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**BROOKHAVEN
NATIONAL LABORATORY**

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

Recruitment for the Department of Safeguards

Donna Occhiogrosso

The following positions are being advertised by the IAEA Department of Safeguards:

Section Head (P-5)

Section for Common Technical Spt
Division of Technical Support
Vacancy Notice No. 2006/024
Deadline: May 22, 2006
Published Salary: \$99,500

Security Advisor (P-4)

Section for Safeguards
Programme and Resources
Vacancy Notice No. 2006/906
Deadline: May 09, 2006
Published Salary: \$83,000

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. Please visit the ISPO website at www.bnl.gov/ispo/expert_opportunities.asp for further information and details regarding these postings.

05/ISI-002 Expert – IT Vulnerability Management (P4)

05/TIE-006 Expert - Unattended Monitoring System Engineer (P5)

Strengthened Safeguards Seminar

Susan Pepper

ISPO arranged for Rich Hooper to present his Strengthened Safeguards Seminar at BNL from February 8 to 9, 2006. Mr. Hooper is the former Director of the IAEA Section for Safeguards Concepts and Planning. He is currently a consultant for the U.S. Support Program. Mr. Hooper developed the seminar for delivery to IAEA Safeguards staff. He has delivered it at the IAEA several times a year since his retirement from the Agency, as part of his USSP-funded work for the Department of Safeguards.

ISPO invited Mr. Hooper to present the seminar at BNL because of the value of the seminar in developing ISPO's knowledge of the history of strengthened safeguards, as well as the value to other individuals and groups in the DOE complex. Most of the attendees were BNL employees from the Nonproliferation and National Security Department. Heather Looney (DOE) and George Baldwin (SNL) attended.

The seminar was web-streamed. Several other laboratories including ORNL, LANL, and INL participated in that way. Off-site participants were able to interact with Mr. Hooper by sending their questions via Email.

The seminar participants appreciated the opportunity to attend. George Baldwin wrote: "Thanks again for the invitation to Rich Hooper's seminar--it exceeded my expectations! It is sometimes hard to appreciate just how helpful such opportunities can be, when we get to step back and try to put our work in the context of bigger pictures. Hooper's intimate knowledge of the subject from personal experience gave us the anecdotes and personal interpretations that make it all extremely interesting."

ISPO videotaped the seminar and it is available on DVD. Requests for a copy of the DVD should be sent to Susan Pepper at pepper@bnl.gov.

If you have any questions, please feel free to contact: Debra Pettit at pettit@bnl.gov or 631-344-2221.

U.S. Support to IAEA Safeguards Internship Program Annual Symposium

Catherine Osiecki

On February 22, 2006, the U.S. Support Program (USSP) to IAEA Safeguards with assistance from the Vienna Chapter of the Institute for Nuclear Materials Management (INMM) and the IAEA Safeguards Department held the Third Annual IAEA Safeguards Intern Symposium in Vienna, Austria.



The Internship Program (which began in 2002) pairs students from colleges around the country with mentors from the IAEA in fields such as open source information collection, computer science, and technical writing. The symposium was coordinated by the Office of Educational Programs at Brookhaven National Laboratory and the U.S. Mission to highlight the projects that the interns have been involved with as part of their one-year internship with the IAEA Safeguards Department.

A panel of judges selected two interns to receive an all-expense paid trip to repeat their presentations at the 2006 INMM Annual Meeting being held in Nashville, Tennessee, from July 16 to 20, 2006. They are Lauren Ginsberg and James Garner. The interns were selected based on the quality of their presentations and the relevance of the topic to the INMM audience. All presentations were very good and showed that the interns were making significant contributions to the IAEA Safeguards Department.

The Symposium was well attended by the mentors, Safeguards staff, and other IAEA personnel, including the Directors of the Divisions of Safeguards Technical Services and Safeguards Information Technology. The Director of the Division of Safeguards Technical Services Nikolai Khlebnikov gave the opening remarks for the symposium. Twelve of the USSP interns were joined at the symposium by one IAEA Safeguards intern, Mariebeth Aquino, from Austria.

Following the symposium, the interns and their mentors were invited to a cocktail reception sponsored by Brookhaven National Laboratory.

The participants in the 2005-2006 Internship Symposium with their assignments, mentors, and presentation titles were:

Sarmadi Almecci, The George Washington University
"Monte Carlo Simulation of the Spent Fuel Gate Monitor to be Installed at Buser NPP"
Alain Lebrun, SGTS/IIS

Maribeth Aquino, Vienna Technical University
"Detection of Undeclared Activities: Project for Novel Techniques and Instruments"
Julian Whichello, SGTS

Jeffrey Easley, Norfolk State University
"Quality Assurance and Testing in SGIT"
Gassim Cheri, SGIT/ISH

Mike Fayer, SUNY @ New Paltz
"CIR Mobile"

Bakhtiyar Sirajov, SGIT/ISH
James Garner, Washington University in
St. Louis
*"Data Collection & Evaluation at the
Rokkasho Reprocessing Plant (RRP)"*
Shirley Johnson and Joe Damico, SGOA/OAJ

Lauren Ginsberg, Rensselaer Polytechnic
Institute
*"Unattended Monitoring Systems with Los
Alamos Instrumentation"*
Max Aparo, SGTS/TIE

Holli Hoerschelman, Montana Tech/Univ. of
Montana
"Redesigning the SGOA Website"
Carlos Olivieri, SGOA/OCP

Mark Laughter, Massachusetts Institute of
Technology
*"Dual-Use People: Knowledge Networks &
Information Proliferation"*
John Lepingwell, SGIT/IIS

Patrick Lynch, Mercyhurst College
*"The Process of Collecting Publicly Available
Information Supporting Imagery Analysis within
the Department of Safeguards"*
Frederic Claude, SG/SIAU

Victoria Pratt, University of Texas @ Austin
*"Cerenkov Light Emission and Spent Fuel
Determination by ORIGEN-ARP Calculations"*
Roland Carchon, SGTS/TNS

Lawrence Taylor, Georgia Southern University
*"Team System – The Physical and Logical
Architecture of IAEA Safeguards Information
System (ISIS) Re-engineering Project"*
Pavel Titov & Jean-Michel Becar, SGIT/ISH

William Wanderer, University of Chicago
*"Plotting Mayhem: Mapping the Illicit Trafficking
Database's Nuclear Material Incidents with
Google Earth"*
John Lepingwell, SGIT/IIS

Santhosh Xavier, SUNY Institute of
Technology/Utica
*"The New Information System for Environmental
Sampling"*
Lydia Martin Hernando, SGCP/PSA

Personal Safety in Vienna

Susan Pepper

ISPO received a notification regarding a new scam being perpetrated in Vienna. Although we could not verify source or the veracity of the details of the incident, we decided the overall message was worth distributing.

Apparently, a delegate attending the OSCE Economic Forum was robbed in the Josefs Platz area of Vienna by two men posing as members of the Austrian police force. The two men who were possibly accompanied by a third person successfully managed to relieve the person of a reasonably large sum of money on the pretense that they were conducting random searches for drugs and counterfeit money. There was no injury to the victim.

According to the notification provided to ISPO, the United Nations advises that any staff member who is approached should refuse to allow anyone to look into their wallet/bag but to state that they are willing to go to the next police station. Police should be willing to continue the discussion in a police station. If going to a police station is refused, the individuals are probably criminals and the victim should start attracting the attention of passersby by shouting loudly at them and making a scene. Criminals will not want this attention and will generally leave quickly. If you are a victim of such activity, please report the incident immediately to the nearest police station and to VIC Security.

It is not common practice for Austrian police officers to conduct random searches in the street. If an Austrian police officer has any reason to stop a member of the public in the street, they can be identified by their green/black uniform and also by their two forms of ID - namely a picture ID card stating Bundespolizei with full name, rank, and service number on it, and also a metal shield with Kriminalpolizei on it with a small Austrian flag in the centre.

Security Seals Symposium

Ray Diaz

I attended the 7th Security Seals Symposium in Santa Barbara, California, from February 28 to March 2, 2006. Hanchett Engineering Associates of Oak View, California were the symposium facilitators and did an outstanding job. The keynote speaker was Mr. James Patton of the United States Department of Homeland Security (Acting Director of Maritime, Cargo and Trade Policy). Improved seal technology is vital to preserving and enhancing United States cargo transportation security. Hanchett Engineering assembled a group of knowledgeable seals personnel for this symposium, with representation from the US government, national laboratories, and private industry. The symposium consisted of presentations by various seals industry experts, followed by question and answer periods. Several of the tasks assigned to me involve IAEA seals. I attended this symposium to obtain knowledge of existing seals used throughout the industry and emerging new seal technology. Vendor exhibits were accessible from the meeting room. New seal technology was presented which included anti-evidence seals (Los Alamos National Laboratory), laser surface authentication (Ingenia Technology), x-ray fluorescence elemental tagging (KeyMaster Technology), and optically stimulated luminescence (Pacific Northwest National Laboratory). The Los Alamos National Laboratory Vulnerability Assessment Team (VAT) made numerous presentations regarding seal vulnerabilities and new sealing techniques. The consensus from the symposium was that the most effective seal system consisted of a layered approach (multiple seal systems for one application). Dr. Halvor Udem (IAEA Seals Group Cost Free Expert) made a presentation regarding sealing systems used by the IAEA. I spent time discussing with Dr. Udem seals tasks assigned to me. This symposium provided me with valuable insight into existing and emerging seal technology which will help me be more effective as an ISPO seals task monitor. Hanchett Engineering Associates are in the process of producing a CD documenting the symposium.

Changes in the Process for Approving the Use of USSP Funds

Susan Pepper

The Subgroup on Safeguards Technical Support (SSTS) made suggestions recently for improving the process for approving U.S. Support Program (USSP) funds. The majority of new tasks and task extensions were approved traditionally during SSTS meetings, which are held about eight times per year. ISPO would collect information concerning IAEA requests and save it for presentation at the next SSTS meeting. If a request could not be addressed at one meeting, the IAEA might have to wait two months until the next meeting when it could be addressed. There has always been the provision to address urgent requests through a system referred to as "phone polling." The use of phone polling between meetings has increased in recent years.

The SSTS suggested that ISPO make more use of Email and web-based communications to make our interactions more efficient. This issue was discussed at the March 28, 2006, SSTS meeting with the following results. The main change to the funding approval process that will affect parties external to ISPO is that the majority of IAEA requests will be addressed by electronic polling (E-polling) that will be conducted outside of scheduled SSTS meetings. ISPO will Email information to the SSTS members who will respond within five business days. ISPO and the SSTS reserve the right to defer any polls that create significant debate until the next meeting. Task approvals will be documented as they occur. Each month a summary will be distributed to USSP participants, similar to the way SSTS meeting summaries are distributed currently. Notification letters will be sent to the IAEA by the ISPO Liaison Officer, as activities are approved. The Mission will be notified during the first week of the following month for new tasks requested through SP-1s, which require a formal letter from the Mission to the IAEA. ISPO will prepare funding documents on the first business day of each month for distribution by the Department of Energy.

These changes to USSP processes will allow the SSTS members more flexibility with their schedules, provide quicker responses to IAEA requests, enable ISPO and the IAEA to place

contracts earlier, and move funding more quickly to the national laboratories.

NGSS Phase I – Conceptual Design Completed

Albert Queirolo

The Agency kicked-off the Next Generation Surveillance System (NGSS) Project in March 2005, awarding two separate contracts: one to Aquila Technologies Group, Inc. (ATG) and the other to Dr. Neumann Consultants (DNC) to cover the four phases of the project which are conceptual design, detailed design, prototype development, and prototype construction and testing support.

The Agency hosted a status meeting in Vienna on April 12 and 13, 2006, which included representatives from the Agency, ATG, DNC, Sonalysts, USSP/ISPO, and the German Support Program. Dr. Neumann of DNC presented the results at the meeting of Phase I of the development of the Surveillance Core Component (SCC) of the NGSS. The SCC will comprise nine building blocks: a central processing unit, a data storage unit, a network interface, a power supply, sensor interfaces, RTC and timers, crypto-systems, cross-triggers, and tamper protection. The general requirements for the SCC are:

- A picture-taking interval (PIT) of 1 image per second
- Support for high-resolution and full color images
- TCP/IP networking over Ethernet
- Scalable, removable storage media
- Ultra low power consumption
- High reliability.

All SCC components would be certified for industrial temperature range and would meet the radiation standards specified in the Standard Test Criteria. DNC evaluated different components and tested the most promising ones at the Prater Institute. DNC is recommending using the Blackfin ADSP-BF537 digital signal processor as the CPU, with synchronous dynamic RAM (SDRAM) for external memory, Ferroelectric RAM (FRAM) for non-volatile memory, and CF and SD cards for removable memory.

Dr. Neumann demonstrated a prototype design based on the recommended components at the end of his presentation.

The demonstration was followed by a presentation from Marius Stein of ATG, reporting on the results of a system software architecture analysis during Phase I. Phase I efforts included a recommended database, database engine, prototype review station architecture, a prototype user interface, and reports. All of these components will be part of a new review system for the NGSS which is called Advanced Automated Review Software (AARS). AARS is designed to be a complete review process that will eliminate the initial delay required by the current General Advanced Review Software (GARS) to process sensor data and to provide a graphical interface to all data available for review. The system will utilize the current GARS interface look and feel for the image review component, in order to leverage the current training and knowledge of the IAEA inspectors. Results of Phase I efforts are:

- An SQL Server review database will be used for storing and retrieving information.
- In addition to the LAN based SQL database, AARS will also employ a proprietary binary index based ISAM database optimized for review session specific information on a local machine.
- The proprietary database engine will be the GSR (Gemini Surveillance Review) database engine which is embedded in GARS. The GSR engine is designed specifically for review of image data.
- ATG demonstrated a sample User Interface for AARS with a GARS look and feel.
- A GIS-based NGSS Review Software mock-up was provided, which demonstrates the potential capabilities that can be assessed to AARS by adding geographical information vectors to safeguards relevant data.

The meeting concluded with all parties agreeing that the deliverables generated for Phase I development satisfied the contractual requirements and the contractors can proceed with Phase II – Detailed Design. The second phase of the project is expected to be completed in December 2006.

Staff Changes at the IAEA

Susan Pepper

Richard McCullough began a CFE assignment as a Quality Management Specialist in the Section for Standardization in the Division for Safeguards Concepts and Planning. Mr. McCullough worked formerly for Entergy Nuclear Vermont Yankee. He has worked in the nuclear power industry implementing various aspects of quality management systems since 1982.

Michael Uzzle began a CFE assignment as an expert in enrichment plant safeguards in March. Mr. Uzzle is formerly from Oak Ridge National Laboratory, where he worked as an engineer in the Export Control Team in the Nuclear Science and Technology Division.

CFE Terry Dunn completed his assignment as Divisional Information Security Policy Officer in January. Mr. Dunn had worked as a CFE, first in the Division of Safeguards Information Treatment in the Information Analysis Unit and then in his latest role, since May 2001. Mr. Dunn and his wife moved to Australia. The role of Divisional Information Security Policy Officer is one that Mr. Dunn designed, based on the Department of Safeguards' information security needs. The IAEA plans to replace Mr. Dunn by adding a regular staff position to the Section for Safeguards Programme and Resources.

James Halbig completed his position with the Section for Installed Systems in the Division for Safeguards Technical Support on April 14. Dr. Halbig had worked with the Section since April 2003 as the CFE for instrumentation systems. Dr. Halbig is an expert in integrating unattended monitoring systems and was well-known for creating innovative solutions to complex instrumentation needs. Dr. Halbig and his wife (who are formerly from Los Alamos) returned to New Mexico at the conclusion of his assignment.

The Department of Safeguards has announced a reorganization of the Operations Divisions. There will be five sections and two senior inspectors per division. The Unit Head positions will be discontinued. Massimo Aparo (who has been the Section Head for Installed Systems since 1997) has been reassigned as a Section Head in the Division of Operations A. Bernard Wishard has been named the Acting Section Head for Installed Systems until a permanent

replacement for Mr. Aparo is selected. Shirley Johnson (who is currently the Head of the JNFL Project) will become a Section Head in the Division of Operations B. Davis Hurt (who is currently the Section Head for Safeguards Systems Studies) will become a Section Head in the Division of Operations C.

There are several changes in the Section for Information Support Services (ISS). Scott Partee has joined the Section. Mr. Partee worked previously at Bell South in Atlanta, Georgia.

Cyndee Annese (formerly of LLNL) has accepted a one-year temporary regular staff assignment with the IAU. Dr. Annese was previously on assignment to DOE Headquarters, where she assisted with international projects related to IAEA safeguards. In the past, she has assisted the IAEA as USSP-funded consultant to the IAU.

Victor Braguine (who has worked for several years in the Information Analysis Unit (IAU) in SGIT-ISS) has moved to the Division of Operations C. In the IAU, Mr. Braguine was responsible for, among other things, the coordination of consultants who assist with the open source collection and analysis activities.

George Weeks has been selected to replace Michael Goldfarb as the Head of the Seals Unit in the Section for NDA and Seals, Division of Safeguards Technical Services. Mr. Goldfarb will retire from the IAEA in June. Mr. Weeks has been employed in the Seals Unit since 2005 and is formerly of Savannah River National Laboratory.

Philip Casey Durst left the IAEA on March 15. Mr. Durst had been an inspector in the Division of Operations A since 1994. He spent several years working in the Tokyo Regional Office. His most recent assignment was as Technical Advisor to the Deputy Director General for Safeguards. Mr. Durst has moved to Washington State where he will take a position with Pacific Northwest National Laboratory.
