

Global Professional Networks: Establishing a Link to the Gulf Region

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Introduction:

International professional societies, training programs, and organizations provide unique and valuable opportunities for indigenous staff of countries with plans to either expand or develop civil nuclear power programs. This paper recommends that such countries concurrently address issues associated with nuclear infrastructure development, specifically the promotion of adequate human resources, by engaging in various forms of international collaboration and networking. The paper advises that identification, training, and retention of next-generation professionals is critical to a civil nuclear power program; it accordingly discusses a number of possibilities that would be highly beneficial to countries seeking to promote this type of development. In addition, this paper suggests that appropriate countries in the Gulf make use of collaboration opportunities with the U.S. Department of Energy and its associated National Laboratory complex. Professional networking is vital to this region, especially as members of the Gulf Cooperation Council (GCC) embark upon the establishment of peaceful nuclear programs. As a result, this paper more broadly intends to demonstrate the high return on investment for attending international conferences, participating in international training opportunities, and establishing regional chapters of international professional organizations and institutions.

International Organizations and Professional Networks

Indigenous staffers of the respective government entities charged with development or expansion of civil nuclear power programs in many instances have very little exposure to international subject matter experts. For that reason, the following organizations and examples are provided to identify opportunities for information sharing and dialogue, knowledge transfer, and training. To begin, the International Atomic Energy Agency (IAEA), which falls under the United Nations, has been referred to as the “world’s center for cooperation in the nuclear field.” The Agency focuses on the promotion of “safe, secure, and peaceful nuclear technologies,” and one of its main outreach functions involves hosting annual meetings, conferences, and symposiums. These opportunities are carried out all over the world, and they focus on reaching out to governmental entities responsible for the development, expansion, and operation of civil nuclear power programs.

Along with the IAEA, however, there are other organizations that can provide outreach to the GCC on nuclear energy, safety, security, education, and many other related areas. Examples of some of these organizations include: The World Nuclear Association (WNA), the World Institute for Nuclear Safety (WINS), World Association of Nuclear Operators (WANO), the Organisation for Economic Co-operation and Development’s Nuclear Energy Agency (OECD/NES), European Nuclear Society (ENS), European Atomic Forum (FORATOM), the Institute for Nuclear Materials Management (INMM), Nuclear Energy Institute (NEI), the Health Physics Society (HPS), and the American Nuclear Society (ANS). This paper does not provide an exhaustive list of organizations or options, but rather it focuses primarily on the INMM and the ANS as examples to highlight the advantages of engaging in international networking.

INMM. The INMM was formed in 1958 and focuses on five main pillars, including:

- The advancement of nuclear materials management in all its aspects.
- The promotion of research in the field of nuclear materials management.
- The establishment of standards, consistent with existing professional norms.
- The improvement of the qualifications of those engaged in nuclear materials management and safeguards through high standards of professional ethics, education, and attainments, and the recognition of those who meet such standards.
- The increase and dissemination of information through meetings, professional contacts, reports, papers, discussions, and publications [1]ⁱ

To promote these pillars, the INMM conducts a variety of meetings, workshops, and other events each year, including an Annual Meeting, to provide training and dialogue on pressing issues that range from nuclear material control and accounting to human capital development. The Institute's success can largely be attributed to its strong foundations, leadership, and diverse membership; its events provide extraordinary opportunities for professionals and students to assemble in one location and present on important topics. During this year's 50th Annual Meeting, authors and co-authors from over thirty nations wrote papers. The event also included many international participants, nine of which were from the GCC, Egypt, and Jordan attending a U.S. DOE-sponsored technical training event that was funded by the National Nuclear Security Administration and supported by the National Laboratory complex. The INMM also ensures to have industry, government, and international leaders, as well as subject matter experts, represented at the annual meetings; this creates a comprehensive and well-rounded environment.

The establishment of INMM chapters in the GCC region, as an example, would enable nations to cooperate, collaborate, and communicate more effectively with this robust organization of experts. States could begin by developing country INMM chapters, which then could eventually lead to development of a larger regional chapter. Developing INMM chapters in the region encourages networking and provides ample opportunities for institutional and individual professional growth; it also enables participants to take part in the INMM annual meetings and to develop and foster working relationships with the attending subject matter experts.

ANS. The ANS provides another example of an international professional society with members recognized as world-renowned leaders in the nuclear industry. The ANS has two meetings per year, which also attract a large international audience; its primary focus is on unifying "professional activities within the diverse fields of nuclear science and technology." Its 10,500 members (in 46 countries) come from diverse technical disciplines ranging from physics and nuclear safety to operations and power, and from across the full spectrum of the national and international enterprise, including government, academia, research laboratories, and private industry. [2]ⁱⁱ

There are eight established regional and local sections across the globe, and the current locations include: Belgium, Japan, Taiwan, Republic of Korea, France, Italy, Switzerland, Austria (IAEA), and Argentina [3]. International sections within the ANS offer the rare experience of bringing regional awareness to topics and issues facing a specific area; these sections also work collaboratively on topics of mutual concern. Much like the INMM, the establishment of a local section of the ANS in the GCC region could be very beneficial to the education and training of indigenous staff. The ANS local section committee is available for consultation and would welcome a discussion on the process of developing a professional network in the region.

U.S. DOE National Laboratory Complex-International Opportunities

The U.S. DOE's laboratory complex includes over 30,000 scientists, engineers, and other professionals who perform work to advance science and technology in the U.S. and around the globe. These individuals work at a variety of laboratories and technology centers in support of different U.S. objectives, all of which fall under the purview of the U.S. DOE. Provided in the next sections are explanations of two of these laboratories, including Oakridge National Laboratory and Sandia National Laboratories, but first is an example of the collaborative approach the U.S. DOE takes to provide international training programs.

To highlight how the laboratory complex works collaboratively to engage international partners, the U.S. DOE's National Nuclear Security Administration (NNSA), INMM, SNL, and ORNL (with participation from four other laboratories), this past year hosted the aforementioned GCC, Egypt, and Jordan Technical Training Program. This event provided a five-week program and included participants from Saudi Arabia, United Arab Emirates, Oman, Kuwait, Jordan, and Egypt. The first week began with INMM's Annual Meeting, which helped establish a strong foundation for the participants to begin their four-week technical training at the U.S. National laboratories. The INMM meeting offered a forum for the foreign trainees to discuss nuclear energy and safeguards-related issues with experts from across the globe; since the event, a few trainees have expressed interest in submitting papers for the annual meeting in 2010.

Following the INMM Annual Meeting, the participants took part in introductory training modules at SNL for one week before they were sent to various national laboratories for a ten-day specialized technical training program. This training, which provided education on fundamental safeguards and nonproliferation issues, also afforded the participants access to facilities and research laboratories.

Oak Ridge National Laboratory

Designated as the U.S. DOE's largest energy laboratory, ORNL has a rich history in nuclear energy research and development. ORNL has twelve user facilities available for collaboration with researchers from domestic and international academia and industry. A few of the most high profile facilities include one of the world's most powerful research reactors (the High Flux Isotope Reactor HFIR), the world's fastest computer, nation's largest concentration of open source materials research, and the world's most intense pulsed neutron source (the Spallation Neutron Source SNS). Another user facility, the Safeguards Laboratory (SL), is specifically noteworthy due to its focus on training and technical support internationally.

The International Collaboration team, within the International Safeguards Group, at ORNL specializes in engaging international safeguards organizations and their staff in the transfer of technology, the assistance of nuclear infrastructure development, and most importantly, the facilitation of training programs for foreign counterparts. In 2009, the International Safeguards Group had 105 foreign nationals visit ORNL to either receive education and training, or present on a safeguards related topic. Country/need specific training programs can be developed to offer hands-on training, with the detection and analysis of sealed Special Nuclear Material (SNM), as well as classroom style lectures from international subject matter experts; confirming the truly unique and versatile training and educational opportunities available for international participants at ORNL. The recent establishment of the Next Generation Safeguards Professional Network (NGSPN) at ORNL is another example of the collaborative role it is taking to address the Next Generation Safeguards Initiative (NGSI). The network, which now has grown to over 30 members representing every U.S. National Laboratory, leaders in safeguards industry, DOE staff, and even IAEA staff, is developing a wiki-spaces open website to encourage membership and collaboration amongst the next generation staff of young professionals worldwide.

Sandia National Laboratories

Since 1949, Sandia National Laboratories has developed science-based technologies that support U.S. national security objectives. Today, Sandia's technology solutions are critical to solving national and global threats to peace and freedom. Through science and technology, people, infrastructure, and partnerships, one of Sandia's core missions is to meet national needs in the areas of energy, resources, and nonproliferation. Consistent with this mission, Sandia provides work focused on three core topics,

including energy systems, nuclear energy, and global security, all three of which are crosscut by the intention to enable breakthrough science and discovery.

In the specific area of nuclear energy, Sandia specializes in repository science, nonproliferation, safety and security, transportation, and modeling and system demonstrations. Subject matter experts in each of these five areas are available to foreign counterparts through various training programs, workshops, and other events sponsored by the U.S. DOE. Sandia's Office of Global Security Programs provides many of these opportunities overseas for partners interested in training and collaboration. Global Security Programs at Sandia also hosts a facility known as the Cooperative Monitoring Center (CMC). The CMC has fifteen years of experience with technical engagement with scientists, policy makers, scholars, journalists, and military officers in countries around the world. Its facilities allow hands-on demonstration and training, as well as testing and evaluation of large scale monitoring systems in realistic environments. A core component of the CMC is its ability to facilitate training for international groups on specialized topics ranging from nonproliferation to nuclear safety and security to physical protection. The CMC maintains an extensive international network and supports scholars from other countries to provide critical research on pressing international and regional security issues.

The CMC also has an international extension in Amman, Jordan known as the Cooperative Monitoring Center –Amman (CMC-A). This Center is a Jordanian organization that is sponsored by the U.S. DOE, and its activities are coordinated by SNL under guidance from the NNSA. In March of 2009, NNSA's International Nuclear Safeguards and Engagement Program sponsored a workshop at CMC-A for countries in the Middle East on nuclear energy infrastructure preparedness, which eventually led to the GCC, Egypt, and Jordan Technical Training Program mentioned above. This, and other types of engagement, takes place at the CMC-A frequently and throughout the year.

Conclusion

Recognizing that development of a civil nuclear power program requires significant amounts of commitment and work is only the first step in a long and challenging path to achieve that end. Countries interested in either developing or expanding upon such a program should, therefore, utilize the vast array of resources available throughout the world. This paper introduces a number of the global professional networks that are currently operational and available to GCC countries as they pursue peaceful nuclear energy options.

Having access to international networks of experts in the field of nuclear energy represents a strong asset to countries seeking to develop or expand civil nuclear power programs. In addition to the assistance offered by the IAEA, countries should take advantage of professional societies such as the INMM and the ANS that can provide important access to tools and expertise. Furthermore, the U.S. DOE and its laboratory complex provides training and other opportunities in-line with the development of civil nuclear energy programs, including the promotion of international networking with professionals around the globe. Countries in the Gulf should utilize these potential partnerships to help bolster the development of their human resources and other important capabilities.

[1] "About INMM," Institute for Nuclear Materials website, 2010, www.inmm.org/about/mission.cfm

[2] "History of ANS," American Nuclear Society website, 2010, www.ans.org/about/history/

[3] "International Local Sections", American Nuclear Society website, 2010, www.ans.org/const/local/index.cgi?s=&i=all&sViewI=View

"About IAEA," International Atomic Energy Agency website, 2010, <http://www.iaea.org/About/index.html>

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"National Laboratories and Technology Centers," The United States Department of Energy website, 2010, <http://www.energy.gov/organization/labs-techcenters.htm>