IAEA
International Atomic Energy Agency

Interoffice Memorandum

To: P. Vincze, A/DIR-NENP

From: I. Khamis, NPTDS

Through:

Clearance: S. Monti, SH-NPTDS

Reference: 622-I3-TM-49708

Date: 2015-02-27

Subject: Meeting Report of the Technical Working Group on Nuclear Desalination (TWG-ND)

Place of Meeting: IAEA Headquarters, Vienna

Date of Meeting: 27-29 January 2015

Program code: 1000155/2014.04/RBF-MP1-2015/613222-\NIIR-\TRV-Non Staff Cons./NENP-NPTDS

Scientific Secretary: Mr Ibrahim Khamis

Chairperson: Mr R. Faibish, USA

ATTENDING EXPERTS

Name	Country/Organization	Date
A. Belkaid	ALG- COMENA	27-29 Jan
M. Chocron	ARG – CNEA	-"-
M.C. Conti	ARG – CNEA	-"-
G. Ejjeh	BEL – BESIX	-"-
I. Dincer	CAN – Univ. Ontario Inst. of Technology	-"-
S. Shen	CPR – Dalian Univ. of Technology	-"-
S. Panicker	IND – BARC	-"-
Y. Muralev	KAZ – MAEK-Kazatomprom	-"-
A.U. Khan	PAK – KNPC/PAEC	-"-

cc:
A. V. Bychkov
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NENP All staff
ARMS

File

M-13 Rev. 6 (Sep 07)

10 page IOM, IKhamis / ymgm-22815, Meetg Report.docx

Name	Country/Organization	Date
A.S. Al-Arifi	SAU – Saline Water Conversion Corp.	-"-
J. Martinez-Sanchez	SPA – Univ. Ingeniería Téchnica Industrial Barcelona	-"-
K.M. Persson	SWE – Water Resources Engineering Lund University	-"-
R. Faibish	USA – ANL	27-28 Jan.

1. Background

The International Nuclear Desalination Advisory Group (INDAG) was established by the IAEA in 1996. INDAG played an active role in the past years, contributed to promotion and stimulation of nuclear desalination activities, and provided a forum for Member States to exchange information on the technological developments, operations, and demonstration of integrated nuclear desalination systems. To enhance its functions, the IAEA has reformed INDAG into a Technical Working Group on Nuclear Desalination (TWG-ND) in 2008. This meeting was the fourth meeting of the TWG-ND. The meeting was held from 27-29 Jan 2015 at the VIC, Vienna, and attended by 13 members. Mr I. Khamis acted as the Scientific Secretary and Mr R. Faibish of USA served as the Chairperson.

2. Objectives of the meeting

The purpose of the meeting is to:

- Review progress made by the IAEA Secretariat and Member States on nuclear desalination and integrated water resources management (IWRM) in nuclear facilities;
- Provide advice and guidance on future IAEA activities relating to nuclear desalination and IWRM;
- Provide a forum for sharing information and knowledge on developments in national and international programmes in the area of nuclear desalination and IWRM;
- Identify important topics in the fields of nuclear desalination and IWRM for discussion by the Standing Advisory Group on Nuclear Energy (SAGNE); and
- Provide advice on preparatory actions by Member States for implementing nuclear desalination demonstration projects and IWRM in nuclear facilities.

3. Agenda

see Annex 1 attached.

4. Summary of the work done and results achieved

Mr. I. Khamis (IAEA Scientific Secretary) presented as an introduction to the Terms of Reference of the TWG-ND and discussed its scope, functions, chairmanship, methods of work and deliverables as related to the IAEA Programme on nuclear seawater desalination. Then, he presented a summary of the IAEA activities (those already implemented as well as those foreseen in the future) in the areas of:

- Coordinated Research Program (CRP)
- Technical Cooperation (TC)
- Forums for information exchange
- Publications on Nuclear desalination
- Upgrade of Desalination Economic Evaluation Programme DEEP
- Development of a toolkit on nuclear desalination
- Budget & Planning (B&P)

The IAEA tools on nuclear desalination tools i.e. the upgraded DEEP-5.1, DE-TOP, toolkit on nuclear desalination, and WAMP were presented. A live demonstration of the applications followed.

The TWG-ND expressed their satisfaction with the IAEA workplan on nuclear desalination and the successful upgrade of IAEA tools, through the supporting recommendations presented in the report.

Algeria (Mr. Belkaid), Seawater desalination technology appeared for the first time in Algeria, in 1964, with the introduction of petrochemical industry. Since then, several desalination plants were installed to meet water demand expressed by industry needs. Given the significant growth experienced of industry, the total installed capacity has reached 100,000 m3/day in 2000. To cope with the high water demand expressed by the population due to its increase and because of decrease of water resources due to a succession of droughts experienced by the country during the 70s, 80s and 90s decades, the Algerian's authorities launched the implementation of a seawater desalination program whose total capacity will be as high as 1.5 million m3/day by 2016. This extensive seawater desalination program is based on natural gas which is locally considered as the favourite energy source. As part of the diversification of the energy source, several techno-economic feasibility studies of seawater desalination using nuclear energy have been initiated. These studies were implemented within the framework of cooperation programmes with the International Atomic Energy Agency respectively through participation to three cooperation projects RAF/4/010, RAF/4/013, ALG/4/012 and to a recent Coordinated Research Project on nuclear desalination field, initiated in 2009. Participation in the last two projects, ALG/4/012 and CRP, within the scope of redeployment activities affecting the field of nuclear technology is part of the preparation program for the introduction of nuclear power in Algeria, in close cooperation with the IAEA. To resolve the challenges of its future and also decrease at the same time the natural gas demand, Algeria has developed a strategy of renewable energy and energy efficiency program. The total capacity of renewable energy which to be installed is of 22,000 MW with 12,000 MW cover its domestic electricity requirements and 10,000 MW for export. This program was launched in 2012 and continues through 2030. Additionally, nuclear energy is an on-going option to cope with a runaway demand for electricity. In Algeria, the first nuclear power plant could be operating in 2027.

Argentina (Mr. Chocron), Argentina has been working in IAEA ND activities in the frame of the INDAG and later in TWG-ND as a permanent member state since 2009 and attended previous meetings (2009/2011/2013). In that sense, Argentina ratifies the support to the IAEA in the full programme on nuclear desalination (ND), waste heat recovery (WHR) and recent inclusion of water management (WM). It is considered that the programme will allow the improvement in efficiency and safety of the NPPs and finally will provide additional benefits to the population. Argentina appreciates that water management and waste heat recovery tasks have been incorporated in the TWG and confirm its participation in the future. As a conclusion of the current meeting and the activities presented by member states there would be three points of view related to ND:

i) Countries which need to supply large amounts of potable water to the population and in consequence make use of commercial and conventional technologies because the water is seen as an strategic issue. They could consider for the future the deployment of high power NPPs but no necessarily coupled to ND,
ii) Countries like Argentina that do not need large amounts of potable water produced by desalination and also do not suffer severe water scarcity unless of some isolated spots. On the other hand, these are countries that have achieved a medium to good scientific and technical development and average autonomous capabilities in design, construction and operation of nuclear facilities. So, ND, WHR and WM are seen as a spin off of Argentinean nuclear projects, sources of academic research with potential for commercialization.
For Argentina ND, WHR and WM are linked to SMRs which will provide electricity and water to small cities located far away from electrical network, research reactors and other nuclear facilities that could need a good management of water and an efficient use of the energy.

iii) Countries that presented a global view regarding problems of the scarcity of water, environmental issues and related economic aspects.
Nowadays, Argentina has a permanent group working on the above mentioned tasks with professionals trained in chemical and mechanical engineering, thermohydraulics and general engineering from the National Atomic Energy Commission and also with the participation of a local University.
Currently, the scope of the National Programme on ND is as follows:
i) Technical coupling of a MED plant to SMR has been analysed. Regarding the results, a capacity of 4000-4300 m3/d of demineralized water is achieved in cogeneration with the production of electricity enough to supply 80,000 populations. A hybrid RO+MED system coupled to a SMR has been proposed for producing both drinkable and demineralized water to NPP and population in cogeneration expecting an improvement above the stand alone MED plant. ND will also contribute to reinforcement of the safety of the NPP by different ways currently under study.
ii) In the frame of the new IAEA CRP of "Advance of Low Temperature Desalination System to Support NPPs and Non Electric Applications", a testing rig was planned to acquire experience in the design and operation of both compact MED plate heat exchanger and RO technologies in cogeneration. Heat Supply System is already built (stage 1 concluded) and presented.
iii) Given the existence of projects in CNEA and the need of expertise on cooling water systems, water management, release of chemicals to the environment and preparation of documents to the local environmental authorities the assistance of the group has been requested and successfully provided.
Finally, Argentina acknowledge the invitations, the support and acceptance of its proposals by the IAEA and remarks that all the meetings developed in highly qualified, open and friendly atmosphere.

Belgium (Mr Ejjeh), Desalination, in particular, thermal distillation is a reliable source to deliver large quantities of fresh water. Desalination is extremely effective, and is being used in over 150 countries. Over 55,000 MW of power is combined with desalination plants in the largest use of cogeneration concepts making installed capacity around the world reaching to 80.9 million m3/d (17,800 MIGD). The hybrid plant schemes can reduce desalinated water costs, in dual-purpose nuclear desalination stations. It is believed that the best solution for nuclear desalination is a hybrid of thermal MED process with membrane desalination processes RO/NF technologies within a single plant.

Canada (Mr. Dincer), Presented on the status of nuclear desalination in Canada to address the use of nuclear waste/process heat and electricity for desalination applications. He first introduced some country specific information, discussed the nuclear power generation status in Canada and more specifically for Ontario, provided some facts about current nuclear industry and power generation dynamics, and future plans for the power generation sector. Also, Dr. Dincer provided a summary of current global water issues and a water-energy nexus, a discussion on potential desalination methods as appropriate with NPPs and their utilization, a review of both world and Canadian water resources status and their utilization along with the challenges and opportunities and Canadian water and sanitation sector and Canadian desalination technologies developed for the market. Furthermore, he dwelled historically on nuclear desalination projects, developments and applications, and he presented that CANDESAL Water Systems, a Canadian company, was formed to develop the concept of nuclear desalination, combining CANDU reactors with DESALination. Their design couples an RO desalination plant with a CANDU reactor. The coupling of RO and CANDU-6 which was an advanced concept for the design and operation of RO seawater desalination systems was first presented by CANDESAL in 1993 (IAEA-TECDOC-1444). Their works also focused on the development and optimization of an innovative approach to the coupling of RO desalination systems to nuclear power plants and to the experimental demonstration of the key concepts underlying that coupling approach. A coupling scheme was developed that made use of waste heat from the reactor (discharged primarily through the condenser cooling system in water-cooled reactors) to preheat the RO system feedwater above ambient seawater temperature. Finally, Dr. Dincer discussed the challenges of desalination

sector, advantages of using NPPs for desalination and suggestions to promote nuclear desalination as well as actions to take in this regard.

China (Mr. Shen), A research project of Nuclear Desalination Technology for Offshore Platform is going to be supported by the Ministry of Science and Technology of China. It will satisfy the requirement of water and power on drilling platform, save the oil/gas consumption and reduce the emission. A MED desalination plant is proposed to couple with the offshore platform nuclear power plant. The research topics include the safety analysis and design of the desalination system, the desalination plant structure design and the performance optimization under ocean conditions. A pilot will be installed to simulate the operation of nuclear desalination plant on the platform. Based on the research, a ND plant on offshore platform will be developed in a few years. It will be a demonstration for the application of ND in China and promote its application in land based nuclear power plant. The safety of ND is still the most concerned problem from society.

India (Ms. Panicar), Presented on the experience & expertise of India in the field of nuclear desalination. She highlighted the objectives of Indian Nuclear Desalination Plants as to:

- Establish the indigenous capability for design, manufacture, installation and operation of such plants.
- Demonstrate safe and economic production of water.
- Generate necessary design inputs and optimum process parameters which would help in setting up larger sized nuclear desalination plants

She also discussed the following two nuclear desalination plants are in operation in India:

- Hybrid (MSF & RO) Seawater Nuclear Desalination Demonstration Plant (NDDP) integrated with Nuclear PHWR (170 MW(e)). The total capacity is 6.3 Million Liters/ Day (MLD) where MSF produces 4.5 MLD and RO 1.8 MLD. Indigenous capability in design, fabrication and operation of nuclear desalination plant was achieved and demonstrated by its successful construction and commissioning. NDDP is sharing LP steam, electricity and seawater with the power station (MAPS). 1MLD distilled quality (< 5 micro-Siemens/ cm conductivity) desalinated water from MSF plant is supplied to the power reactor (MAPS) as boiler make up water. Remaining water from MSF and RO product are mixed and sent to drinking water public distribution reservoir. A portion of the drinking water is distributed through as bottled drinking water with the help of a bottling plant
- Sea Water Desalination Plant (30 m3//day) integrated with a nuclear research reactor using low temperature evaporation (LTE). The plant is receiving heat from the condensate cooling water. The distillate from the LTE plant is used as make up water in the reactor.

She discussed India's future programmes in the field of nuclear desalination, citing the examples of two nuclear desalination plants proposed for integration with Advanced Heavy Water Reactor (AHWR). They include the followings:

- MED-TVC based sea water desalination plant using steam (Capacity: 3 x 800 m3//day)
- LTE based sea water desalination plant, using main heat transfer (MHT) purification circuit waste heat (Capacity: 250 m3//day)

Kazakhstan (Mr. Muralev), Kazakhstan still did not take final decision about NPP construction in the country and National Nuclear Power Development Program not yet includes Nuclear Desalination direction. Nevertheless National Nuclear Company "Kazatomprom" has approved its own Research and Development Program on Advanced Low Temperature Distillation Desalination and take efforts to work in cooperation with "Rusatom Overseas" Company under Nuclear Desalination option for BOO and BOOT contracts being offered to potential Clients in near future. During last year in frame of Kazatomprom R&D program it is developed software for calculation of design characteristics of advanced distillation equipment, performed necessary research, prepared design and manufactured the

experimental module of advanced evaporator prototype. The first results of new equipment testing should be received, analysed and published to the end of this year.

Pakistan (Mr. Ahsan), Presented on the Nuclear Desalination Demonstration Plant NDDP which was a 1600 m3/day MED plant coupled to KANUPP (137MWe CANDU-6) and commissioned in December 2009. The plant produces product water of quality 10-25 ppm and installation of pipe line is underway to start supplying water to nearby costal village. He also stressed the fact that the re-mineralization skid was commissioned in 2012 for the production of potable water, and that inspection of various equipment carried out in 2014. The main result is that no sign of scaling found on MED and distillate condenser tubes. Yet, due to excessive leakage in some of the tubes of re-boiler, the whole tube bundle was replaced with new one which was manufactured locally. The major advantages of NDDP are:

- Cost saving: Product water cost is HALF of commercial water cost.
- Reduced Load on Water Treatment Plant: WTP re-generation time increased FIVE times.
- Reduced Environmental Discharge of Chemicals: Chemicals discharge reduced by a factor of FIVE.
- More Secure/Reliable Source: Physical security threat reduced
- Indigenization: Developed local know-how, Reduced technical uncertainties, and Enhanced public interest and confidence.

He also mentioned that installation is already completed for using waste heat of NDDP discharge as raw feed water input to forthcoming CSWRO(2*250,000 USGD) plant to expected be commissioned in March 2015 and feasibility study for inclusion of nuclear thermal desalination plant in Karachi Coastal Power Projects(K2/K3) is being considered. In addition, an opportunity for deploying another nuclear desalination plant is very much feasible for upcoming Karachi coastal projects (2×1100 MWe ,PWR each) and that waste heat can also be removed from the PWR to preheat RO seawater desalination.

Saudi Arabia (Mr. Al-Arifi), Day by day the gap between the world's demand and supply of fresh water is widening due to the increase in population and the exponential growth of industries and climate change. The increase of water demand and due to shortage of fresh water resources on the earth, necessity arose for the development of desalination technologies to produce enough potable water to satisfy mankind. Desalination has been used more widely than ever before, not only in the arid region such as Gulf Countries where more than 45% of seawater desalination plants are located but also by other nations who have been traditionally depended on natural resources of water.

Nowadays, desalination in kingdom of Saudi Arabia became a strategic choice. Today, the Kingdom of Saudi Arabia tops in the production of desalinated water which is about 16.5% of world production. The presentation will show the growth of desalination industry sector in the last sixty years in the world and in KSA over the last thirty five years. The desalination technology used nowadays will be presented. The challenges faced the water sector in KSA will be covered. Highlight some facts and figures about the government organization responsible for seawater desalination in KSA "Saline water conversion corporation (SWCC)". The current SWCC strategies, the 30 seawater desalination plants which currently operated and under construction will be demonstrated also the future coming seawater desalination projects in KSA with desalination technologies will be revealed. SWCC strategy of diversify fuel portfolio will be presented especially for the option of utilizing alternative energy (solar and nuclear energy) for seawater desalination and the plans for that. The pronation will ended with summary and some Suggestion & Recommendation to IAEA.

Spain (Mr Martinez-Sanchez), Presented the desalination activities in Spain where first plants were constructed 4 decades ago at Lanzarote (Canary Islands) and Ceuta (70's). The current production water capacity in Spain is 1100 hm3/y (70% sea water + 30% wells) i.e. desalination capacity is 23% of total urban needs, but 40% used in agriculture and a smaller part yet a significate one is in industries. He also discussed the fact that Spain has already gained experience on constructing and

operating desalination plants. Yet, he believes that there is some potential for nuclear desalination despite the fact that nuclear energy is socially unpopular in Spain especially among young people as it still has some political risk, mainly for new players

Sweden (Mr Persson), In 2011 the world's nuclear reactors supplied 2518 TWh of electricity (2518 billion kilowatt hours). This represents around 13% of global electricity consumption. The electricity part is 1/3 of the total energy production, meaning that waste heat is substantial in the production of electricity. The total amount of waste heat can be estimated to be twice the amount of electricity produced, or 2518 TWh *2 = 5036 TWh heat. A general energy demand to evaporate sea water for fresh water is 10 kWh/m3, based on experiences from thermal desalination plants. The potential fresh water production from NPP is thus 5036 * 109 kWh / 10 kWh/m3 = 504 * 109 m3/a. With a global population of 7.5 billion people, the daily supply per capita globally is 184 l/p d. This equals the amount of fresh water that is consumed per person in for instance Finland, Sweden or Germany. Issues for nuclear desalination are for instance the storage capacity of fresh water produced in the ND-plant; water is stored through groundwater recharge? Can the design flow from ND meet the consumption of the supplied area? What should be done to meet fresh water consumption during periods of maintenance and refurbishments? These topics should be considered when implementing ND in an area. Desalinated water is low in mineral and the correct need for balancing final water quality with hardness, alkalinity and so forth must be addressed when supplying ND-water to the public.

USA (Mr. Faibish), Large-scale desalination of seawater is gaining quite a bit of momentum in the U.S. (e.g., Southern California and Florida). However, large-scale nuclear desalination in the U.S. is far from a reality. Indeed, the energy-water nexus is promoting a better understanding of the vital links between energy and water resources and the related needs, both in water-for-energy (e.g., thermoelectric cooling, water for oil and gas production, biofuels) and energy-for-water (e.g., water treatment and transport). Small modular reactors (SMRs) in the near-term, and advanced reactors in the long-term, may offer opportunities for co-location of power and water production plants. These reactors have the potential of meeting the needs of small and medium size communities and a variety of industrial operations. These smaller reactors and the larger, existing ones face common challenges that include: licensing issues, unfavourable economics, and unresolved nuclear waste issues – all of which need to be addressed and resolved as soon as possible. Once this is done, the viability of site-specific nuclear cogeneration should be assessed. Some specific recommendations to the IAEA include:

- Strengthening the message to Member States about the viability of the link between nuclear power and water production in light of ever-increasing water needs in growing economies and water-deprived regions;
- Conducting an objective "reality check" study (preferably in the form of a consultancy) on the future of nuclear desalination that would include a demonstration of obstacles to future deployment of nuclear desalination operations and examination of the concept of "energy parks", where multiple cogenerated products are being produced (e.g., district heat, hydrogen, etc.) This study should arrive at conclusions that may support or discourage nuclear cogeneration, subject to region-specific economic and infrastructure conditions.

5. Conclusions

- The TWG-ND reiterates its support for IAEA activities in nuclear desalination, water management, cogeneration (i.e. electricity and desalination).
- The TWG-ND commends the IAEA for the successful release of updated versions of DEEP, and the initiation of the new CRP on Application of Advanced Low Temperature Desalination Systems to Support Nuclear Power Plants and Non-electric Applications and encourage

Members to actively support the CRP with innovative desalination methods such as membrane distillation (using low quality steam or waste heat), hybrid systems such as RO/MED.

- The water and energy nexus can well be addressed by nuclear desalination.
- From the technical point of view, a great potential for fresh water production from waste heat generated in NPPs exists. Integrated water resources management including nuclear desalination should be considered during the deployment of NPPs.
- There is a need to enhance collaboration with other organization involved in water desalination and nuclear industry to integrate desalination systems at early design stage to increase the knowledge of how to integrate systems, increase efficiency of NPPs, enhance overall safety, and reduce environmental impact which would lead to a carbon-free society.
- Nuclear desalination has successfully been practiced in several MSs for several years. Product water has been used not only to support NPPs but also as a drinking water to onsite personnel and inhabitants nearby NPPs.

6. Recommendations

- Conduct an objective review of the status of nuclear desalination future and provide guidance to Member States to strengthen the viability of nuclear desalination in light of increasing water demands and overall economic growth.
- Enhance public awareness on nuclear desalination and related IAEA activities possibly through collaboration with industry and international water and desalination organizations like International Desalination Association IDA, European Desalination Society EDS, ..etc.
- Enhance fostering education and training in the field of nuclear desalination through more Publications/workshops/conferences/networks.
- Encourage Member States such as India, Pakistan, Kazakhstan, and others to share experience from operating nuclear desalination. Such experience/information could be used for the update of IAEA documents such as Introduction to nuclear desalination and Technical Reports Series No. 400 to reflect lessons learned from desalination projects especially the retrofitting of nuclear desalination demonstration plants, and to introduce chemistry requirements related to desalination systems.

3. Date/venue/duration of the upcoming TWG-ND: in April 2016

Agenda for the

Technical Meeting of the Technical Working Group on Nuclear Desalination (TWG-ND)

Vienna, Austria

VIC M4

27-29 January 2015

Tuesday, 27 Jan 2015

1. Opening Session		
09:30	Welcoming and opening remarks	I. Khamis, IAEA
09:35	Self-introduction & Chair-selection & Finalization of the Agenda	Participants/Chairperson
09:45	Opening remarks by the TWG-ND Chairperson	
10:00	Roles and responsibilities of TWG: Goals of this meeting	I. Khamis, IAEA
10:30	IAEA Project on Nuclear Desalination	I. Khamis, IAEA
11:00	***Coffee Break***	
2. Status of National & International Programs		
11:30	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	M.C. Conti & M.Chocron, Argentina
12:00	***Invited Lunch (VIC)***	
14:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	Gh. Ejjeh, Belgium
14:30	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	S.Shen, China
15:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	A.U. Khan, Pakistan
15:30	***Coffee Break***	
16:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	A. Belkaid, Algeria
17:00	***Adjourn Day 1***	

Wednesday, 28 Jan 2015

3. Status of National & International Programs-Continue		
09:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	R. Faibish, USA
09:30	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	S. Panicker, India
10:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	I. Dincer, Canada
10:30	***Coffee Break***	
11:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	K. Persson, Sweden
11:30	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	A. Al-Arifi, Saudi Arabia
12:00	***Lunch Break***	
4. Demonstration of latest versions of IAEA tools on Nuclear Desalination		
14:00	IAEA tools demonstration	I. Khamis, IAEA
14:30	Brief on National program & Issues/Areas for discussion	J. Martinez-Sanchez,

	including recommendation to IAEA	Spain
15:00	Brief on National program & Issues/Areas for discussion including recommendation to IAEA	Y.Muralev, Kazakhstan
15:30	***Coffee Break***	
16:00		All participants
17:00	***Adjourn Day 2***	

Thursday, 29 Jan 2015

5. Conclusion, Recommendations and Open Discussion on Nuclear Desalination		
09:00	Open discussion: Future of nuclear desalination and integrated water management in NPPs	All participants
10:00	Summary of the Chairperson	
11:00	Finalize meeting report; Conclusions and recommendations	All participants
12:30	***Adjourn Day 3***	All participants