

***The U.S. Support Program to IAEA Safeguards Priority of  
Training and Human Resources***

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## **The U.S. Support Program to IAEA Safeguards Priority of Training and Human Resources**

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### **ABSTRACT**

The U.S. Support Program to IAEA Safeguards (USSP) priority of training and human resources is aimed at providing the Department of Safeguards with an appropriate mixture of regular staff and extrabudgetary experts who are qualified to meet the IAEA's technical needs and to provide personnel with appropriate instruction to improve the technical basis and specific skills needed to perform their job functions.

The equipment and methods used in inspection activities are unique, complex, and evolving. New and experienced safeguards inspectors need timely and effective training to perform required tasks and to learn new skills prescribed by new safeguards policies or agreements. The role of the inspector has changed from that of strictly an accountant to include that of a detective. New safeguards procedures are being instituted, and therefore, experienced inspectors must be educated on these new procedures. The USSP also recognizes the need for training safeguards support staff, particularly those who maintain and service safeguards equipment (SGTS), and those who perform information collection and analysis (SGIM). The USSP is committed to supporting the IAEA with training to ensure the effectiveness of all staff members and will continue to offer its assistance in the development and delivery of basic, refresher, and advanced training courses.

This paper will discuss the USSP ongoing support in the area of training and IAEA staffing.

### **INTRODUCTION**

The U.S. Program of Technical Assistance to IAEA Safeguards (POTAS) was established in 1977. At the same time, the International Safeguards Project Office (ISPO) was established at Brookhaven National Laboratory (BNL) to manage the program administratively and technically. The interagency Technical Support Coordinating Committee was formed, at about the same time, to provide policy oversight for the program. The United States reorganized its support to the IAEA in 1994, resulting in the creation of the Subgroup on Safeguards Technical Support (SSTS). The SSTS is an interagency committee that determines which IAEA requests will be approved and that provides policy oversight. The SSTS is composed of representatives of the Department of Energy (DOE), the Department of State (DOS), the Department of Defense (DOD), and the Nuclear Regulatory Commission (NRC).

Today, all the various sources of support to the IAEA's Department of Safeguards are coordinated under the umbrella of the U.S. Support Program to IAEA Safeguards (USSP). This program provides extra budgetary assistance to research, development, and implementation support to resolve technical safeguards questions. Thereby, the USSP assists the IAEA in its mission to verify that nuclear material placed under IAEA safeguards is not diverted for non-peaceful purposes. This program is funded primarily through POTAS. However, the DOS's Non-Proliferation and

Disarmament Fund and other government agencies provide additional funding periodically. POTAS funding was \$14.4 million for FY2007.

Tasks sponsored by the USSP may provide human resources support to Agency staff. For example, cost-free experts (CFEs), junior professional officers (JPOs) and extrabudgetary staff, work for the IAEA on specific projects for one or more years and their salaries and benefits are reimbursed by the POTAS. The USSP sponsors a number of shorter-term consultants. The national laboratories and the private sector work on research and development tasks. In recent years, there has been a focus on providing commercial, off-the-shelf equipment, to avoid the high costs of development. Typically, between eighty and one hundred tasks are active at any given time. Postings for IAEA staff vacancies, expert positions, and task requests are listed on the ISPO website at [www.bnl.gov/ispo](http://www.bnl.gov/ispo).

## **BACKGROUND**

With limited funding available, the USSP establishes priorities, based on U.S. government policies and guidelines, which serve as a tool for making decisions regarding use of available resources. Strategies and tactical goals with performance measures are established for each priority. Annually, the USSP reviews its previous year's priorities, strategies, goals and assesses its performance based on these set measures. Priorities are then updated as necessary, shared with the IAEA's Department of Safeguards, and posted on the ISPO website at [www.bnl.gov/ispo](http://www.bnl.gov/ispo). The remainder of this paper will focus only on USSP priority statement for Human Resources and Training.

A main objective of the USSP is to ensure that the IAEA Department of Safeguards has an appropriate mixture of regular staff and extrabudgetary experts who are qualified to meet the IAEA's technical needs, and to increase U.S. representation at the IAEA to meet those objectives. The USSP has a recruitment program that increases awareness within the United States of employment opportunities at the IAEA and provides a coordinated mechanism for recruitment [1].

A challenge facing the Department of Safeguards with respect to inspector training involves the unprecedented attrition of safeguards inspectors. Large numbers of experienced inspectors have been retiring and this trend will continue for a few more years. The situation is further strained by the United Nations' rotation policy, which encourages the IAEA to replace staff members after they have served the organization for seven years. As a result, the institutional knowledge and the average experience level are decreasing. The IAEA Section for Safeguards Training must provide basic and advanced inspector courses at an accelerated rate to compensate.

The equipment and methods used in inspection activities are unique, complex, and evolving. New and experienced safeguards inspectors need timely and effective training to perform required tasks and to learn new skills prescribed by new safeguards policies or agreements. The role of the inspector today is much broader than being an accountant of nuclear materials. Today, the inspector is being trained more and more in "soft skills," such as communications, diplomacy, observational skills, etc. New safeguards procedures are required and experienced inspectors must be trained in the new procedures. The USSP recognizes the need for training safeguards support staff, particularly those who maintain and service safeguards equipment (SGTS), and those who perform information collection and analysis (SGIM). The USSP is committed to supporting the IAEA with training to ensure the effectiveness of all staff members and will continue to offer its assistance in the development and delivery of basic, refresher, and advanced training courses.

The following discussion is divided into two parts. The first deals with the human resources portion of USSP Human Resources and Training Priority, followed by a discussion on training.

### **HUMAN RESOURCES – Priorities**

The U.S. government has an interest in maintaining levels of U.S. citizens employed at the IAEA, particularly in the Department of Safeguards. U.S. representation at the IAEA was 12.0% on February 28, 2008, as compared to 11.3% in March 2005. U.S. citizens are filling 12.7% of the professional positions subject to geographic distribution within the Department of Safeguards, as of February 28, 2008. The U.S. would like to increase the percentage of U.S. citizens working at the IAEA overall to between 14 and 16%. The United States is focusing on identifying well-qualified U.S. citizens for IAEA vacancies in the Operations and Support Divisions. When recruiting inspectors, it is important to recruit at the P-3 level, as well as more senior levels, since most current senior IAEA inspectors are recruited from within the organization. Also, there are key positions in the Support Divisions that require or benefit from inspection experience.

The rate of attrition over the next several years will require the IAEA to recruit and place individuals at an aggressive rate. It is not always possible for the IAEA to find the correct mix of education, skills, and experience required for the positions. The IAEA needs CFEs, consultants, and JPOs to assist with the IAEA's workload to fill gaps left by departing staff and due to the inability to recruit regular staff. It is recommended that the IAEA start succession planning as early as possible, especially in technical areas where key skills are rare worldwide [2].

It has become a priority to the U.S. government for U.S. citizens to take positions with the IAEA to contribute to its success. It is critical for persons within, and outside, the U.S. nuclear and safeguards industries to become aware of the job opportunities available at the IAEA and to be informed of important vacancies as they arise. ISPO at BNL is tasked by the U.S. government with recruiting candidates for positions within the Department of Safeguards at the IAEA.

### **HUMAN RESOURCES - Strategies**

Strategies are defined for each priority; identifying activities that are focused at addressing a specific priority. The strategies for addressing the USSP Human Resources priority are the following:

- Cooperate with U.S. recruitment initiatives through DOE, DOS, BNL, and Argonne National Laboratory (ANL).
- Identify means to strengthen U.S. recruitment for IAEA Safeguards positions.

### **HUMAN RESOURCES - Tactical Goals and Performance Measures**

Tactical goals and performance measures are provided for each strategy, identifying specific milestones expected to be achieved in the upcoming year. The tactical goals and associated performance measures for this priority are:

- Maintain or increase US representation in the Department of Safeguards. Identify and target new or non-traditional pools of expertise for recruitment.

### Performance Measures:

- 1) Identify well-qualified U.S. citizens for IAEA Safeguards regular staff positions and experts as needed, and develop tools, brochures, and policy position papers for recruiting.
- 2) Design a brochure to inform candidates about Employment Opportunities for Spouses.
- 3) Revise and update ISPO's: "Working for the IAEA – A Guide for US Citizens," including a section on JPOs.
- 4) Sustain the recruiting program for JPOs.
- 5) Participate in NA-24 Next Generation Safeguards Initiative activities related to human resources.

### **HUMAN RESOURCES – Current Activities**

ISPO conducts activities aimed at recruiting U.S. citizens for job vacancies in the Department of Safeguards, as part of its support to the SSTS and the State Department. These activities can be divided into three categories: efforts that are carried out daily basis, those efforts conducted on a periodic bases, such as trade shows and updating documents, and special efforts to improve our outreach capabilities. Identified by category, these activities include:

#### **Daily**

- Working closely with applicants for submission of their Personal History Form (PHF) and resume, to better coincide with the IAEA Job Vacancy Description.
- Coordinating efforts with IAEA personnel, the U.S. Mission to International Organizations in Vienna (UNVIE), DOS, BNL, ANL, NRC, and DOE.
- Collecting and retaining resumes in an electronic format, using the ISPO Information System, to perform search functions for specific vacancy positions.

#### **Periodic**

- Revising and updating ISPO's, *Working for the IAEA – A Guidebook for US Citizens*. The last revision to the ISPO Guidebook was in 2006. This guide is being revised currently, according to the latest policies, technology updates, and new requirements. It is scheduled to be released in the second half of 2008.
- Attending trade shows and career fairs such as Military West, Institute for Nuclear Materials Management, the Maritime Security Expo, the Institute of Electrical and Electronics Engineers – Nuclear Science Symposium/Medical Imaging Conference, Society of Women Engineers, and the American Nuclear Society.
- Creation of a brochure/fact sheet containing specific information regarding the roles and responsibilities of a Safeguards Inspector. Many individuals inquire about the roles and responsibilities of a safeguards inspector, during tradeshow events. ISPO has developed a brochure in conjunction with the IAEA to explain the inspector's job, in response to this need.
- ISPO is collaborating with a DOS working group to coordinate recruitment efforts for non-Safeguards positions and Safeguards positions. ISPO participates in quarterly digital video

conferences (DVC), organized by the UNVIE, for discussions on recruitment efforts, for topics of concern, for accomplishments, to raise questions, to resolve issues, to discuss status of vacancy positions, and to establish points-of-contact among all interested parties, etc.

- Vacancy notices are distributed monthly to points-of-contact to laboratories, the database of applicants, university contacts, and potential candidates from tradeshows, etc.

### **Special Effort**

- Owing to its experience in recruiting personnel for the IAEA, ISPO is coordinating a workshop at BNL, “Enhanced Recruitment for International Safeguards (ERIS)” to be held later this year. This workshop is being funded by DOE/NA-24, Office of Nonproliferation and International Security, as part of the Next Generation Safeguards Initiative (NGSI).
- The USSP has funded the BNL Office of Educational Programs (OEP) to assist with recruitment of Junior Professional Officers (JPOs) and with identifying candidates for CFE positions. OEP will assist ISPO by attending four trade shows and by distributing information about USSP JPO positions at the other numerous recruiting events, which they will be attending.

### **TRAINING - Priorities**

The USSP’s goal for training is to contribute to the development and proficiency of highly effective safeguards staff through the implementation of inspector and support staff training programs. The implementation of new training courses and updating of the existing ones are needed constantly, as a result of the changes in safeguards technology and the increasing focus on the Additional Protocol and on State-level approaches. The IAEA’s Section for Safeguards Training (CTR) Division of Concepts and Planning is responsible for addressing these ever changing approaches. The use of newer sophisticated equipment throughout the Department of Safeguards also calls for constantly revising their training needs. On-going efforts by CTR to identify staff training requirements are strongly supported by the USSP. In general, the CTR is taking a methodical approach. The first phase is an assessment of knowledge and skills needed, based on job function. Specific training courses may be prepared to address these needs, when these skills have been identified.

### **TRAINING - Strategies**

Strategies are defined for each priority; identifying activities which are focused at addressing a specific priority. The strategies for addressing the USSP Training priority are the following:

- Support U.S.-sponsored training for IAEA inspectors in introductory, intermediate, and advanced subject areas, while providing training in a manner that satisfies U.S. security concerns.
- Provide training at increased frequencies to counteract the effects of the high rates of retirement and the rotation policy.
- Improve the quality of training and training materials.
- Develop and update basic, advanced, specialized, and job-related training courses to keep pace with existing safeguards procedures and to meet the needs of a changing safeguards environment, as a result of an increased focus on the Additional Protocol and on the State

Evaluation approach.

- Assist the IAEA in developing and providing training courses for implementation of strengthened and integrated safeguards measures.
- Help maintain and preserve institutional knowledge.

### **TRAINING - Tactical Goals and Performance Measures**

Tactical goals and performance measures identifying specific milestones expected to be achieved in the upcoming year are provided for each strategy. The tactical goals and associated performance measures for this priority are:

- Ensure continued U.S. participation in Non-Destructive Assay (NDA) courses for new IAEA inspectors.

#### Performance Measures:

- 1) Ensure the continued accessibility of the NDA courses in the US (LANL or INL) or provide expert instructors if moved to a non-US location.
- 2) Provide a NDA Training CFE

- Provide introductory and advanced inspector training courses

#### Performance Measure:

- 1) Consider and support with funding all Agency requests submitted, related to Enhanced Observational Skills, Enhanced Communications Skills, Advanced Plutonium Verification Techniques, Radiation Review Software, Complementary Access Exercise (Additional Protocol), Pyroprocessing, and Enrichment Technology.

### **TRAINING – USSP Active Tasks**

The USSP supports IAEA training activities strongly, spending over \$1.8 million in CY2007. The USSP provides assistance traditionally during the Introductory Course on Agency Safeguards (ICAS), performs updates to existing U.S. sponsored courses, develops and implements new training courses to address training gaps that are identified due to changes in inspection activities, and hosts courses at U.S national laboratories involving practical exercises at facilities of interest and on nuclear materials. Below is a listing of USSP sponsored courses for CY2007 with a brief description of the course. A more detail description of all IAEA Training Courses is available from the IAEA [3].

- **Introductory Course on Agency Safeguards (ICAS)**

This course provides the inspectors with the necessary entry-level skills for performing an inspection, evaluating its results in accordance with the Safeguards Criteria requirements; documenting the inspection, and reporting its results to the states, in accordance with the Safeguards Agreements, and performing measures/techniques relevant to the implementation of the strengthened safeguards system, i.e. Additional Protocol/Complementary Access.

This course is given two to three times a year and is supported by the USSP, which provides an NDA expert as an instructor for the NDA Verifications Techniques portion of the course.

- **Non-Destructive Assay Techniques**

This course provides new inspectors with the fundamental principles of selected NDA instrument design and operation and with the basic skills for applying appropriate NDA techniques and instruments for specific measurements of nuclear materials, based on the verification requirements of the Safeguards Criteria.

The course is given by LANL at Los Alamos, New Mexico, typically twice a year.

- **Complementary Access Exercise (Additional Protocol)**

With the development of the Strengthened Safeguards Systems and the Additional Protocol, the IAEA needed to create training programs to supplement the training which inspectors previously received, under the traditional material accountancy safeguards approach. The USSP funded BNL in 2006 to develop and conduct a pilot program to teach inspectors the needed skills to understand the responsibilities of the Additional Protocol (AP), with respect to planning, organizing, conducting, and reporting complementary access (CA) visits. This program continues to be sponsored by the USSP and is conducted nominally once a year at BNL.

- **Enhanced Communications Skills**

This course was designed by Sonalysts, Inc., to assist participants in developing their skills to effectively communicate orally and in writing with members of the inspection teams, with regional and State authorities, and with facility personnel in planning, conducting, and reporting safeguards inspections and other activities based on the Safeguards Agreement. This course is offered typically twice a year, as part of the ICAS course and, additionally, two more times a year for inspectors who have not completed the course previously.

- **Enhanced Observational Skills**

This course was also designed by Sonalysts, Inc., and was prepared to enhance the participant's observational capabilities, while performing safeguards activities and to assist them with the evaluation and interpretation of what was observed, based on the assessment of nuclear proliferation indicators. This course is presented typically twice a year, as part of the ICAS course and, additionally, two more times a year for inspectors who have not completed the course previously.

- **Advanced Plutonium Verification Techniques**

This advanced course is intended for inspectors currently assigned to perform plutonium measurements during inspections, to enable them to verify plutonium content using neutron and gamma-ray techniques based on approved procedures.

The course is given by LANL at Los Alamos, New Mexico, typically once a year.

- **Radiation Review Software**

This course is intended for inspectors who are assigned currently or will be assigned to inspect facilities where unattended and remote monitoring systems are being used or will be installed. The course is given approximately twice a year by LANL, usually with support from Sonalysts.

- **Safeguards at Uranium Enrichment Plants**

This course was developed by Oak Ridge National Laboratory (ORNL) and provides participants with the necessary skills to perform safeguards activities at enrichment plants. The course includes the safeguards aspects of enrichment technology, particularly in relation to centrifuge enrichment plants. Specific topics include basic separation and cascade theory, UF<sub>6</sub> handling procedures, possible diversion scenarios, enrichment plant safeguards measurement procedures, and material balance evaluation.

- **Pyroprocessing Training Course**

The USSP funded INL in 2007 to develop and deliver a pilot training course to address the IAEA's concern for an increased interest in pyroprocessing and for the need to expand the skills base of the inspectors to be able to understand the basics of the underlying technology. This one-week training course on the fundamentals of pyroprocessing was presented last year at INL and included visits to their pyroprocessing facilities. This course was so well received that it will be repeated in July 2008.

## **CONCLUSIONS**

Traditionally, the USSP has supported the IAEA's training activities and is expected to do so well into the future. The USSP has included Human Resources in this priority since 2005. Placing Americans in sufficient number and in key safeguards positions within the IAEA has become an important U.S. nonproliferation objective. Efforts are already underway to overcome many of the obstacles to achieving this objective, including continuing efforts by the USSP through the ISPO and the U.S. interagency. These areas are expected to remain a high priority. The USSP is committed to:

- Supporting the IAEA with training, to ensure the effectiveness of all staff members, through assistance in the development and delivery of basic, refresher, and advanced training courses.
- Identifying and recruiting well qualified U.S. citizens for IAEA positions, especially in the Department of Safeguards.

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