

Discussion Summary of Working Group III
Nuclear Science, Technology, and Safeguards
 TECRO-AIT Meeting of the Joint Standing Committee on Civil Nuclear Cooperation
 December 10-11, 2013

Number of items discussed	21
Closed items	0
New items	0
Merged items	0
Number of working items after the meeting	21

1. Closed items:

none

2. New items:

none

3. Merged items:

none

4. Highlights:

AE-NR-D59, "Radiation Protection Training Program."

AEC staff member, Ms. Ju-Chuan Huang, completed Multi-Agency Radiation Surveys and Site Investigation Manual (MARSSIM) training in August 2013. NRC would welcome future requests for trainings.

AE-IN-DE-D64, "Radiation Protection Technical and Regulatory Information Exchange"

NRC would welcome future requests for information exchange.

AE-NR-D65, "Epidemiology Study on Effects of Prolonged Low-dose Radiation Exposure on Residents living in 60Co-contaminated Rebar Buildings in Taiwan."

The final report of the epidemiology study is being reviewed by the consulting experts. AEC will continue to exchange research results between AEC and NRC. AEC and NRC agree to present on their updated status of epidemiological surveys and reports at the 2014 bilateral technical meeting.

AE-DE-F39, "Nuclear Forensics Initiative."

The FBI-led workshop on crime scene management proposed and requested by AEC has been postponed indefinitely due to continued budget constraints at FBI. Recommend to keep discussions open and investigate whether other resources can be leveraged to support a future workshop in crime-scene related nuclear forensics training. TECRO to identify needs for training in crime scene management, data analysis, and laboratory. AIT to identify training resources to meet TECRO's needs.

IN-OR-I7, "Production and Evaluation of Isotopes and New Radiopharmaceuticals."

AIT provided Isotope Business Office website so that INER's needs can be factored into tungsten-188 production schedules. AIT also suggested that INER request a quote directly from the website. In order to facilitate more fluid communication, INER will directly contact Joel Grimm, Program Manager, DOE Office of Science, Office of Nuclear Physics, Isotope Program, as recommended by AIT.

IN-DE-I14, "Information Exchange of Certification, Quality Control and Licensing Procedure of Radiopharmaceutical."

AIT has provided a point of contact in FDA, Astrid Szeto, for this working item. TECRO can correspond directly with FDA on the questions related to therapeutic radiopharmaceuticals.

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- IN-DE-I19, “Cooperative Programs on the Development of Nuclear Imaging Instrumentation.” Assistant Engineer Fan-Pin Tseng (INER) was given 3-week training about optimization of radiation image quality at the Ravin Advanced Imaging Laboratories (RAI Labs) of Duke University in Durham, NC, from Sep. 16 to Oct. 7, 2012. Assistant Researcher Sheng-Pin Tseng (INER) was given 2-week training about carbon nanotube x-ray source array and stationary digital breast tomosynthesis technology at the Otto Zhou Research Lab of the University of North Carolina at Chapel Hill from Oct. 14 to Oct. 29, 2012. Dr. Bai-Ling Hsu (Univ. Missouri-Columbia) was invited to participate in a webinar with INER about the SPECT cardiac imaging and quantitative technology in Jan. 2013. Associate Engineer Yu-Ching Ni (INER) visited Prof. Ge Wang (Rensselaer Polytechnic Institute) in April. 2013, after the 2013 IEEE International Symposium on Biomedical Imaging for discussions about a novel method of computed tomography (CT) reconstruction. Dr. Bai-Ling Hsu (Univ. Missouri-Columbia) and Professor Benjamin Tsu (Johns Hopkins) have been invited to visit INER in Jan. 2014 and talk about the future official cooperation. Professor Benjamin Tsu has already agreed.
- TU-DE-Y1, “Generation IV Nuclear Reactors.” National Tsing Hua University (NTHU) held an international workshop on "The Advanced Nuclear Reactor Safety Technology" on October 18, 2013. Collaboration on advanced reactor technologies has been beneficial to both parties. In the past year, technical exchanges were held. In 2014, INL staff will be traveling to NTHU to support a student's dissertation defense. Technical exchanges of these types will continue and potentially expand. A workshop is proposed by NTHU on reactor structural materials and researchers from the U.S. will be invited to participate. Additionally, Professor R. J. Shue is pursuing a potential one-month assignment at INL. Discussions will also be held to restart the assignment of students from NTHU at DOE national laboratories.
- TU-DE-Y3, “Explore opportunities related to DOE Engineering Innovation Hub for Modeling and Simulation Program” In 2013, minimal activities were performed on this task. In 2014, this topic will be discussed further as part of the technical exchanges performed under TU-DE-Y1, Generation IV Nuclear Reactors. This work could potentially include NTHU sponsor of staff or students for nuclear safety simulation training or reactor core modeling.
- TU-DE-Y4, "Formation of New Partnership INL/NTHU/INER/NBL for Education and Training in Nuclear Science and Technology." In 2013, INL and INER moved forward on the technical exchange of staff between the two laboratories. Mr. Chih-Lin Huang was approved to begin a two-month assignment at INL, but unfortunately he was not able to start the assignment. In 2014, both laboratories will again pursue the potential for a staff assignment from INER at INL. Additionally, New Brunswick Laboratory (NBL) may participate in these future staff exchanges in support of this educational activity. Support by NBL may also open up the opportunity to benefit from the National Analytical Management Program (NAMP) in support of education and training in radiological science training.
- TU-AN-CC1, “Neutron Research at Research Reactors.” Prof. Wen-Hsien Li went to NIST for powder diffraction experiment. Prof. Hsin-Lung Chen's students (NTHU) went to the spallation neutron source (SNS/ORNL) for small angle neutron scattering experiment in April. Prof. Jien-Wei Yeh (NTHU), Prof. Er-Wen Huang (NCU), and students went to SNS/ORNL for neutron diffraction experiment in April. Dr. Jason Gardner (NSRRC) went to NIST for neutron scattering experiment in August. AIT and TECRO points of contact will work together to identify appropriate activities for 2014.

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AE-DE-EE2, “International Training Course on Physical Protection.”

Mr. Te-Chung Liu (AEC) attended ITC-24 course held at SNL from Oct. 20 to Nov. 8, 2013. The next ITC on Physical Protection will be held in 2015. AIT will inform TECRO of the dates once they have been established. TECRO will identify and nominate up to two participants as soon as possible.

AE-DE-EE3, “Nuclear Export Control Training.”

Limited activity in 2013. AIT would welcome future requests for trainings.

AE-DE-EE5, “Radioactive source security cooperation.”

From Feb. 2013 through Nov. 2013, AEC has inspected all 85 licensees of Sealed Radioactive Material of Category I and Category II to ensure the security of radioactive sources in Taiwan. AEC is awaiting comments from DOE/GTRI on their radiological security regulation.

AE-DE-EE6, “Physical Protection Consultations.”

AIT four-member team, led by NNSA/DOE, visited Taiwan from March 7-8, 2013 to verify the security improvements recommended by the NNSA/DOE team in Aug. 2011 for the reactor facility at the National Tsing Hua University (NTHU) and suggested further security enhancements. AIT and TECRO will tour the THOR facility of NTHU after the 2013 JSSCNC adjourns to review implementation of the security improvements recommended in March, 2013.

AE-DE-EE7, “Training in Implementation of New PP Standards and Guidance.”

From March 5-6, 2013, AIT sponsored two subject matter experts in physical protection from Sandia National Laboratory to conduct a workshop entitled, “Requirements for a State’s Physical Protection Regime under International Atomic Energy Agency (IAEA) INFCIRC 225/Rev.5.” Six different entities participated in the workshop (NTHU, INER, TPC, Lungmen NPP, FCMA, AEC). TECRO will inform AIT of any additional requirements for support in the implementation of INF INFCIRC 225/Rev.5. AIT remains open to providing additional training on physical protection of nuclear material and nuclear facilities (e.g. Foundations of Physical Protection, Vulnerability Analysis, and Contingency Planning) or other courses that address the top needs and priorities of Taiwan.

AE-AIT-FF1, “State Systems of Accounting and Control (SSAC).”

With the assistance of U.S. State Department, Ruey-Yu Chan (INER) and Ying-Chi Lin (TPC) attended the 2013 SSAC training course held at ORNL from April 28 to May 10, 2013. AIT will provide invitation to TECRO to send one or two observers to the next SSAC course.

AE-IN-AIT.LA-FF2, “Cooperation in Safeguards Technology”

Limited activity in 2013. Both sides agreed to keep on-going. TECRO will determine whether cooperation is needed with respect to safeguards on fuel being transferred from the Chin Shan NPP spent fuel pools to dry casks.

AE-AIT-FF3, “Exchange of Information on Implementation of IAEA Safeguards and Additional Protocol.”

AIT and TECRO exchanged information during 2013 JSSCNC meeting. Information on implementing safeguards will continue to be exchanged at future meetings.

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- AE-AIT-FF4, "Inventory of U.S. obligated nuclear material in Taiwan."
TECRO continues to submit questions regarding how to fill out the new inventory form for the renewed 123 agreement. US experts conducted training on nuclear material accountancy and foreign obligations tracking in Taiwan on January 21-24, 2013. The training program included a two-day table top discussion and site visit to the Chin Shan Nuclear Power Plant. There were approximately 30 participants from all nuclear stakeholders in Taiwan. TECRO will provide AIT with accumulation inventory of all material subject to the current agreement for cooperation as well as individual inventory of Canadian, Australian, and Euratom flagged materials for 2013 by March 31, 2014.
- TU-OR-HH1, "Design of Medical Therapy Facility for THOR."
TECRO contacted the Office of Nuclear Physics within the DOE Office of Science regarding lithium content of a number of different chemical compounds, as well as differing lithium-6/lithium-7 enrichments. Mr. Mitch Ferren of Isotope Business Office (IBO) recommended that NTHU professors submit an isotope purchase request with the required specifications. The response will provide a price quote for the material, and an estimated cost for additional technical services required to convert the material to the chemical form required. On April 2, 2013 the National Isotope Development Center (NIDC) assigned Reference Number Q2013-0516 to NTHU's request for information on Li-6. As of the end of October 2013, NTHU had not yet received a reply from IBO. TECRO contacted IBO in November to inquire about the status of Q2013-0516. IBO/ORNL Connie Cinder replied that she will send a Li-6 carbonate quote. On November 7, Connie Cinder sent a quote for 1kg Li-6 carbonate to Professor Shiang-Hui Jiang, as well as requested background info of this procurement. Tsing-Hua professor contacted Connie Cinder and indicated that TECRO will not be purchasing Li-6 carbonate due to the high processing fee and will suspend the contract. TECRO will consider a possible substitute in the future. AIT and TECRO points of contact will work together to identify appropriate activities for 2014.

Approved:



Ike U. Therios, DOE/NNSA

AIT Representative

Date:

11 December 2013



Lie-Hang Shen, INER

TECRO Representative

Date:

11. Dec. 2013