

Report of the Technical Meeting on Training for Regulatory Bodies in Member States with Nuclear Power Plants (NPPs)

2 – 4 December 2008

1. Introduction

The Technical Meeting (TM) was the second in a series, the first meeting having been held from 17 – 19 December 2007. This series of meetings stemmed from a recommendation made at a Consultant Group¹ in March 2007, which was convened to advise IAEA on ways in which it might improve the training available for Regulatory Bodies in Member States (MSs) with NPPs. The Consultant Group had suggested a number of possible actions, but amongst them was a proposal to hold an initial meeting in order to test whether there was broader support amongst MSs for setting up some international group of persons with a particular interest in the training of regulators. Such a group could provide advice to the Agency on a longer term basis on how it could better meet the needs of MSs to improve the training of staff within their Regulatory Bodies.

At the initial meeting² in December 2007, a number of issues and recommendations were raised, which included the proposal to hold another TM in December 2008. During the discussions, the first draft of the Terms of Reference for the group was agreed, and it was decided to set up a small Bureau, which met in London in July 2008, to help monitor the progress of these actions, and plan the meeting in December 2008.

2. Discussions

2.1 First day, 2 December 2008

The meeting³ started with welcoming remarks from Mr Philip Jamet, Director of the Division of Nuclear Installation Safety. He referred to the importance of training as mentioned in the IAEA Standards GS-R-1⁴, GS-G-1.1⁵, GS-R-3⁶ and GS-G-3.1⁷.

¹ The IAEA invited a Consultant Group to advise it on ways to improve the training materials it provides to assist in the training of Regulatory Bodies in MSs with NPPs. The Consultant Group met on 19 – 23 March 2007, and consisted of Kaisa Koskinen, STUK, Alfred Kraut, GRS, and Jim Furness, Consultant (formerly NII). The Group's final report was made available to the delegates attending the Technical Meeting.

² A Report of the TM held in December 2007 is available at:

<http://www-ns.iaea.org/downloads/ni/training/training-for-rb.pdf>

³ An Agenda for the meeting and a List of Participants are attached as Appendices 1 and 2.

⁴ IAEA Safety Standards Series No. GS-R-1, Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety, IAEA, Vienna, 2000. Available at:

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1093_scr.pdf

⁵ IAEA Safety Standard Series Safety Guide No. GS-G-1.1, Organization and Staffing of the Regulatory Body for Nuclear Facilities, IAEA Vienna, 2002. Available at:

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1129_scr.pdf

⁶ IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities, Safety Requirements, IAEA, Vienna 2006. Available at:

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1252_web.pdf

⁷ IAEA Safety Standard Series Safety Guide No. GS-G-3.1, Application of the Management System for Facilities and Activities, Safety Guide, IAEA, Vienna 2006. Available at:

http://www-pub.iaea.org/MTCD/publications/PDF/Pub1253_web.pdf

The Chairman, Mr Britten, then summarised the aims of the meeting, and there was some discussion on what it was hoped to achieve, and on the most appropriate titles for the group; whether it should be called a Steering Group, a Steering Committee (SC), or a Technical Meeting (TM). This meeting, and that in 2007, had been convened as TMs, but it was explained that this title was not appropriate for the open-ended activity which was envisaged by the Agency. It was concluded that the most appropriate title would be a Steering Committee, composed of members officially nominated by their countries. This Committee would be able to form Working Groups as necessary, and would be supported by a Bureau which would meet once or twice each year between the annual meetings of the Steering Committee to progress actions and plan the agenda.

Mr Furness reminded those present of the conclusions from the previous meeting² in December 2007. In discussion, it was agreed that there should be more feedback to Committee members on the progress of actions between meetings. It was agreed that this should be addressed by the Bureau.

Mr Britten summarised the work that had been done by the Bureau which met in July in London. The Bureau's role was to: follow up the actions from the SC; to assess the working methods of the SC; and to prepare the agenda for the next SC. The Bureau had identified four work streams that were intended to cover all the recommendations arising from the December 2007 Technical Meeting:

- (i) Direct Training Support Activities
 - Advising IAEA on what types of training could best support MSs.
 - To canvass MSs on the shortfalls in the list of competencies in Quadrant 2 of TECDOC-1254⁸ and to identify those areas in which training materials should be strengthened.
- (ii) Facilitating access to various types of freely available training material
 - Compile a list of what is available from MSs.
 - Form a Task Force to decide which items from this list should be included in a database of links.
 - Improve what is available from IAEA.
- (iii) Facilitate the sharing of good practice
 - Produce a document summarising for each country the resources devoted to training.
 - Include a presentation on what Good Practices had been found during IRRS missions in relation to training.
- (iv) Facilitate cooperation and networking
 - Helping to facilitate the formation of groupings of MSs having similar reactor types or regional interests in common.
 - Facilitate the use of shared training materials of courses.

These four topics were addressed later in the meeting as four questions for discussion when the delegates split into three groups to provide their views on how these should be progressed.

As part of its work in July, 2008, the Bureau had drafted a Vision Statement to accompany the Terms of Reference (ToR) of the SC, and a set of Desired Outcomes.

⁸ See IAEA-TECDOC-1254, page 15 and the following pages. This TECDOC can be found at: http://www-pub.iaea.org/MTCD/publications/PDF/te_1254_prn.pdf

The bureau Proposal was:

Terms of Reference:

- To advise the IAEA on the best strategy to adopt in support of the E&T activities of the Regulatory Bodies;
- To identify how the IAEA can support through training the implementation of the IAEA Safety Standards and how the training programme of regulators would better comply with the NSC and IRRS missions;
- To identify and share best practices for training strategies of the regulatory bodies;
- To identify training needs and specific training projects;
- To promote co-operation, knowledge sharing and transfer amongst the participant countries, in particular at a regional level.

Vision:

“Adequate policies and strategies for ensuring sufficient and competent human resources are in place to ensure effective regulation of safety at NPPs”

Outcomes:

- Harmonised, sustainable capacity building systems for Nuclear Safety;
- Synergy of resources and regional cooperation;
- Training materials for learning and implementation of the IAEA Safety Standards.

A discussion on these followed, several delegates proposing changes to the wording of the draft Vision, although there was general consensus on the aims set out in the Vision. The meeting returned to this subject on the final day, when the wording of the Vision was finally agreed.

It was agreed that the Steering Committee needed to prepare a Long Term Strategy/Plan covering what it hoped to achieve over the next five years or so, and that it should maintain an Action Tracking System which would be regularly updated and circulated to SG Members.

Presentations followed from Maria Moracho on the work that NSNI training was doing to improve the access to training materials through the IAEA website, and on the improvements being made to the various training packages. A video lectures based training course on Management Systems (GS-R-3) and a set of video presentations from a workshop on the same subject, but focussing on Safety Culture, were produced during 2008. One very significant addition to be made shortly would be the inclusion of videos of the presentations made at the conference in early September 2008 organised by the Finnish Regulatory Body, STUK, on the regulation of the new EPR reactor project at Olkiluoto. This material would be available as a set of 10 DVDs showing the presenters and the slides they used. The DVDs would be indexed to enable rapid navigation to the points of interest.

This was one of many changes and improvements being made to the training materials which were available. Another example given was that some 15 chapters of the Basis Professional Training Course (BPCT) had been revised. This brought the observation that some system of alerting MSs to these changes was needed in order to enable them to be aware of the latest

materials. A change notification system and proper change control system were needed to provide an appropriate administrative discipline.

One of the ToR included the task of improving training based on the findings from IRRS missions. Stéphane Calpena gave a presentation in which he showed the findings from IRRT and IRRS missions related to training. There were a number of generic Recommendations, Suggestions and Good Practices. One very clear message was that the IRRS process carries considerable training benefits, both to the staff with the RBs of the recipient MSs, and to those individuals chosen to be members of the IRRS teams. The prior self-assessment process is a powerful tool to improve the performance of the RB.

At the end of day 1, the Chairman summed up the day's discussion as follows:

- It was agreed that a sense of Vision is important;
- A long term strategy and plan was needed that aligns with IAEA strategy;
- The need for a Steering Group was re-affirmed (effectively the Technical Meeting, which in these Minutes is referred to as a Steering Committee);
- The need for a Progress Group (the Bureau) was re-affirmed;
- It was acknowledged that better in-year feedback and communications were necessary;
- It was agreed that the Steering Committee should consider more than just Quadrant 2 of TECDOC 1254.

Delegates then split into three groups⁹ to discuss the proposed four work streams described on Page 2 above.

2.2 Second day, 3 December 2008

After more discussion in working groups, the plenary session reconvened and the Chairperson of each working group summarised the group's findings. These findings are presented in Appendix 3.

There then followed a general discussion on the priorities that should be attached to these various suggestions in terms of the work programme that the Steering Group should undertake, and on the final wording of the Vision statement. A number of options were discussed, and the delegates from India and Belgium agreed to come forward with a proposal the following day.

2.3 Third day, 4 December 2008

At the start of the day, the Chairman, Mr. Britten, suggested three main objectives for the group

- develop a clear and agreed forward action plan;
- move towards an agreed statement of vision;
- depending on success, develop views on how to progress with the actions.

⁹ Group 1 consisted of Belgium, Bulgaria, India and Slovenia. Group 2 consisted of the EC Observer, Germany, the Netherlands and the UK. Group 3 consisted of Argentina, Brazil, Finland and Spain.

There then followed a further discussion to agree a final wording for the Vision for the Steering Committee.

The three options for the Vision statement were:

- Adequate policies and strategies for ensuring sufficient and competent human resources are in place to ensure effective regulation of safety at NPPs
(Vision prepared by the Bureau in July 2008)
- Adequate nuclear safety infrastructure including a sustainable programme of Education and Training in Nuclear Safety is in place worldwide and safety is ensured in all practices, consistent with the requirements of the IAEA Safety Standards and other relevant nuclear safety standards.
(Vision from the 2001 Advisory Group report¹⁰)
- Adequate tools are available for helping the Regulatory Bodies of all MSs with NPPs to establish an education and training system such that sufficient and competent human resources are developed to carry out their mission.
(Vision jointly proposed by Belgium and India)

M. Mignot and Mr. Singh further worked on these statements to finally produce the following proposal:

Vision

- Adequate tools are available for helping the Regulatory Bodies of all Member States with NPPs to establish an education and training system such that sufficient and competent human resources can be developed to carry out their missions

Mission

- Develop harmonised and sustainable competence building systems for Nuclear Safety
- Promote e-learning and make training materials available for learning and for implementation of the IAEA Safety Standards
- Facilitate synergy of resources through IAEA website and regional cooperation networking

It was agreed to allow the Bureau to finalise the wording for the Vision which captured each of the ideas above.

The meeting went on to carry out a voting exercise to identify which of the list of possible actions arising from the discussions in the Working Groups (see Appendix 3) should be pursued by the Steering Committee in its future work programme.

The voting system was used to narrow the options, and Maria Moracho compiled a list of the nine subjects that were identified as candidate topics following this process. These, and the votes cast for each proposal, were as follows:

¹⁰ Advisory Group Meeting on Education and Training in Nuclear Safety, Final Report, 27-29 March 2001, Vienna, Austria. Available at: <ftp://ftp.iaea.org/dist/nsni/traing01.pdf>

1. Complete the technical competencies in Quadrant 2 of the 'four box model' of IAEA TECDOC-1254 with the information gathered from the SG members.
(7 votes) **(Action on IAEA and the Bureau)**
2. Establish what training documents may be available for each of the resulting list of competencies. This is a difficult but potentially very useful task. Using this information, it may also be possible to develop the Standard Syllabus in parallel.
(5 votes) **(Joint Action on IAEA and the MSs)**
3. Prepare and send a questionnaire to MSs on their training systems. Straightforward task.
(5 votes) **(Action on the Bureau)**
4. To develop a Standard Syllabus, and possibly design a course that would help achieving the necessary competence as described in the four quadrants of IAEA TECDOC-1254, possibly after this is revised to include the additional suggested competencies. This will be a big task.
(4 votes) **(Action on MSs)**
5. Improve the information on strategies and good practices for management of training. IRRS and IRRS reports may provide a potential source of information. This is a straightforward task.
(4 votes) **(Action on IAEA and Bureau)**
6. Identify materials and web links on training that can be made freely available. This is a medium term objective.
(3 votes) **(Action on MSs)**
7. Explore potential benefits of greater European networking. This is a big issue.
(3 votes) **(Action on European Countries and Bureau)**
8. Ensure there is balance in the detail of the competencies across each of the four quadrants in the 'four box model' in IAEA TECDOC-1254. The IAEA/Systematic Training Needs Assessment tool can be used for this purpose.
(2 votes) **(Action on MSs)**
9. Video clips based on case study materials and simulation of real cases. This is a medium term objective.
(0 votes) **(Action on MSs to identify potential case study topics and on IAEA to help in producing the material)**

It was agreed that the decision on which of these should be taken forward would be left to the Bureau to consider, either by e-mail or at its next meeting.

The Chairman then went through the Working Group proposals from the previous meeting to check that all the items identified in December 2007 is covered by the above topics, is covered by other IAEA initiatives, or is no longer applicable. The Steering Committee agreed that all of the December 2007 actions fall into one or other of these categories.

There followed a presentation from Tom Mazour, IAEA Nuclear Energy Division, on the work of the Education and Training Support Group. This was a cross-Divisional group within the Agency whose mission was to:

- provide in-house coordination and advice on activities supporting E & T delivered by the Agency to Member States with a view to helping to optimize resources, continuously improving effectiveness and avoiding duplication with respect to relevant IAEA programmes.

He explained that this Steering Committee set up to advise on the training within Regulatory Bodies for Nuclear Safety was one of several similar Committees which were already advising other Divisions of the Agency. There were other groups advising on training in Radiation Protection and on the Education and Training of NPP personnel. The Agency was also doing work on Workforce Planning for NPPs, which when complete might be of considerable interest to the Regulatory Bodies.

Mr Butragueno Casado gave a presentation on the work that CSN had done in Spain to establish the competency and hence the training requirements across the Regulatory Body. The stages in this exercise were:

- Inventory, description and analysis of **standard jobs**,
- Identification of **job families**,
- Definition of **competence framework**, Dictionary of competences and competence profiles,
- Design and definition of the **professional development model**, and
- Preparation of the bases of the **training plan**.

The exercise had been carried out with the help of management consultants, and was now nearing completion, having been started in February 2008.

The discussion on Day 3 also covered the composition of the Bureau. It was agreed that Ms Jelinski would take over from Mr Kraut and also the Mr Mignot would join the Bureau, subject to the agreement of their respective parent organisations. The next Bureau will be on 22/23 April, kindly hosted by Spain.

The meeting finally closed thanks to the members for their attendance and Ms Moracho for the work she had done to prepare for the meeting. There was **agreement to hold the next Steering Committee meeting from 1-3 December 2009 in Vienna**.

Appendix 1

Agenda for Technical Meeting
“Training for Regulatory Bodies in countries with NPPs”
Vienna 2-4 Dec 2008
VIC F0817

	Tuesday, 2 Dec 2008	Wednesday, 3 Dec 2008	Thursday, 4 Dec 2008
09:30	Introductory remarks (Mr. Jamet) IAEA/NSNI director	Working Groups Preparation of conclusion papers	
9:45	Presentation and adoption of the agenda (Mr. Britten)		Discussion
10:00	Minutes from last TM in December 2007 (Jim Furness)	Presentation of working groups conclusions	
10:35	Coffee Break	(Facilitators)	Coffee Break
11:00	Conclusions from last Bureau meeting, July 2008 (Mr. Britten and Ms. Koskinen)		Discussion
11:30	Discussion		
12:30	Lunch Break	Lunch Break	Lunch Break
14:00	NSNI Training Activities. (M. J Moracho) Website for training: Multimedia materials (Mr. Bekiri)	Discussion of working groups' conclusions, future actions	Future actions and work plan for 2009
14:30	Discussion and feedback from the group		IAEA Education and Training Support Group (ETSG) (Tom Mazour)
15:00	Coffee break		Coffee break
15:30	Lessons learned from IRRS for training of regulators (Mr Calpena)		Conclusions
16:00	Discussion- future actions		Wrap up Closing of the meeting
16:30	Set up of working groups (M. J. Moracho)		
17:00	Close of the day	Close of the day	

Appendix 2: List of Participants

COUNTRY / ORGANIZATION	PARTICIPANT		OFFICIAL MAILING ADDRESS
	Title	Last Name First Name, Middle Name	
Argentina	Mr	Perez Adrian Claudio	Autoridad Regulatoria Nuclear Avenida del Libertador 8250 C1429BNP BUENOS AIRES ARGENTINA Email: acperez@sede.arn.gov.ar
Belgium	Mr	Mignot Pierre	Bel V Rue Walcourt 148 1070 BRUXELLES BELGIUM Tel: 0032 2 5280234 Fax: 0032 2 5280102 Email: pierre.mignot@belv.be
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		Magiel	Health and Safety Executive (HSE) Nuclear Directorate (ND) Redgrave Court Merton Road Bootle L20 7HS United Kingdom Email: Ian.Britten@hse.gsi.gov.uk
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		Ales	
Spain	Mr	Butragueno Casado	
		Jose, L.	
United Kingdom	Mr	Britten	
		Ian	
United Kingdom	Mr	Furness	
		Jim	

Appendix 3 Conclusions of discussion of the Working Groups presented on the Second day, 3 December 2008

Working Group 1, Belgium, Bulgaria, India and Slovenia

On question 1, WG 1 drew the following conclusions in relation to TECDOC-1254:

- For the technical disciplines listed in Section 3.4.1, no further training materials need to be prepared by IAEA.
- The disciplines listed in Section 3.4.2 need to be broken down into more detail as they are currently too general and the availability of training material for each topic needs to be established.
- New technologies should be added to Section 3.4.3 and the availability of training material for this section needs to be established.
- Some additional disciplines may need to be added to Quadrant 3 (and possibly Quadrant 4) of the “four box model”.

On question 2, WG 1 considered that:

- IAEA should conduct a survey by questionnaire to MSs with NPPs to identify existing freely available training materials.
- IAEA should evaluate these materials to determine whether they should be included on a database of links, translating them if necessary.
- The improved IAEA training website looks as though it will be a useful improvement, though the real test will be how it is perceived by its users over the longer term.

On question 3, WG 1 considered that:

- The gathering of Good Practices could be achieved through a questionnaire to MSs, the results being evaluated by the Bureau before circulating to MSs and discussed at the next meeting of the Steering Committee.

On question 4, WG 1 considered that:

- Grouping of MSs for training purpose would only be useful if the groups were of similar reactor types and interests.
- A questionnaire should be used to ask MSs if there is a need for sharing regional training courses.
- The findings from IRRS missions should continue to be used as a source of information and potential projects on topics for which there was a need for training materials.

The group also queried the status of the issues and recommendations arising from the TM in December 2007.

Working Group 2, EC Observer, Germany, the Netherlands and the UK

On question 1, WG 2 drew the following conclusions in relation to TECDOC-1254:

- A number of Technical disciplines should be added to those listed in Section 3.4.1. These included Seismic Studies and Hydrology (which might be considered part of Earth Science), Nuclear Chemistry, Management Science (including Organisation and Management), and ‘Science of the Future’ (Emerging technologies).
- The disciplines listed in Section 3.4.2 should have the addition of Spent Fuel and Waste Management.

- The disciplines listed in Section 3.4.3 should have the additions of Severe Accident Modelling, Source Term Estimation and Severe Accident Management, Safety Culture, Supply Chain issues, Quality Assurance, and Risk Informed Regulation.

On question 2, WG 2 considered that:

- The issue was a difficult one, so needed to be broken down into different areas.
- A number of the most useful potential sources of material were ‘Commercial in Confidence’, so might be difficult to put into the public domain.
- The area was one in which TSOs and a number of existing networks were already active:
 - ETSN¹¹ (European Technical Safety Organisation Network)
 - ANSN¹² (Asian Nuclear Safety Network)
 - Doku-Ost¹³
 - GRS seminars (in German)
- Other sources of information included contractor, consultant and licensee information, all subject to intellectual property rights (IPR).
- Information from university and technical institutes, also subject to IPR.
- WG 2 considered that a consultant might be used to gather such materials together, possibly in the form of links.

On question 3, WG 2 suggested as examples of Good Practice:

- The GRS competence mapping exercise.
- The BMU Nuclear Academy¹⁴.
- The CANTEACH¹⁵ system.
- A study could be undertaken based on IAEA GS-R-3 to gather the Good Practices from existing IRRS and IRRS reports.

On question 4, WG 2 considered that:

WG2 considered that grouping training against reactor types was not appropriate because the needs of regulatory bodies was different from that of operators and was better targeted at principles rather than operational detail.

- There was a potential for further networking, particularly within Europe. Examples which could be built on included:
 - The ETSN summer school¹⁶
 - EUROSAFE¹⁷
 - The recent agreement on cooperation between Belgium and Italy
 - ENEN¹⁸ (the European Nuclear Education Network)

In subsequent discussion, it was considered there was a real possibility of setting up a European regional focal point for training, possibly a European Nuclear Academy. One

¹¹ Further details of the European Technical Safety Organisation Network can be found at: http://www.eurosafe-forum.org/files/etsn_rev4.pdf

¹² Further details of the Asian Nuclear Safety Network can be found at: <http://www.ansn.org/>

¹³ Further details of Doku-Ost can be found at: http://www.grs.de/en/osteuropa/index.html?pe_id=30

¹⁴ Relevant background can be found in the presentation given at a conference in Trieste in . The slides are available at: http://iaea.org/inisnkm/nkm/documents/trieste2005/27_W_Petri_2226Aug05.pdf

¹⁵ A portal to the training documentation available from the Canadian Regulatory Body, CNSC, can be found at: <http://canteach.candu.org/> Clicking on the ‘Documents Library’ opens a page listing relevant documents from many sources, then clicking on ‘CNSC’ opens the page listing training documents prepared by CNSC.

¹⁶ Some information on the 2008 summer school (and the proposal to organise a similar event in 2009) can be found at: http://www.eurosafe-forum.org/files/8-seminar1-WEBER-Pilot_ETSN-JSP_summer_school.pdf

¹⁷ Further information on EUROSAFE can be found at: <http://www.eurosafe-forum.org/>

¹⁸ Further information can be found at: <http://www.enen-assoc.org/>

suggestion was that the best way to test the support for such an idea would be for those persons attending the TM to put the idea to their WENRA representatives to see whether there was sufficient consensus to move the idea forward. Pierre Chuilon, the EU Observer at the meeting, said that he considered there would be a good chance of such an idea receiving strong support on the European Commission level.

Working Group 3, Argentina, Brazil, Finland and Spain

On question 1, WG 3 considered that IAEA TECDOC-1254 was:

- very general in nature and needed more detail.
- the competencies needed to be mapped using the IAEA self-assessment tool.
- IAEA should devise a Standard Syllabus for ‘regular training’ for both general and in-depth courses. Additions to TECDOC 1254 needed to include organisational factors, management systems, accident analysis and waste management, plus also more general subjects such as emergency preparedness, transport safety, safeguards and security.

On question 2, WG 3 considered that:

- One useful model for international cooperation was that established in South America, the Foro iberoamericano de Organismos Reguladores Radiológicos y Nucleares¹⁹ which involved Argentina, Brazil, Chile, Cuba, Mexico, Spain and Uruguay. The Forum was established some 5 years ago, and the very impressive website took about two years to build.
- WG 3 also advocated the use of training videos which recreated scenarios as case studies which trainee regulators would be likely to encounter in their day-to-day

On question 3, WG 3 presented some information on the proportion of their operating budgets which was spent on training activities. The figures given were 7% for Argentina, 4% for Brazil, 2.7% for Finland, and 2% for Spain.

On question 4, WG 3 considered that:

- IAEA should continue doing what it does now.

¹⁹ Further details (in Spanish) can be found at: <http://www.foroiberam.org/web/index.php>