



Office of **International
Nuclear Safeguards**

**NEXT GENERATION
SAFEGUARDS INITIATIVE**

NGSI consists of five sub-program elements:

1. Safeguards Policy
2. Concepts and Approaches
3. International Nuclear Safeguards Engagement
4. Technology Development
5. Human Capital Development



OFFICE OF
**NONPROLIFERATION AND
ARMS CONTROL (NPAC)**

NEXT GENERATION SAFEGUARDS INITIATIVE

In 2008, the Department of Energy, National Nuclear Security Administration (DOE/NNSA) established the Next Generation Safeguards Initiative (NGSI) to develop the policies, concepts, technologies, expertise, and international safeguards infrastructure necessary to strengthen and sustain the international safeguards system as it evolves to meet new challenges.

Safeguards Policy

The NGSI Safeguards Policy subprogram, working with other U.S. agencies and the IAEA, conducts activities designed to:

- Strengthen and encourage full use of existing IAEA authorities and examine possible new authorities;
- Develop policies and strategies that will help the IAEA plan, evaluate, and report on the implementation of safeguards agreements in a manner that is effective, efficient, objective, transparent, and non-discriminatory; and
- Increase public awareness and understanding of the role of international safeguards in international efforts to prevent the spread of nuclear weapons.

Policy Studies

Some recent NGSI policy studies have examined ways to help the IAEA use all relevant information to customize safeguards approaches to each State, optimize its inspection activities, and draw conclusions as effectively and efficiently as possible.

Concepts and Approaches

The NGSI Concepts and Approaches subprogram focuses on: (1) identifying and analyzing safeguards best practices, gaps in current capabilities, and new requirements; and (2) demonstrating and evaluating advanced methods to safeguard nuclear material and facilities. These efforts help inform investment decisions about future safeguards technology research and development to support enhanced safeguards concepts and approaches.

Safeguards by Design (SBD)

NGSI promotes the concept of Safeguards by Design (SBD) in which international safeguards are fully integrated into the design process of a new nuclear facility from the initial planning through design, construction, operation, and decommissioning. NGSI supports the ongoing IAEA SBD guidance development effort, and engages directly with U.S. nuclear industry facility designers to assist the U.S. nuclear industry in better understanding and implementing SBD for specific projects. The NGSI series of SBD guidance documents are available at www.nnsa.energy.gov/safeguardsbydesign.



International Nuclear Safeguards Engagement

Through cooperation with more than 25 international partners, the NGS International Nuclear Safeguards Engagement subprogram conducts activities that are designed to:

- Prepare the safeguards infrastructure necessary to support the safe, secure, and peaceful uses of nuclear energy;
- Enhance the implementation of IAEA safeguards and strengthen State accounting and reporting systems through capacity building, regulatory development, and technology transfers to reduce the likelihood of theft or diversion of nuclear material for non-peaceful purposes; and
- Test and implement new safeguards technologies to meet future and current safeguards challenges.

Additional Protocol (AP) Outreach

A number of countries require legislative and technical support in order to prepare the infrastructure and procedures necessary to provide timely, correct, and complete declarations pursuant to their AP. The NGS International Nuclear Safeguards Engagement subprogram currently cooperates with nearly a dozen partner countries in strengthening AP implementation.



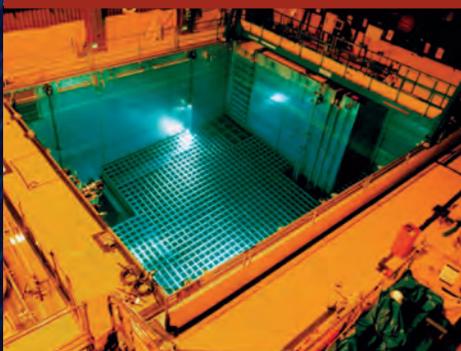
Technology Development

The NGS Technology Development subprogram directs the DOE National Laboratories in the development and testing of tools, technologies, and methods that optimize the effectiveness and efficiency of safeguards implementation. In particular, this subprogram focuses on transitioning advanced and maturing technologies with near-term safeguards applications from the laboratory into the field. Focus areas include:

- Advanced nuclear measurement technologies;
- Field-portable, near-real-time analysis tools;
- Data integration and authentication applications;
- Improved detector materials; and
- Strengthened technology development infrastructure at the National Laboratories.

Advanced Technologies

The NGS Technology Development subprogram has undertaken a multi-year effort to develop and test new nondestructive assay (NDA) techniques capable of measuring certain characteristics of spent nuclear fuel.



Human Capital Development

The Human Capital Development (HCD) subprogram of NGS is developing sustainable academic and technical programs that support the recruitment, education, training, and retention of the next generation of international safeguards professionals to help meet the needs of both the United States and the IAEA for decades to come. Focus areas include:

- University engagement through curriculum development, guest lectures, and textbook development;
- Internships, post-doctoral fellowships, and graduate assistant positions at DOE National Laboratories;
- Safeguards policy and technology courses to strengthen young and mid-career professional development;
- Career opportunities for safeguards experts returning to the United States from positions at the IAEA; and
- Ongoing analysis of workforce needs of safeguards-relevant staff at DOE National Laboratories.

Metrics of Success

Of past NGS students and interns, nearly four in ten pursue multiple NGS opportunities, one in five are converted to permanent DOE National Laboratory staff, and nearly two in ten pursue a nonproliferation or safeguards-focused graduate degree.





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National Nuclear Security Administration
Defense Nuclear Nonproliferation

<http://nnsa.energy.gov/aboutus/ourprograms/nonproliferation-0/npac>



About NPAC

United States Department of Energy
National Nuclear Security Administration
Defense Nuclear Nonproliferation
Office of Nonproliferation and Arms Control
1000 Independence Avenue, S.W.
Washington, D.C. 20585