICO Ms. Dwi Angestiningih (BAPETEN) INDONESIA

	LYBIA Mohamed Lafdhal (ARSN) MAURITANIA Ishagh Moussa (ARSN) MAURITANIA Ali Hussein Jawad (Min. Sc. Tech.) IRAQ Aseel Naim Abu-Al-Jadayel (Min. Elect.) JORDAN Anas Zuhair Kokash (JAEC) JORDAN Kamal Mohammad (JAEC) JORDAN Awatif Elaydaros Salih (Min. Water Res. And Elect.) SUDAN Mubarak Al-Motasam Mustafa (Min. Water Res. and Elect.) SUDAN Abdalla Siddig Abdallah (SNRRA) SUDAN Abdelgadir Eltayeb Abdelgadir (SNRRA) SUDAN Riahi Adel (CNSTN) TUNISIA Dridi Walid (CNSTN) TUNISIA Mohamed Ben Abdallah (CNSTN) TUNISIA Basheer Mansour Abdulmoiz (NAEC) YEMEN Wleed M. Shamsan (NAEC) YEMEN Samah Mohammed Al-Akwaa (NAEC) YEMEN Abdulmoin Al-Asbahi (NAEC) YEMEN Nassiba Mazar (CNESTEN) Morocco
--	--



Place Date Duration	Regional Training Course on: “Legal & regulatory framework, regulatory role and functions, licensing process and basic safety requirements for NPP”
ANNuR Hammamet 1W April 2013	Elsayed Salem Hanafy (ENRRA) EGYPT Wesam Zakaria Awwad Ibrahim (ENRRA) EGYPT Moussa Othman (ENRRA) EGYPT Mohamed Ahmed (ENRRA) EGYPT Mustafa Ali Ben Ghzail (LNRO) LYBIA Tofigh Mhamed Masaud (LNRO) LYBIA Mahmoud AboubakerLaga (LNRO)



Place Date Duration	Training Course on: “Review and inspection of I&C systems”
STUK Helsinki 1W April 2013	Mr. Levon Hovhanissyan (ANRA) ARMENIA Mr. Pham Thanh Trung (VARANS) VIETNAM Mr. Truong Cong Thang (VARANS) VIETNAM Mr. Joao Lima do Nascimento (CNEN) BRAZIL



Place Date Duration	Tutoring Course on: “Inspection and regulatory project management for a new build”
STUK Helsinki /1M Sept- Oct. 2012	Mr. Zaitsau Siarhei (Gosatomnadzor) BELARUS Mr. Duong Quoc Hung (VARANS) VIETNAM

Place Date Duration	Training Course on: “Requirements and safety evaluation of PSA for NPP”
SNSA & JSI Ljubljana 1W May 2013	Mr. Gurgen Kanetsyan (NRSC) ARMENIA Mr. Philip Speransky (Gosatomnadzor) BELARUS Mr. Kostiantyn Zapisotskyi (SNRIU) UKRAINE Ms. Thi Loan Nguyen (VARANS) VIETNAM Mr. A.Sayed Ahmed Khedr (ENRRA) EGYPT Mr. Morad Hamad (JNRC) JORDAN Ms. S. Maria Orlando Gibelli (CNEN) BRAZIL Mr. Marcos Eduardo Nunes (CNEN) BRAZIL Ms. Iris Juarez (CNSNS) MEXICO Mr. Eko H. Riyadi (BAPETEN) INDONESIA Ms. Maryem El Kiram (Ministry of EMWE) MOROCCO Mr. Abdellaziz Hajjani (Ministry of EMWE) MOROCCO



Place Date Duration	Tutoring Course on: "Regulatory licensing and oversight of RW & decommissioning activities of NPP and other NF"
ISPRA & ITER Rome/2M Oct.-Nov. 2012	Ms. Iryna Forostenko (SNRIU) UKRAINE Ms. Xaman Nohpal Jiménez (CNSNS) MEXICO

Place Date Duration	Tutoring Course on: "Objective, requirements, methodology & regulatory use of PSA"
SNSA& JSI Ljubljana/2M May – July '13	Mr. Morad Hamad (JNRC) JORDAN Ms. Thi Loan Nguyen (VARANS) VIETNAM

Place Date Duration	Tutoring Course on: "Regulatory review and oversight of NPP during operation"
SNSA Ljubljana/2M Nov. - Jan. 2013	Mr. Paulo Adriano da Silva (CNEN) BRAZIL Mr. L. Antonio Domínguez (CNSNS) MEXICO



Place Date Duration	Tutoring Course on: "Regulatory licensing and oversight of RW & decommissioning activities of NPP and other NF"
ISPRA& ITER Rome/2M June – July '13	Mr. Nikolai Mikhailov (Gosatombnadzor) BELARUS Mr. Halim Abdul Rahman (AELB) MALAYSIA

Place Date Duration	Tutoring Course on: "Radiation protection and regulatory emergency"
SCK-CEN Mol /2M March - May'13	Mr. Amer Ghugeh (JNRC) JORDAN Ms. Lusine Poghosyan (NRSC) ARMENIA



ACHIEVING EFFECTIVENESS

The constant relation of the Consultant with the PC's to collect their requests, to provide prompt communication about the planned T&T courses and contents, to select the trainees and consider their needs has shown to be a key aspect for the successful implementation of the project.

The second important factor is the extensive experience of our project team having the possibility to rely on a significant number of NRA-TSO organizations and in particular on 4 Regulators contributing not only to the training but primarily to the tutoring activity with the unique know-how on regulatory licensing and inspections.



The feedback from Task 2 & Task 3 (assessment of courses results, final questionnaire, remarks and opinions collected from the trainees) confirms that:

A) Regarding organization and implementation:

- T&T courses for staff of NRA need to be developed mainly in a dedicated approach: it is hard to find trainings on the market meeting the specific needs of NRA and TSO;
- The training activity needs to be conducted by senior lecturers with long experience in NRA and TSO activity in particular for lectures on regulatory licensing and inspection activity;
- The T&T activity needs to maintain continuous focus on the role and responsibilities of the NRA paying attention to the organization, technical review and internal process of NRA;
- It is important to have in the project team sufficient human resources (and facilities) as Regulators and TSO to face the T&T needs and offer the best contents and services¹;
- It is useful to complement, whenever possible, training with tutoring.

B) Regarding the conduct of training, the importance of:

- Setting clearly goal and objective for T&T,
- Ensuring sufficient background and basic competence of the trainees,
- Adopting methods of delivery combining effectively content and process,
- Promoting continuous interaction with the trainees,
- Presenting and analyzing case studies,

¹ ITER Management express sincere acknowledgements to the project team partners (NRAs and TSOs) and their experts and consultants for their fundamental contribution and experience, the excellent competence, their availability and dedication. All that has allowed us to achieve the shown results.

- Promoting discussion and multilateral communication,
- Creating a positive atmosphere in which also the trainees take the responsibility for the training outcomes,
- Creation of working sub-groups for practical application,
- Performing the final evaluation at the end of the T&T courses,
- Feeding back the identified improvements,
- Complementing training with site visits.

The technical final questionnaires (40 - 60 questions submitted to the trainees at the end of each course) have provided indication of correct answers ranging as average between 70 and 89 per cent with constant increase in effectiveness.



The EU visibility has been constantly ensured in all performed T&T activity promoting and disseminating the EU legal framework for nuclear and radiation safety and presenting and discussing the EU safety objectives, requirements approaches and practices for regulatory and technical support functions.

Legenda:

- ANNuR = Arab Network of Nuclear Regulators
- NRA = Nuclear Regulatory Authority
- TSO = Technical Support Organization
- T&T = Training & Tutoring
- PC's = Partner Countries
- INSC = Instrument Nuclear Safety Cooperation
- EC PM = EC Project Manager

Prepared by: K. Slavcheva, I. Aro, L. Cizelj, I. Glicarev, N. Vlahov, R. Ranieri, M. Gasparini, A. Madonna.
Rome - July 2013

ITER-Consult: P.zza San Pietro 36, 00029 Vicovaro (RM)
Tel. +39 06 77072888; Fax +39 0623328132
e-mail: iter@iter-consult.it; www.iter-consult.it