

5th Workshop for the preparation of an ECVET-oriented Nuclear Job Taxonomy

DEBRIEFING

Madrid (Spain)

11-15 November 2013

1. INTRODUCTION

This Workshop is the fifth of a series initiated in October 2011 with the objective of preparing a taxonomy of nuclear jobs, aimed to facilitate the implementation of the European Credit System for Vocational Education and Training (ECVET). At the present stage, the taxonomy covers the three phases in the life cycle of a nuclear power plant (NPP). Jobs in collateral activities such as fuel disposal or research are not included, neither nuclear jobs in sectors not related to fission energy production. It is under consideration the enlargement of the taxonomy to the jobs in the regulatory bodies.

2. PARTICIPANTS

The Workshop was held at the premises of the Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (Ciemat) in Madrid (ES) and was attended by the following participants:

The invited experts

- Abdesselam ABDELOUAS, from École des mines de Nantes (France)
- Decebal-Radu CIURCHEA, from Babes-Bolyai University (Romania)
- Marisa MARCO ARBOLI, from CIEMAT (Spain)
- Olivia COMSA, from CITON (Romania)
- Fulvia PASQUALONI, from ENEL (Italy)
- Carmen-Gabriela BOSTAN, from Inst. Educ. - Ministry of Education (Romania)
- Odile DERUELLE, from ISTEP-IRUP (France)
- Lyubomir PIRONKOV, from Kozloduy NPP (Bulgaria)
- Izabela KULPA, from PGE Polska (Poland)
- Enrico BASTIANINI, from Sogin SpA – Latina NPP (Italy)
- Anton CHAUSHEVSKI, from Ss.Cyril and Methodius Univ. Skopje (Makedonia)
- Jesús IGLESIAS MORÁN, from TECNATOM (Spain)
- Eija-Karita PUSKA, from VTT (Finland)
- Salvatore LANZA, independent consultant (Italy)

The volunteer contributor

- Natalia SHULEPOVA, from CICE&T (Russia)

The internal experts

- Rocco SILVERII, from JRC-IET F.5 (EC)
- Daniele GIUFFRIDA, from JRC C.1 (EC)

The organisers

- Willy MUNTJEWERF, from JRC-IET F.04 (EC)
- Mihail CECLAN, from JRC-IET F.04 (EC)
- César CHENEL RAMOS, from JRC-IET F.04 (EC)

3. PRELIMINARY WORK

Some participants were requested individual preparation prior to the Workshop, consisting in the review of certain profiles. This was meant to make possible that the workshop sessions were fully devoted to group reviews. The following experts took part in this preparation:

Lyubomir PIRONKOV
Eija-Karita PUSKA
Decebal-Radu CIURCHEA

Anton CHAUSHEVSKI
Natalia SHULEPOVA

PEER REVIEWS:

- Nuclear Safety manager (NB)
- Mechanical Design Engineer (NB)
- Civil Design Engineer (NB)
- Mechanical Discipline Engineer (NB)
- Civil Construction Engineer (NB)
- I&C Construction Engineer (NB)
- Civil Construction Technician (NB)
- Electrical Construction Technician (NB)
- I&C Construction Technician (NB)
- Occupational Safety Manager (NB)
- Environmental Manager (NB)
- Shift Engineer (O)
- Turbine Operator (O)
- Electrical Design Engineer (O)
- Reactor Physicist (O)

3. WORKSHOP SESSIONS

The workshop consisted of plenary sessions on the first and last days, being the participants split in three working groups for the rest of the time:

3.1. Opening session

Ramón Gavela González, Deputy General Director of Ciemat opened the workshop with a welcome to the participants.

After that the participants introduced themselves.

Two presentations followed:

M. Ceclan explained the general principles of the ECVET system, the timing for its implementation and the related actions undertaken within the nuclear sector.

C. Chenel gave an introduction to the schedule and work methods to apply during the workshop, presenting the work documents and explaining the main concepts involved, as well as the proposal for work groups.

Both interventions were followed by a turn of questions and comments.

The first day finalised with a review of the list of jobs, mostly based on the proposals for addition or suppression carried over from the previous meeting. The conclusions were the following:

Confirm suppression of the jobs:

1.1.04 Health and Safety Officer	1.4.09 Permission-to-energise Officer
1.3.23 Locksmith	2.1.01 Operation Planning Officer
1.4.08 Permission-to-work Officer	2.7.10 Process Equipment Technician

Retract suppression of the jobs:

1.3.22 Welder

Confirm addition of a Safety Assessment Area in the New-Build phase, with the positions:

1.0.01 Nuclear Safety Manager	1.0.03 DSA Specialist
1.0.02 PSA Specialist	1.2.10 Safety Design Engineer

Confirm addition of the jobs:

1.1.05 Geological (hydrogeology/seismic) experts
1.1.06 Environmental External infrastructure expert
2.8.07 Reactor Physicist

Propose addition of the jobs:

1.3.27 Non-destructive Inspection Engineer
2.7.18 HVAC Technician

Change job title:

2.1.04 Training Officer into *Training Manager*¹

3.2. Work group sessions

Three groups worked separately since the morning Tuesday 12 till the closure session on Friday. Their composition was:

NPP NEW BUILD

Moderated by M. Ceclan and attended by the experts: Izabela kulpa, E-J Puska, J. Iglesias Morán, O. Deruelle, Anton Chaushevski, and Olivia Comsa.

NPP OPERATION

Moderated by C. Chenel Ramos and attended by the experts: N. Shulepova, L. Pironkov, F. Pasqualoni, D-R. Ciurchea and E. Bastianini.

NPP DECOMMISSIONING

Moderated by R. Silverii and attended by the experts M. Marco Arboli, S. Lanza, D. Giuffrida, C-G Bostan and A. Abdelouas.

3.2. Closure

In the morning of Friday 15th the participants were invited for a technical visit around the Ciemat site consisting of a guided tour to the fusion laboratory and to the photovoltaic facilities.

In the final session, F. Pasqualoni explained her view on the most recent organisational structures adopted in the nuclear industry and their possible application to the job taxonomy.

M. Ceclan shared the experience from the 2nd ECVET Seminar (Budapest, Oct 2013) presenting a practical case of design of learning outcomes and qualifications based on the job taxonomy. Also was presented a summary of the activity within the NB group.

The meeting was closed with a first estimate of the progress achieved and acknowledgements to participants and hosts.

4. OUTCOME OF THE WORKING GROUPS

The work groups were fully devoted to group reviews. The following profiles were reviewed:

¹ Job titles needs overall revision following the systematic approach agreed for functional areas and terminology.

- 1.0.03 DSA specialist
- 1.1.01 Site Characterisation Manager
- 1.1.02 Licensing Manager
- 1.2.02 Civil Design Technician
- 1.2.03 Electrical Design Technician
- 1.2.04 Mechanical Design Technician
- 1.2.05 Mechanical Design Engineer
- 1.2.06 Civil Design Engineer
- 1.2.07 Electrical Design Engineer
- 1.2.08 I&C Design Engineer
- 1.3.03 Mechanical Discipline Engineer
- 1.3.04 Mechanical Construction Engineer
- 1.3.05 Civil Construction Engineer
- 1.3.06 Electrical Discipline Engineer
- 1.3.07 Electrical Construction Engineer
- 1.3.08 I&C Discipline Engineer
- 1.3.09 I&C Construction Engineer
- 1.3.10 Mechanical Construction Technician
- 1.3.11 Civil Construction Technician
- 1.3.12 Electrical Construction Technician
- 1.3.13 I&C Construction Technician
- 1.3.16 Electrical Construction Worker
- 1.3.19 Quality Control Manager
- 1.4.01 Electrical Commissioning Engineer
- 2.1.03 Production Manager
- 2.1.04 Training Officer
- 2.1.05 Quality Assurance Officer
- 2.1.06 Engineering Manager
- 2.1.07 Operation Manager
- 2.2.01 Shift Engineer
- 2.2.05 Turbine Operator
- 2.3.01 Field Operator Technician
- 2.3.02 Field Operator Worker
- 2.4.01 WM&RP Manager
- 2.4.03 Radiation Protection Worker
- 2.5.01 Chemistry Manager

- 2.5.03 Chemistry Operator II
- 2.7.03 Mechanical Maintenance Technician
- 2.7.04 Electrical Worker
- 2.7.11 Welder
- 2.7.13 Maintenance Manager
- 2.8.03 Electrical Design Engineer
- 2.8.07 Reactor Physicist
- 3.1.01 Project Manager
- 3.1.02 Contractors Manager
- 3.1.03 Management System Manager
- 3.1.04 Training Manager
- 3.1.05 Licensing Manager
- 3.2.02 Decontamination Supervisor
- 3.2.03 Decontamination Worker
- 3.3.01 Site Engineer
- 3.3.02 Spent Fuel Management Engineer
- 3.3.04 Decommissioning Planner
- 3.3.05 Decommissioning Supervisor
- 3.3.06 Decommissioning Operator
- 3.3.07 Decommissioning Worker
- 3.4.02 Dismantling Supervisor
- 3.4.03 Dismantling Worker
- 3.5.01 Demolition Planner
- 3.5.02 Demolition Civil Engineer
- 3.5.03 Demolition Worker
- 3.6.01 Clean up Supervisor
- 3.6.02 Clean up Worker
- 3.7.04 Radioactive Waste Worker-characterisation
- 3.7.05 Radioactive Waste Worker-processing
- 3.7.07 Transport responsible
- 3.8.02 Maintenance Supervisor
- 3.9.05 Safety Case Expert
- 3.9.07 Health Physics Technician
- 3.9.08 Chemistry and Radiochemistry Manager

The current progress is shown in the Annex.

5. MATTERS OF DISCUSSION

Classification of job categories and harmonisation of job titles

The proposal of L. Pironkov presented during the 4th Workshop has been consolidated and adopted. Although it has been used in all the working groups, thorough scrutiny is needed to complete the harmonisation of job titles.

Competence items

The KSC Catalogue has been much enlarged and better structured. This fact, together with the completion reached in the descriptions of the job requirements, make necessary to consolidate full consistency –meaning and exact correspondence of items.

Rationalisation of job profiles

The presence of profiles with similar contents, both within and across NPP phases, needs to be examined in order to harmonise them and, in its case, merge some of them.

Quality assurance

In addition to the periodical review in the EHRO-N Senior Advisory Group, a more technically oriented quality assurance would provide appropriate endorsement for the outcomes of the taxonomy. This might be attained through the involvement of relevant stakeholders, such operators and regulatory bodies.

Data management

The volume of information accumulated with the preparation of the job profiles, as well as with the parallel development of the KSC Catalogue makes advisable, if not necessary, the creation of specific tools for the handling of data and its practical translation into learning outcomes, units and qualifications.

6. CONCLUSIONS AND FURTHER DEVELOPMENTS

The preparation of the Job Taxonomy is coming close to its completion. The final revision and conclusion might require allocation of specific workforce alongside to it, the possibilities to enlarge the scope of the project might be explored in several directions,

- Involvement and collection of input from stakeholders and users –fission E&T projects, operators, regulators...
- As initiated during the 2nd ECVET Seminar (Budapest, Sep 2013) customised for nuclear energy sector, continue experiencing the applicability of the Taxonomy to the design of learning outcomes and qualifications.

- Creation of software tool to facilitate the management of the data generated and possibly make it available to the potential users.
- Study the feasibility to apply the experience acquired to help the implementation of ECVET in other energy fields.

Acknowledgements

The organisers would like to express their gratitude to the participants for their commitment and dedication during the workshop and the preparatory work; to Marisa Marco and other staff of Ciemat for their hospitality and excellent logistic arrangements.

ANNEX: Updated list of job profiles

1. NEW BUILD				
Area	Ref	Job title	Status	
1.0 SAFETY ASSESSMENT	1.0.01	Nuclear Safety Manager	1	
	1.0.02	PSA specialist	1	
	1.0.03	DSA specialist	3	
	1.2.10.	Safety Design Engineer	2	
1.1. SITE LOCATION	1.1.01.	Site Characterisation Manager	3	
	1.1.02.	Licensing Manager	3	
	1.1.03.	Nuclear Engineer	0	
	1.1.05	Geological (hydrogeology/seismic) experts	0	
	1.1.06	Environmental External infrastructure expert	0	
	1.2 DESIGN	1.2.01.	Design Manager	1
1.2.02.		Civil Design Technician	3	
1.2.02[bis]		Civil Technical Draughtsman	0	
1.2.03.		Electrical Design Technician	3	
1.2.03[bis]		Electrical Technical Draughtsman	2	
1.2.04.		Mechanical Design Technician	3	
1.2.04[bis]		Mechanical Technical Draughtsman	2	
1.2.05.		Mechanical Design Engineer	3	
1.2.06.		Civil Design Engineer	3	
1.2.07.		Electrical Design Engineer	3	
1.2.08		I&C Design Engineer	3	
1.2.09		System Design Engineer	1	
1.2.11.		Project Integration Engineer	0	
1.2.12		HVAC Design Engineer	1	
1.2.13		HVAC Technical Draughtsman	1	
1.2.18		I&C Technical Draughtsman	1	
1.3. CONSTRUCTION		1.3.01.	Construction Project manager	2
		1.3.02.	Transverse Engineer	1
	1.3.03.	Mechanical Discipline Engineer	3	
	1.3.04.	Mechanical Construction Engineer	3	
	1.3.05.	Civil Construction Engineer	3	
	1.3.06.	Electrical Discipline Engineer	3	
	1.3.07.	Electrical Construction Engineer	3	
	1.3.08.	I&C Discipline Engineer	3	
	1.3.09.	I&C Construction Engineer	3	
	1.3.10.	Mechanical Construction Technician	3	
	1.3.11.	Civil Construction Technician	3	
	1.3.12.	Electrical Construction Technician	3	
	1.3.13.	I&C Construction Technician	3	
	1.3.14.	Mechanical Construction Worker	1	
	1.3.15.	Civil Construction Worker	1	
	1.3.16.	Electrical Construction Worker	3	
	1.3.17.	I&C Construction Worker	1	
	1.3.18.	Occupational Safety Manager	1	
	1.3.19.	Quality Control Manager	3	
	1.3.20.	Quality Control Technician	2	
	1.3.21.	Environmental Manager	1	
	1.3.22.	Welder	0	
	1.3.25	HVAC Construction Engineer	1	
	1.3.26	HVAC Construction Technician	1	
	1.4. COMMISSIONING(*)	1.4.01.	Electrical Commissioning Engineer	3
		1.4.02.	Mechanical Commissioning Engineer	2
1.4.03.		Civil Commissioning Engineer	1	
1.4.04.		I&C Commissioning Engineer	2	
1.4.05.		System Commissioning Engineer	1	
1.4.06.		Commissioning Manager	1	
1.4.07.		Licensing Manager	1	

2. OPERATION			
Area	Ref	Job title	Status
	2.0.01.	Plant Manager	3
2.1. NUCLEAR OPERATIONS AND WASTE MANAGEMENT	2.1.02.	Licensing Officer	3
	2.1.03.	Production Manager	3
	2.1.04.	Training Officer	3
	2.1.05.	Quality Assurance Officer	3
	2.1.06.	Engineering Manager	3
	2.1.07.	Operation Manager	3
2.2. OPERATORS IN CONTROL ROOM	2.2.01.	Shift Engineer	3
	2.2.02.	Senior Reactor Operator	3
	2.2.04.	Reactor Operator	2
	2.2.05.	Turbine Operator	3
2.3. OPERATORS IN THE FIELD	2.3.01.	Field Operator Technician	3
	2.3.02.	Field Operator Worker	3
2.4. WASTE MANAGEMENT & RP	2.4.01.	WM&RP Manager	3
	2.4.02.	Radiation Protection Officer	3
	2.4.03.	Radiation Protection Worker	3
2.5. CHEMISTRY	2.5.01.	Chemistry Manager	3
	2.5.02.	Chemistry Supervisor	1
	2.5.03.	Chemistry Operator II	3
	2.5.04.	Chemistry Operator I	1
2.6. SAFETY AND SECURITY	2.6.01.	Safety and Security Manager	2
	2.6.02.	Industrial Safety Technician	2
	2.6.03.	Industrial Safety Supervisor	1
	2.6.04.	Fire Protection Worker	1
	2.6.05.	Fire Protection Supervisor	1
	2.6.06.	Environmental Supervisor	2
	2.6.07.	Security Manager/Supervisor	1
2.7. MAINTENANCE	2.7.01.	Electrical Technician	2
	2.7.02.	Electronic-I&C Technician	1
	2.7.03.	Mechanical Maintenance Technician	3
	2.7.04.	Electrical Worker	3
	2.7.05.	Electronic-I&C Worker	1
	2.7.06.	Mechanical Worker	2
	2.7.07.	Electrical Supervisor	1
	2.7.08.	Electronic-I&C Supervisor	1
	2.7.09.	Mechanical Supervisor	1
	2.7.10.	Process Equipment Technician	1
	2.7.11.	Welder	3
	2.7.12.	Operational Locksmith	1
	2.7.13.	Maintenance Manager	3
	2.7.14.	Maintenance Planning Officer	2
	2.7.15.	Civil Engineering Technician	1
	2.7.16.	Process Equipment Engineer	2
	2.7.17.	Civil Engineering Supervisor	0
2.8. ENGINEERING	2.8.01.	Mechanical Design Engineer	1
	2.8.02.	Civil Design Engineer	0
	2.8.03.	Electrical Design Engineer	3
	2.8.04.	I&C Design Engineer	1
	2.8.05.	System Design Engineer	0
	2.8.06.	Safety Design Engineer	0
	2.8.07.	Reactor Physicist	3
2.9. CANDU	2.9.01	Fuel Machine Operator	1
	2.9.02	System Responsible Engineer	1

3. DECOMMISSIONING			
Area	Ref	Job title	Status
3.1. MANAGEMENT	3.1.01.	Project Manager	3
	3.1.02.	Contractors Manager	3
	3.1.03.	Management System Manager	3
	3.1.04.	Training Manager	3
	3.1.05.	Licensing Manager	3
	3.1.06.	Communication Manager	2
	3.1.07.	Financial Manager	2
	3.1.08.	Site Manager	3
3.2. DECONTAMINATION	3.2.01.	Decontamination Planner	3
	3.2.02.	Decontamination Supervisor	3
	3.2.03.	Decontamination Worker	3
3.3. PREPARATORY WORK FOR DECOMMISSIONING (2)	3.3.01.	Site Engineer	3
	3.3.02.	Spent Fuel Management Engineer	3
	3.3.03.	Engineering Support Manager	3
	3.3.04.	Decommissioning Planner	3
	3.3.05.	Decommissioning Supervisor	3
	3.3.06.	Decommissioning Operator	3
	3.3.07.	Decommissioning Worker	3
3.4. DISMANTLING/EQUIPMENT	3.4.01.	Dismantling Planner	3
	3.4.02.	Dismantling Supervisor	3
	3.4.03.	Dismantling Worker	3
3.5. DEMOLITION (BUILDING AND STRUCTURES)	3.5.01.	Demolition Planner	3
	3.5.02.	Demolition Civil Engineer	3
	3.5.03.	Demolition Worker	3
3.6. SITE CLEAN UP	3.6.01.	Clean up Supervisor	3
	3.6.02.	Clean up Worker	3
3.7. RADIOACTIVE WASTE (1)	3.7.01.	Radioactive Waste Manager	3
	3.7.02.	Radioactive Waste Manager-characterisation	3
	3.7.03.	Radioactive Waste Manager-processing	3
	3.7.04.	Radioactive Waste Worker-characterisation	3
	3.7.05.	Radioactive Waste Worker-processing	3
	3.7.07.	Transport responsible	3
3.8. MAINTENANCE	3.8.01.	Maintenance Engineer – Manager	3
	3.8.02.	Maintenance Supervisor	3
	3.8.03.	Maintenance Worker	2
3.9. HEALTH, SAFETY AND ENVIRONMENT	3.9.01.	Radiation Protection Expert	2
	3.9.02.	Radiation Protection Officer	3
	3.9.03.	Radiation Protection Worker	3
	3.9.04.	Industrial Safety Engineer	2
	3.9.05.	Safety Case Expert	3
	3.9.06.	Environmental Manager	2
	3.9.07.	Health Physics Technician	3
	3.9.08.	Chemistry and Radiochemistry Manager	3
	3.9.09.	Nuclear Laboratory Technician - Chemistry	3
3.10 SITE RELEASE	3.10.1	Final Release Process Supervisor	1