

# USSP History and Funding Mechanisms

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*

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# Acronyms

**BNL – Brookhaven National Laboratory**

**HPSOP – High Priority Safeguards and Other Projects**

**IAEA – International Atomic Energy Agency**

**ISPO – International Safeguards Project Office**

**NGSI – Next Generation Safeguards Initiative**

**POTAS – Program of Technical Assistance to IAEA Safeguards**

**SSTS – Subgroup on Safeguards Technical Support**

**USSP – U.S. Support Program**

# The U.S. Support Program to IAEA Safeguards

## OBJECTIVE:

To provide a mechanism to transfer technology available in the United States and augment the IAEA's regular budget for Safeguards activities with U.S.-sponsored expertise, technology, equipment, and techniques

To react to identified, urgent safeguards needs more quickly than could be met through IAEA administrative procedures

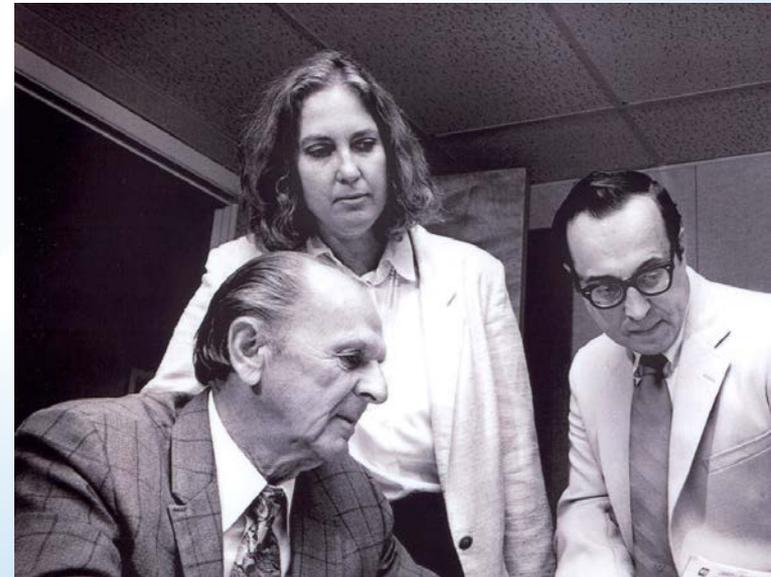
# The U.S. Support Program to IAEA Safeguards

First Member State Support Program  
and Cost Free Experts  
David Rundquist, John Foley



# The U.S. Support Program to IAEA Safeguards

- Grew out of BNL's Technical Support Organization
- 1975 – US delegation visited Vienna to discuss IAEA's technical safeguards needs
- 1977 – USSP established



# The U.S. Support Program to IAEA Safeguards

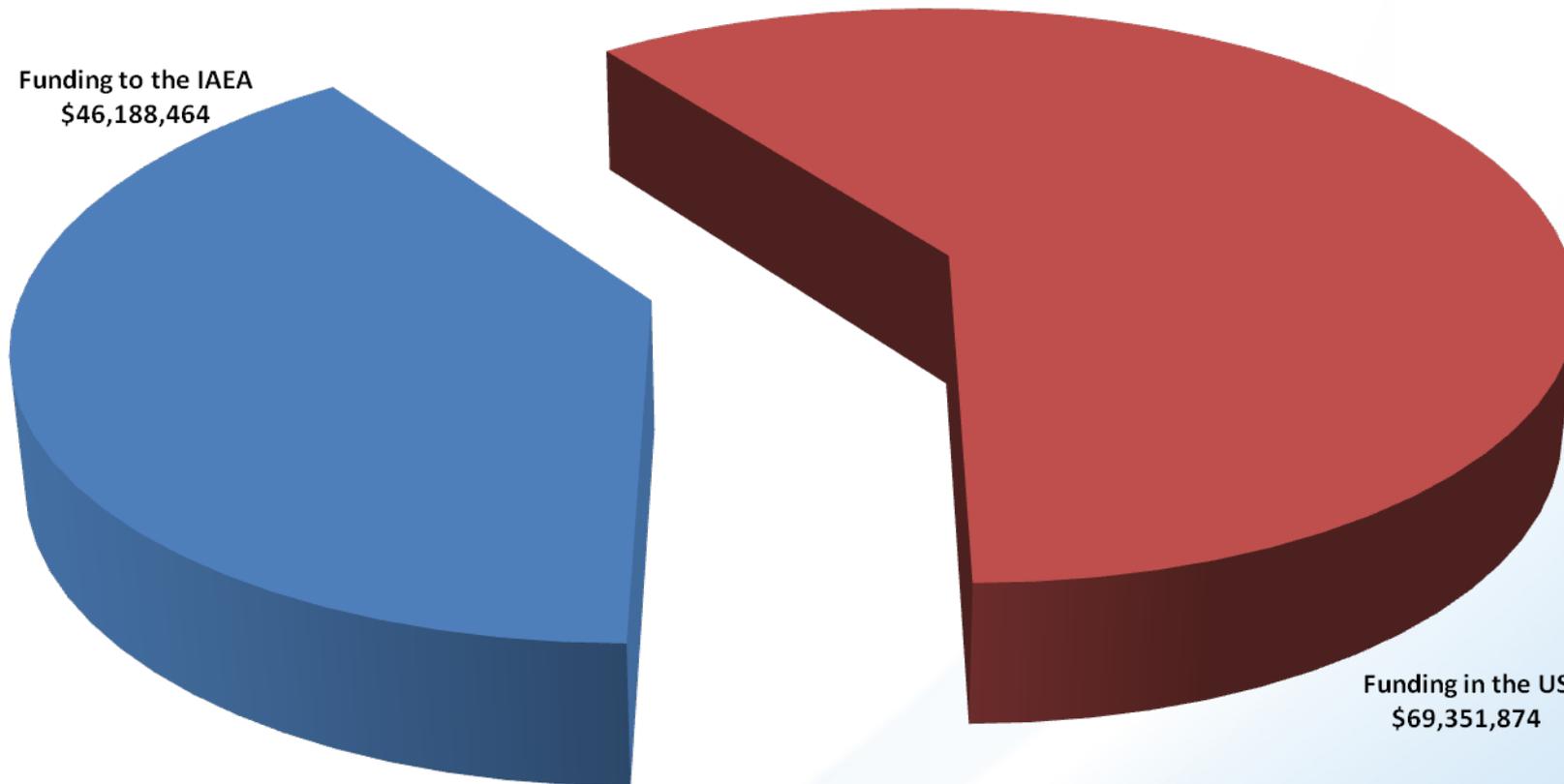
- USSP Established January 1977
  - Technical Support Coordinating Committee (TSCC) established to provide oversight of the program
    - Members from Departments of State and Energy, Nuclear Regulatory Commission, and Arms Control and Disarmament Agency
  - The International Safeguards Project Office (ISPO) was established to manage the program
- First Program Plan approved February 1977
  - 98 Tasks

# The U.S. Support Program to IAEA Safeguards

- The USSP has accepted over 1200 IAEA requests, has completed over 1100 tasks, and typically has about 100 active tasks
  - Tasks completed by U.S. national laboratories and the U.S. private sector
- The Program of Technical Assistance to IAEA Safeguards is the primary funding mechanism
  - Initial Budget: \$2.6 million
  - FY12 Budget: \$15 million

## All POTAS Funding Approved - CY 2005 - 2012 (\$115.5M)

Funding to the IAEA  
\$46,188,464



Funding in the US  
\$69,351,874

# THANK YOU FOR YOUR ATTENTION

## Questions?

### References:

1. S.E. Pepper, “U.S. Support Program Contributions to the Implementation of IAEA Safeguards,” presented at the 54<sup>th</sup> INMM Annual Meeting, Palm Desert, CA, July 2013.
2. International Safeguards Project Office, “Annual Report on the U.S. Program of Technical Assistance to Safeguards of the International Atomic Energy Agency (POTAS), January – December 1977,” BNL-50869, ISPO-17, March 1978.

# USSP Governmental Oversight

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*

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U.S. DEPARTMENT OF ENERGY



# Acronyms

**BNL – Brookhaven National Laboratory**

**CFE – Cost Free Expert**

**DOD – U.S. Department of Defense**

**DOE – U.S. Department of Energy**

**IAEA – International Atomic Energy Agency, Department of Safeguards**

**ISPO – International Safeguards Project Office**

**JPO – Junior Professional Officer**

**NRC – U.S. Nuclear Regulatory Commission**

**POTAS – Program of Technical Assistance to IAEA Safeguards**

**SISUS – Subgroup on the Implementation of Safeguards in the United States**

**SSTS – Subgroup on Safeguards Technical Support**

**USSP – U.S. Support Program to IAEA Safeguards**

# Definitions

**POTAS** – Program of Technical Assistance to IAEA Safeguards

The primary funding source for the U.S. Support Program

**USSP** – U.S. Support Program to IAEA Safeguards

The program that provides technical support to the IAEA Department of Safeguards

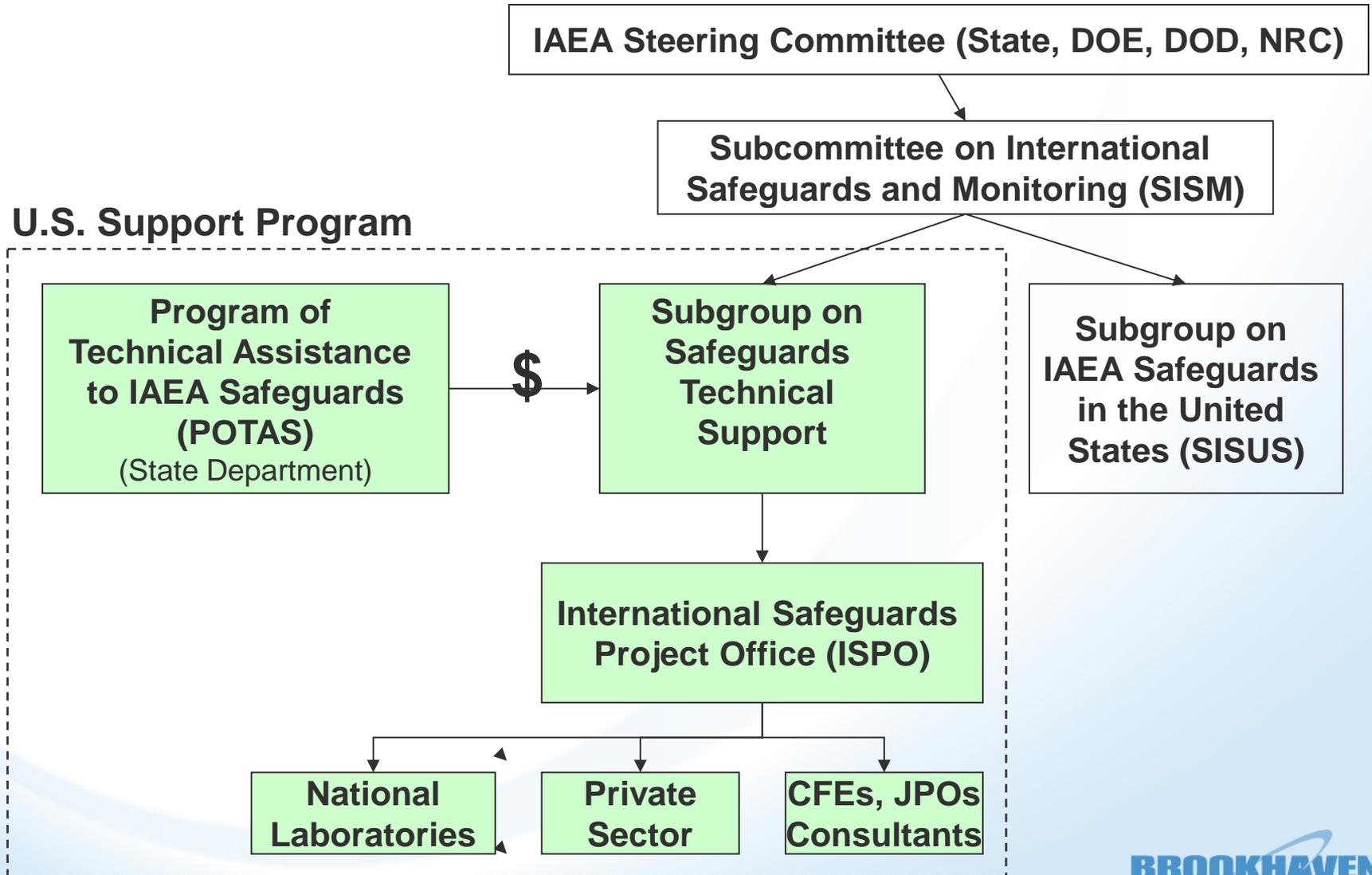
**SSTS** – Subgroup on Safeguards Technical Support

The U.S. government committee that oversees the USSP and decides how program funding will be used

**ISPO** – International Safeguards Project Office

The organization responsible for day-to-day technical and administrative management of the USSP (non-governmental)

# U.S. Government Support to IAEA Safeguards



# U.S. Government Subgroup on Safeguards Technical Support (SSTS)

- Responsible for oversight of the USSP
- Makes funding decisions for USSP
- Members from:
  - U.S. Department of Energy (Chair)
    - Kevin Veal
  - U.S. Department of State
    - Robert Cockerham
  - U.S. Nuclear Regulatory Commission
    - Santiago Aguilar and Eric Freeman
  - U.S. Department of Defense
    - Lt. Col. Robin Orth

# U.S. Government Organizations

## U.S. Department of Energy

Responsible for oversight of national laboratories and U.S. government nuclear facilities; Includes the National Nuclear Security Administration

## U.S. Department of State

Ministry of Foreign Affairs; Responsible for cooperation with and outreach to other countries

## U.S. Department of Defense

Ministry of Defense

## U.S. Nuclear Regulatory Commission

Responsible for regulation of commercial nuclear facilities; funded in part by industry

# International Safeguards Project Office (ISPO) at Brookhaven National Laboratory

- Responsible for day-to-day technical and administrative management of the USSP
- Liaison Office at U.S. Mission in Vienna, Austria
- Seven technical and four administrative staff
- Expertise in international safeguards, project management, and procurement

# Brookhaven National Laboratory

## Safeguards and Nonproliferation Policy Group

**Susan Pepper** Group Leader

Michele Rabatin

Administrative Support



## International Safeguards Project Office

Raymond Diaz Project Office Head

### *BNL*

James Disser	(Task Monitor)
Jae Jo	(Task Monitor)
Al Queirolo	(Task Monitor)
Josh Tackentien	(Task Monitor)
Laura MacArthur	(Project Planner)
Michele Rabatin	(Administrative Support)
Tanya Collins	(Recruitment Specialist)
Deborah Johnson	(Financial Specialist)

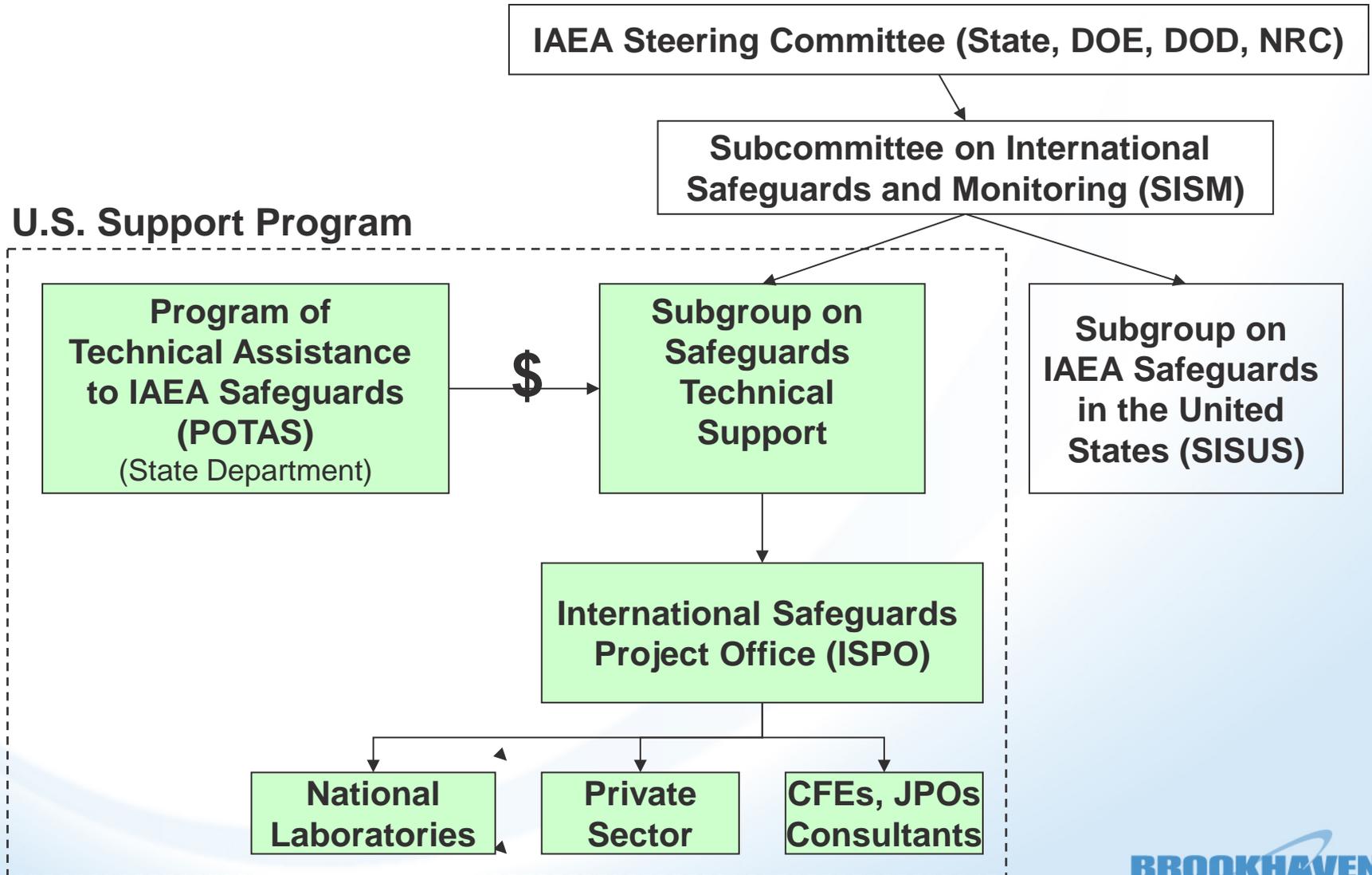
### *VIENNA*

Barbara Hoffheins	(Liaison Officer)
Amy Amenu-Zotter	(Contractor - Support Program Mgr.)

# USSP Coordinator

- Each Member State Support Program has a Coordinator
  - Single point of contact to facilitate official communications with the IAEA for all USSP matters
  - Participates in official meetings with the IAEA along with SSTS representatives and other ISPO staff
- The USSP Coordinator has traditionally been a member of ISPO
  - Usually, but not always, the Head of ISPO
  - The USSP has the benefit the Liaison Officer, who represents the USSP in Vienna
- Susan Pepper is the current USSP Coordinator

# U.S. Government Support to IAEA Safeguards



# THANK YOU FOR YOUR ATTENTION

## Questions?

### References:

1. S.E. Pepper, “U.S. Support Program Contributions to the Implementation of IAEA Safeguards,” presented at the 54<sup>th</sup> INMM Annual Meeting, Palm Desert, CA, July 2013.
2. S.E. Pepper, “U.S. Support Program to IAEA Safeguards – 2008,” presented at the 49<sup>th</sup> INMM Annual Meeting, Nashville, TN, July 2008.

# Daily Management and Interaction with Stakeholders of the USSP

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*

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# Acronyms

**BNL – Brookhaven National Laboratory**

**IAEA – International Atomic Energy Agency**

**ISPO – International Safeguards Project Office**

**MSSP – Member State Support Program(me)**

**POTAS – Program of Technical Assistance to IAEA Safeguards**

**SSTS – Subgroup on Safeguards Technical Support**

**UNVIE – U.S. Mission to International Organizations in Vienna**

**USSP – U.S. Support Program**

# USSP Policies that Govern Program Management

- The USSP responds to requests from the IAEA
  - This ensures that there is an IAEA “champion” who will support the project through completion and promote the use of the product by the IAEA
  - Only in rare cases does the USSP fund activities that are not specifically requested by the IAEA
- The USSP tries to distribute work to a number of contractors to take advantage of the wide range of expertise available in the United States
- The USSP uses electronic communication, where appropriate, to optimize the program

# USSSP Participants and Partners

- International Safeguards Project Office (ISPO)
- Subgroup on Safeguards Technical Support (SSTS)
- IAEA Department of Safeguards (IAEA)
- USSSP Contractors
- Other Member State Support Programs (MSSPs)

# International Safeguards Project Office

- ISPO is responsible for the day-to-day technical and administrative management of the USSP
- ISPO is located at Brookhaven National Laboratory (BNL) and maintains a Liaison Office at the U.S. Mission to International Organizations in Vienna (UNVIE)
  - Ray Diaz is the Head of ISPO (BNL)
  - Barbara Hoffheins is the ISPO Liaison Officer (UNVIE)
- ISPO works closely with the Subgroup on Safeguards Technical Support (SSTS)
  - Daily communication with SSTS members

# ISPO – SSTS Interaction

- Daily communication
  - IAEA task requests are presented to the SSTS for approval through e-mail communications
- Meetings are held as needed to discuss complex tasks and program business

# IAEA Department of Safeguards

- Director Safeguards Concepts and Planning (Jill Cooley) is the IAEA's official lead of the MSSPs
- The Support Program Coordination Team coordinates the IAEA's activities that support the MSSPs
  - Vera Firbasova is the Team Leader for Support Programme Coordination
- Each task has a Task Officer who is responsible to the IAEA for the management of the tasks.
- The IAEA has prepared the “Department of Safeguards Long Term R&D Plan, 2012-2023” and the “Development and Implementation Support for Nuclear Verification 2012-2013” to document its needs and priorities

# ISPO-IAEA Interaction

- ISPO maintains daily contact with the IAEA through the Liaison Office and sometimes directly with IAEA task officers
  - Vera Firbasova, Team Leader, Support Programme Coordination Team, is our primary point-of-contact
  - The Liaison Officer meets with IAEA task officers and others to get information needed for effective project management and to ensure that IAEA stakeholders are informed of the progress of the U.S. contractor on tasks
  - Task approvals are communicated to the IAEA on a monthly basis by ISPO and through the U.S. Mission

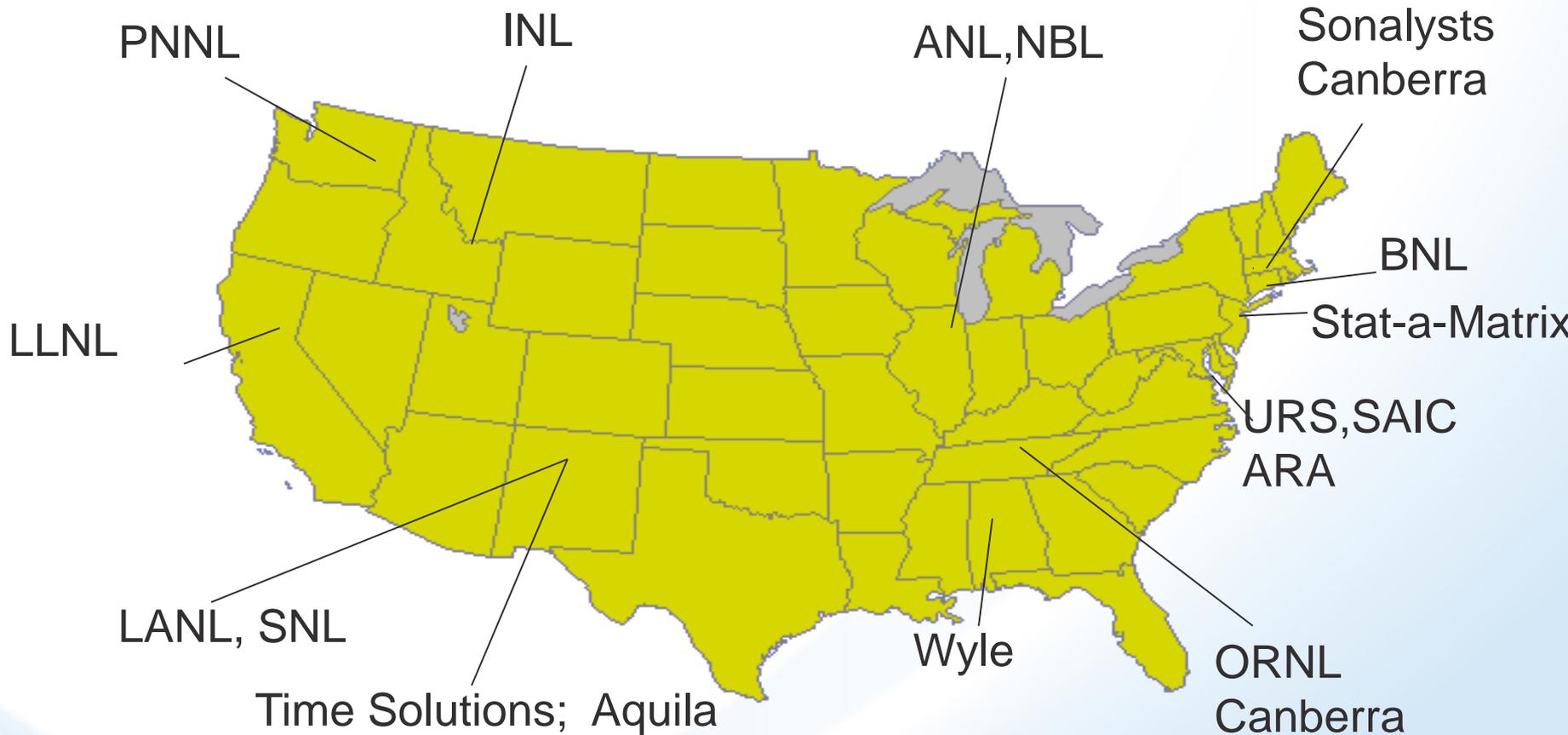
# USSP-IAEA Interactions

- The USSP holds an Annual Task Review to review the status of the active tasks
  - usually in the winter
  - ISPO, SSTS members, IAEA managers and Task Officers participate
- Our Biennial Review Meeting is held in odd years to discuss topics of mutual interest with the IAEA
  - usually co-scheduled with the Annual Task Review
  - ISPO, the SSTS, IAEA managers and Task Officers participate
- USSP representatives participate in the Member State Support Programme Coordinators' Meeting in even years
  - The next meeting will be in March 2014
  - These meetings give us the opportunity to meet our counterparts in other countries

# Contractors

- The USSP relies on U.S. national laboratories and private sector companies to meet the technical needs of the IAEA
- ISPO communicates with each contractor through an identified representative in the organization
- ISPO advertises IAEA task requests via its web site
  - [www.bnl.gov/ispo](http://www.bnl.gov/ispo)

# USSSP Contractors



Vienna:  
Cap Gemini Ernst & Young  
AWST

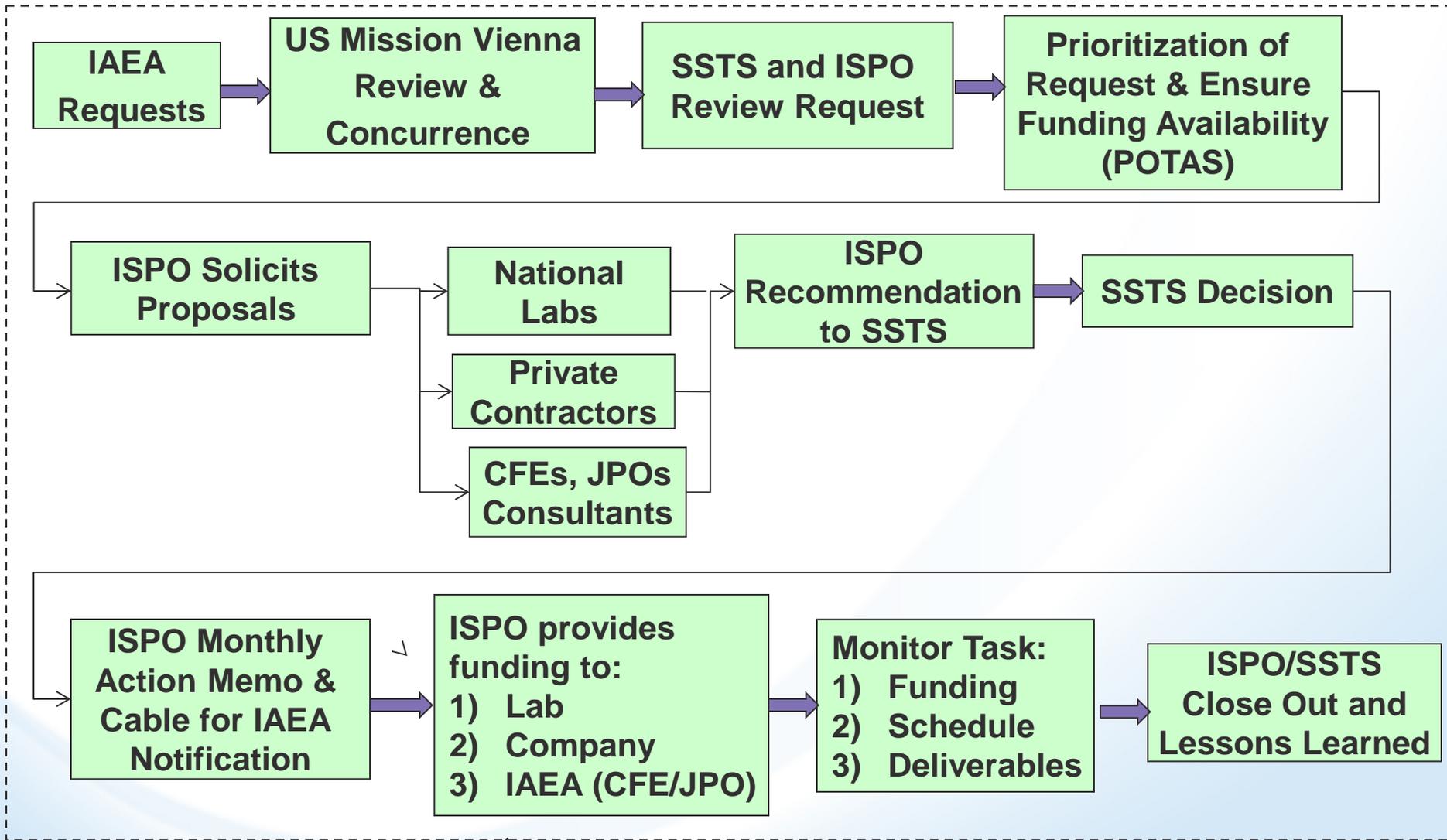
# Cost Free Experts and Junior Professional Officers

- The USSP provides funding to send CFEs and JPOs to support the IAEA Department of Safeguards
- Cost Free Experts
  - The USSP is currently funding 18 CFEs
  - CFEs are placed at the P3, P4, or P5 level
  - They work at the IAEA for 2 to 5 years
  - They assist with short term projects for which the IAEA lacks expertise or personnel
- Junior Professional Officers
  - The USSP is currently funding 5 JPOs
  - JPOs are placed at the P1 or P2 level
  - They work at the IAEA for 1 to 2 years
  - They assist with basic, yet essential work

# Member State Support Programs

- The SSTS and ISPO value interaction with other MSSPs
  - Both technical information exchanges and working together on projects to benefit the IAEA
- The SSTS and ISPO routinely participate in the biennial MSSP Coordinators' meetings arranged by the IAEA
- The SSTS and ISPO periodically meet with other MSSPs to discuss our work and learn about theirs
  - These meetings are usually held with European MSSPs and arranged in conjunction with our Biennial Meetings and Task Reviews
  - We appreciate the opportunity to meet with China this week
- We collaborate with other MSSPs on task development when we can combine our capabilities to increase the value of the end product to the IAEA

# How the USSP Processes IAEA Requests



# THANK YOU FOR YOUR ATTENTION

## Questions?

### References:

1. STR-375, “IAEA Department of Safeguards Long Term R&D Plan, 2012-2023,” IAEA, Vienna, January 2013.
2. STR-371, “Development and Implementation Support for Nuclear Verification 2012-2013,” IAEA, Vienna.

# USSP Strategic Objectives

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*



# Acronyms

IAEA – International Atomic Energy Agency

CFE – Cost Free Expert

ISPO – International Safeguards Project Office

JPO – Junior Professional Officer

QM – Quality Management

SSTS – Subgroup on Safeguards Technical Support

USSP – U.S. Support Program

# Why the USSP has Strategic Objectives

- The Department of Safeguards has more technical needs than can be addressed by the USSP
- The IAEA has difficulty prioritizing needs across Safeguards divisions
- Strategic Objectives reflect the objectives of the U.S. government
- The strategic objectives are used by the SSTS as a guideline when deciding which IAEA requests to accept under the USSP

# USSP Strategic Objectives

- **Training**
- **Tools**
- **Concepts and Approaches**
- **Information Management and Security**
- **Human Resources**
- **Quality Management**
- **Communication**

# Training

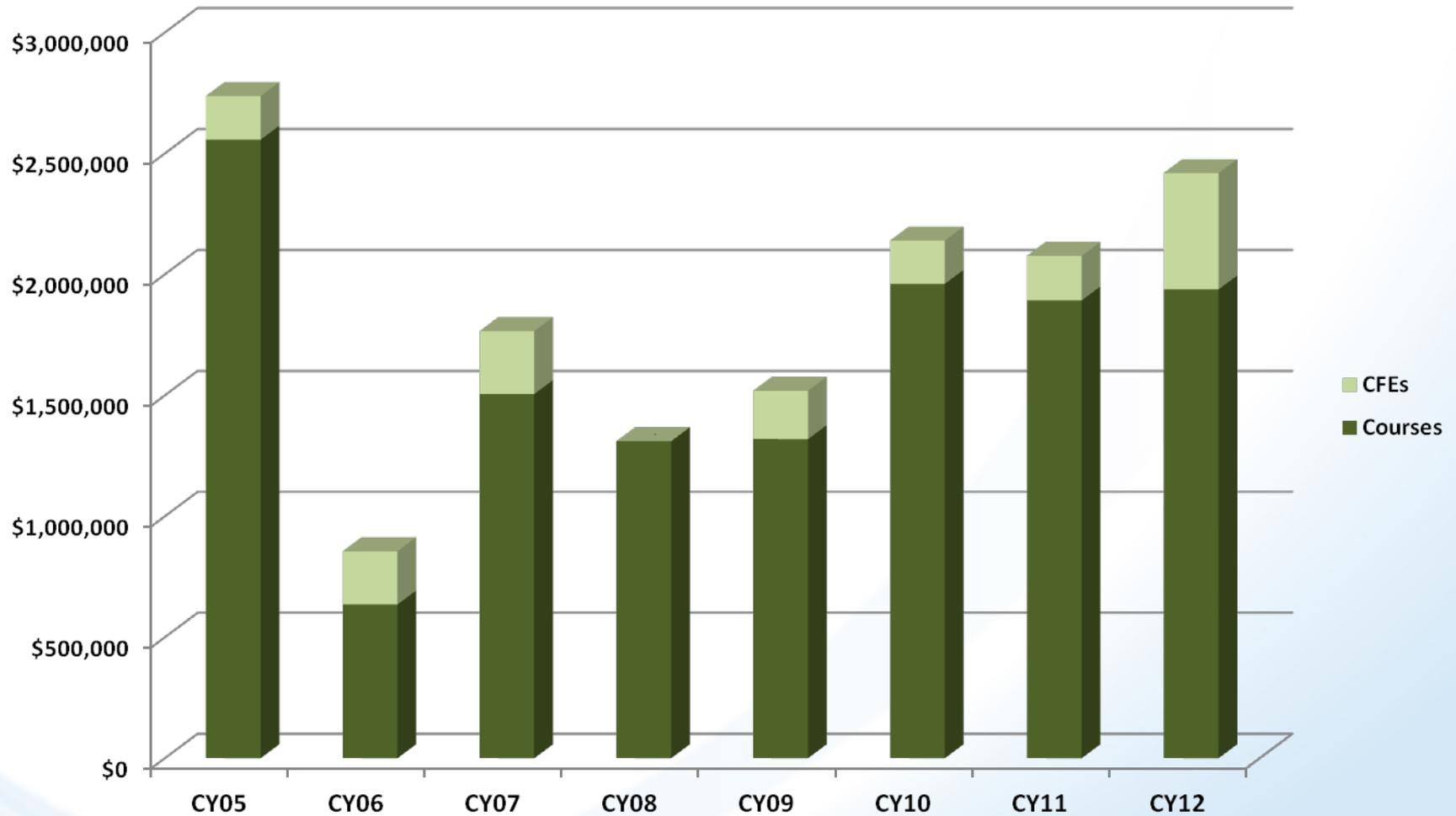
- Ensure that IAEA Safeguards staff have the necessary expertise.

The USSP has assisted with IAEA training since the beginning of our program. A U.S. CFE helped to establish the IAEA's Section for Safeguards Training, which manages all training for inspectors. The USSP currently provides funding for nine training courses.

## Why?

- New IAEA staff members need supplemental training to round out their qualifications for safeguards work
- Specific, advanced training is necessary to prepare IAEA staff to assume some safeguards responsibilities
- Changes in the international safeguards mission can be addressed and reinforced by training programs
- The USSP helps to ensure that IAEA staff members are well prepared for their assignments

## POTAS Funding Approved Training & CFEs - CY 2005 - 2012 (Total = \$14.8M)



# Tools

- Help ensure the IAEA has the necessary tools to implement safeguards verification effectively and efficiently.

The USSP assists the IAEA in the development, maintenance and implementation of safeguards equipment and techniques

Why?

- The IAEA has unique requirements for tools
- Tools that are necessary are not always commercially available
- The safeguards market is small and companies sometimes need financial incentives to support the IAEA

# Concepts and Approaches

- Help the IAEA develop effective safeguards approaches.

The USSP has assisted the IAEA with Safeguards by Design, the implementation of safeguards at complex facilities (Chernobyl, Rokkasho, Pebble Bed Modular Reactors), and the investigation of new safeguards technologies such as remote monitoring, environmental sampling, and information collection and analysis.

## Why?

- The IAEA faces new challenges
  - New facility types
  - New member states exploring the use of nuclear technology
  - The introduction of new technologies for safeguards implementation
  - The desire for greater efficiency and reduced intrusiveness in implementing safeguards

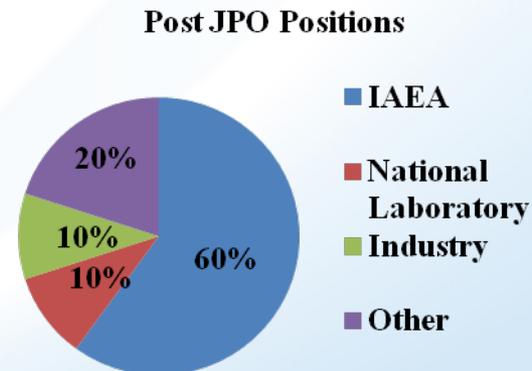
# Information Management and Security

- Assist the IAEA to collect, analyze, and manage safeguards information.
  - Like any organization, the IAEA Department of Safeguards needs sophisticated software and information management systems to collect and manage data
  - The IAEA's needs are often not met by commercially available systems
  - The implementation of the information collection and analysis program introduced new needs
    - Openly available information
    - Geospatial technology
  - Information security is of utmost importance to the IAEA because member states expect Safeguards information to be confidential between the IAEA and the member state
    - Since 2005, the IAEA has been the subject of repeated hacking attempts

# Human Resources

- Place well-qualified personnel in IAEA positions
  - Scientists and engineers are needed to fill positions that require the use the sophisticated tools and the performance of complex safeguards activities
  - A large percentage of senior IAEA safeguards staff members are reaching retirement age and must be replaced
  - The United States is facing a similar loss of experienced nuclear safeguards experts – assignments with the IAEA are effective in training early- and mid-career professionals

*The USSP sponsors CFEs and JPOs and recruits U.S. citizens for Safeguards vacancies*



# Quality Management

- Provide high quality products to the IAEA and promote a culture of quality at the IAEA

The USSP has assisted the IAEA with the delivery of quality management workshops to improve awareness of quality principles and the impact of quality on their work

## Why?

- The IAEA must have a strong quality program to ensure that its safeguards conclusions are sound and based on irrefutable data
- Repeating activities that have been done incorrectly wastes scarce resources

# Communication

- Internal USSP objective: Improve communication practices between the USSP, the IAEA and its stakeholders

It is important to the SSTS and ISPO that the USSP is characterized by good communication:

- Between the SSTS and ISPO for effective management of the USSP
- Between the SSTS and the U.S. government to promote understanding of the importance of USSP activities and ensure continued funding
- Between ISPO and USSP contractors and the IAEA so that obstacles can be mitigated and work can be completed successfully
- Between the USSP and the IAEA to support successful tasks

# THANK YOU FOR YOUR ATTENTION

## Questions?

References:

1. S.E. Pepper, "U.S. Support Program Contributions to the Implementation of IAEA Safeguards," presented at the 54<sup>th</sup> INMM Annual Meeting, Palm Desert, CA, July 2013.

# U.S. and China – Joint Tasks

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*



# Current Joint Tasks

Both the U.S. and China have accepted in the following tasks:

- Qualification of Environmental Network Laboratories
- Experimental Investigation of Behavior of Trace Elements in Uranium during the Concentration and Conversion Processes
- Guidance for Designers and Operators on Design Features and Measures to Facilitate the Implementation of Safeguards at Future Nuclear Fuel Cycle Facilities

# In-depth Discussion of Representative USSP Tasks

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# Acronyms

APEX - Complementary Access Training Exercise

BNL – Brookhaven National Laboratory

ECAS - Enhancing the Capabilities of Safeguards Analytical Services

IAEA – International Atomic Energy Agency

ISPO – International Safeguards Project Office

NGSI – Next Generation Safeguards Initiative

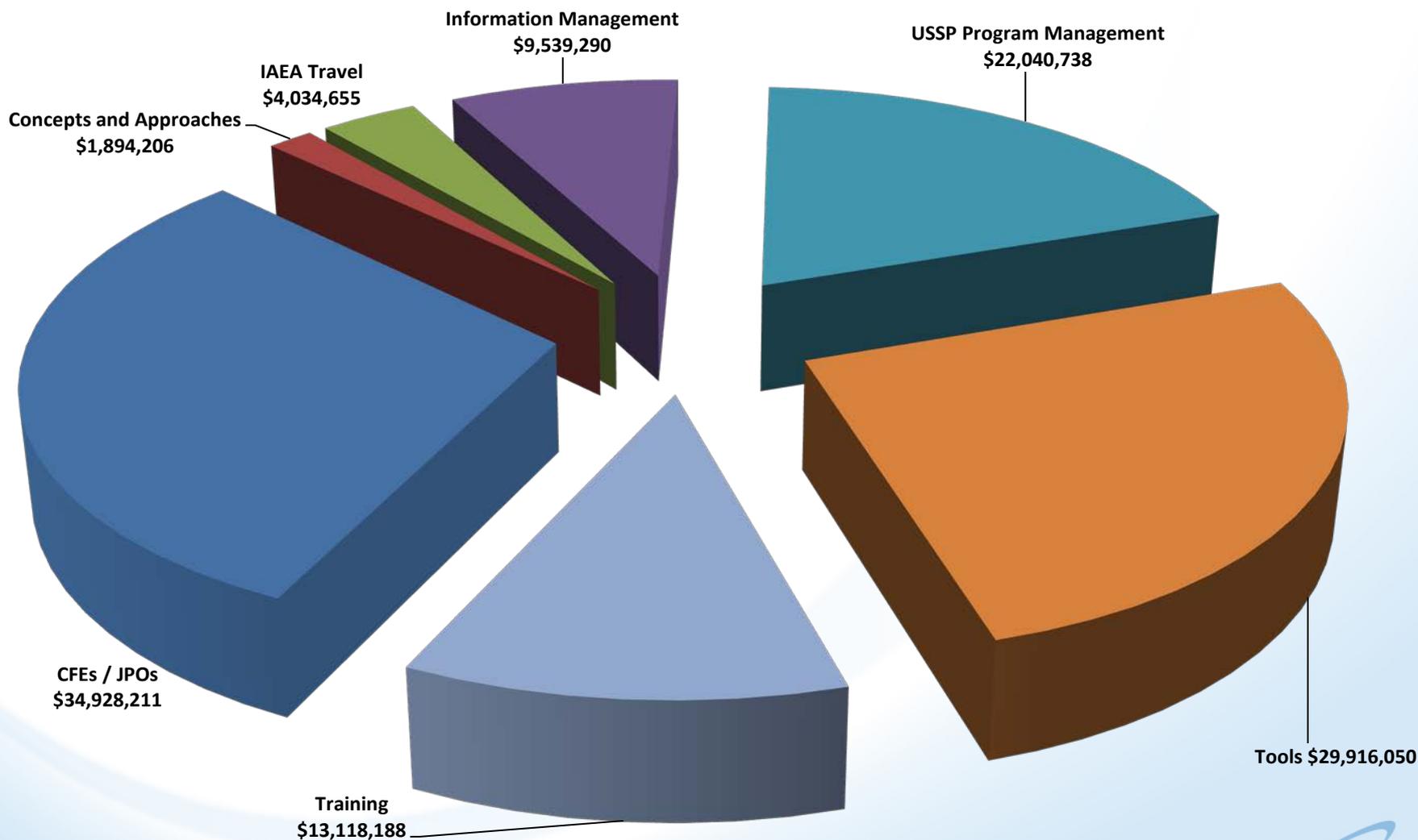
NGSS - Next Generation Surveillance System

SSTS – Subgroup on Safeguards Technical Support

UNAP - Universal NDA Data Acquisition Platform

USSP – U.S. Support Program

# All POTAS Funding Approved by Functional Area (CFEs / JPOs separated) CY 2005 - 2012 (\$115.5M)



# Representative Tasks

- Remote Monitoring
- Human Resources
- Enhancing the Capabilities of Safeguards Analytical Services – ECAS
- Universal NDA Data Acquisition Platform - UNAP
- Next Generation Surveillance System - NGSS
- Complementary Access Training Exercise - APEX

# Remote Monitoring

- International Workshop on Data Communications, October 1999
- Remote Monitoring Field Trials
  - Republic of South Africa
  - Y-12 Plant, Oak Ridge, TN
- Cost Free Experts
- Equipment Development/Modification
- Remote Monitoring Test Facility

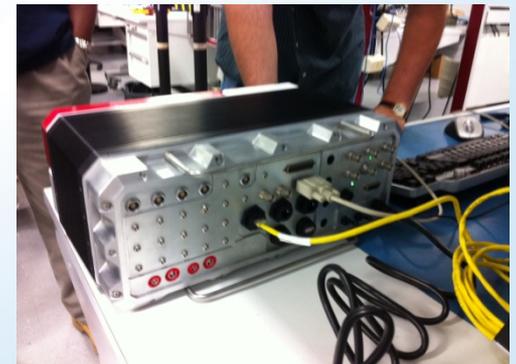
*Today, the IAEA transmits data from 263 RM systems composed of 583 cameras and 150 seals*

# Human Resources

- Core focus of the USSP
  - Cost free experts, junior professional officers and consultants
  - Positions advertised at [www.bnl.gov/ispo](http://www.bnl.gov/ispo)
  - Resources provided for prospective and successful candidates
- Represents 40% of USSP 2012 budget
  - Identified as a high priority in 2008
  - Recent efforts to reduce in this area in favor of other forms of support
  - Over 200 CFEs since 1977 and 25 JPOs funded since 2005
- Workshops sponsored by USSP and NGSII
  - Enhanced Recruitment for International Safeguards
  - Americans in International Organizations in Vienna

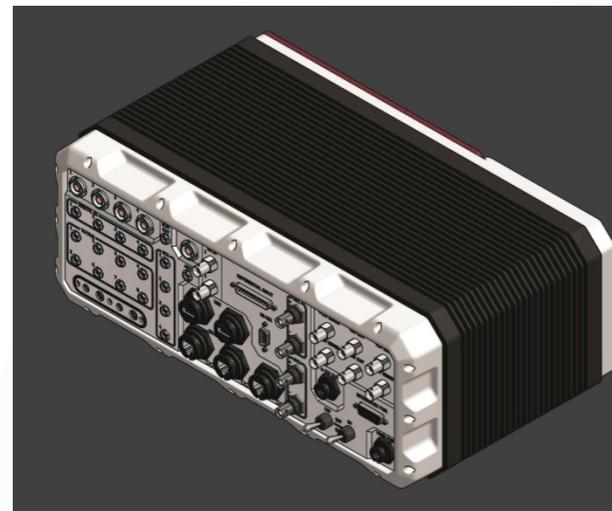
# Universal NDA Data Acquisition Platform (UNAP)

- Concept developed by the IAEA to replace obsolete instruments and instruments that are no longer commercially available
  - Will assist the IAEA with instrument standardization
- Development started in 2009
- Collaboration between Canberra, Los Alamos National Laboratory, and Pelowitz/Foiani LLCs
- Hardware delivered in Spring 2013
- Software nearing completion



# UNAP Features

- Multi-purpose data acquisition system for attended and unattended non-destructive assay
- Electronics
  - UNAP Data Acquisition board
    - Multiplicity shift register circuitry
    - Digital input/output circuitry
    - Analog measurement circuitry
  - Power processor
  - Compact PCI Component Interface
- Web-enabled set up and operation
- Supports multiple communication *technologies*
  - *Ethernet, USB, Modem, RS-232*



# Surveillance

## Next Generation Surveillance System (NGSS)

- Replacement for the currently used DCM-14 family of surveillance instruments
- International Workshop (2003) for review of the IAEA specifications for the NGSS
- Joint development with German Support Program
  - Developed by Canberra and Dr. Neumann Consultants

*NGSS was approved for use in March 2013 and is currently being installed at the rate of 15-20 cameras per month*

# NGSS Features

- Improved image resolution
- Modern camera features
  - Color images
  - advanced industry standard image compression and file formats
  - Ethernet and a minimum picture taking interval (PTI) of 10 seconds
- Improved reliability for longer periods between inspection visits
- Provisions for joint use by the Agency and other inspectorates
- Higher tolerance to radiation environments
- Compatible with other SG equipment systems and triggering sources
- Remote-control capabilities (focus, pan, tilt and zoom)

# Additional Protocol/Complementary Access Exercise (APEX)

- Training is a significant portion of the USSP - \$2 million annually
- APEX provides training to IAEA inspectors on the conduct of complementary access inspections under the Additional Protocol
- Involves one week of classroom training in Vienna and one week of field exercises at BNL
- Field exercises are based on fabricated scenarios in a mythical member state
- The scenarios enable inspectors to test their skills in a mock proliferation situation

# APEX

- Vienna activities
  - Information analysis
  - Definition of technical objectives
  - Selection of facilities and locations
- BNL activities
  - Conduct “inspections” of BNL facilities, e.g., the Magnet Division
  - Gather “inspection data” from BNL operators
  - Evaluate data and draw conclusions on presence of absence of undeclared material and activities
  - Report to the “state representatives” and “operators”
  - Receive feedback from senior IAEA staff

# APEX



# THANK YOU FOR YOUR ATTENTION

## Questions?

### References:

1. S.E. Pepper, “U.S. Support Program Contributions to the Implementation of IAEA Safeguards,” presented at the 54<sup>th</sup> INMM Annual Meeting, Palm Desert, CA, July 2013.

# Private Sector Involvement in the U.S. Support Program to IAEA Safeguards

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# Presentation Outline

- Background
- Vendor Database
- Contractor Selection
- Private Vendor Tasks
- Lessons Learned
- Overview of Expertise sought by USSP

# List of Acronyms

USSP – U.S. Support Program to IAEA Safeguards

POTAS- Program of Technical Assistance to  
IAEA Safeguards

ISPO- International Safeguards Project Office

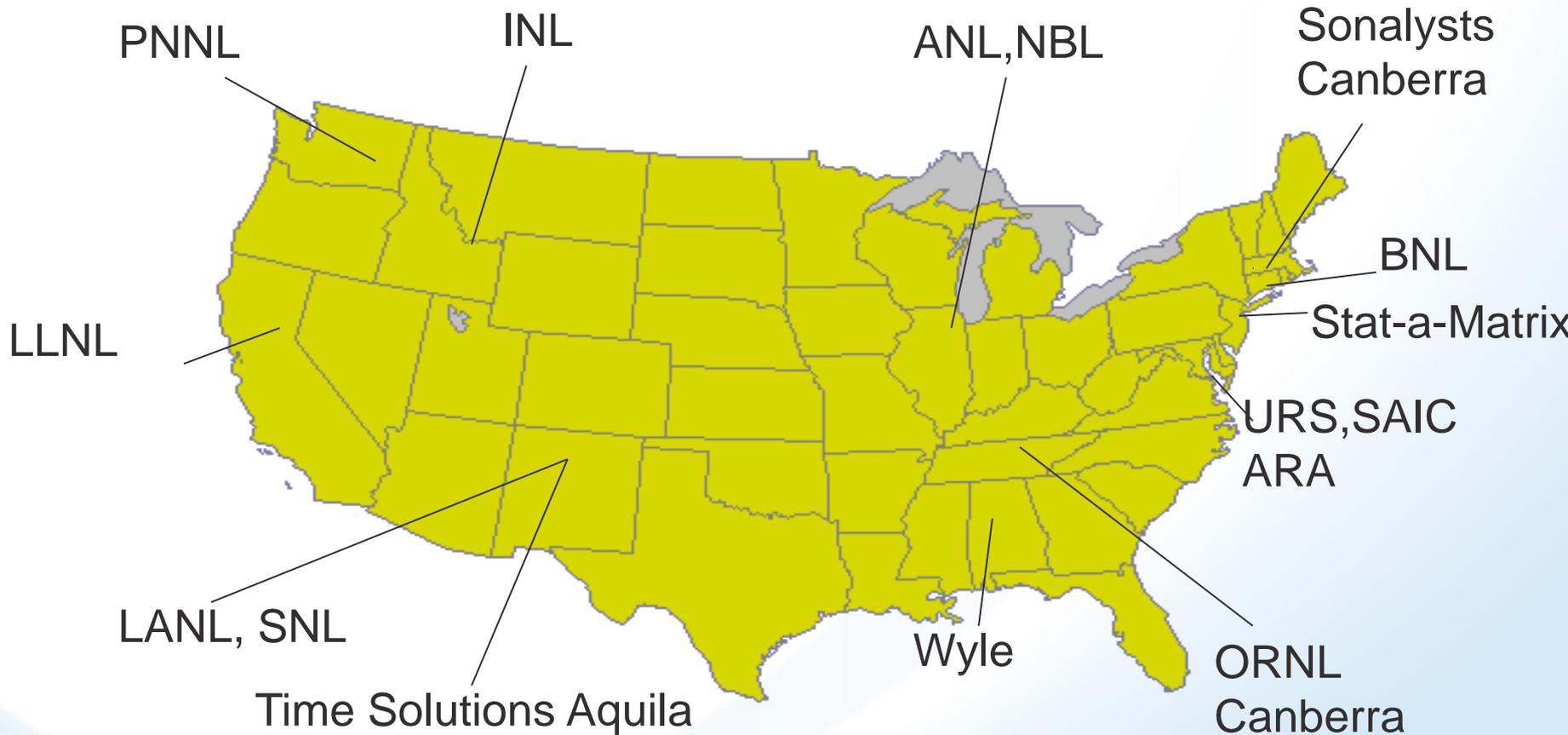
TSCC- Technical Support Coordinating Committee

SSTS – Subgroup on Safeguards Technical  
Support

# Definitions

- **Public Sector**
  - Government and government-funded entities, including national laboratories
- **Private Sector**
  - Commercial, for profit entities

# USSSP Contractors



Vienna:  
Cap Gemini Ernst & Young  
AWST

# Background

- The USSP relies on technical expertise found in the U.S. public and private sectors
- In 1993, a U.S. government audit found that the USSP should increase its use of the private sector
  - In response, ISPO advertised for new U.S. companies to provide technical expertise to the IAEA and maintained a database of the respondents
- ISPO has since called on these companies and others to respond to IAEA requests for technical assistance

# Search for New Company Partners

- ISPO placed advertisements in various periodicals to increase awareness of the USSP in the U.S. private sector
- Advertisements identified 10 areas of expertise that are sought for IAEA task requests
- Companies responded by submitting their corporate statement to certify their expertise
- More than 130 U.S. businesses responded
- Qualified respondents were invited to bid on selected projects

# Contractor Selection (1)

- Upon receipt of a task proposal from the IAEA,
- the first step is to determine whether it should be
- undertaken by the public or private sector
- Tasks can be directed to national labs when:
  - They require unique capabilities not found in the private sector, e.g., knowledge of NDA algorithms
  - They preserve a capability found in the labs, e.g., unattended monitoring system integration
- Tasks that utilize technology and experience commonly found in the private sector must be directed towards the private sector e.g., nonscientific software development

## Contractor Selection (2)

- Many IAEA tasks are highly specialized
- The IAEA also requests assistance in obtaining products that are commercially available
  - Mainly due to budgetary constraints

# Examples of USSP Tasks Performed by the Private Sector

- ECAS: Enhancing Capabilities of Agency Safeguards
  - URS
- Virtual Reality Training Tool for Pressurized Heavy Water Reactors
  - Advanced Research Associates
- Next Generation Surveillance System
  - Canberra and Dr. Neumann Consultants
  - Joint task with the German Support Program
- Universal NDA Data Acquisition System
  - Canberra, Los Alamos, and Pelowitz/Foiani

# Lessons Learned (1)

- Experienced, successful contractors are selected repeatedly
- Commercially-competitive U.S. companies are generally not familiar with the IAEA or international safeguards
- IAEA staff members are not familiar with many U.S. private companies

## Lessons Learned (2)

- U.S. companies must invest considerable time learning about the IAEA and its requirements to be successful
- The “learning curve” can increase the cost of the task or become a burden to the contractor

## Lessons Learned (3)

- When USSP presents the IAEA with proposals from several companies, the IAEA is inclined to select a familiar contractor
- Past experience with a contractor provides confidence in that contractor
- Effort to manage projects is not always directly related to the cost of the project – small projects can be time intensive

## Lessons Learned (4)

- The POTAS budget is too small to attract large, well-known companies, e.g., Sony, Microsoft
- By covering development costs for safeguards equipment or tools, USSP reduces the risk to companies entering the market.

## Lessons Learned (5)

- Tasks can be completed successfully by private companies with no prior IAEA experience
  - An example of this is the Virtual Reality Training Tool by Advanced Research Associates
  - ARA, in conjunction with the IAEA and the Canadian Safeguards Support Program, produced a virtual reality tool to help inspectors prepare for inspections at PHW reactors
  - The tool was completed on time and within budget

# Examples of Expertise and Skills Sought from the Private Sector for the USSP

- Training – soft skills and virtual reality
- Computer software and hardware development
- Preparation of procedures
- Satellite imagery analysis and geographical information systems
- Equipment development

# Thank you for your attention. Any questions?

## References:

1. S.E. Pepper, L. Epel, G. Maise, A. Reisman, and J. Skalyo, "Private Sector Involvement in the U.S. Program of Technical Assistance to IAEA Safeguards," presented at the Annual Meeting of the Institute of Nuclear Materials Management, BNL-61988, July 1995.
2. J.K. Tackentien, C. Owens, R. Brown, "Lessons Learned and Potential Paths Forward in Virtual Reality Developments for the International Atomic Energy Agency (Member States Support Programs Supporting the International Atomic Energy Agency), presented at the 54<sup>th</sup> Annual Meeting of the Institute of Nuclear Materials Management, Palm Desert, CA, July 2013.

# USSP and CSP Future Tasks Discussion

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*

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# Outline

- Introduction of potential future tasks
- Discussion of joint priorities
- Preliminary identification of viable options

# Topics for Future Collaboration

- **Training**
  - IAEA staff
  - Member State Facility staff – Complementary Access expectations
- **Human capital development**
  - Cost Free Experts
  - Junior Professional Officer program
- **Equipment development**
  - Technical Meetings for development of specifications
  - Commercialization
  - Testing
- **Procurement of commercially available equipment**
- **Information Analysis**

# Identification of Priorities

- What are some of CAEA's thoughts on preferences for future collaboration based on our discussions and the presentations we have seen so far?

# Identification of Viable Options

- What are some safeguards activities that our support programs can pursue jointly?
- What are next steps for us to pursue following this meeting?

# USSSP Cost Free Experts and Junior Professional Officers

*Presentation By Katherine Bachner & Susan Pepper  
August 2013, Beijing*

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# Acronyms

IAEA – International Atomic Energy Agency

DOE – Department of Energy

ISPO – International Safeguards Project Office

JPO – Junior Professional Officer

SSTS – Subgroup on Safeguards Technical Support

USSP – U.S. Support Program



# Cost Free Experts

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CFEs are U.S. citizens who are recruited and funded by the USSP to work at the IAEA to assist the IAEA with short term, targeted projects for which the IAEA does not have the expertise or manpower.

CFEs are intended to work with the IAEA for a limited time, to complete the project, and return to the United States.

CFEs can be placed in any department of the IAEA, but the USSP only funds those in the Department of Safeguards.

# Cost Free Experts

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CFEs currently assist the IAEA in:

- Remote Monitoring
- Training
- Export Controls
- Satellite Imagery/Geospatial Technology
- Software/database development
- Project Management
- Information Technology



# Junior Professional Officers

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- Preceded by an internship program (2002-2006) under which 40 students and recent graduates were placed in the Department of Safeguards
- The U.S. JPO program started in 2004
  - First placements in Safeguards in 2005
- Assignments from 1-2 years
- 26 JPOs placed since 2004
- Currently 5 JPOs in assignments
  - Open source information collection and analysis
  - Organizational performance monitoring
  - Support to surveillance implementation

# JPO Qualifications & Requirements

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- U.S. citizens (*or permanent residents of the U.S.*)
- Interviewed and selected by the IAEA from among candidates recruited by ISPO
- College degree in relevant field
- 0-2 years of work experience
- Less than 32 years of age
- Ability to work independently

Safeguards JPOs are advertised on the ISPO website.

# Typical JPO Assignments

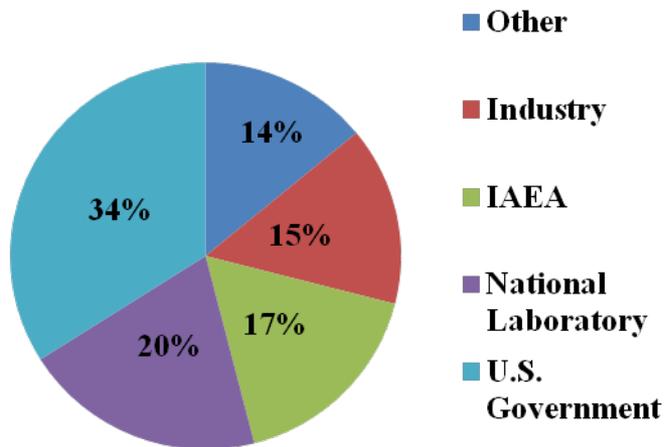
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- Open Source Information Collection and Analysis
- Nuclear Trade Analysis
- Equipment development, testing, preparation, and implementation
  - Nondestructive Assay
  - Containment/Surveillance
  - Remote Monitoring
- Software and database development
- Statistical evaluation of safeguards data
- Training

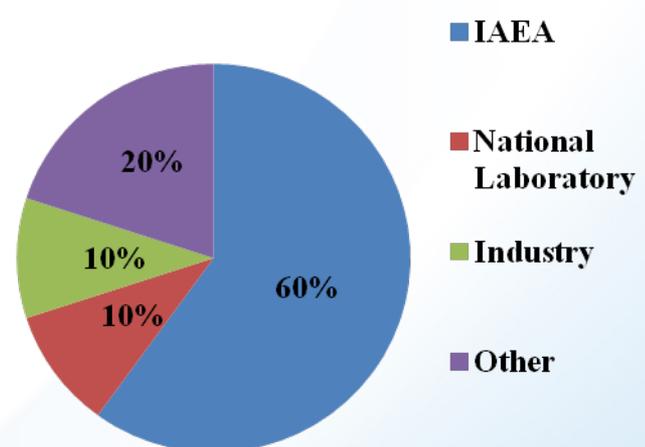
# JPO Statistics – Return on Investment

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**Figure 1: Post Internship Positions**



**Figure 2: Post JPO Positions**



# Thank you for your attention! Comments or Questions?

## References:

1. *Evaluation of the United States Support Program's Internship and Junior Professional Officer Programs, J. Cruz, et.al., presented at the 53<sup>rd</sup> INMM Annual Meeting, Orlando, FL, July 2012.*