



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”

EU Training Course

“Nuclear power reactor technology and NPP safety from a regulatory perspective”

Mannheim - October 5 - 9, 2015

TÜV SÜD Energietechnik GmbH Baden-Württemberg
Dudenstr. 28, 68167 Mannheim, Germany

Course Objective

The training course will provide a presentation of the nuclear reactor technologies, NPP safety conception and related provisions to achieve high level safety.

The course will cover the conception of different reactor types, technological aspects, key safety objectives, principles and requirements to be implemented in the design and operation of NPP. Generation III and IV of NPP will be presented and discussed focusing on related provisions for nuclear and radiation safety issues including RW management. The course will provide detailed consideration of objectives and scope of deterministic safety analysis and probabilistic safety analysis highlighting the differences and the complementarities in the overall safety evaluation of the NPP from the licensee side and also from the regulatory side.

Design basis events (external and internal), Design Basis Accident, Design Extended Conditions (or BDBA) will be presented with focus on requirements for the analysis, requirements for radiological consequences calculations and how to report in the SAR for licensing purpose. Design provisions and accident management procedures to face severe accident conditions with damaged fuel in a NPP will be covered together with the importance of PSA to identify weaknesses in the design of a NPP.

Regulatory requirements and regulatory evaluation during the licensing process are introduced as well as public communication. Reference safety standards from EC, IAEA and relevant national standards will be presented and discussed.



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Course Daily Program

Monday, 5 October 2015	
08.30 - 09.00	Registration
9.00 – 12.45	Welcome, Organizational aspects, Training objective, Training program
	EU infrastructure for Nuclear and Radiation Safety - <i>A. Madonna, ITER</i>
	Role & Functions of the NRA - <i>A. Madonna, ITER</i>
12.45 – 13.45	Evolution of nuclear power generation and safety conception - <i>L. Holt, TÜV SÜD ET</i>
	Lunch
13.45 – 17.45	Different reactor types - <i>S. Özdür, TÜV SÜD ET</i>
	Generation III & IV Nuclear Reactors - <i>S. Özdür, TÜV SÜD ET</i>
	Basic safety approach, safety functions, safety SSC and defense in depth principle - <i>J. Venker, TÜV SÜD ET</i>

Tuesday, 6 October 2015	
9.00 – 12.45	BWR-PWR Definition of plant conditions (normal, abnormal accident) - <i>C. Janning, TÜV SÜD ET</i>
	Design basis accident for LWR (BWR, PWR) and radiological consequences - <i>J. Venker, TÜV SÜD ET</i>
	Safety classification and requirements for NPP SSC - <i>R. Seidler, TÜV SÜD ET</i>
12.45 – 13.45	Lunch
13.45 – 17.45	Practical Application Preparing a list of initiating events internal and external for a PWR NPP - <i>R. Seidler, TÜV SÜD ET</i>

Wednesday, 7 October 2015	
9.00 – 12.45	Licensing of a NPP and content of SAR at different stages - <i>C. Janning, TÜV SÜD ET</i>
	Deterministic safety analysis - <i>R. Hampel, TÜV SÜD ET</i>
	Probabilistic safety analysis and content of a PSA - <i>D. Baumann, TÜV SÜD ET</i>
12.45 – 13.45	Lunch
13.45 – 17.45	Practical Application Comparison of deterministic and probabilistic safety analysis - <i>R. Hampel, TÜV SÜD ET</i>

Thursday, 8 October 2015	
9.00 – 12.45	Reference Rules and Regulations for safety of NPP including IAEA Safety Standards and Security Guidelines - <i>S. Özdür, TÜV SÜD ET</i>
	EU requirements (Directives, ENSREG and WENRA) and best practices - <i>S. Özdür, TÜV SÜD ET</i>
	Design codes – principles, ASME, RCC-M and PNAE / GOST - <i>J. Bochert, TÜV SÜD ET</i>
12.45 – 13.45	Lunch
13.45 – 17.45	Severe accident in a LWR - <i>J. Venker, TÜV SÜD ET</i>
	Severe accident phenomenology in LWR (in vessel retention, core catcher & containment function) - <i>J. Venker, TÜV SÜD ET</i>
	Severe Accident Management guidelines (SAMGs) - <i>D. Baumann, TÜV SÜD ET</i>

Friday 9 October 2015	
9.00 – 12.45	Key issues of Design, Construction and operation of a NPP and safety culture - <i>D. Baumann, TÜV SÜD ET</i>
	The European stress test (after Fukushima accident) objective and results - <i>A. Stritar - SNSA</i>
	RW management and Decommissioning - <i>B. Schulz, TÜV SÜD ET</i>
12.45 – 13.45	Public information & communication - <i>K. Slavcheva, ITER</i>
13.45 – 17.45	Lunch <ul style="list-style-type: none"> - Course summary (TUV - ITER) - Questionnaire (ITER – TUV) - Opinion from trainees (ITER – TUV) - Training Minutes (ITER – TUV)