

International Safeguards Policy and Information Analysis Course

In the summer of 2009, the **James Martin Center for Nonproliferation Studies (CNS)** at the **Monterey Institute of International Studies** in cooperation with the **Lawrence Livermore National Laboratory (LLNL)** offered an intensive safeguards policy and information analysis course and summer internships at LLNL. This followed a similar program successfully conducted in 2008. Aimed at graduate students and professionals interested in pursuing careers in nonproliferation and nuclear safeguards, the course was supported both years by the **U.S. Department of Energy's Next Generation of Safeguards Initiative**.



A team of experts from CNS, **Los Alamos National Laboratory (LANL)**, LLNL, **Pacific Northwest National Laboratory (PNNL)**, the **International Atomic Energy Agency (IAEA)** and other well-known safeguards specialists provided a comprehensive overview of the origins and fundamentals of international safeguards and the evolution of the legal, political, and technical elements of and approaches to their implementation.

Case studies on nuclear programs in **Iraq**, **North Korea**, and **Iran** were reviewed in detail to demonstrate their influence on the development of safeguards approaches and technologies, as well as highlight the challenges they continue to pose. A special session was devoted to open-source information analysis. Throughout the week, the students worked under expert supervision on an exercise simulating the preparation of a state evaluation report.



Four course participants in 2008 and six course participants in 2009 were selected for a ten-week paid summer internship at the Livermore National Laboratory.

"I really liked the lectures from people who work directly on the issues they lectured about. I found it valuable to be able to ask questions about the practical issues."



Participants

The **thirty participants** of the safeguards course were selected on a highly competitive basis, resulting in a mix of students with policy and technical knowledge. With participants from **Canada, China, Egypt, Germany, Kyrgyzstan, Russia,** and the **United States**, the makeup of the course highlighted the benefits of incorporating culturally diverse viewpoints and backgrounds into the contemporary discourse on the international safeguards system.

The majority of participants were graduate students pursuing a Master's or Doctorate degree. The institutions represented included a number of major U.S. universities, such as George Mason University, Georgia Institute of Technology, Harvard University, Idaho State University, Monterey Institute of International Studies, Missouri University of Science and Technology, Old Dominion University, Syracuse University, and Texas A&M University. In addition, several professionals from U.S. national laboratories, government and international agencies, and researchers from think tanks and nongovernmental organizations took part in the course.



Program

The course, conducted in picturesque Monterey, California, May 18-22, 2009, provided participants with an understanding of what nuclear safeguards are, and how they are implemented, as well as an overview of the interaction between different technical, legal and policy aspects of nuclear safeguards.

Day 1. Participants were presented with an overview of the origins of international safeguards, and the evolution of the safeguards system through the implementation of Information Circular 153, which provided the foundation for the safeguards requirement under the NPT. **Richard Hooper** of Wind River Consulting provided participants with a comprehensive history of safeguards approaches and practices. This presentation tied together the concepts presented in the Introductory Module and during the overview of the origins of international safeguards with lessons learned over the years through the various stages of safeguards implementation. **Richard Wallace** from Los Alamos National Laboratory briefed the participants on the state evaluation process, the method the IAEA employs to implement a state's comprehensive safeguards agreement.

"I've been working in safeguards, so I knew a bit already, though this course really made the context and evolution of safeguards apparent to me."



Presentations

Origins of International Safeguards

Foundations of International Safeguards through Information Circular 153

Safeguards Approaches and Practices

The State Evaluation Process

Safeguards Implementation at Declared Facilities: Practical Aspects and Procedures

Safeguards Technology and Instrumentation: An Introduction to Technical Verification

Case Study: Iraq

Case Study: North Korea

Strengthened Safeguards

Technologies for Detection and Investigation of Undeclared Facilities

Case Study: Iran

Open-source Information Analysis

Export Controls and International Safeguards

Current Challenges: Legal and Political Issues

Future of International Safeguards

Next Generation Safeguards Initiative

In an effort to revitalize and strengthen the U.S. safeguards technology and human capital base, the National Nuclear Security Administration (NNSA) has launched the NGSi, a comprehensive initiative aimed at developing advanced safeguards approaches, technologies, and equipment that will cultivate a new generation of specialists with expertise in a broad range of safeguards-relevant disciplines. In order to address emerging safeguards challenges, NGSi seeks to develop the policies, concepts, technologies, expertise, and infrastructure required to sustain the international safeguards system.



Day 2. **Brian Boyer**, Los Alamos National Laboratory, gave presentations on safeguards implementation at declared facilities, with a focus on practical aspects and procedures, as well as safeguards technology and instrumentation, in order to provide students with a better understanding of technical verification issues. Richard Hooper and **George Anzelon** presented the first two case studies of the course, Iraq and North Korea, respectively. These extremely important case studies provided participants with an enhanced understanding of some the challenges to the safeguards system that emerged through the implementation and verification of comprehensive safeguards agreements with these particular states.

Day 3. **Lisa Owens Davis**, Lawrence Livermore National Laboratory, offered an overview of the origination of strengthened safeguards and the multitude of issues surrounding their evolution and implementation. Richard Wallace gave a presentation on technologies for detection and investigation of undeclared facilities, an issue that primed participants for the next case study: Iran. **Chris Carson**, Lawrence Livermore National Laboratory, presented the case study on Iran, which aimed at identifying the past, present, and future challenges to the international safeguards system by states that are found to be in non-compliance with their comprehensive safeguards agreements, and outlining procedures and practices for addressing these challenges.

Day 4. The first presentation of the day focused on open-source information analysis and

was given by **Jonathan Essner**, LLNL. It was followed by an exercise held during class time aimed at providing participants with a greater understanding of the various tools and resources at their disposal for conducting more comprehensive and valuable open-source information analysis. **Stephanie Lieggi**, CNS, then gave a brief overview of export controls and how they function in concert with the international safeguards system.

Day 5. On the final day of the course, participants were provided with an assessment of the current challenges to international safeguards, including legal and political issues, by **Laura Rockwood**, International Atomic Energy Agency. Following this briefing, **Thomas Shea**, Pacific Northwest National Laboratory, delivered a presentation on the future of international safeguards in an effort to stimulate progressive thinking on matters concerning the implementation and evolution of safeguards approaches in a future where nuclear energy is projected to play an increasingly relevant role.

After being provided on the first day with an introduction to the Course Exercise “**Developing a State Evaluation Report**” simulating the preparation of a state evaluation report for a particular state, the students worked in 3 groups throughout the week on this project. The course culminated in a series of student presentations exhibiting the results of the exercise. Experts from LLNL and LANL served as consultants to students during the exercise, shared their first-hand knowledge and practical experience in the field, and provided feedback on the final product.

"I was very happy with the course, I learned a lot, and it has sparked my interest to learn more about some of the subjects."

"The material is difficult, but it was presented in a non-overwhelming way. Well done!"

"During this one-week course, students not only gained an understanding of the relevance of nuclear safeguards and their contribution to facilitating civil nuclear cooperation and supporting nonproliferation, but also the strengths and limitations of the international safeguards system. The highly motivated and well-prepared group demonstrated a keen interest in the subject, actively participated in class discussions, and challenged speakers with thorough questions and comments."

Elena Sokova, CNS Assistant Director



Introductory Module

In order to provide all course participants with the minimum tools and knowledge necessary to comprehend the more advanced and complex course, CNS designed an Introductory Online Module. Course participants were required to complete this module prior to their arrival in Monterey.

The participants completed required readings, watched 25 to 45 minute video presentations providing background information on each topic, and passed a series of quizzes ensuring that each individual was well prepared for the course.

The four topic areas covered in the module included:

- (1) Energy, Weapons, and Technology
- (2) The Nuclear Non-proliferation Treaty (NPT) Regime
- (3) The IAEA and Safeguards
- (4) Proliferation Cases



By September 2009, the module will be available on the Nuclear Threat Initiative website. Visit www.nti.org

Video presentations were given by:

Dr. Patricia Lewis—Deputy Director and Scientist-in-Residence with CNS at the Monterey Institute of International Studies.

Jean P. du Preez—Director of the International Organizations and Nonproliferation Program (IONP) at CNS and Senior Lecturer at the Graduate School for International Policy Studies at MIIS.

Dr. Fred Wehling—Director of Educational Programs at the James Martin Center for Nonproliferation Studies and Associate Professor in the Graduate School of International Policy and Management at MIIS.

Cristina Hansell—Director of the Newly Independent States Nonproliferation Program (NISNP) and an adjunct professor at the Monterey Institute.

Liviu Horovitz, CNS Research Associate, with assistance from **Luis Gain** and **David Steiger**, researched, designed, and developed the module.

We welcome your questions & suggestions regarding the Safeguards Course at:
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