

Unclassified

NEA/RWM/WPDD(2013)6/PROV

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

11-Feb-2014

English - Or. English

**NUCLEAR ENERGY AGENCY
RADIOACTIVE WASTE MANAGEMENT COMMITTEE**

Working Party on Decommissioning and Dismantling (WPDD)

Summary Record of the 14th Session of the WPDD

**Held on 18-20 November 2014
NEA Offices, Issy-les-Moulineaux, France**

For any further information please contact Ivan REHAK (ivan.rehak@oecd.org)

JT03352282

Complete document available on OLIS in its original format

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.



NEA/RWM/WPDD(2013)6/PROV
Unclassified

English - Or. English

NEA/RWMC WORKING PARTY ON DECOMMISSIONING AND DISMANTLING (WPDD)

14th Session of the WPDD

Summary Record

The 14th meeting of the RWMC Working Party on Decommissioning and Dismantling (WPDD) was held on 18-20 November 2013, at:

OECD Nuclear Energy Agency Offices,
Le Seine Saint-Germain, 12 Boulevard des Iles, 92130 Issy-les-Moulineaux, France

This meeting included a topical session on *Preparation for Decommissioning During Operation and After Final Shutdown* (19th November 2013). This summary record does not include the Rapporteur's Report on the Topical Session, which report will be included in the next update.

The agenda of the meeting can be found in the Annex.

Presentations alongside this open-access summary record and the list of participants are posted on the WPDD restricted web page: <https://www.oecd-nea.org/download/wpdd/wpdd14/index.html>.

Plenary Session	3
Annex	14

Monday 18 November 2013 (DAY 1)

Plenary Session

Item	Summary of Discussions and Decisions
-------------	---

1. OPENING THE MEETING

Mr Juan-Luis Santiago, WPDD Chair, welcomed participants to the 14th session of the WPDD. He introduced new WPDD members present at the meeting.

Mr Kazuo Shimomura, a new NEA Deputy Director – Safety and Regulation, informed on the 127th Session of the Steering Committee for Nuclear Energy (24-25 October 2013, Paris) that included a Policy Debate on Decommissioning. He reported on the OECD NEA activities regarding Fukushima Daiichi accident, and introduced a recent OECD NEA publication ‘*The Fukushima Daiichi Nuclear Power Plant Accident: OECD/NEA Nuclear Safety Response and Lessons Learnt*’ ([No. 7161](#), OECD NEA 2013), reporting on immediate response by NEA member countries and NEA actions in follow-up to the Fukushima Daiichi accident. He also informed about establishing the International Research Institute for Nuclear Decommissioning, IRID, and invited the RWMC and WPDD to discuss how to support the Institute.

2. REVIEW AND ADOPTION OF AGENDA

Mr Ivo Tripputi, WPDD Core Group Member, proposed under the item 16 ‘*Any Other Business*’ to deal with ongoing discussion concerning a proposal for exclusion of some nuclear facilities under decommissioning from the Paris Convention on Nuclear Third Party Liability.

Mr Boby Abu-Eid updated the title of his presentation under the item TS8 as ‘*Aspects of Preparation for Decommissioning US Commercial Facilities - Regulatory Perspective*’.

Decision: The agenda was adopted in principle as proposed.

3. REVIEW AND APPROVAL OF SUMMARY RECORD OF WPDD-13

Decision: The Summary Record of WPDD-13 was approved.

4. INTERNATIONAL DEVELOPMENTS

4.a IAEA - Decommissioning-related activities over the past year

Mr Vladimir Michal provided an update on current work of the IAEA in the area of decommissioning. He informed on the objectives of the International Decommissioning Network (IDN) and examples of its activities in 2013, on recently issued technical publications, and decommissioning related reports under preparation, on-going regional technical cooperation projects and recently completed national technical cooperation projects. He also reported on the International Project on Evaluation and Demonstration of Safety for Decommissioning of Nuclear Facilities (DeSa), completed in 2011, and further

on the International Project on Use of Safety Assessment in the Planning and Implementation of Decommissioning of Facilities using Radioactive Material (FaSa), to be completed this year. He concluded his presentation with briefing on the 'Connect' – a concept and software tools for inter-connecting the IAEA networks related to decommissioning, remediation, radioactive waste management and disposal.

In the discussion it was noted that the Connect platform serves for sharing presentations, maintaining discussions and generally for exchange of information. Countries with developed nuclear programmes are encouraged to share their information with countries with less developed programmes.

4.b EC - Decommissioning-related activities over the past year

Mr Thomas Kirchner informed on the document '[3rd Decommissioning Funding Report \(Communication from the Commission to the European Parliament and the Council on the Use of Financial Resources Earmarked for the Decommissioning of Nuclear Installations, Spent Fuel and Radioactive Waste\)](#)', and its accompanying document '[Commission Staff Working Document: EU Decommissioning Funding Data](#)', noting that there is a gradual improvement over the years as for scope and detail of information provided as well as for level of legal implementation. A legal base is currently formed mainly by the '[Commission Recommendation of 24 October 2006 on the Management of Financial Resources for the Decommissioning of Nuclear Installations, Spent Fuel and Radioactive Waste](#)' and the '[Council Directive 2011/70/EURATOM of 19 July 2011 establishing a Community Framework for the Responsible and Safe Management of Spent Fuel and Radioactive Waste](#)', while the latter makes some Recommendation's principles binding. The Commission focuses on adequacy of financial resources available when needed for the implementation of national programmes for all types of radioactive waste and spent fuel, at all phases of their management, on 'polluter pays' principle, on cost estimates and its transparency.

Mr Kirchner also briefed on the Decommissioning Funding Group, established as a group of representatives of the EC Member Countries, with aim to better address decommissioning costing aspects and to achieve agreement of the EC Member Countries on common reporting format concerning requests of above mentioned Recommendation and Directive. He also informed about priorities of the EC Joint Research Centre, and on EU decommissioning funding support of three decommissioning projects: Ignalina 1&2 (Lithuania), Kozloduy 1-4 (Bulgaria), and Bohunice V1 (Slovakia) up to year of 2020.

It was noted that currently no report is available from the round table discussions of the Decommissioning Funding Group. However, a summary report from the next round table to be held in the spring 2014 may be issued. If the summary report is available, WPDD would appreciate to be informed.

Decision: The Secretariat will inform WPDD members in case the report of the EC Decommissioning Funding Group round table to be held in the spring 2014 is available.

5. DEVELOPMENTS WITHIN THE NEA

5.a RWMC and NEA Steering Committee

Mr Michael Siemann informed about main outcomes of 46th Meeting of the Radioactive Waste Management Committee (RWMC), held on 13-14 March 2013 in Paris. The meeting elected Jean-Paul Minon (Belgium, Belgoprocess) as a new RWMC Chairperson. Mr Siemann noted that the Ad hoc Expert Group on Decommissioning Costs of the NEA Nuclear Development Committee (NDC) has a full support of the RWMC. He

also briefed on 127th Session of the Steering Committee for Nuclear Energy (24-25 October 2013, Paris), as well as on the current effort to find a way of cooperation between the Co-operative Program on Decommissioning (CPD) and the Information System on Occupational Exposure (ISOE), concerning collating and analysing occupational dose data from decommissioning activities. Mr Siemann also noted about his planned participation in the 2nd IAEA International Peer Review Mission on Mid-and-Long-Term Roadmap towards the Decommissioning of TEPCO's Fukushima Daiichi Nuclear Power Station Units 1-4 (25 November – 4 December 2013).

Regarding the Secretariat, Mr Siemann introduced Mr Vladimir Lebedev, a new member of the Radiation Protection and Radioactive Waste Management Division, joining the OECD NEA from Rosatom, Russian Federation. He also informed that Mr Ivan Rehak did not accept 2 year extension of the contract and is leaving the OECD NEA on completion of his current contract in April 2014.

Mr Siemann encouraged WPDD members to participate in '[*Symposium on Recycling of Metals Arising from Operation and Decommissioning of Nuclear Facilities*](#)', April 8-10, 2014 at Studsvik Site, Sweden, co-sponsored by the OECD NEA. Mr Arne Larsson summarized in his presentation basic coordinates of the Symposium.

In the discussion it was explained that the Ad hoc Expert Group on Decommissioning Costs of the NEA Nuclear Development Committee (NDC) does not overlap the mandate of the WPDD Decommissioning Cost Estimation Group, since NDC addresses economic aspects in the nuclear energy, *inter-alia* focuses on economic analysis of nuclear energy back-end and on decommissioning funding.

5.b CPD

Mr Ivo Tripputi, CPD MB Chair, presented an overview of current status of the Co-operative Programme on Decommissioning. A new CPD agreement for the next five year period (2014-2018) was modified in two aspects: 1. CPD and TAG Chairmen and Vice-Chairmen are elected for five year period instead of previous three year period; 2. An extent of shared information is solely determined by the Participant presenting the information.

Mr Tripputi informed about two Technical Advisory Group (TAG) meetings organized in 2013: TAG 54, held in Heringsdorf, Germany, 13th -17th May, hosted by EWN, with a topical session on '*General Project Management Good Practice*' and a technical visit to Greifswald NPP; and TAG 55, held in Tokai, Japan, 21st – 25th October, hosted by JAEA, with technical visits to Fukushima Daiichi NPP, JRTRF, AVR, and Tokai 1 NPP.

Since TAG Chairman Mr Jan Carlsson announced his retirement, TAG 54 meeting has elected a former TAG Vice Chairman Mr Robert Valthéry (Belgium, Belgoprocess) as the new TAG Chairman, and Mr Manuel Ondaro (Spain, Enresa) as the new TAG Vice Chairman.

TAG 56 meeting will be held on 19th-23rd May 2014 at Sellafield site, UK, with a topical session on '*Radioactive Waste Containers*', and TAG 57 meeting on 13th- 17th October 2014, being hosted by JRC Ispra, Italy. AVR (Germany), Bohunice (Slovakia) and Belgoprocess (Belgium) have offered hosting the TAG 58 meeting for May 2015; a final decision on venue has not been made yet.

The CPD Task Group on Site Restoration will have completed their report on technical aspects of site restoration by the end of January 2014 (see also item 6.d). Since TAG intend to update old CPD reports, they will seek an approval of CPD Management

Board to launch a new task group on recycling of metals.

6. PROGRAMME OF WORK OF THE WPDD

6.a Task Group on R&D and Innovation Needs for Decommissioning

Mr Gérard Laurent, Task Group Chairman, provided an overview of the *'Report on R&D and Innovation Needs for Decommissioning'*. The Report addresses five themes: 1.Characterization and survey prior to dismantling, 2.Segmentation and dismantling, 3.Decontamination and remediation, 4.Materials and waste management, and 5.Site characterization and environmental monitoring. For each theme the Report describes current R&D status with number of references and internet links, suggests specifics topics for future R&D work and summarizes areas for potential international co-operation.

Since WPDD-12, the authors implemented comments, reviewed and updated the Report, which was then circulated to WPDD members for their comments.

In the discussion the quality of the Report was highly appreciated as an excellent information base suitable not only for researches, but also for regulators, implementers and project managers. Since R&D progresses rapidly, the Report has to be released to public domain as soon as possible and it will require an update after some time. It was proposed to organise a workshop on R&D. It was also noted that the IAEA intends to use a Wiki-platform for sharing the R&D type of information that allows to reflect flexibly on a constant progress in this area.

Decision: WPDD members are invited to comment the *'Report on R&D and Innovation Needs for Decommissioning'* by 31st January 2014. The WPDD Core Group will implement comments and is authorised to approve the Report. The Secretariat will make the Report publicly available from WPDD web site.

6.b Decommissioning Cost Estimating Group (DCEG)

Mr Björn Hedberg, Task Group Chairman, presented the main outcomes of the 6th plenary meeting of the DCEG (18-19 June 2013). The plenary meeting held a topical session on *'Risk Analysis in Decommissioning Costing'*, a topical session on *'Learning Curves'* from repeated industrial procedures, and special presentations on the main cost drivers evolution over time, on application of software tools for the Earned Value Management System, and on update on work concerning decommissioning cost calculation of Swedish NPPs. The plenary meeting also discussed two on-going projects: *'Methodology for International Peer Reviews of Decommissioning Cost Studies'* and *'The Practice of Cost Estimation in Decommissioning'*. Reports of both projects are drafted. The report on the Methodology for International Peer Reviews is **planned** to be completed before the 7th plenary meeting of the DCEG. The Group will continue working on the Practice of Cost Estimation and will launch the work on the risk analysis in decommissioning costing.

In the discussion the DCEG was encouraged to work more on the IAEA-EC-NEA collaborative basis, since a constant improvement of transparency, auditability and traceability of decommissioning costs is of interest of all three international organisations. Project on *'International Structure for Decommissioning Costing of Nuclear installations (ISDC)'* is an excellent example of synergic work of these organisations.

6.c Task Group on Radiological Characterisation and Decommissioning

Mr Arne Larsson, Task Group Chairman, presented an overview of completed project on *'Status Report on Radiological Characterisation for Decommissioning'* – the main

objective of the Report, mode and scope of the work, structure and content of the Report, and its main outcomes. The project fully met targets defined in the Terms of References, as for the work scope and schedule. The Task Group also organized the Workshop on Radiological Characterisation for Decommissioning, held at Studsvik site, Sweden, 17th - 19th April 2012, attended by over 120 participants from 23 countries, and four international organisations.

Based on Task Group's experience of effective and collaborative work, Mr Larsson proposed to continue working, notably on a leaflet on radiological characterisation for decommissioning to disseminate main messages of the Report, and to study aspects of optimisation of characterisation in a waste disposal perspective.

In the discussion it was appreciated that the Report describes a general approach and also discusses specific requirements on characterisation for decommissioning in each phase of nuclear facility lifecycle, although it does not focus on technical details. It was noted that well prepared Data Quality Objective Plan is crucial for effective performance of characterisation. Statistical characterisation methods, reducing number of samples and measurements as well as a project cost and time, and characterisation of subsurface contamination were proposed as potential future topics of the Task Group for further consideration.

Decision: The existing Mandate of the Task Group is extended by 31st December 2015. Task Group Chairman will discuss topics of further work within the Task Group and submit a proposal to WPDD Core Group by 31st May 2014. The Task Group will seek the information on the further progress of on-going ISO project on elaboration of the 'Methodology for sampling and characterization of sites, soils, buildings and infrastructures contaminated with radionuclides or chemical products for remediation purposes' (see item 11).

6.d Nuclear Site Restoration

Mr Peter Orr, Chairman of the CPD Task Group on Site Restoration, presented the progress of the work of CPD Task Group. Having collated information through country- and project- oriented questionnaires, the group analysed information and is finalising a draft report addressing technical aspects of site restoration. The report will contain a review of national and site factors influencing site restoration, actions avoiding or minimising site restoration problems, considerations on integral site management (incl. non-radioactive contaminants, ground water, off-site contamination, waste disposal permitting), good practices leading to effective delivery (project management, techniques, tools, software), followed by technical case studies. The report will be completed by 31st January 2014.

The WPDD-12 meeting organized a topical session on Nuclear Site Restoration and decided to work on a draft report on strategic aspects of site restoration (see WPDD-12 Record [[NEA/RWM/WPDD\(2012\)9](#)], item 13). Therefore, the WPDD Core Group and the Secretariat proposed to establish a WPDD Task Group on Nuclear Site Restoration (NSR) aiming to produce a report on strategic aspects of the subject. Mr Orr presented a proposal of the Mandate of the WPDD Task Group, having been prepared in cooperation with the Secretariat.

Decision: WPDD meeting approved to establish the WPDD Task Group on Nuclear Site Restoration (NSR) and approved the Mandate of the Task Group [[NEA/RWM/WPDD\(2013\)3](#)]. WPDD members are invited to the Task Group, nominations are to be sent to the Secretariat by 3rd March 2014.

7. COUNTRY UPDATES ON DECOMMISSIONING

Short country reports were provided by delegates from each country. Written reports following the pattern table were also submitted by:

- Canada
 - Czech Republic
 - Germany
 - Japan (also presentation)
 - Korea (Republic of)
 - Norway
 - Slovak Republic
 - Sweden
 - Switzerland
 - United Kingdom
 - USA
-

8. SUMMARY OF DAY 1

Mr Juan-Luis Santiago, WPDD Chairman, appreciated the IAEA and EC work in decommissioning and the progress of WPDD and CPD activities. He encouraged for more co-operation between the IAEA, EC and NEA in decommissioning related projects, and invited WPDD members to the new WPDD Task Group on Nuclear Site Restoration.

9. SPECIAL PRESENTATION: R&D DECOMMISSIONING PROGRAMME FOR FUKUSHIMA

Mr Hiroshi Rindo briefed on the Revised Mid-and-Long-Term Roadmap towards Fukushima Daiichi NPP Decommissioning. He informed on development of decontamination technologies for inside part of reactor buildings, on work concerning the survey of the reactor containment, and on remote technologies to identify locations of leaks. He also reported on radioactive waste management plan, pointing at basic features of the wastes and main steps of waste treatment and disposal. He highlighted the main decommissioning challenges in the Mid-and-Long-Term Roadmap.

Then Mr Rindo presented a background and a mission of the International Research Institute for Nuclear Decommissioning (IRID), established in August 2013. He introduced the areas of future R&D focus (fuel debris retrieval, spent fuel retrieval, and radioactive waste treatment and disposal), a proposed network of international cooperation with the IRID, and a mode of co-operation amongst R&D stakeholders in Japan. Finally, he presented a mission and planned activities of the JAEA's Technology Safety Research Centre for Decommissioning of Fukushima Daiichi, established in April 2013. He completed his presentation by a set of reference links to Governmental bodies and organisations related to decommissioning.

10. SPECIAL PRESENTATION: THE IAEA INTERNATIONAL PEER REVIEW OF THE ROADMAP TOWARDS DECOMMISSIONING OF FUKUSHIMA DAIICHI NPP

Mr Vladimir Michal informed on the first mission of the IAEA International Peer Review of the Roadmap Towards Decommissioning of Fukushima Daiichi, which was held on 15th -22nd April 2013 on request of METI. The main objective of the first mission was an initial review of the Roadmap and a review of several specific short-term issues and recent challenges. The objective of the second planned mission will be more detailed and holistic

review of the Roadmap and mid-term challenges including a review of agreed specific topics. Mr Michal presented topics covered by the first mission review, he reported on a mission programme and gave examples of the Acknowledgements and Advices summarized in the Mission Report available at <http://www.iaea.org/newscenter/news/2013/fukushimareport.html>.

The Mid-and-Long-Term Roadmap was revised and updated in June 2013, taking also into account the first mission Advices. The second mission will be organized from 25th November to 4th December 2013. Mr Michael Siemann will be a member of the second mission team as an OECD NEA representative.

In the discussion it was noted that there is a space for international organisations to provide more advice on safety and technical aspects concerning management of vast amounts of waste and on off-site remediation activities.

11. SPECIAL PRESENTATION: DEVELOPMENTS OF CHARACTERIZATION STANDARDS AT THE INTERNATIONAL LEVEL

Mr Jean-Guy Nokhamzon informed on the on-going ISO project on elaboration of the *'Methodology for sampling and characterization of sites, soils, buildings and infrastructures contaminated with radionuclides or chemical products for remediation purposes'* as a future comprehensive decommissioning characterisation standard employing besides others a geostatistical sampling approach. Mr Nokhamzon focused on the outcomes achieved at the latest meeting (ISO/TC85/SC5) held in Atlanta, 10th -13th June 2013. He presented a proposed characterisation strategy diagram, a table of contents of the proposed standard with focus on chapter *'Strategy applied to the remediation of contaminated sites and soils'*, covering steps from definition of characterisation objectives, historical and functional analysis, through 2D and 3D characterisation program, data processing, meeting characterisation objectives, up to remediation program. The standard is planned to be completed and published by December 2015.

In the discussion it was highlighted that the project of the future ISO standard is not a duplication of existing MARSSIM methodology. The former describes characterisation procedures for further performance of decommissioning and remediation activities, while the latter addresses procedures and techniques to be performed for the site release as the last phase of decommissioning project.

12. OPENING DAY 3

Mr Juan-Luis Santiago, WPDD Chairman, reminded that the Russian Federation has become a member of the OECD Nuclear Energy Agency since 1st January 2013, and thanked presenters Mr Evgeny Komarov, Ms Tatyana Berezovskaya, Mr Vladimir Zimin, and Mr Leonid Sukhanov for attending the meeting to give a general information on decommissioning scene in Russia. He also welcomed invited presenter Mr Jörg Feinhals from Germany who would present considerations on material clearance and site release.

13. DECOMMISSIONING IN THE RUSSIAN FEDERATION

13.a Decommissioning legal framework and funding

Mr Evgeny Komarov briefed on location and number of NPPs, research reactors, other reactors, RW/SNF storage facilities and sites, and radiochemical production sites in Russia. He presented a hierarchical structure of a legal and regulatory framework for decommissioning and main legal provisions, notably federal acts on use of nuclear energy and on radioactive waste management, and governmental decrees on decommissioning

licensing and on financing the decommissioning and radioactive waste management related activities. Rosatom prefers a deferred dismantling strategy for facilities containing induced activity, defines the ‘final isolation sites’ in case of ‘non-retrievable’ radioactive waste, and recommends immediate dismantling in all other cases. Another option is a conversion of the facility to other use. Decommissioning liability is estimated as USD 100B and 70 percent of facilities/sites are legacy ones. Mr Komarov also introduced the decommissioning funding scheme and the use of funds, and addressed key challenges in decommissioning in Russia. He underlined a need for defining a long-term decommissioning strategy taking in to account an inventory of facilities, a legal and regulatory framework, and a prioritisation of decommissioning projects.

13.b Decommissioning costing

Ms Tatyana Berezovskaya presented a methodology of cost estimation of decommissioning and site remediation activities for facilities and sites of Rosatom and its affiliates. Costing approach is based on cost estimation for typical facility and on applying correction factors for similar ones. Costs for treatment of waste arising from decommissioning are included. Assumed end stage is a ‘brown field’. A conceptual description of cost estimation methodology for facilities with nuclear reactors (power, research, others), storages, and production facilities were presented. Finally, examples of estimated decommissioning costs averaged per unit reactor power were given for specific types of power reactors and research reactors.

13.c Decommissioning of nuclear power plants

Mr Vladimir Zimin informed on a mission of the ‘All-Russian Research Institute for NPP Operation’ (VNIIAES), which provides a scientific and technical support to operational NPPs to enhance their safety and efficiency, as well as a consultancy and technical support in the area of decommissioning and radioactive waste management. He presented a schedule of final shutdown of the first generation nuclear power reactors in Russia. In addition to country’s legal and regulatory framework, he briefed on current decommissioning guides. Mr Zimin introduced main decommissioning concepts: deferred dismantling, immediate dismantling and on-site disposal, and he presented decommissioning plans (immediate dismantling) for Novovoronez 1&2 NPP (shutdown 1984,1990) and Beloyarsk 1&2 NPP (shutdown 1983,1989). The former has obtained a decommissioning license, the turbine hall equipment have been dismantled, and the Decommissioning Demonstration Centre has been established on the site. Mr Zimin addressed infrastructural and societal challenges arising from transition process from operation to decommissioning (e.g. loss of job opportunities, impact on local economy). He completed his presentation with considerations on an effective decommissioning concept resulting to economical/industrial renewal of the site.

13.d Activities of the JSC VNIINM in decommissioning

Mr Leonid Sukhanov informed on the scope of work of the ‘A.A. Bochvar Research Institute of Inorganic Materials’ (VNIINM), providing besides others uranium and plutonium radiochemistry research, research of materials for nuclear industry, SNF and radioactive waste management research, and development of radioactive waste treatment technologies for nuclear sites. The Institute performs decontamination and dismantling activities of former fuel cycle research facilities (prototype equipment, labs, hot cells) and remediation of their surrounding areas.

Mr Sukhanov described in detail a plan and performance of decontamination, dismantling and remediation of the ‘Building B’, which had been used as an experimental base of the USSR radiochemical industry. He also informed on decontamination activities

of the ‘Large-scale facility U-5’ (a prototype of plutonium production plant (1946-1965) later implemented at Mayak site), as well as on current radioactive waste management infrastructure of the Institute.

In the discussion related to above four presentations it was noted that decommissioning cost estimations include also cost estimations of project management activities. The risk analysis is not applied in the cost estimates at the moment; its application is under consideration.

Decommissioning Fund was established in 1999 and contributions to the Fund are based on the price of sold electricity. In addition, the Government established the Federal Target Programme (2008-2015). A new Federal Target Programme will be defined for period 2016-2020, with extension till 2025. Its concept is already approved by Rosatom’s Public Council and now is under development. Moreover, Rosatom operates its own fund to support R&D activities in decommissioning and radioactive waste management.

A separate fund for final radioactive waste disposal is also established after the Federal Act on Radioactive Waste Management came into force, and contributions to the fund are based on the volume of produced radioactive waste packages to be disposed.

Rosatom, as facilities’ owner, is legally responsible for decommissioning and performs decommissioning through its subsidiary companies and contractors.

After submittal of decommissioning license documentation, the regulator has to decide on consent/refusal within one year.

Concerning preparation for decommissioning and training needs, Rosatom operates decommissioning and radioactive waste management training centres with adequate training programmes and relevant infrastructure. Moreover, these centres focus on R&D of decommissioning technologies and their presentation to stakeholders.

Material clearance is based on 10 microSv concept. Concerning disposal infrastructure, a deep geological repository is planned to be located at Krasnoyarsk region, three LILW disposal facilities are planned at current nuclear sites in 10-20 year perspective.

14. POTENTIAL FUTURE WORK OF WPDD

Invited Presentation: Material Clearance and Site Release: Different Strategies

Mr Jörg Feinhals presented in detail the structure of clearance levels, and briefed on clearance procedures used in Germany. Radioactivity based clearance levels are predominantly applied, but a direct application of 10microSv model is also an option. Mr Feinhals summarized French approach of zoning (not employing a concept of clearance levels), and pros and cons of this approach as stated by the ASN. He also quoted J. Avérous’ conclusions (2004) on cost benefit comparison of clearance strategy vs. VLLW disposal strategy.

Mr Feinhals explained a distinction in conditions for application of clearance and removal procedures, as defined by German regulations. Up to now, two thirds of material from the Greifswald site has undergone a removal as non-contaminated material, and one third of material a clearance procedure as potentially contaminated material. Explanation of distinction between clearance and exemption was also given, as stated in a proposal of the new EC Basic Safety Standards Directive (EC BSS), followed by comparison of the IAEA and EC concepts of material clearance and site release.

Finally, he addressed issues of regulator’s license requirements defined on the basis of single case assessment, justification of reduction of decontamination effort by releasing the

site with remaining activity, and legacy aspects. Mr Feinhals concluded his presentation by summarising the scope of EC regulation and guidance concerning the site release.

In the discussion it was noted that the zoning approach and the absence of clearance levels have its basis in the public concern of release of contaminated material by mistake. This concept demands extensive final disposal capacities (VLLW).

Clearance and/or VLLW disposal: The roles in the optimisation of radioactive waste management for decommissioning

Mr Claudio Pescatore briefed on the report on '*Release of Radioactive Materials and Buildings from Regulatory Control*' (OECD NEA, 2008) and its achievements. The Report gives an overview of clearance levels and practices of selected OECD NEA Member Countries, however, the subject of optimisation of clearance vs VLLW/LLW disposal is discussed only marginally. The Report quotes outcomes of J< Averous' paper (2004).

Many countries built up their radioactive waste management infrastructure including final disposal facilities and established their clearance procedures. Some countries operate VLLW disposal facility because of either not having the clearance procedures, or lowering the volume of waste to be disposed of to LLW facility. Moreover, since the existing free capacities of final radioactive waste repositories are decreasing faster than it was projected, and building new final disposal capacities is getting more difficult due to public acceptance, an optimisation of final disposition (LLW, VLLW, clearance) of materials and radioactive waste is important. In light of this, it is also important to understand past decision making and priorities made by countries when they were forming their radioactive waste management concepts.

In the discussion it was proposed to organise a WPDD topical session on optimisation of final disposition of radioactive waste and materials from decommissioning.

15. COUNTRY UPDATES ON DECOMMISSIONING (see Item 7)

16. ANY OTHER BUSINESS

Mr Ivo Tripputi informed on the Paris Convention on the Third Party Liability in the Field of Nuclear Energy and on the current effort of the OECD NEA towards defining criteria for exclusion from the Convention for nuclear installations under decommissioning. Criteria for exclusion are proposed as the radioactivity in Bq of listed nuclides for a nuclear installation, and then the second scrutiny is to meet a site specific scenario criterion of less than 1 mSv individual annual off-site dose under accident conditions. Above mentioned radioactivity criteria have been derived from 10 mSv model, under considerably conservative assumptions concerning fraction of released inventory during accident. Therefore, it is assumed that only few installations under decommissioning would pass radioactivity criteria.

It was also noted that the combination of the new liability limits (2004 Amendment) and the difficulty to assess a real risk for the nuclear installation under decommissioning may make it difficult to insure the installation. Moreover, the proposed radioactivity criteria differ from those for a decommissioning license, what may be questioned by the public.

Since the proposed criteria for exclusion from the Convention are still being discussed within the NEA Commission on Radiation Protection and Public Health (CRPPH), the WPDD meeting was invited to discuss the radioactivity criteria at a separate meeting in

January 2014 to support the CRPPH.

Note after the meeting: The CPPRH announced that the representatives of the Parties of the Paris Convention achieved agreement on the subject and their discussion is completed. The Secretariat cancelled the preparation of the meeting proposed for January 2014.

17. DATE AND PLACE OF NEXT MEETING

Mr Evgeny Komarov proposed hosting of WPDD-15 meeting by Rosatom in the Russian Federation.

Decision: WPDD Plenary meeting will be held in Moscow. A technical site visit will be held in Moscow or Novovoronez. Date of the meeting will be specified later, a proposed duration is 3-4 days, between 10-20 October 2014. The meeting will hold a special session on decommissioning scene in the Russian Federation and a topical session on optimisation of final disposition of radioactive waste and materials from decommissioning.

18. REVIEW OF MAIN DECISIONS AND ACTION ITEMS

Juan-Luis Santiago – see decisions in this record.

Annex: AGENDA

18 NOVEMBER 2013 (DAY 1)				
14 th Meeting of the WPDD Venue: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12, boulevard des Îles, Issy-les-Moulineaux, France NEA Room A and B				
Chair: Juan-Luis Santiago, Spain				
14:00	1.	OPENING THE MEETING <i>Kazuo Shimomura, NEA Deputy Director – Safety and Regulation</i> <i>Juan-Luis Santiago, Spain, WPDD Chair</i>		
14:15	2.	REVIEW AND ADOPTION OF AGENDA <i>Juan-Luis Santiago</i>	D	NEA/RWM/WPDD/A(2013)2 (Document No.1 -
14:20	3.	REVIEW AND APPROVAL OF SUMMARY RECORD OF WPDD-13 <i>Juan-Luis Santiago</i>	D	NEA/RWM/WPDD(2012)9 (Document No.2)
	4.	INTERNATIONAL DEVELOPMENTS		
14:25	4.a	IAEA – Decommissioning-related activities over the past year <i>Vladimir Michal, IAEA</i>	I	Oral Report
14:40	4.b	EC – Decommissioning-related activities over the past year <i>Thomas Kirchner, EC</i>	I	Oral Report
	5.	DEVELOPMENTS WITHIN THE NEA		
14:55	5.a	RWMC and NEA Steering Committee <i>Michael Siemann, Head of RP & RWM Division, NEA</i>	I	Oral report
15:05	5.b	CPD <i>Ivo Tripputi, Italy, CPD MB Chair</i>	I	Oral Report
	6.	PROGRAMME OF WORK OF THE WPDD		
15:20	6.a	Task Group on R&D Needs for Decommissioning <i>Gérard Laurent, France, R&D TG Chair</i> (The Report on R&D and Innovation Needs for Decommissioning was revised by the authors and was circulated to WPDD members on 6 th November 2013 to comment the Report. A procedure for approval-in-principle through the WPDD Core Group is proposed.)	D	Oral Report

15:40	6.b	<p>Decommissioning Cost Estimation Group (DCEG) by Björn Hedberg, Sweden, DCEG Chair</p> <ul style="list-style-type: none"> • <i>The DCEG-6 Meeting and Current Status of Work</i> • <i>DCEG Work Plan</i> 	I	Oral Report
15:55		BREAK		
16:15	6.c	<p>Task Group on Radiological Characterisation and Decommissioning Arne Larson, Sweden, RCD TG Chair</p> <ul style="list-style-type: none"> • <i>Information on recently completed project</i> • <i>Proposal of future work</i> <p><i>(The Report on Radiological Characterisation for Decommissioning of Nuclear Installations was commented by WPDD members from 14 June 2013 till 15 August 2013. DCEG and the Task Group on R&D and Innovation Needs were also invited to comment the Report. Since comments were minor, in accordance with the decision of the WPDD Core Group the Report was issued in September 2013, and posted on publicly available web page of WPDD on 18th October 2013 as [NEA/RWM/WPDD(2013)2]).</i></p>	I D	Oral Report
16:35	6.d	<p>Nuclear Site Restoration Peter Orr, UK, CPD Nuclear Site Restoration TG Chair</p> <ul style="list-style-type: none"> • <i>Reflection from the last topical session (WPDD-13)</i> • <i>Information on the work progress of CPD Task Group on Nuclear Site Restoration</i> • <i>Proposal to create a WPDD Task Group on Nuclear Site Restoration</i> <p><i>(The CPD Task Group on Nuclear Site Restoration is currently working on a report on technical aspects of site restoration. WPDD members are invited to form the WPDD Task Group on Nuclear Site Restoration to launch work on a report on strategic aspects of site restoration.)</i></p>	I D	Oral Report
17:00	7.	<p>COUNTRY UPDATES ON DECOMMISSIONING</p> <ul style="list-style-type: none"> • <i>Country delegations are invited to present information on recent developments in their country on decommissioning aspects, following the structure of the template for individual country updates. The completed template should be provided to the NEA Secretariat <u>at least one week before the meeting for later distribution.</u></i> 	I	Oral Reports
17:50	8.	SUMMARY OF DAY 1		
18:00		ADJOURN		

19 NOVEMBER 2013 (DAY 2)		
14th Meeting of the WPDD Venue: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12, boulevard des Îles, Issy-les-Moulineaux, France NEA Room A and B		
Topical Session on 'PREPARATION FOR DECOMMISSIONING DURING OPERATION AND AFTER FINAL SHUTDOWN'		
Session Chair: Gérard Laurent, France, EDF Rapporteur: Bernhard Massing, Germany, BMU		
09:00	TS1.	INTRODUCTION TO THE TOPICAL SESSION <i>Session Chair</i>
		TECHNICAL ASPECTS OF PREPARATION FOR DECOMMISSIONING
09:10	TS2.	CEA'S FEEDBACK EXPERIENCE IN THE PREPARATION FOR DECOMMISSIONING: RESEARCH REACTORS AND HOT LABS <i>Jean-Guy Nokhamzon, France, CEA</i> <i>(presentation 15', discussion)</i>
09:30	TS3.	EXAMPLES OF PREPARATORY ACTIVITIES FOR DECOMMISSIONING IN JAEA FACILITIES <i>Hiroshi Rindo, Japan, JAEA</i> <i>(presentation 15', discussion)</i>
09:50	TS4.	ENGAGING THE PREPARATORY AND POST-DEFINITIVE PRODUCTION SHUTDOWN OPERATIONS FOR EDF SITES <i>Gérard Laurent, France, EDF</i> <i>(presentation 15', discussion)</i>
10:10	TS5.	STATE OF THE ART AND FUTURE PERSPECTIVES FOR DECOMMISSIONING OF NUCLEAR POWER PLANTS IN GERMANY <i>Ralf Verseemann, Germany, RWE Power AG</i> <i>(presentation 15', discussion)</i>
10:30		BREAK
10:40	TS6.	MAGNOX LTD'S TRANSFORMATION FROM OPERATING TO DECOMMISSIONING – THE IMPACT ON THE WORKFORCE <i>Beccy Pleasant, UK, Magnox Ltd.</i> <i>(presentation 15', discussion)</i>
11:00	TS7.	TECHNICAL CASE OF ENRESA, SPAIN <i>Juan-Luis Santiago, Spain, ENRESA</i> <i>(presentation 15', discussion)</i>

11:20	TS8.	ASPECTS OF PREPARATION FOR DECOMMISSIONING US COMMERCIAL FACILITIES – REGULATORY PERSPECTIVE <i>Boby Abu-Eid, USA, US Nuclear Regulatory Commission</i> (presentation 15', discussion)
11:40	TS9.	TECHNICAL CASE OF THE US DOE <i>Andrew Szilagyi, USA, US Department of Energy</i> (presentation 15', discussion)
12:00		Lunch
13:20	TS10.	PRACTICAL ASPECTS OF SAFETY CULTURE: SOGIN, ITALY <i>Ivo Tripputi, Italy, SOGIN</i> (presentation 15', discussion)
13:40	TS11.	SUMMARY OF TECHNICAL ASPECTS <i>Session Chair</i>
		STRATEGIC ASPECTS OF PREPARATION FOR DECOMMISSIONING (What are / should be regulators' requirements concerning preparation for decommissioning during operation & transition period)
13:50	TS12.	STRATEGIC CONSIDERATIONS AT POLICY LEVEL IN CANADA <i>Doug Metcalfe, Canada, Natural Resources of Canada</i> (presentation, - discussion in panel)
14:05	TS13.	STRATEGIC CONSIDERATIONS AT THE REGULATORY LEVEL IN FRANCE <i>Céline Fanguet, France, ASN</i> (presentation, - discussion in panel)
14:20	TS14.	STRATEGIC CONSIDERATIONS AT POLICY LEVEL IN GERMANY <i>Bernhard Massing, Germany, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety</i> (presentation, - discussion in panel)
14:35	TS15.	STRATEGIC CONSIDERATIONS BY A SWEDISH NPP OPERATOR <i>Svante Andersen Sweden, Vattenfall Sweden</i> (presentation, - discussion in panel) (In Sweden, the NPP operators and their jointly owned waste management company SKB are responsible for strategic considerations for decommissioning and waste management.)
14:50	TS16.	STRATEGIC CONSIDERATIONS ON COMMERCIAL FACILITIES IN THE USA <i>Boby Abu-Eid, USA, US Nuclear Regulatory Commission</i> (presentation, - discussion in panel)
15:05		Break
15:30	TS17.	PANEL
16:30	TS18.	CONCLUDING REMARKS <i>Session Chair</i>
16:40		CLOSURE OF THE TOPICAL SESSION

19 NOVEMBER 2013 (DAY 2)			
14th Meeting of the WPDD Venue: OECD Nuclear Energy Agency, Le Seine Saint-Germain, 12, boulevard des Îles, Issy-les-Moulineaux, France NEA Room A and B			
Chair: Juan-Luis Santiago, Spain			
16:40	9.	Special presentation: R&D DECOMMISSIONING PROGRAMME FOR FUKUSHIMA <i>Hiroshi Rindo, Japan, JAEA</i>	Oral report
17:20	10.	Special presentation: THE IAEA INTERNATIONAL PEER REVIEW OF THE ROADMAP TOWARDS DECOMMISSIONING OF FUKUSHIMA DAIICHI NPP <i>Vladimir Michal, IAEA</i>	Oral report
17:40	11.	Special presentation: DEVELOPMENTS OF CHARACTERIZATION STANDARDS AT THE INTERNATIONAL LEVEL <i>Jean-Guy Nokhamzon, France, CEA</i>	Oral report
18:00		Adjourn	

CLOSING SESSION				
12:25	16.	<p>ANY OTHER BUSINESS <i>Juan-Luis Santiago</i></p> <p><i>Any other item raised in the meeting that needs further addressing</i></p>		
12:35	17.	<p>DATE AND PLACE OF NEXT MEETING <i>Secretariat</i></p> <ul style="list-style-type: none"> • <i>The Secretariat proposes the Russian Federation to host the WPDD-15 in 2014.</i> 	D	
12:45	18.	<p>REVIEW OF MAIN DECISIONS AND ACTION ITEMS <i>Juan-Luis Santiago</i></p>	D	
13:00		ADJOURN		