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## 1st Quarter

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## Recruitment for the Department of Safeguards

**Susan Pepper**

### Junior Professional Officers:

JPO positions are offered for an initial period of one year to recent college graduates with zero to two years' working experience who are U.S. citizens and less than 32 years of age. The positions are offered at the P1 or P2 grade, depending on experience. For further information and details regarding these postings, please visit the ISPO website at [www.bnl.gov/ispo](http://www.bnl.gov/ispo).

08/IDS-004 – JPO – Statistical Analysis

### Cost-Free Expert Positions:

The initial duration of a Cost-Free Expert (CFE) appointment is two years. CFEs are employed by the IAEA with funding provided by the U.S. or another member state. For further information and details regarding these postings, please visit the ISPO website at [www.bnl.gov/ispo](http://www.bnl.gov/ispo).

07/ICO-003 – Expert – Safeguards Next Generation Desktop Development (readvertised)

## IAEA Regular Staff Positions:

### 2008/921: Senior Technology

Analyst (2 posts) (re-opened on 15 May 2009) (P-5)

Trade and Technology Analysis Unit  
Information Collect. & Analysis Sect.  
Division of Information Management  
Application Deadline: June 12, 2009  
Salary: \$122,346  
Guidance: U.S. citizens are encouraged to apply.

### 2009/035: Head, Customer Services Unit (P-4)

Cust. Services & Operations Sect.  
Division of Information Management  
Application Deadline: July 9, 2009  
Safeguards: \$104,072  
Guidance: U.S. citizens are encouraged to apply.

### 2009/900: Quality Assurance Engineer (P-3)

Project Management Services Unit  
Info. Architecture & Projects Sect.  
Division of Information Management  
Application Deadline: June 29, 2009  
Salary: \$85,002  
Guidance: U.S. citizens are encouraged to apply.

For an updated list of positions available at the IAEA, visit [www.iaea.org/phf/p\\_vacancies.asp](http://www.iaea.org/phf/p_vacancies.asp). Please contact Susan Pepper at [pepper@bnl.gov](mailto:pepper@bnl.gov), for information regarding positions in the IAEA Department of Safeguards.

**BROOKHAVEN**  
NATIONAL LABORATORY

managed for the U.S. Department of Energy by Brookhaven Science Associates,  
a company founded by Stony Brook University and Battelle

Contact Christine O'Brien at [cobrien@dep.anl.gov](mailto:cobrien@dep.anl.gov), for positions in other departments of the IAEA.

These points of contact can provide information about the status of individual applications.

**Opportunity at Brookhaven National Laboratory:** ISPO is advertising for a Recruitment Specialist to implement programs for the recruitment of U.S. citizens for IAEA Safeguards positions on behalf of the U.S. Support Program and the Next Generation Safeguards Initiative. An official announcement is posted on the BNL website, [www.bnl.gov](http://www.bnl.gov), soon. If you or anyone you know is interested, please contact ISPO. This position is at BNL as a BNL employee.

**Job Description:** Requires a bachelor's degree or equivalent experience, at least four years' experience in the recruitment of technical, engineering and information technology experts, excellent oral and written communication and organizational skills, knowledge of MSWord, Outlook, MS Office Publisher, PowerPoint, and Excel, experience developing web-based recruitment strategies, knowledge of and personal ideas for innovative recruitment techniques, including experience in locating non-active job seekers, and ability to work in a fast-paced office. Knowledge of and experience using PeopleSoft, website development tools, and applicant tracking databases are highly desirable. SHRM/HR certifications are highly desirable. Responsibilities will include recruiting entry-level and experienced U.S. citizens for positions with the International Atomic Energy Agency Department of Safeguards, maintaining and updating recruiting materials, maintaining the website of the International Safeguards Project Office (ISPO), working with the U.S. Support Program and the Next Generation Safeguards Initiative to achieve goals, implementing recommendations for program improvements, networking with former IAEA employees to understand special requirements for IAEA positions, management of candidate information, explaining IAEA recruitment and hiring practices to candidates, discretionary and confidential handling of personal information, compiling statistics, responding to inquiries from candidates and sponsors, representing ISPO at trade shows and career fairs, and management of contracts with recruiting partners. Significant domestic travel and some foreign travel are required. U.S. citizenship and the ability to

obtain and maintain a DOE security clearance is required.

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## ANS Career Fair at the University of Florida

### Ray Diaz

David Hanks of Savannah River National Laboratory and I attended the American Nuclear Society Career Fair at the University of Florida on April 3-4, 2009. The Career Fair was located on campus in the Reitz Union grand ballroom. Numerous employers from the nuclear industry were present. This included employers from the government, and private companies. The University of Florida staff did an excellent job in preparing and running the fair. We spoke to many students who were interested in applying for positions in the Junior Professional Officer (JPO) program. Many of the students were not familiar with the JPO program and we enjoyed explaining to them how the program works along with answering any questions they had. Selected candidates will be assigned to work at the International Atomic Energy Agency (IAEA) in Vienna, Austria for a period of at least one year. ISPO is primarily seeking JPO candidates with an education in computer science, open source information collection, engineering services and technical writing. A limited number of positions may be available at the IAEA in other divisions, depending on particular project need in that area. We also spoke to experienced professionals regarding the Cost Free Expert program and applying for positions as an IAEA staff member. The town of Gainesville was pleasant and the weather was beautiful. I feel it was very worth while attending this Career Fair and speaking with numerous prospective candidates. Available JPO positions sponsored by the United States Support Program within the Department of Safeguards at the IAEA are posted on the ISPO website at <http://www.bnl.gov/ispo/jpo/jpo.asp>.

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## The Next Generation Surveillance System – Development Project Overview

Albert Queirolo and Marius Stein

The DCM-14 is nearing its end-of-life, after more than a decade of reliable service in a family of surveillance systems. Critical components have become obsolete, while new technologies have become available. In anticipation of this end-of-life stage, the IAEA initiated in 2003 the replacement of the DCM-14 with a project called Next Generation Surveillance System (NGSS). The IAEA prepared the user requirements carefully to build the foundation of the development of the NGSS. They conducted an internal review to pool the feedback from the end-user (the inspector), technical support staff, and information management, and held a user requirements workshop that invited experts from throughout the non-proliferation community, including R&D institutes, support programs, nuclear regulatory authorities, and the private sector. The result was published and opened for comments before the tender for the project was initiated. In late 2004, the project was awarded to a German-U.S. private sector partnership with support from both the German and the U.S. Support Program. The project was subdivided into four phases, each to be concluded by a design review to accept deliverables and refine the scope of the project for the remaining phases. The following details the four project phases:

- Phase I: Conceptual Design (completed in April, 2006)
- Phase II: Detailed Design (completed in March, 2007)
- Phase IV: Pre-production qualification testing, start of field testing (on-going)
- Final Acceptance (Cat. A): Foreseen for July, 2010

The key NGSS design goals summarize the user requirements and aimed originally at replacing the DCM-14 systems with a technologically advanced implementation, which essentially followed the same application structure. Certain technical changes were proposed throughout the project, which make the system easier to use, scale, and maintain. The key design goals are:

- Short Picture Taking Interval (PTI)

- Support for high resolution and color images
- Support for modern TCP/IP networking over Ethernet and possible co-existence with current surveillance equipment (backward compatibility)
- Advanced data security (authentication and encryption)
- Integration of the surveillance camera and the security critical components into one tamper indicating assembly
- Modular and fully scalable to allow simpler installation, maintenance, and spare parts logistics
- Low power consumption
- High reliability under harsh environmental conditions
- Commercial Off The Shelf (COTS) and non-proprietary components where possible (extended life cycle management)
- Designed to be easily implemented as Joint-Use-Equipment (JUE)

Another impetus for the design was the challenge that resulted from the example of the DCM-14, which was designed in the mid-1990s, but is still used in the field today, with essentially the same hardware as it was originally fielded. Thus, the lifecycle management for NGSS was envisioned to be at least as long. The developers were tasked to prepare for some fifteen to twenty years of fielding of the NGSS. The component selection of the conceptual design was conducted with this goal in mind.

After approval of the conceptual design, the detailed design aimed at providing a working laboratory setup that had as many critical design goals implemented as possible. One major design change in comparison to the DCM-14 took place during the work of Phase II. The developers proposed to implement a CMOS sensor directly onto the circuit board to allow for a true digital generation of data, rather than connecting an analog camera to the SCC. This new concept offered some features of high interest to the IAEA.

The combination of the camera and the processing electronics made for a smaller and more compact design. It allowed integrating all security critical functions into one tamper indicating module, as opposed to the DCM-14 where analog camera and the DCM-14 (and the cabling in-between) had to be protected as a whole unit. It allowed for the use of a high resolution (5

megapixels) CMOS sensor, from which multiple 'camera views' could be clipped at the appropriate image size. In effect, one single camera with a fisheye lens could record multiple views and replace potentially more than a single camera fielded currently.

The NGSS review application will retain the look and feel of the current review tool but allow the inspector to start a review immediately, while the processing tools are running in the background, thereby significantly reducing the inspector's wait time. The review software optimizes the available computer resources. Background tasks are queued and executed without user intervention, as resources become available. The computer will never be idle until all tasks have been completed. Currently, the computer is idle for a large portion of the time, while the inspector manually reviews all images and events. An MPEG stream file viewer was incorporated for the NGSS review. All prototype work completed was implemented in a new version of the General Advanced Review Software (GARS) for in-process testing and to be made available for inspector use and feedback.

Phase II Detail Design completed work on building prototypes were delivered to the IAEA in September 2008 and were accepted. Prototypes of the new cameras have been completed as part of Phase III deliverables. Based on this design, the zero run production has been initiated as the major deliverable of Phase IV. Other Phase III deliverables are currently six months behind schedule due to loss of key contractor staff members, delays in the IAEA's specification of a data encryption scheme, and unanticipated software problems. When the prototype units become available, the various test will be conducted that are needed to take the NGSS from development stage to field approved instrumentation. The complete system will undergo environmental tests in accordance with IAEA standards, as well as radiation exposure testing for the front-end camera, since it will be installed in high radiation environments. Field testing will be initiated by the IAEA to test performance in an operating environment.

NGSS is expected to start replacing DCM-14 based surveillance systems in the field sometime in the second half of 2010. The phase-in will be gradual and at a pace that IAEA installation teams can support. It is expected that DCM-14s will remain in the field for up to seven

years after the official release of the NGSS. This is due to the fact that some installed systems can only be accessed at very infrequent intervals (i.e., during reactor shutdown) and also to maximize the return on capital of DCM-14s that have been installed only recently.

The NGSS system has been designed so that DCM-14 based cameras can be connected to the NGSS DCI and data consolidator, to facilitate a smoother transition. This allows the IAEA to change the server and even a selected number of cameras at one time, while leaving older units connected for later replacement.

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### Upcoming Meetings

May 18-22, 2009 – **USSP Annual Review Meeting, Vienna, Austria** – SSTS, ISPO, and contractors are welcome to attend. Contractors are invited to submit abstracts to ISPO for presentation at the annual meeting. Please contact Susan Pepper, E-mail: [pepper@bnl.gov](mailto:pepper@bnl.gov), Phone: 631-344-5979.

July 12-16, 2009 - **INMM 50<sup>th</sup> Annual Meeting, Tucson, AZ** – ISPO will participate in the INMM Exhibits and Student Career Fair to distribute information about IAEA job opportunities.

July 13, 2009 – **POTAS Coordinators Meeting – Tucson, AZ, JW Marriott Pass Resort** – Time and exact location will be printed in the INMM Annual Meeting Schedule. The meeting is open to all current, past and future U.S. Support Program (USSP) Contractors.

July 14, 2009 – **IAEA Alumni Meeting – Tucson, AZ, JW Marriott Star Pass Resort – 1:00 PM to 2:30 PM** – All US citizens who are current or former employees of the IAEA are invited. We will discuss the recruitment of US citizens for IAEA Safeguards positions and several initiatives that are being undertaken by the USSP and the Next Generation Safeguards initiative. Please contact Susan Pepper if you plan to attend at [pepper@bnl.gov](mailto:pepper@bnl.gov).

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