

Webinar Series on
**Training and Qualification
for Nuclear Facility Personnel**



09

Assuring the contractor's competence: Key stages in training and qualification programmes





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Assuring the contractor's competence: Key stages in training and qualification programmes



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Assuring the contractor's competence: Key stages in training and qualification programmes



Webinar Series on Training and Qualification for Nuclear Facility Personnel | IAEA





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Assuring the contractor's competence:

Key stages in training and qualification programmes



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Learning Objectives

After attending the webinar, the participants will be able to:

- Understand the approaches in assuring contractor's competence.
- Understand how to oversee the vendor supplied training and contractors learning management system.
- Explain the importance of evaluation of contractor's performance.
- Describe the challenges in contractor's training



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Assuring the contractor's competence:

Key stages in training and qualification programmes



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IT Guidelines

- Interactive live session
- Questions into CHAT
- Q&A Session
- Records available on Webinar page



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Assuring the contractor's competence:

Key stages in training and qualification programmes



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Today's Speakers



Tingkui Wang

Training Department
Deputy Director of
Tianwan NPP, China



Matjaž Žvar

Training Manager,
Krško NPP, Slovenia



**Heorhi (George)
Shpuntov**

Head of Training
Methodology Dept. in
TC of Belarus NPP



09

Assuring the contractor's competence:
Key stages in training and qualification programmes



Tingkui Wang

Training Department Deputy Director of Tianwan NPP

- Retired WANO-HKO staff member in Pre-startup PR program
- 25 years of experience in nuclear industry
 - Previously main control room shift supervisor of VVER reactor
 - Nuclear island system Commissioning engineer
 - Training Section Head in operations department
 - Technical program manager in WANO Hong Kong Office
 - Still works as Training Department Deputy director in Tianwan NPP
- Master Degree in International and Development Economics
- Bachelor degree in thermal steam turbine in Energy Engineering



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE

Wang Tingkui, Tianwan NPP, China



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



1. OVERVIEW

- MULTIPLE UNITS UNDER VARIOUS STAGE, LARGE NUMBER OF CONTRACTORS ON SITE
 - **6** units in commercial operation
 - **2** units under construction
 - DESALINATION PLANT under construction and commissioning
 - NUCLEAR STEAM SUPPLY PLANT nuclear steam for industrial heating
 - IN TOTAL,
 - Around **12,000** construction contractors in the peak time
 - About **6000** production services contractors
 - More than **150** contractor companies



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE

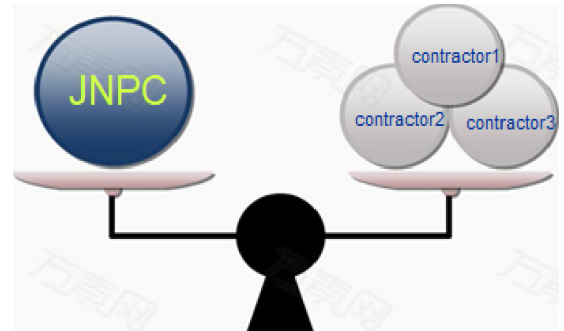
1. OVERVIEW

FACT: The number of contractors **outweighs** that of JNPC personnel.

LOGIC: The station overall performance heavily depends on contractors'.

QUESTION: How to secure contractors performance ?

- Selecting capable contractors
- Managing contractors performance
- Building contractors competence



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.1 Training analysis

2.2 Training design

2.3 Developing training materials

2.4 Carrying out the training plan

2.5 Assessing all the elements in the cycle



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE

2. SAT for contractor competence building

2.1 Training analysis

- Job analysis
- Task analysis
- Outcome ; knowledge and skills needed for the job



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

Main Factors to be considered when decide to outsource the business

- Lack of capability
- Lack of qualification
- Lack of access to core technology of some equipment or control systems
- Cost factor
- Lack of workforce
- The other approved factors



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.2 Training design

- Create Training objectives
- Determine Training setting
- Develop Test questions and pass criteria
- Minimum requirements for the trainees
- Develop Training program (courses list, training setting)

---- Some examples ----



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.2 Training design

EXAMPLE 1: Rad Prot & Professional Health Management

- ① solid rad waste management
- ② special laundry service
- ③ rad I&C meters maintenance and calibration
- ④ rad waste treatment **system's** operation
- ⑤ effluent monitoring
- ⑥ radiation protection



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



	Specialty	Post	Training course	Training hours	Training setting	Evaluation method	Refresher training frequency
1	Rad prot	Managers	Radiation safety and radiation protection optimization management	24	OJT	Written test	/
2			Radiation protection standards and procedures	24	Class room	Written test	2y
3	Rad prot	Work supervisor	Human error prevention tools for RP personnel	2	laboratory	Practice evaluation	2y
4			RP standards and procedures	24	Class room	Written test	2y
5			Radioactivity protection	24	Class room	Written test	2y
6			Radioactivity monitoring	24	Class room	Written test	2y
7			FME	2	Class room	Written test	2y
8			JNPC production maintenance record work instruction handbook	2	Class room	Written test	2y
9	RP (technical position)	team members	Human error prevention tools for RP personnel	2	laboratory	Practice evaluation	2y
11			RP standards and procedures	24	Class room	Written test	2y
12			Radioactivity protection	24	Class room	Written test	2y
13			Radioactivity monitoring	24	Class room	Written test	2y
14			FME	2	Class room	Written test	2y
15			shadow training on the position	150	OJT	oral test /practice eval	/

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.2 Training design

EXAMPLE 2: MAINTENANCE

- ① 4 Categories
- ② 3 Posts: work package preparator, work supervisor, team member
- ③ 53 specialties



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



Maintenance Contractor Qualification Requirement for His/Her Authorization

Category of authorization	Job authorization	Qualification requirements	Exam subjects	Exam score
category 1	category I maintenance work package preparator	category 1 authorization + 5 years of working experience in current specialty + technical college	maintenance work package preparation and management	above 90
	category I work supervisor (incl. high risk/radioactive)	category II worker supervisor authorized more than 1 year + 5 years of WE in current specialty	basic safety training	above 80
			special safety training for work supervisor	above 90
			high-radioactive risk activities	above 80
			generic job skills training	above 90
			special job skills for the post	above 90
			maintenance work report	above 90
	category I work supervisor	category II worker supervisor authorized more than 1 year + 5 years of WE in current specialty	basic safety training	above 80
			special safety training for work supervisor	above 90
			generic job skills training	above 90
special job skills for the post			above 90	
			maintenance work report	above 90

category I above 90, category II above 85, category III above 80, category IV above 80, managerial above 80

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



Generic Job Skills Training Courses for Maintenance Contractors

post	courses	training hours	training setting	eval methods	refresher training frequency
maintenance work package preparator	maintenance work package preparation and management	4	classroom	computer based test	2
work supervisor	human error prevention tools	4	classroom	computer based test	2
	FME	3	classroom	computer based test	2
	maintenance work process	3	classroom	computer based test	2
	maintenance workers code of conduct	4	classroom	computer based test	2
	maintenance work reprot	4	classroom	computer based test	2
team member	human error prevention tools	4	classroom	computer based test	2
	FME	3	classroom	computer based test	2
	maintenance work process	3	classroom	computer based test	2
	maintenance workers code of conduct	4	classroom	computer based test	2

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



Special Job Skills Training Courses for the Posts						
specialty	post	training courses	training hours	training setting	eval methods	certificate
container/ vessel	worker supervisor/te am member	container/vessel maintenance			computer based	
		theoretical training		2 classroom	test	
		skill training on flange tightening		1 laboratory	practice eval	
		human error prevention tools for static machine specialty		2 laboratory	practice eval	
piping/ valves	worker supervisor/te am member	skill training on flange tightening		1 laboratory	practice eval	
		human error prevention tools for static machine specialty		2 laboratory	practice eval	
		skill training on nuclear valves		2 classroom	computer based test	
		valves used in nuclear power plants		2 classroom	computer based test	
reactor	worker supervisor/te am member	basic knowledge on nuclear reactor		2 classroom	computer based test	
		human error prevention tools for static machine specialty		2 laboratory	practice eval	
sea water systems	worker supervisor/te am member	overhaul and maintenance of sea water system components and equipment		6 classroom	computer based test	
		human error prevention tools for static machine specialty		2 laboratory	practice eval	

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



53 Maintenance Specialties

serial number	specialty	serial number	specialty
1	container/vessel	28	fire protection system instrumentation
2	piping/valves	29	mechanical I&C
3	nuclear reactor	30	analytical instrumentation
4	sea water systems	31	BOP instrumentation
5	supports and suspensions	32	electrical instrumentation
6	electrical and I&C	33	MCDS instrumentation
7	man/equipment hatch	34	NFME
8	UJA water gates	35	control rods control and positioning system
9	water pumps	36	nuclear instrumentation
10	main steam turbine	37	TXS
11	ventilation and aux machinery	38	TXP
12	air conditioners	39	industrial computers
13	lifts and cranes	40	civil construction
14	elevators	41	scaffolding
15	high voltage electrical	42	thermal insulation
16	low voltage electrical	43	water draining/cleaning
17	motors	44	generic service management
18	relay protection	45	lifting and rigging
19	mechanical modification	46	machining
20	electrical modification	47	vehicle transportation
21	Thermodynamic instrumentation on CI	48	fuel handling
22	Thermodynamic instrumentation on NI	49	Fuel assembly
23	pneumatic valves	50	spent fuel
24	air conditioner I&C	51	welding
25	I&C modification	52	communication/announcement systems
26	radioactive instrumentation	53	physical security systems
27	diesel instrumentation		

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.3 Developing training materials

- Lesson plan
- Trial delivery
- training plan



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE

2. SAT for contractor competence building

2.3 Developing training materials

EXAMPLE 3: OPERATIONS

- ① BOP
- ② WATER PLANT
- ③ SEWAGE TREATMENT PLANT
- ④ DESALINATION PLANT
- ⑤ NUCLEAR STEAM SUPPLY PLANT



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



training plan for BOP contractors

JC-R2-11013/A

	training organizer	training course	training objectives	schedule	class hours	trainees	number of trainees	training setting	eval method	venue	instructor	training budget.
1	JS Office of Emergency Management	stage I water treatment	prerequisite for special operation certificate (initial tr)	3月1日	/	BOP master operational	5	classroom	computer based test	yancheng		
2	JS Office of Emergency Management	high voltage electrical	prerequisite for special operation certificate (re tr)	8月11日	/	BOP operational	2	classroom	computer based test	out of plant		
3	JS Office of Emergency Management	industrial boiler	prerequisite for special operation certificate (re tr)	1-6月	/	BOP operational	2	classroom	computer based test	out of plant		
4	JS Office of Emergency Management	hazardous chemicals	prerequisite for special operation certificate (re tr)	3-10月	/	BOP operational	5	classroom	computer based test	out of plant		
5	JS Office of Emergency Management	low voltage electrical	prerequisite for special operation certificate (initial tr)	5-8月	/	BOP operational	7	classroom	computer based test	out of plant		
26	JS Office of Emergency Management	high voltage electrical	prerequisite for special operation certificate (initial tr)	3月	/	water plant operational	1	online	computer based test	out of plant		
27	JS Office of Emergency Management	high voltage electrical	prerequisite for special operation certificate (re tr)	7月	/	water plant operational	1	online	computer based test	out of plant		
28	JS Office of Emergency Management	high voltage electrical	prerequisite for special operation certificate (re tr)	11月	/	water plant operational	6	online	computer based test	out of plant		
29	JS Office of Emergency Management	low voltage electrical	prerequisite for special operation certificate (initial tr)	3月	/	water plant operational	3	online	computer based test	out of plant		
30	JS Office of Emergency Management	low voltage electrical	prerequisite for special operation certificate (initial tr)	4月	/	water plant operational	3	online	computer based test	out of plant		

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



training plan for BOP contractors

JC-R2-11013/A

	training organizer	training course	training objectives	schedule d	class hours	trainees	number of trainees	training setting	eval method	venue	instructor	training budget.
6	BOP contractor	role and responsibilities of BOP operations/code of conduct	familiarize	7-8月	1	BOP operational	19	classroom	written	BOP		
7	BOP contractor	chemicals used in BOP operations	understand/apply	7-8月	1	BOP operational	19	classroom	written	BOP		
8	BOP contractor	BOP chemicals storage on site / interfaces between BOP and other disciplines	understand/apply	7-8月	1	BOP operational	19	classroom	written	BOP		
9	BOP contractor	BOP systems operation	mastery	7-8月	40	BOP operational	19	classroom	written	BOP		
10	BOP contractor	human error prevention tools	use of HU tools	7-8月	16	BOP operational	19	classroom	written	BOP		
11	BOP contractor	operators rounds system \ CR system、SAP	use of the management systems	7-8月	8	BOP operational	19	classroom	written	BOP		
12	BOP contractor	BOP operational managemet procedures	familiarize	7-8月	8	BOP operational	19	classroom	written	BOP		
13	BOP contractor	sewage treatment systems	improve system knowledge	1-2月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
16	BOP contractor	operational personnel code of conduct	regulate operational behaviours	5-6月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
17	BOP contractor	operational management procedures	labor discipline	6-7月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
18	BOP contractor	operators rounds system \ CR system、SAP	improve skills	7-8月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
19	BOP contractor	human error prevention tools	improve skills	9-10月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
20	BOP contractor	workplace and building management	improve skills	11-12月	8	sewage treatment plant operational	7	classroom	written	sewage treatment plant		
21	BOP contractor	roles and responsibilities of water plant operational	improve skills	7-9月	2	water plant operational	15	classroom	written	water plant		
22	BOP contractor	basic knowledge of water plant systems	improve skills	7-9月	8	water plant operational	15	classroom	written	water plant		

TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.4 Carrying out the training plan

- Part-time-job instructors (selection and authorization)
- Training facilities availability
- Trainees' Presence and absence control
- Evaluation after training
- Training records



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



2. SAT for contractor competence building

2.5 assessing

- Plant events/CR/PI
- Feedback from trainees/instructors/contractor users
- Training facilities
- Quality of Training program



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE

3. Typical SAT assessment results

- Monitoring and Evaluating contractors performance
 - Establish contractor performance indicators
 - Monthly evaluation and rating
 - Observation and coaching
 - Condition reports/human error events
- Human error risk increase
 - procedure use and adherence (experienced persons)
 - Fatigue which resulted from long work hours during outage
 - Mistakenly locate the target components (units)



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



3. Typical SAT assessment results

- Lack of skill training facilities
- Ineffective training courses equivalence (contractor persons from other sites)
- Repetitive general training courses
- Operating experience learning is overwhelming



TIANWAN'S PRACTICES IN ASSURING CONTRACTORS COMPETENCE



Thank you!





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Assuring the contractor's competence:

Key stages in training and qualification programmes



Matjaž Žvar

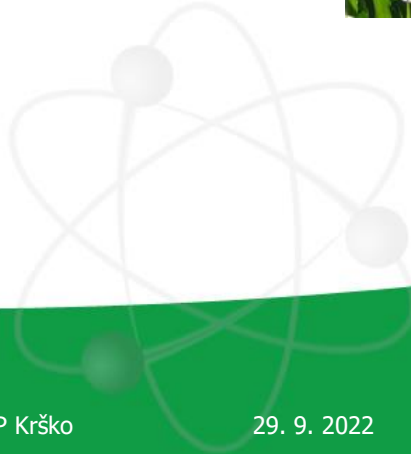


Head of training at NPP Krško

- Member of IAEA TWG in Managing Human Resources
- 26 years of experience in the nuclear industry
- 2 years in reactor operator initial training
- 3 years as a reactor operator and a shift foreman in the main control room
- 10 years as operations training supervisor
- 11 years as training manager
- Master Degree in Electrical Engineering



CONTRACTOR TRAINING & COMPETENCE ASSURANCE AT NPP KRŠKO





Content

1. Contractor training
2. Q&A



NPP Krško (Slovenia) in Brief



- Operator: **Krško Nuclear Power Plant**
- NSSS Supplier: **Westinghouse**
- Reactor Type: **PWR, 2-loop**
- Engineering: **Gilbert Architect Engineer**
- Construction Permit: **1975**
- First Criticality: **1981**
- Commercial Operation: **1983**
- Operating Life Time: **40+10+10+... years**
- No. of Employees: **~640**
- Gross Plant Output: **727 MW**
- Average Annual Production: **5,66 TWh**



Contractor – who am I?

Permanent?

Long term?

Certified?

Short term?



Escorted?

Nuclear professional?



Contractor – am I competent?

Long term, on-site contractors

On a continuing basis at the NPP for more than a year, under the management system of the NPP.

Same competency rules apply as for plant employees – SAT process and competency matrix for the work position.



A contract on their name for a work position in our organization.

They grow together with the rest of employees

No problems related to their safety culture or their values according to company values

Positions: IT, purchase department, administration, ...



Contractor – am I competent?

On-site contractors

Contractor personnel who perform work at the NPP supporting core processes

Same competency rules apply as for plant employees – SAT process and competency matrix for the work position

They grow together with the rest of employees



A company has the contract to provide certain number of work force to support the work in our organization

No problems related to their safety culture or their values according to company values

Positions: maintenance workers, fire brigade, ...



Contractor – am I competent?

Short term contractors

Contractor personnel who work at the NPP for a short period of time and are unescorted during outages

Great workers, but there are ... issues!

Receive only indoctrination training
– up to 5 days

Issues related to **safety culture** which is an unknown area for them

Looking for **shortcuts** to perform the work as quick as possible

Positions: workers with hands on experience, ...



Participation on different projects performed during the outages
≈2000 people

Issues related to their **values** according to company values

They use **ALARA** for their working standards



The process

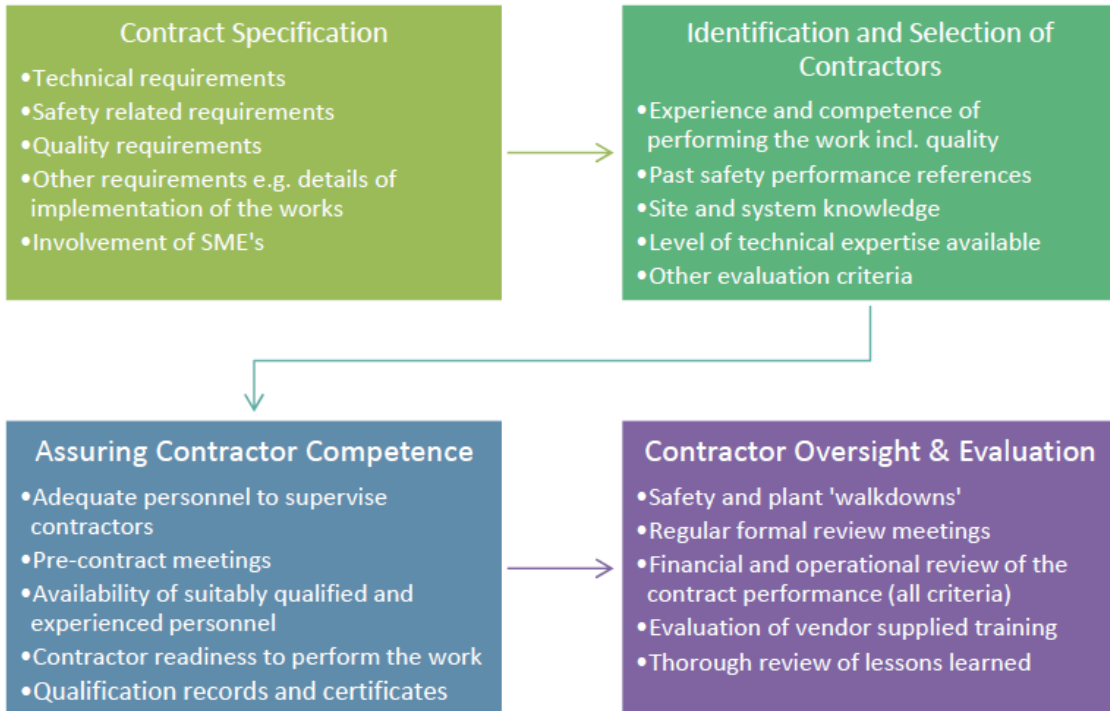
A key principle to assuring the competence of contractor personnel is that they must be suitably **qualified** and **experienced** before performing the work

- All requirements are defined within purchasing documentation (**technical specification, contract, work packages, reports**, etc).
- All documentation **assuring the qualifications** of contracted workers must be provided by contractor before the contract is signed
- For each of the contracted activities (on-line or outage) the Krško NPP **staff maintain the overall responsibility** for nuclear safety, quality of work, documentation, etc (**thrust but verify**)
- Krško NPP maintains adequate number of qualified and experienced personnel to implement all required duties, such as project leaders, work group leaders, work coordinators, ...



The process

IAEA TECDOC-1232, REV.1 Assuring the Competence of Nuclear Power Plant Contractor Personnel





The training

In the awarded contract, these extra training are mandatory:

Site Access Training:

(7 hours, validity 18 months)

- Site introduction
- Plant policies
- Physical security
- Emergency plan
- Fire protection
- Industrial safety
- Radiation protection
- Foreign material exclusion (FME)
- Cyber security
- ...

Controlled Area Access Training:

(16 hours (initial), validity 5 years)

- Fundamentals of radiation protection
- Plant specific radiation protection
- ...



The training

Contractor work leader training:

For those contractors that have to start operations in the work order process initial 16 hours, requal 8 hours, validity 18 months

Theoretical training:

- Work order process
- Equipment tagging
- Hazardous chemicals
- Execution of the work order in the radiological controlled area – RCA
- Foreign material exclusion process (FME)
- Human error prevention tools

Demonstrations „how to“, 3 groups, each group 30 minutes:

- use the workorder Kiosks in the field
- verify the equipment tagging
- prepare a workplace
- use human error prevention tools

Practical hands on training in groups of 3-4 people on each area. 4 hours





The training

Practical training for Safety at Work

validity 36 months

Mandatory for **everybody** performing:

- Work at height (500 participants)
- Rigging and lifting (270 participants)
- Work in confined spaces (500 participants)

Demonstrations and practical hands on training under supervision: everybody gets a task to perform in every area

Demonstration on how it should not be done 😊



- 15 participants
- 4 hours

Lifting & rigging

Work at height

Confined spaces



- 15 participants
- 4 hours



The competence

- Quality assurance (QA) audits for approved suppliers list
- Nuclear Procurement Issues Corporation NUPIC
 - With a proven process for evaluating suppliers to high standards of quality, NUPIC is the NRC Licensee's preferred and cost-effective method of maintaining their Approved Suppliers List.
 - NUPIC Members include all domestic U.S. nuclear utilities, and several international members.
 - The training process is also audited.



NUPIC

NUCLEAR PROCUREMENT ISSUES CORPORATION





The oversight and evaluation

- Feedback from the work supervisors
- Feedback from the field observations
- Corrective action program analyses
- Entrance & exit meetings with the contractor representatives
- Continuous oversight from the NPP Krško work coordinators
- Outage reports
- Training reports
- Internal OPEX reports
- ...

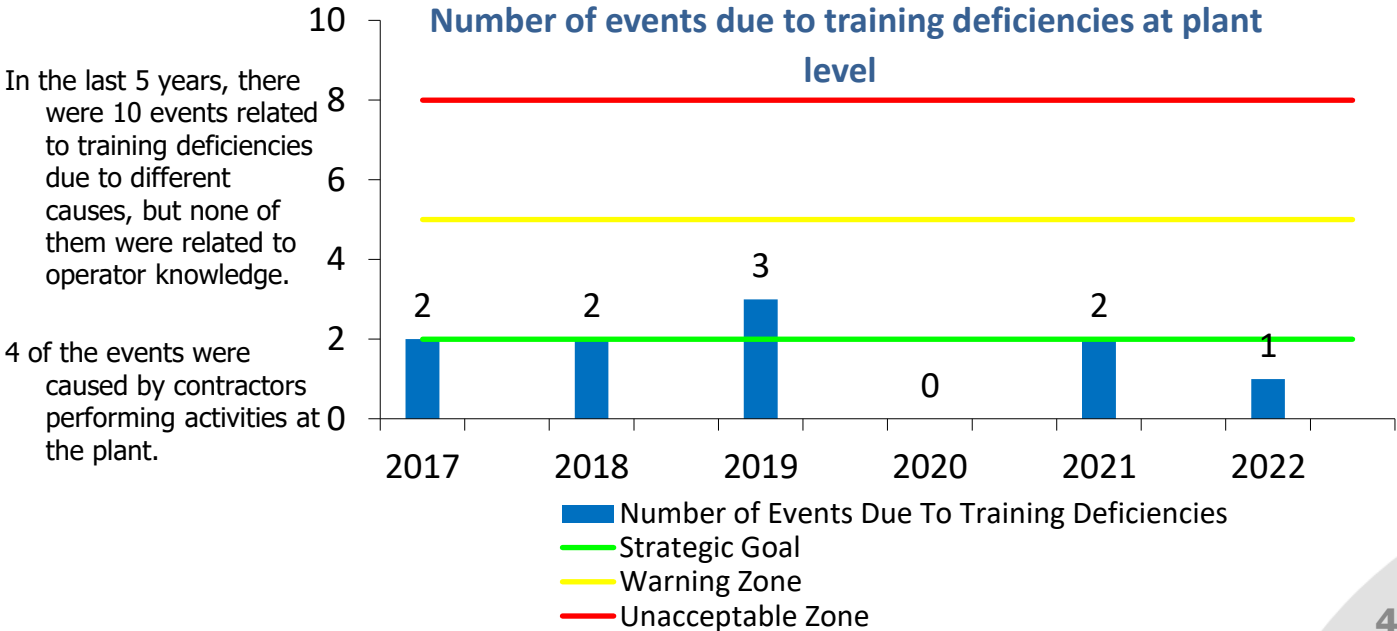




The oversight and evaluation

Number of events due to training deficiency at plant level

The indicator monitors number of related events due to training deficiencies, which provides basis for evaluation of plant safety and overall culture of operation.





Questions?

*Thank you for your
attention!*





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Assuring the contractor's competence:
Key stages in training and qualification programmes



Heorhi (George) Shpuntov

Head of Training Methodology Department in TC
of Belarus NPP



- In power industry since 1993
 - Previously manager for wind and solar generation
 - Prior to this spent 18 years as a sales manager in ABB
 - The first job – research Institute of Belarus National Academy of Science
- Diploma Lawyer
- Diploma Engineer in Physics



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Assuring the contractor's competence:
Key stages in training and qualification programmes

ASSURING THE CONTRACTOR'S COMPETENCE

Experience of Belarus NPP

30th September 2022

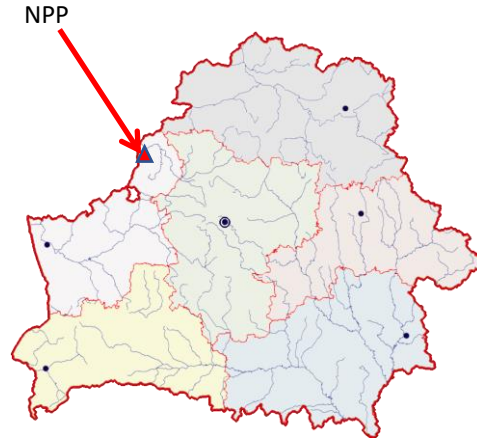
Heorhi Shpuntau



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Assuring the contractor's competence:
Key stages in training and qualification programmes

Republic of Belarus: location and some facts



Part of former Soviet Union
Independent from 1991
Population <10 million
Almost no primary energy
Power generation is based on gas from Russia (> 95% of capacity)



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Assuring the contractor's competence:
Key stages in training and qualification programmes

Looking back at the history

- July 18, 2012 – the Contract signed
- November 06, 2013 – the first concrete
- October 11, 2020 – the first criticality
- November 03, 2020 – the first power
- June 10, 2021 – commissioning of the first power unit



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Assuring the contractor's competence:
Key stages in training and qualification programmes

Designed view of Belarus NPP



**09**

Assuring the contractor's competence:
Key stages in training and qualification programmes

General technical & economical parameters of Belarus NPP

Design of NPP	NPP-2006, generation 3+
Number of power units	2
Power (electrical), MW	2 x 1194
Expected life time, years	60
Pay-back period, years	15,3

Financing is provided by Russian Federation according to The Intergovernmental Agreement on the Export Loan to the Government of the Republic of Belarus for the construction of NPP (signed in 2011)



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Assuring the contractor's competence:

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Training Center of Belarus NPP

- In 2016 the training center equipped by full-scale simulator and analytical simulation unit starts to operate.
- There are also few local simulators, several stands, many samples, various tools, etc.



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Assuring the contractor's competence:
Key stages in training and qualification programmes

We acquire all competences

❖ Advantages:

- full availability,
- ever in time,
- easy to control,
- easy to safe and transfer critical knowledge

❖ Disadvantages

- full cost from the very beginning and all the time,
- long time to develop,
- a bit difficult to use operation foreign experience,
- risk to establish and safe mistakes as a kind of wrong traditions



We intend to use outsourcing

❖ **Advantages**

- Opportunity to select “best of the best” equipment, personnel, knowledge and skills,
- Better access to foreign operation experience,
- Pay only when use,
- Available from the very beginning of the project.

❖ **Disadvantages and risks**

- Language and mentality problems,
- Low availability, especially in emergency cases,
- Uncontrollable market cost,
- Competence continue to stay away,
- Political risks.

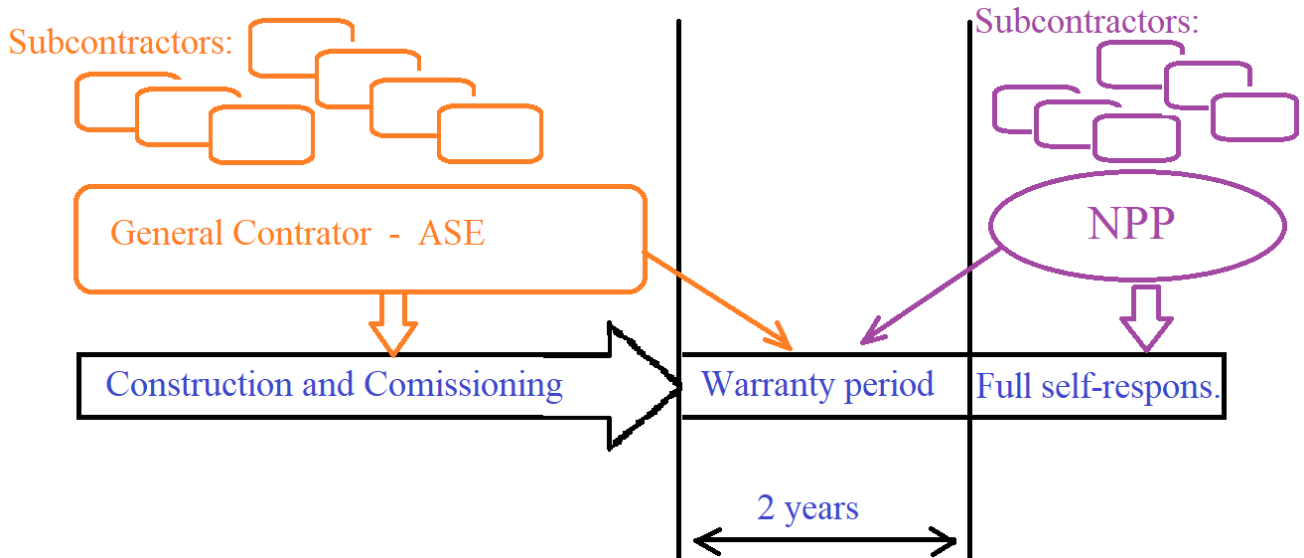
❖ **Specific requirement regarding licensing**



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Assuring the contractor's competence:
Key stages in training and qualification programmes

Share of responsibility for subcontractors





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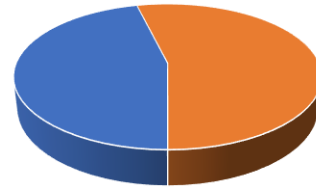
Assuring the contractor's competence:
Key stages in training and qualification programmes

Experience gained from the first periodical maintenance

Major involved subcontractors:

- Mostly “BERN” (Belarus) and few others – up to approx.300 persons
- “RusAtomService” – up to approx.350 persons

Major subcontractors



■ BERN” (Belarus)



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Assuring the contractor's competence:
Key stages in training and qualification programmes

The order is strict

We have established in 2020 the procedure:

- Whom may we invite as a subcontractor?
- How we check up qualification of pretender?
- What should be done in order to give permission to work at Belarus NPP?
- Who is responsible for any step-in preparation?
- Who and how controls subcontractor's performance at NPP?

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ЭЛЕКТРОЭНЕРГЕТИКИ «БЕЛЭНЕРГО»
Республиканское унитарное предприятие
«Белорусская атомная электростанция»
(Государственное предприятие «Белорусская АЭС»)

УТВЕРЖДЕНО
Приказом генерального директора
государственного предприятия
«Белорусская АЭС»
30.06.20 № 247

ПОЛОЖЕНИЕ

ПОРЯДОК ДОПУСКА ПЕРСОНАЛА ПОДРЯДНЫХ ОРГАНИЗАЦИЙ
К РЕМОНТУ ОБОРУДОВАНИЯ 1 – 4 КЛАССОВ БЕЗОПАСНОСТИ

№ 434/44 ПТО-20



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Assuring the contractor's competence:
Key stages in training and qualification programmes

Scope of training

- Contractors means personnel not included in NPP staff, both construction and commissioning personnel at the beginning, and various service and repair personnel in following operation.
- **Note: all these contractors are real experts in their profession and do not need any job specific training.**
- But they normally know almost nothing about nuclear and radiation safety rules, nuclear security, administrative procedures and other NPP specific features.
- Before training we study proper documents, provided by pretender, discussed the scope of training with management of pretender (chief engineer, safety rules manager, quality assurance manager) and determine topics and duration of training.



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Scope of training

For workers:

- Site description and layout
- Safety Culture
- Emergency preparedness and roles
- Radiation safety and contamination control practices
- Facility physical security
- Fire prevention/response
- Rules of behaviour at the site

Additional for first level maintenance managers/supervisors:

- Site and facility administration
- Leadership
- ALARA
- Environmental safety
- Experience feedback

**09****Assuring the contractor's competence:**
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Subcontractor training in 2021-2022

Training courses	No of persons	Duration, hours
Personel-oriented trainig		
Personnel for S&R turbine, pumps, fans, piping	204	17
Personnel for S&R electrical equipment	32	27
Personnel for S&R instrumentation, control and process automation	5	12
Task-oriented training		
Service & Repair rules and procedures	15	7
Nuclear & Radioactive safety	46	15
Foreign material exclusion	38	3



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Instructors' contribution

- Instructors from NPP Training Center also took part in the first periodical maintenance. They:
- trained subcontractors
- trained NPP staff in order to refresh their knowledge and skills
- participated in service as first-level supervisors (together with managers from NPP workshop)
- analyzed gained experience in order to improve further training process

- *As a result of the first periodical maintenance, we have no any negative feedback regarding personnel training*



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THANK YOU



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Before you go...

All registered participants will receive a short post-webinar survey with a link to the recording, including your suggestions for future topics. This will strengthen the experience and we would be grateful for your advice on how to move forward.

Thank you for your feedback in advance.



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Thank you!