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The ANS Globe

...e-news from the ANS International Committee

From the editor

The ANS Globe is the Bulletin of the American Nuclear Society's International Committee. *The ANS Globe* has as its mandate the dissemination of news of international interest to International Committee members and to others.

We would like to keep *The ANS Globe* current and relevant. Please send your letters, articles, news and/or comments for consideration towards the next issue.



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From the Chair

As I begin my term of Chairman of the ANS International Committee, I'm excited about our prospects to learn from each other, expand our influence and deliver more value to ANS members along with those of other nuclear societies we represent.



Under the leadership of former IC Chair Corey McDaniel, the Committee launched a strategic project to accomplish these goals. Vice Chair Luc Van Den Durpel and I intend to complete this project and to launch a series of value-building programs. We plan to continue the IC's evolution into an action-oriented Committee that makes a tangible positive difference to ANS members. For example, we intend to make key information in The Globe more easily accessible, collaborate more effectively with other committees, particularly in the areas of professional development, and engage with international nuclear societies with more focus. In short, we hope to bring the best of the nuclear energy world to ANS members.

The growth of economies throughout the world along with the mandates in the Paris Agreement, which now has been signed by 197 parties, and ratified by 89 nations, makes nuclear energy more attractive to many nations. While the agreement doesn't require the use of nuclear energy to achieve its carbon reduction goals, for many, nuclear energy is the one clear path to meeting commitments. Yet, public fears about nuclear energy continue to impede progress in certain nations. So each of us has work to do in our home nations. As an IC member, you'll play an important role in our success and to the success of nuclear energy.

The ANS President Any Klein recently launched the "ANS Nuclear Grand Challenges" which is for IC an attractive task to actively spur international ideas and coordinate the outcome on international level among the IC-members. We'll address during the ANS Winter meeting how IC will be fulfilling this task and the ANS Globe will report on these developments regularly.

Best Regards,
Mimi Limbach

The ANS International Committee's Web Page

Visit the enhanced ANS International Committee's Section on the ANS website, located at <http://www.ans.org/const/international>. It includes:

- Background information about the ANS International Committee
- Connections to ANS International Local Sections
- An overview of Society alliances with international organizations (INEA, INSC, and PNC), along with contact information
- Connections to 30 ANS Agreement Societies/Organizations, and
- Current/back issues of *The ANS Globe*, which features ANS International Committee activities and related items.

ANS 2017 National Election – Non-US Board Candidates

The IC has selected 2 names of IC members to present as candidates to the 2017 national election of non-US candidates to the ANS Board of Directors:

[Oum Keltoum Bouhelal](#)
[Fiona Rayment](#)

News from Sister Societies and International News

- [Canada, Canadian Nuclear Society \(CNS\) \(<http://www.cns-snc.ca>\)](#)

As per the elections which took place in June, the current CNS President is now Dr. Peter Ozemoyah, of Tyne Engineering, and the First Vice-President is Daniel Gammage, of AMEC Foster Wheeler. The outgoing president, Paul Thompson, is now the Immediate Past President.

As of this writing, the CNS is organizing several events for the next 12 months:

- 2016 November 2-4, 4th International Technical Meeting on Small Reactors (ITMSR-4), Ottawa, Ontario, Canada, <https://www.cns-snc.ca/events/4tm/>
- 2016 March 27-29, CNS CANDU Technology and Safety Course, Toronto, Ontario, Canada, <https://www.cns-snc.ca>
- 2017 June 4-7, 37th Annual Conference of the CNS and 41st Annual CNS/CNA Student Conference, Niagara Falls, Ontario, Canada, <https://www.cns.ca>
- 2017 September 17-22, 2nd CNS Conference on Fire Safety and Emergency Preparedness (FSEP-2017), Toronto, Ontario, Canada, <https://www.cns-snc.ca>
- 2017 October 1-4, CANDU Maintenance and Nuclear Component Conference (CMNCC-2017), Toronto, Ontario, Canada, <https://cns-snc.ca/events/cmncc-2017/>
- 2017 (exact date and venue to be determined): CNS CANDU Thermalhydraulics Course
- 2017 (exact date and venue to be determined): Nuclear-101 Course

In terms of the Canadian nuclear-power industry, the latest development is that the refurbishment of the Darlington Nuclear Generating Station (4 CANDU 900-MWe

reactors) has just begun. On Saturday October 15, 2016, the first reactor to be refurbished was shut down as this major project started. The reactors will be refurbished one at a time, and the whole project is expected to last a decade.

- **France**

Dominique Grenêche sent the following article on behalf of the SFANS. It describes a US faculty tour of French nuclear facilities, which took place in France last July. As usual, it was a great success: 13 Professors attended this tour, which covered 7 major nuclear installations in France.

Enhancement of cooperation between U.S. Nuclear Faculty and French nuclear R&D and industry sectors: the example of the tour of nuclear facilities in France

Since 1996, every two or three years, the French Local Section of the American Nuclear Society (SFANS), which is also a section of the SFEN (the French Nuclear Society for nuclear energy) hosts a tour of facilities within the extensive French nuclear industry. In total, more than a hundred participants from universities in 24 different States were able to participate in these trips, whose fame is now widely established in academia in the United States and which constitute one of the "flagships" of SFANS activities. This event is partially funded by the two French industrial nuclear actors in the nuclear field, that is AREVA and EDF. The CEA (French Atomic Energy Commission) and ANDRA (National Agency for nuclear waste management) also make a contribution to this tour, by invitation to different meals.

This year, thirteen faculty from 10 US universities were hosted from July 3 to 10, along with their guests (for seven of them, for whom a special tourist program was prepared). This was the ninth such tour, whose objectives are in line with the chief goal of the SFANS, that is, to promote and develop exchanges about the status and knowledge of nuclear development and achievements in France and in USA in the different technical fields (operation and construction of reactors, fuel cycle, R&D...). The technical program and exchanges and discussions focused this year on the back end of the fuel cycle including the review of issues related to waste management and the option of vitrification of high level long-lived waste adopted in France. Within the framework thus defined, the main objectives of this event are to:

- Provide to US Professors of nuclear engineering the relevant information on French nuclear programs that they could deliver and dispatch for the benefit of their students in US universities.
- Enhance the mutual links between SFANS and ANS through the participation of US professors of nuclear engineering, most of them being active members of the ANS
- Organize an exchange views between respective academic programs and engineers training courses in nuclear energy in France and USA.

The week-long tour started in Paris with a Sunday noon welcome lunch followed by a journey in train (by the fast train "TGV") to join the south of France (Aix-en-Provence) and then the "Château de Cadarache", where the CEA hosted a gala dinner. Monday

morning saw the start of a rigorous series of daily travels and tours of major French nuclear infrastructure industries, including, in order, by day:

1. A general meeting for presentations, exchanges and discussions on the French nuclear program and professional activities of each participant. Then, in the afternoon, visit to some of the experimental facilities the Cadarache Research Center: Tore-Supra Tokamak machine for fusion energy research, sodium technological platform test for Fast neutron reactor development and the multipurpose large experimental reactor RJH which is currently near completion.
2. A trip to Marcoule near Avignon where the MELOX facility (MOX fuel fabrication facility for plutonium recycling in light water reactors), and the ATALANTE main hot laboratory for research on advanced fuel cycles was experienced,
3. A trip to the center of France (north of Lyon) to visit the St. Marcel vessel, steam generator, and pressurizer large-component-assembly factory in Chalon,
4. Travel to the Northwest of France to visit Bure, the deep geological high-level waste repository laboratory, in particular the surface technological space and the network of underground galleries where various experiments are conducted,
5. On the last day a detailed tour of the La Hague reprocessing plant, ending with a tour of the Flamanville III EPR construction site.
6. The tour was capped the next day, Saturday 9, by a personally guided tour of the Normandy coast, with visits to major WWII battle sites (in particular the “D-day” beaches) and memorials.

Each day’s technical tour included detailed lectures of the industrial processes by top-level managers, followed by detailed tours of the facilities. Every day, participants seemed to be more amazed than the day before by the facilities, the technology, the organizations, and the quality of the people and processes.

As valuable and informative as the tours themselves were, the participants looked forward each day to the opportunities to discuss technical issues over the finest lunches and dinners to be found in the various regions of France that were visited. In the end all came away with a very deep appreciation for the French nuclear industry, the extensive heavy-industry infrastructure, the broad educational programs in place to fuel the industry, and also with lots of material to enhance every one of the courses each faculty member teaches.

At the end of the tour, participants were asked to prepare a report summarizing their reactions and comments on the organization of the trip, but especially related to their perceptions of the French nuclear industry, and the value of this information in their respective nuclear engineering courses. Below is a very short overview of some of the feedback and comments about this tour:

- “This will make my teaching about the fuel cycle and nuclear technology much more effective”.
- “I was fascinated by the operation of each facility. The safeguard systems and security control measures of each facility were exceptional”.
- This is the best technical tour I have ever participated in during my entire academic career”.

- “This has been an absolutely awesome educational, informative and enlightening experience for me”.
- (About the visit of the La Hague reprocessing plant) : “This is the most amazing part of my trip, to see the on-going operation of the reprocessing facility that the U.S. does not even have or try to consider one at this stage.
- “The French approach to nuclear power is so completely different from what we’ve done in the US, from both a technical and a policy perspective. I will be incorporating both of these facets in my teaching in the future”. “I have also brought a lot of information back to share with the professor who teaches most of our fuel cycles and waste management materials”.
- “The waste-reprocessing facilities and plans for disposal are the most unique and fascinating parts of the tour”. “These capabilities have become the model for several other nations”. “We were granted many opportunities to have guided tours of a wide range of advanced facilities that we would not be able to find anywhere else in the world”. “There is nothing in the USA that compares with the capability to deal with the entire nuclear fuel cycle, so that is an experience that I will be able to describe to my students as unique to France”.
- “Definitely, the French Nuclear Industry has advanced itself into a proper closed-end of the nuclear fuel cycle which is a crucial way if nuclear energy will be beneficial to the world”.
- “As a global leader in nuclear energy generation, the French expertise in spent fuel reprocessing and high level radioactive management is unequivocally recognized”.
- “Successful deployment of reprocessing capabilities in France and continuing to build up a record of safe practices is the best hope for other nations to eventually recognize the inevitable need for such reprocessing capabilities and work to develop them around the world”.
- “The topic of this tour was very well assembled. It covered places that delivered a very clear picture of the current efforts and technologies in France in fuel reprocessing and waste disposal”. “Fuel recycling is certainly an activity that provides sustainability, reliability and security to the long term energy supply. Similarly, the high-level waste-disposal strategy is well aligned with the recycling strategy”.

In conclusion, the objectives of this tour were clearly met and even exceeded in some areas. This long-prepared event fits perfectly with the mission of the SFANS which aims to promote and develop Franco-American exchanges in the field of nuclear and achievements in general (operations and construction of reactors, fuel cycle, R & D).

Below, a July 5, 2016 group photo in front of the Melox plant (plutonium fuel factory)



- [Japan](#)

[Kiyoshi Yamauchi](#), ANS Japan Local Section and IC member, sent the following report from Japan, which I have edited slightly:

1. Energy Policy and Activities of Ministry of Economy, Trade and Industry (METI)

- (1) The revised “Energy Basic Plan”, approved by the Cabinet on April 11, 2014, emphasized that restoration and reconstruction of Fukushima would be the starting point of nuclear energy, and that nuclear energy would be one of the important base load power contributing to ensure the stability of the energy supply and demand structure, and that dependency on nuclear power generation would be reduced as much as reasonably possible. The “Energy demand/supply prospectus Subcommittee”, formulated by METI, decided “Long Term Energy Demand/Supply Prospectus” on July 2015, consistent with the above energy basic plan and the desirable “power best mix” in 2030 as electric power base, features 20-22 % of nuclear, down from about 30 % before “the Great earthquake disaster” of 2011, and 22-24% of renewable energy in order to contribute to CO2 reduction of 26% from 2013.
- (2) “Safety enhancement / technology/ human resources Working Group”, formulated by METI, proposed safety enhancement means on May 27, 2015 and published safety

technology and human resources roadmap on June 16, 2015. This WG was restarted on June 17, 2016 and the rolling activity is continuing.

- (3) “Radioactive Waste Working Group”, formulated by METI, proposed the revised basic policy of the final disposal of HLRW and TRU and the Ministerial Meeting approved this on December 18, 2015. This WG is still underway discussing how to proceed the dialogue at the scientifically promising site.

2. Monju (prototype FBR) Issue

NRA issued a recommendation about Monju (Prototype FBR) on Nov. 13, 2015. NRA recommended that an organization having the capability to perform safety power operation of Monju in place of JAEA should be identified within half year and that the existences of Monju should be reviewed unless an alternate organization be identified. MEXT (Ministry of Education, Culture, Sports, Science and Technology) formed a Committee how to respond to the above on December 28, 2015. The final report, proposing the conditions which the operating organization should have, was presented to the Minister on May 27, 2016 and the Minister responded to NRA on May 31, 2016. The activities to identify the specific conditions, which the new organization should have, will be followed.

3. Status of LWRs Restart

The new safety regulation for commercial LWRs was enforced in July 2013, and applications for NRA review on conformity with new safety standard for restart were started. Applications as of September 2016 are 16 sites 26 reactors (16 PWR, 4ABWR, 6 BWR).

In September 2015, Sendai unit 1 started commercial operation. This is the first unit to be restarted after the “Great Earthquake” in 2011. Sendai unit 2 started commercial operation in November 2015. Takahama unit 3 started commercial operation in January 2016. Ikata unit 3 started commercial operation in September, 2016. Takahama NPP Unit 1&2 obtained approval in April, 2016. Takahama Unit 1&2 granted approval in June 2016 and Mihama Unit 3 is expected to grant approval by November 2016. Further, Kansai Electric Power Company (KEPCO) applied long term operation beyond 40 years for Takahama Unit 1 & 2 in April 2015 and for Mihama unit 3 in November 2015.

Applicant	NPP	Type	Commercial Operation start	Application
Hokkaido	Tomari 1	PWR	1989	July, 2013
	Tomari 2	PWR	1991	
	Tomari 3	PWR	2009	
Kansai	Ohi 3	PWR	1991	July, 2013
	Ohi 4	PWR	1993	
	Mihama 3	PWR	1976	March, 2015

	Takahama1 Takahama2	PWR PWR	1974 1975	Approval Obtained (June ,2016)
	Takahama 3	PWR	1985	Restarted(January2016) but shut down(March2016) *
	Takahama 4	PWR	1985	Approval obtained (February 2015)
Shikoku	Ikata 3	PWR	1994	Restarted (September, 2016)
Kyushu	Sendai 1	PWR	1984	Restarted (September,2015)
	Sendai 2	PWR	1985	Restarted (November, 2015)
	Genkai 3 Genkai 4	PWR PWR	1994 1997	July, 2013
Tokyo	Kashiwazaki-Kariwa 6 Kashiwazaki-Kariwa 7	ABWR ABWR	1996 1997	Sept. 2013
Chugoku	Shimane 2	BWR	1989	Dec. 2013
Tohoku	Onagawa 2 Higashidori 1	BWR BWR	1995 2005	Dec. 2013 June 2014
Chubu	Hamaoka 3 Hamaoka 4	BWR BWR	1987 1993	June 2015 Feb. 2014
Hokuriku	Shika 2	ABWR	2006	Aug. 2014
JAPC	Tokai 2 Tsuruga 2	BWR PWR	1978 1987	May 2014 Nov 2015
EPDC	Ohma (Full Mox)	ABWR	Not yet	Dec.2014

* : Takahama unit 3 was shut down due to Otsu District Court Judgement on March 10, 2016.

4. Juridical Issue (Related to the plants already restarted)

(1) Takahama Unit 3&4

Fukui District Court issued provisional disposition to prevent the restart of Takahama Unit3&4 on April 14, 2015, stating that the current NRA requirement was not enough and the safety of Takahama Unit 3&4 would not be fully assured.KEPCO raised objection and Fukui District Court in the objection trial cancelled the above disposition on December 24, 2015 and Takahama unit 3 was restarted on January 29, 2016. However, on March 9, 2016 Otsu District Court, which area is adjacent to Fukui prefecture, issued provisional disposition to prevent the restart and Takahama unit 3 turned to shutdown on March 10, 2016. KEPCO raised objection, but Otsu District

Court rejected this objection in July 2016. KEPCO raised appeal pertaining to temporary restraining order to Osaka High Court in July 2016.

(2) Sendai Unit 1&2

On April 22, 2015, Kagoshima District Court rejected a request by a group of local anti-nuclear residents for a temporary injunction to prohibit the restart of the Sendai 1&2 of Kyushu Electric Power Company, due to “no irrationalities in the NRA new regulatory standards”, in the context of the latest scientific findings. Although anti-nuclear residents raised immediate appeal against this decision, Fukuoka High Court rejected this request in the Immediate Appeal Court on April 6, 2016. Anti-nuclear group requested to Fukuoka District Court to cancel the approval of reactor permit on June 10, 2016.

(3) Ikata Unit 3

Temporary injunction to prohibit the restart of the Ikata Unit 3 by anti-nuclear group was raised to Hiroshima District Court on March 11, 2016, to Matsuyama District Court on May 13, 2016 and to Oita District Court on June 24, 2016.

5. Activities of the Nuclear Risk Reserch Center (NRRC)

(1) NRRC was formed in the Central Research Institute of Electric Power Industry on October 1, 2014 for research and development of the comprehensive risk assessment utilizing PRA based on the lessons learned from Fukushima Daiichi Nuclear Power Station Accident. Dr. George Apostolakis, the former NRC Commissioner is the Head and Dr. Richard A. Meserve, the former NRC Chairman is the Executive Advisor. Technical Advisory Committee has been held every three months.

(2) Ikata unit 3 of Shikoku Electric Power Company was already selected as a PWR pilot plant introducing the state of practice PRA technologies. Kashiwazaki Kariha unit 6 &7 was also selected as a BWR pilot plant in June 2016. Dr. Apostolakis has been continuing to see CEOs of Electric Power Companies and to visit plant sites in order to convince them the importance of Risk Informed Management. On September 2, 2015, the first Symposium by NRRC was held. “What is Risk Informed Management” and “What is expected for the NRRC” were discussed. The next Symposium is expected to be held in middle of 2017. The “Risk Informed Decision Making(RIDM) Promotion Team“, to support utilities’ efforts to establish the process of risk-informed decision making by clarifying the goals and developing the strategy plan, was formed in July 2016.

6. Activities of AESJ

International conferences and large domestic conferences held by AESJ after April 2016 are focused as follows. Officers of the AESJ for 2016 were elected and authorized on June 17, 2016 and Dr. Uesaka, Professor of Nuclear Engineering and Management at Univercity of Tokyo became a Chairman of AESJ.

In collaboration with the ANS, the following international conferences will be held:

- ICAPP 2017, Fukui and Kyoto, Japan, April 24-28, 2017.

- Decommissioning and Remote Systems (D&RS 2016), Pittsburgh, PA, July 31-August 4, 2016.
- 10th Japan-Korea Symposium on Nuclear Thermal Hydraulics and Safety (NTHAS-10), Kyoto, Japan, November 27-30, 2016.

7. Activities of ANS Japan Local Section

Officers for 2016 Japan Local Section were elected in March 2016 and Mr. Mukunoki of JGC Cooperation became a Chairman of the Executive Committee of the Japan Local Section of ANS. The 1st General meeting for members was held in the AESJ Fall Meeting on September 9th at Kurume-city. The Activities Report of the Japan Local Section was sent to ANS Local Section Committee on July 27, 2016. The name of “International Affairs Committee (IAC)” of AESJ, which is also a body of ANS’s Japan Local Section, has been renamed “International Nuclear Information Network (ININ)”.

8. Recent status of Fukushima Daiichi NPP Restoration

(1) Means for Contaminated Water Treatment

This issue is coming from the fact that ground water flowing into the building is mixed with the contaminated water to cool the fuel debris. “Fukushima Daiichi Decontamination and Decommissioning Engineering Company” started groundwater bypass operation at Fukushima Daiichi NPS based on the three strategies. The first is to “remove” the contamination source, the second is to keep ground water “away from the contamination source”, and the third is to “preclude the leakage” of contaminated water. Concerning “removal”, cleaning the contaminated water by the multi-nuclide removal equipment (ALPS) has been continued and the Sea Water piping trench was blocked. Concerning “away from the contamination source”, freezing operation of water shielding wall at the mountain side has been started in addition to the reduction of water flowing into the building by ground water bypass and sub-drain operation. Concerning “preclude the leakage”, water shielding wall at the sea-side and pumping up of ground water are under way.

(2) Fuel Removal from Spent Fuel Pit

As for Unit 4, all spent fuel was already removed by December 22, 2014. As for Unit 1, the reactor building cover was dismantled and rubble removal has been started. As for Unit 2, the strategy of whole dismantling of the upper portion of reactor building was decided. As for Unit 3, removal of large rubble in the spent fuel pit was completed and radiation reduction in the operating floor is under way.

(3) Investigation of in-core monitoring

As for Unit 1, investigation by muon and investigation inside the containment vessel (PCV) by robots were conducted. As for Unit 2, measuring by muon is under way and investigation inside the containment by robots is under preparation. As for Unit3, investigation device was inserted into the PCV and information was obtained.

(4) Waste Management

Volume of water-process secondary waste due to progress of contaminated water treatment and volume of solid waste due to rubble removal have been increased. Tokyo

Electric Power Company (TEPCO) strengthened the structure of the Waste Management Department and has been progressing the waste generation reduction. TEPCO announced the 10 year plan for waste storage and management.

(5) Work Environment

Radiation dose reduction (additional effective dose rate at the site boundary down to under 1mSv/yr) has been accomplished. Dose reduction at high radiation in under way.

(6) Research and Development

“Decommissioning Research Development Cooperation Meeting” was formulated in “Nuclear Damage Compensation and Decommissioning Facilitation Corporation” (NDF) and study to effectively connect the R&D results of each organization to the actual decommissioning activities has been started. JAEA formed “Collaborative Laboratories for Advanced Decommissioning Science” (CLADS). Further, operation of the “Naraha Remote Technology Development Center” has started.

(7) Road Map and Technical Strategic Plan

“The Intermediate and Long Term Road Map for Fukushima Decommissioning and Contaminated Water Removal”, originally issued on December 2011, revised on July 2012, revised again on June 2013, revised again reflecting the progress of the recovery work at the site, comments from the Fukushima Council, and the strategic study by NDF, was approved by the Ministerial Meeting on June 12, 2015. Major points of this road map are “emphasis on risk reduction rather than speed”, “explicit schedule of near time frame” and “keeping the same target as 30-40 years later for final target of decommissioning”. In order to provide the technical basis to the above road map, NDF issued “The Technical Strategic Plan 2015” on April 30, 2015, and “The Technical Strategic Plan 2016” on July 23, 2016.

- **Mexico**

Roberto Lopez, in charge of communications in the Sociedad Nuclear Mexicana, sent the following article about nuclear activities in Mexico, along with some pictures from the last conference of the Mexican Nuclear Society.

Nuclear-Related Events:

From July 3rd to 6th 2016 the Mexican Nuclear Society held its annual conference, along with the Mexican Society of Radiological Safety at the Hilton Hotel in Villahermosa, Tabasco. As it is every year, this was a forum for interaction between academia, industry, regulators and government, where everyone had the opportunity to show work to colleagues and, of course, a chance for future generations to know what is going on in the nuclear industry in Mexico. The program's details can be seen at <http://www.congresosnm.org.mx>.

The Conference logo and a couple of photos from the conference are given below.



Nuclear Academia in Mexico:

Currently three universities have postgraduate programs dealing with nuclear engineering and sciences:

- The National Autonomous University of Mexico (UNAM) has M. Eng. and Ph.D. programs in Energy Engineering, with an option focused on the Nuclear System.
- The National Polytechnic Institute (IPN) has M.Sc. and Ph.D. programs in Nuclear Sciences.
- The Autonomous University of Zacatecas (UAZ) has a M.Sc. program in Nuclear Sciences.

Nuclear Power Generation in Mexico:

The site of Laguna Verde, Veracruz, has 2 GE BWR/5 units in operation, with a total power of 1,615 MWe. In 2015 it generated 11,177 GWh, representing 6.79% of the country's total generation [1]. Together, the two units have avoided the emission of at least 119.3 MT of CO₂ through their lifetime up to 2015, which would have an estimated value of 2,982 million USD on the carbon credit market.

Future of Nuclear Power in Mexico:

On May 30, 2016, the Energy Ministry published the “Development Program for the National Electric System” (PRODESEN 2016-2030) [2], which mentions that electric consumption is expected to increase at an average rate of 3.4%/year during the projected period 2016-2030. To cover this demand, a production capacity increase of 57 GWe is expected to be installed. The nuclear share of that new capacity is 4,191 MWe in 3 new nuclear power plants.

References:

[1] “Power Reactor Information System, Mexico”. International Atomic Energy Agency (IAEA), <https://www.iaea.org/PRIS/CountryStatistics/CountryDetails.aspx?current=MX>

[2] “PRODESEN 2016-2030”. Energy Ministry (Secretaría de Energía SENER), <https://www.gob.mx/sener/acciones-y-programas/programa-de-desarrollo-del-sistema-electrico-nacional-33462>.

- **OECD Nuclear Energy Agency (<http://www.nea.fr>)**

The following articles are gleaned from OECD NEA monthly reports.

Developing Geological Repositories in Salts

On 6 September 2016, the **NEA Salt Club** met in Washington, DC, United States. During this meeting, participants assessed the group's progress on various studies of the characteristics and properties of rock salts for the disposal of heat-generating radioactive

waste. They discussed the thermodynamic treatments of actinide-borate interactions within the Pitzer Approach, the relevant Features, Events and Processes (FEP) that are crucial for developing geological repositories in salts, the effects of microbes in salt repositories and the mechanical behaviours of rock salts, as well as salt knowledge archives. The group expects to issue two technical reports in the coming months: one on the microbiology of subsurface, salt-based radioactive waste repositories, and another on the considerations of the differences between bedded and domal salt pertaining to disposal of heat-generating radioactive waste.

Discussions on the Financing of Decommissioning

Nearly 100 participants from 18 countries and three international organisations convened in Stockholm, Sweden, on 20-21 September 2016 for the International Conference on Financing of Decommissioning, jointly organised by the NEA and the Swedish Radiation Safety Authority (SSM). Opening remarks and keynote speeches were delivered by the State Secretary of the Swedish Ministry of the Environment and Energy Per Ångquist, SSM Director-General Mats Persson and NEA Director-General William D. Magwood, IV. The conference programme featured a series of lively panels and Q&A sessions covering country-specific decommissioning funding mechanisms, as well as various presentations on national and organisational approaches to cost estimation and improvement, and the management of associated risks. Benchmarking was considered a vital tool for estimate improvements and resolving specific conflicts related to transparency. The challenges associated with fluctuations in global markets and rates of return were also highlighted as major obstacles in ensuring adequate financial resources to cover all costs for decommissioning. Participants and panellists concluded that the conference made a major contribution to enhancing the understanding of the close interrelations between these challenges. They reaffirmed the continued benefits of information exchange among experts and international discussion fora, such as the [NEA Decommissioning Cost Estimation Group \(DCEG\)](#), and encouraged the NEA to organise a similar conference in the coming years.



- [**Spain**](#)

[**Santiago San Antonio**](#), of the Spanish Nuclear Society (SNE) and IC member, sent the following report about SNE activities.

The 42nd Annual Meeting of the Spanish Nuclear Society, held last 28-30 September 2016 in Santander, Spain, gathered nearly 700 congresspersons. The 394 papers presented in both, oral and poster technical sessions, dealing with areas such as nuclear safety, radiological protection, nuclear fuel, plant operation and maintenance, engineering or communications, showed the state of the art of nuclear industry and research. The exhibition congregated 38 of the principal nuclear industry companies in Spain.



The technical programme had two plenary and three monographic sessions. A special session about the role of nuclear energy in the COP21 agreements was programmed, open to the Santander's citizens. Additionally, three workshops were on the program.

Plenary sessions addressed these issues of general scope:

- Nuclear Industry, ready for the future?
- Contribution of the nuclear technology to the human development

The monographic sessions covered the following topics:

- Made in Spain
- Optimization of radiation doses
- The future of nuclear industry: needs and training



The meeting also included activities aimed at informing and educating the general public, e.g. the Basic Course on Nuclear Science and Technology, which was organized by the SNE's Nuclear Youth Committee and opened to students from the local university. WiN Spain organized also in the city a conference open to the public. Another activity was the installation, in the venue, of an educational nuclear energy center destined for schoolboys.



You can find all the relevant information about the meeting at: www.reunionanualsne.es.

“TALENT ATTRACTION PROJECT”

The Board of Directors of the Spanish Nuclear Society has launched this project to attract the attention of last stage students or just graduated, make them interested in nuclear technology and show them the attractiveness of nuclear industry. A wide range of activities have been programmed: A competition, online courses and seminars, job portal and mentoring program by professionals of the industry.

SPANISH NUCLEAR INDUSTRY REPORT **“SPANISH NUCLEAR GENERATION UNTIL SEPTEMBER 2016”**

The electricity generation share of Spanish nuclear power plants until September 2016 was 23.4%. Once again nuclear was the major source of power generation in Spain, followed by wind (20.9%), hydro (16.7%), coal (11.7%), cogeneration (10.4%), combined cycle gas (8.4%), solar (5.9%) and other renewable thermal (1.8%).

“NEWS ON NUCLEAR FACILITIES”

The current political situation –non defined Government after the elections of last June– delays three important decisions for nuclear facilities: extend the Santa María de Garoña NPP operating life, as well as the other Spanish plants, and construction of a Centralized Temporary Storage to hold the spent fuel from plants.

To date, no decisions have been made regarding these subjects. The Spanish regulatory authority (CSN) is still assessing safety subjects of Santa María de Garoña NPP. The other seven Spanish reactors keep normal operation. Arrangements are being made to install

Individualised Temporary Storage in the NPP that still do not have.

- **United Kingdom**

Fiona Rayment, IC member and Director, Fuel Cycle Solutions, of the UK's National Nuclear Laboratory, sent the following notice for ENYGF 2017:

ENYGF 2017: A date for your diary (11-16 June 2017)

The UK Nuclear Institute's Young Generation network (YGN) is organising and hosting the European Nuclear Young Generation Forum (ENYGF) in June 2017 in Manchester, UK. The ENYGF is the largest youth nuclear event in Europe, and up to 500 young nuclear professionals are expected to attend the event in 2017. The theme for ENYGF2017 is "Innovation in nuclear: A rich heritage and our bright future?", and the week-long event will be comprised of seminars, workshops, technical sessions, networking opportunities, site tours and social activities. ENYGF is held every two years around Europe, and was last held in Paris in June 2015. The event is seen as the main opportunity for young professionals in the nuclear industry to be heard on a global stage. It also provides an international platform for knowledge transfer, discussion and sharing best practice. The ENYGF team is pleased to announce that the call for workshop managers, and for technical abstract submissions for the best poster and best presentation competitions has now opened. A number of sponsorship packages are also available for this event. More information can be found on our website www.enygf.org, or you can contact enygf2017@nuclearinst.com for more information.



- **United States of America**

Laura Hermann, of Potomac Communications Group, Inc., calls attention to the following conference:

The 9th International Conference on Isotopes (www.9ici.org) will convene in Doha, Qatar on November 12-16, 2017 at the Sheraton Grand Doha Resort & Convention Hotel. Organized by the Qatar Physics Society, the University of Qatar, and the World Council on Isotopes, this is the first time this international conference will be held in the Middle East, highlighting the growing importance of isotope science, technology and application in the region. The Conference will have six Tracks, with several session topics for each Track. The organizers will appreciate expressions of interest to help organize a Track or session in these areas:

- Track 1 - Isotope Production and Devices
- Track 2 - Isotope Research and Applications
- Track 3 - Isotopes in the Environment
- Track 4 - Security of Supply, Safety, and Transportation
- Track 5 - Quality Assurance and Quality Control

Important Dates:

First Call for Papers:

November 1, 2016

Abstract Submissions deadline:

June 5, 2017

Final Papers Due:

December 11, 2017



Societies with Collaboration Agreements with ANS

The following is a list of nuclear societies with collaboration agreements with the ANS, along with the corresponding website addresses. The Table contains also a few other entries of interest to ANS International Committee members.

Society	Website or E-Mail Address
Asociación Argentina de Tecnología Nuclear	www.aatn.org.ar
Associação Brasileira de Energia Nuclear	www.aben.com.br
Association des Ingénieurs en génie atomique du Maroc	-
Atomic Energy Society of Japan	wwwsoc.nii.ac.jp/aesj/index-e.html
Australian Nuclear Association	www.nuclearaustralia.org.au
Bangladesh Nuclear Society	-
Bulgarian Nuclear Society	www.bgns.bg
Canadian Nuclear Society	www.cns-snc.ca
Chinese Nuclear Society	www.ns.org.cn
Croatian Nuclear Society	www.nuklearno-drustvo.hr/en/home.html
Czech Nuclear Society	www.csvts.cz/cns
European Nuclear Society	www.euronuclear.org
Hungarian Nuclear Society	www.kfki.hu/~hnucsoc/hns.htm
Indian Nuclear Society	www.indian-nuclear-society.org.in
Israel Nuclear Society	meins@tx.technion.ac.il

Korean Nuclear Society	www.nuclear.or.kr/e_introduce.php
Lithuanian Energy Institute	www.lei.lt
Malaysian Nuclear Society	www.nuklearmalaysia.org/index.php?id=18mnu=1
Nuclear Energy Society of Kazakhstan	www.nuclear.kz
Nuclear Energy Society of Russia	ns@kia.ru
Nuclear Energy Society of Slovenia	www.drustvo-js.si
Nuclear Energy Society of Thailand	www.nst.or.th
OECD/Nuclear Energy Agency	www.nea.fr
Polish Nuclear Society	www.ptn.nuclear.pl
Romanian Nuclear Energy Association	www.aren.ro
Romanian Society for Radiological Protection	www.srrp.ro
Slovak Nuclear Society	www.snus.sk
Sociedad Nuclear Española (SNE)	www.sne.es
Sociedad Nuclear Mexicana	www.sociedadnuclear.org.mx
Ukrainian Nuclear Society	www.ukrns.odessa.net
United Kingdom Nuclear Institute	www.nuclearinst.com/ibis/Nuclear%20Institute/Home
Women in Nuclear – Global	www.win-global.org
Affiliated National Societies	Website or E-Mail Address
Belgian Nuclear Society	www.bns-org.be
Associated Nuclear Organizations	Website or E-Mail Address
International Nuclear Societies Council	http://insc.ans.org
Pacific Nuclear Council	http://www.pacificnuclear.net/pnc/
Non-U.S. Local Sections	Website or E-Mail Address
Austrian Section	
French Section	http://local.ans.org/france/
India Section	http://local.ans.org/india/
Italian Section	
Japanese Section	
Latin American Section	www.las-ans.org.br
Korean Section	
Swiss Section	
Taiwan Section	u805301@taipower.com.tw

Calendar of Events

Some Upcoming International Conferences on Nuclear and Related Topics
(Please send us information about your upcoming conferences, for inclusion in this space.)

Legend:

☀ **ANS Event**

□ **Non-ANS event co-sponsored by ANS**

○ **For all other conferences, ANS is NOT a sponsor, nor are these conferences endorsed by ANS.**

2016

- 2-4 November: 4th International technical Meeting on Small Reactors (ITMSR-4), Ottawa, Ontario, Canada - <https://www.cns-snc.ca/events/4tm/>
- 6-10 November: ANS Winter Meeting, Las Vegas, NV, USA – <http://www.ans.org/meetings> ☀
- 16-17 November: Nuclear Power Plant Management and Life Extension, Paris, France – <http://www.wplgroup.com/aci/event/nuclear-power-plant-life-management-extension/>

2017

- 5-8 February, Conference on Nuclear Training and Education 2017 (CONTE-2017), Jacksonville, FL, USA - <http://www.ans.org/meetings>
- 12-16 February, TOP SAFE, Vienna, Austria – www.topsafe2017.org
- 28 February-7 March: Nuclear and Emerging Technologies for Space 2017, Cape Canaveral, FL, USA - <http://anstd.ans.org/nets-2017/> ☀
- 19-22 March, Public Information Materials Exchange Conference 2017 (PIME-2017), Middelburg, The Netherlands - www.pime2017.org
- 9-13 March: International High-Level Radioactive Waste Management (IHLRWM 2017), Charlotte, NC, USA - <http://ihlrwm.ans.org/> ☀
- 16-20 April, International Conference on Mathematics and Computations (M&C 2017), Jeju, Korea - www.mc2017.org ☀
- 14-18 May, European Research Reactor Conference 2017 (RRFM-2017), Rotterdam, The Netherlands - <http://www.euronuclear.org/meetings/rrfm2017/>

- 30 May-2 June, Education and Training for Radiation Protection Conference 2017 (ETRAP-2017), Valencia, Spain – <http://etrap2017.org>
 - 4-7 June, 37th CNS Annual Conference and 41st CNS/CNA Conference, Niagara Falls, ON, Canada – <https://cns-snc.ca/events/cns2016conference/>
 - 11-15 June: ANS Annual Meeting, San Francisco, CA, USA – <http://www.ans.org/meetings> ☀
 - 11-16 June, European Nuclear Young Generation Forum (ENYGF Manchester 2017), Manchester, UK – <http://www.enygf.org>
 - 31 July-4 August, 13th International Topical Meeting on Nuclear Applications of Accelerators (AccApp '17), Québec City, QC, Canada – Organised jointly by ANS and CNS - <http://accapp17.org/>
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- 3-8 September, 17th International Technical Meeting on Reactor Thermal Hydraulics (NURETH-17), Xi'an, Shaanxi, China – <http://www.nureth17.com>
 - 17-22 September: 2nd CNS Conference on Fire Safety and Emergency Preparedness (FSEP-2017), Toronto, Ontario, Canada – <http://www.cns-snc.ca>
 - 24-28 September: 2017 Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA-2017), Pittsburgh, PA, USA - <http://psa.ans.org/> ☀
 - 1-4 October: CANDU Maintenance and Nuclear Component Conference (CMNCC-2017), Toronto, Ontario, Canada – <https://cns-snc.ca/events/cmncc-2017/>
 - 29 October -2 November: ANS Winter Meeting, Washington, DC, USA – <http://www.ans.org/meetings> ☀
 - 12-17 November, 9th International Conference on Isotopes (9ICI), Doha, Qatar, organized by the Qatar Physics Society, the University of Qatar, and the World Council on Isotopes – <http://www.9ici.org>

2018

- 3-6 June: 38th CNS Annual Conference and 42nd CNS/CNA Conference, Saskatoon, SK, Canada – <http://www.cns-snc.ca>

- 17-21 June: ANS Annual Meeting, Philadelphia, PA, USA – <http://www.ans.org/meetings> ☀
- 23-27 September: Is the LNT Obsolete? The Linear Non-Threshold Question, Pasco, WA, USA – <http://www.ans.org/meetings> ☀
- 30 September – 3 October: Pacific Basin Nuclear Conference 2018 (PBNC-2018), San Francisco, CA, USA – <http://www.ans.org/meetings>
- 11-15 November: ANS Winter Meeting, Orlando, FL, USA – <http://www.ans.org/meetings> ☀

2019

- 9-13 June: ANS Annual Meeting, Minneapolis, MN, USA – <http://www.ans.org/meetings> ☀
- 17-21 November: ANS Winter Meeting, Washington, DC, USA – <http://www.ans.org/meetings> ☀

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