



INSC Project MC.03/10

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

LOT 1

Tutoring Module N. 3

“Safety and oversight of Research Reactors”

September – November 2013
c/o JSI & SNSA Ljubljana Slovenia

Tutoring Program

August 2013



Tutoring Module

“Safety and oversight of Research Reactors”

The tutoring activity is conceived as “on the job training” at JSI and SNSA in the area of Safety and oversight of Research Reactors including:

- RR reactor safety conception
- RR SAR
- Regulatory licensing of RR
- Regulatory inspection of RR
- RR safe operation
- RR use for personnel training
- RR use in support to NPP
- Periodical safety review of RR
- Safety assessment, safety analysis
- Categorization of modifications
- PSA for RR
- RR operation and safe utilization
- Radiological monitoring
- Emergency preparedness
- Slovenian and international requirements

Objective of the tutoring will be to ensure an optimum of transfer of know-how and develop capability in understanding the operational and safety aspects of a RR, related safety and licensing requirements, content of SAR and regulatory oversight activity, use and application of RR.

The tutoring is covered by JSI and SNSA in a time period of 2 months.

During the tutoring activity the trainees will be asked to elaborate and report review analysis and prepare a final Tutoring report.

Tutoring Program

Programme at JSI
<p>1st Week</p> <ul style="list-style-type: none"> ▪ Introduction: <ul style="list-style-type: none"> ○ Introduce working place, documentation and equipment ○ Present tutoring program, work plan, goals of work and final report ▪ Review input data <ul style="list-style-type: none"> ○ Safety Analysis Report ○ Slovenian regulation ○ IAEA safety standards for RR
<p>2nd Week</p> <ul style="list-style-type: none"> ▪ RR operation and safe utilization (hands on) ▪ Safety assessment, safety analysis, categorisation of modifications (prepare Safety Analysis and Safety Evaluation Report for modification of control rod mechanisms and installation of water leakage detection system) ▪ Use of Graded approach in safety assessment of modifications ▪ Core analysis and instrumentation for Research Reactors (hands-on)
<p>3rd Week</p> <ul style="list-style-type: none"> ▪ Safety Classifications of SSC and requirements for redundancy, independence, diversity (practical work on safety classification of SSC for the TRIGA Mark II reactor) ▪ Help in performing Periodical safety review of RR
<p>4th Week</p> <ul style="list-style-type: none"> ▪ review of the work performed <ul style="list-style-type: none"> ○ safety assessment and categorization ○ safety classification of SSC ▪ write a report on the work performed
<p>5th Week</p> <ul style="list-style-type: none"> ▪ RR operation and safe utilization (hands on) role of RR to support NPP operation, training of personnel, etc. (TBC)

Programme at SNSA

1st Week

- Introduction of SNSA
 - * About SNSA and its organization,
- Slovenian legislation with emphasis on the RR
 - * Rules JV5 (Rules on radiation and nuclear safety factors)
 - * Rules JV9 (Rules on operational safety of radiation or nuclear facilities)
 - * Rules JV7 (Rules on radioactive waste and spent fuel management)
- Licensing process, basic licensing principles – for RR
 - * Basics of the licensing process including RR and comparison of requirements for RR and those for power reactors
- Safety Assessment and licensing decision
- PSA for RR and international missions

2nd Week

- Modifications (how to evaluate them, review of examples of some typical and some current modifications)
 - * Some examples of RR modifications, trainees will try to do review and evaluation by themselves
- SAR
 - * Legal requirements (structure and relevant chapters of SAR)
- Maintaining safety of RR in the future
 - * Future modifications
- Environmental monitoring around RR (requirements and results) including JV 10 (Rules on radioactivity monitoring)
- Fire Protection
- Radiation sources management (isotope production, samples)

3rd Week

- Inspection
 - * Inspection programme, methods, findings, reports evaluations, events – for RR
- Decommissioning
 - * Current decommissioning plan and its characteristics

4th Week

- Physical Protection
 - * Physical Protection Basics with application to RR
- Emergency Preparedness
- Licensing of Reactor Operators
