Historical Overview of International Safeguards

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June 8, 2011

OUTLINE

- Early History: Baruch Plan, Atoms for Peace, IAEA
- NPT and comprehensive safeguards
- Strengthened safeguards, Additional Protocol
- Integrated safeguards, state-level approach
- The challenge of non-compliance
- IAEA Safeguards in the United States

U.S. PROPOSAL: BARUCH PLAN

- 1946 charter of UN Atomic Energy Committee

  Effective safeguards by way of inspections and other means to protect complying states against the hazards of violations and evasions

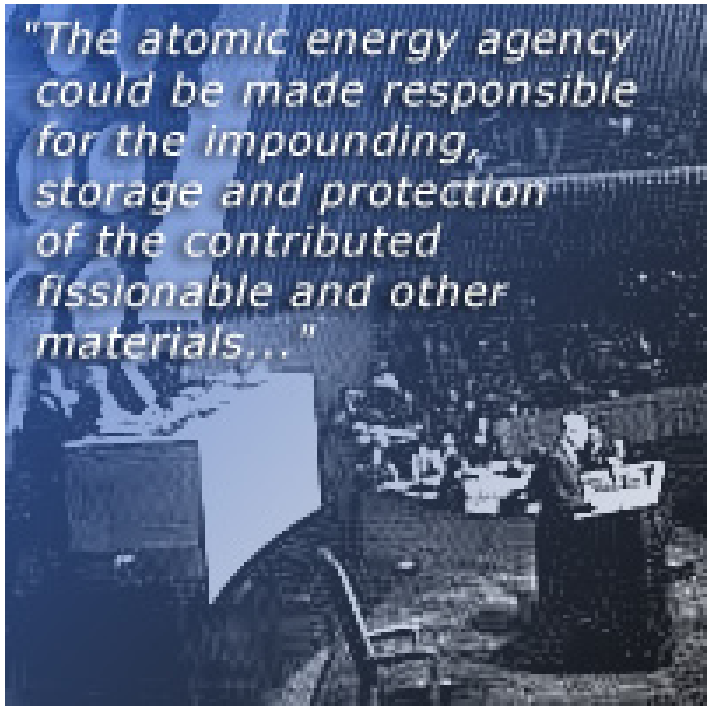
- Proposed Atomic Development Authority
  - Full international control of all atomic energy activities potentially dangerous to world security
  - Then United States would disarm
  - Enforcement would override UN Security Council veto
- Rejected by Russia

ATOMS FOR PEACE

- President Eisenhower's December 1953 speech to the UNGA
- Atomic Energy Act of 1954 created framework for nuclear cooperation with other countries
  - Facilities/materials provided under agreements for cooperation and ***bilateral safeguards arrangements***
- Proposed establishing international organization to promote peaceful uses of nuclear energy
  - Source of nuclear materials and technical information
  - ***Assistance subject to verification of peaceful use***

INTERNATIONAL ATOMIC ENERGY AGENCY

- Established by treaty (IAEA Statute) in1957
- IAEA objectives
  - Enlarge contribution of nuclear energy to peace, health and prosperity throughout the world
  - ***Ensure technology is not used to further any military purpose***



IAEA SAFEGUARDS

- IAEA authorized to establish and administer ***safeguards***
  - to ensure that nuclear material and assistance provided by the IAEA is not used to further ***any military purpose***
  - to apply safeguards, at the request of the parties, to any ***bilateral or multilateral arrangement***
  - at the ***request of a State***, to any of that State's activities in the field of atomic energy

IAEA SAFEGUARDS RIGHTS AND RESPONSIBILITIES

- Approve design information for safeguards purposes and to ensure peaceful use
- Record keeping and reporting to ensure accountability for nuclear material
- Require fissionable material produced to be used only for peaceful purposes
- Require the deposit with the IAEA of excess special fissionable materials to prevent stockpiling
- Send inspectors into the recipient state to account for nuclear materials
- Respond to non-compliance

NUCLEAR NON-PROLIFERATION TREATY (NPT)

- Three Pillars: Nonproliferation, Peaceful Use, Disarmament
- Focus on Nonproliferation:
  - Nuclear-weapon states (NWS) may not help non-nuclear-weapon states (NNWS) acquire nuclear weapons
  - NNWS may not acquire nuclear weapons
  - NNWS must accept ***IAEA safeguards*** to prevent diversion from peaceful use to nuclear weapons
- United States committed to accept same ***safeguards*** NNWS are required to accept on civil facilities
  - National Security Exclusion
  - Voluntary undertaking separate from NPT

NPT STATUS

- Entered into force March 5, 1970
- Recognizes five nuclear-weapon states
- Nearly universal
- Extended indefinitely in 1995
- Eighth Review Conference in 2010 agreed on unprecedented action plan on all three pillars

NPT SAFEGUARDS

- NPT Provisions (Article III)
  - Comprehensive safeguards apply to ***all*** nuclear material in peaceful uses in the state
  - NNWS required to conclude safeguards agreement with IAEA with a view to ***preventing diversion of nuclear energy*** from peaceful purposes
- NPT model safeguards agreement (INFCIRC/153)
  - Purpose: verifying that ***nuclear material*** is not diverted
  - Technical objective: ***timely*** detection and deterrence of diversion of ***significant quantities*** of nuclear material
  - Focus on declared facilities and material
  - Fundamental safeguards measure is nuclear material accountancy, with containment and surveillance as complementary measures

IN SEARCH OF UNDECLARED ACTIVITIES (1991)

- Iraq experience showed safeguards must be strengthened to maintain credibility
- Focus on declared activities not enough; need tools to address undeclared activities
- DG Blix – Lessons from Iraq: "A high degree of assurance can be obtained if three major conditions are fulfilled:"
  1. Access to information, including intelligence, about sites that may require inspection
  2. Access to any such site as a right of Agency
  3. Access to the UN Security Council for necessary support

FIRST STEPS TO STRENGTHEN SAFEGUARDS

- Special Inspections – Full exercise of Agency rights, including to additional information and locations
- Early Design Information – Information on new facilities during planning and design, not 180 days before use
- Voluntary Reporting - States requested to expand reporting of exports and imports

PROGRAMME 93 + 2

Access to Information

– Expanded declaration (nuclear-related)

– Environmental sampling

– Open source information collection and analysis

Physical Access

– Broad inspector access at declared locations (nuclear and nuclear-related)

– Special Inspections

Optimum Use of Existing System

– Advanced technology

– Improved administrative arrangements

– Adjusted safeguards parameters

– Increased cooperation with Member States

STRENGTHENED SAFEGUARDS
PART 1: EXISTING AUTHORITY (1995)

- IAEA Board of Governors decided implementation of comprehensive safeguards should be designed to provide verification of ***correctness*** and ***completeness***, to give credible assurance of
  - Non-diversion of declared nuclear material and
  - Absence of undeclared nuclear material and activities
- June Board took note of Director General's intent to implement measures for which he had authority, *e.g.*
  - Environmental sampling at all locations where inspectors had access
  - Remote monitoring and other optimization measures

STRENGTHENED SAFEGUARDS
PART 2: ADDITIONAL PROTOCOL (1997)

- IAEA Board of Governors formed open-ended special committee; Model Additional Protocol (INFCIRC/540) adopted May 16 1997
  - Additional declarations on nuclear fuel cycle-related activities, e.g. mining and milling, waste processing, sites, fuel cycle R&D, nuclear equipment exports
  - Complementary access
  - Other efficiency measures (e.g. inspector designation and visas)
- United States committed to accept same measures as non-nuclear weapon states would required to accept
  - National Security Exclusion; Managed Access
  - Voluntary Commitment

INTEGRATED SAFEGUARDS

- Integrated Safeguards: optimal combination of old (INFCIRC/153) and new (INFCIRC/540)
- Principles of Integration:
  - No duplication – new measures should complement old
  - State-level approach: differentiation without discrimination
  - Nuclear material accountancy remains fundamental
  - Safeguards should cover all plausible acquisition paths
  - Benefits of randomness and unpredictability
  - IAEA must be able to draw independent conclusions
- IAEA must first draw conclusions regarding non-diversion and absence of undeclared activities

STATE-LEVEL APPROACH

- Safeguards reviews in 2004 endorsed state-level safeguards approach
- Based on State Evaluation Report (SER)
- Takes into account state-level factors
  - Overall fuel cycle
  - Related technical capabilities
  - Cooperation by state and capabilities of SSAC
- Allows differentiation
  - Must be transparent and based on objective factors
- Information-Driven Safeguards
  - Optimize interaction between information analysis and inspection activity

THE CHALLENGE OF NON-COMPLIANCE

IAEA Board Findings of Non-Compliance

- Iraq 1991: Extensive undeclared activities, including enrichment, reprocessing, weapons design
- Romania 1992: Undeclared irradiation and reprocessing experiment by former regime
- DPRK 1993, 1994, 2003: Clear evidence of incomplete declaration, failure to cooperate with required inspections
- Libya 2003: Undeclared fuel cycle efforts, voluntarily dismantled
- Iran 2005: Undeclared nuclear materials, facilities, enrichment and reprocessing activities for over 18 years

WHAT IS NON-COMPLIANCE?

- Most safeguards problems fall below threshold
- Factors in assessing non-compliance:
  - Nature of problem – sensitive activities/materials
  - Degree of cooperation/concealment
  - State-Level considerations – consistency with civil program requirements
- Not necessary to show military purpose – diversion for purposes unknown (Paragraph 28)

RESPONDING TO NON-COMPLIANCE (1)

- IAEA Statute (Articles XII.C, XIX, III.B.4)
  - Call for corrective action
  - Report to the UN Security Council
  - Suspend privileges/curtail assistance
  - Notify UN Security Council on questions related to maintenance of international peace and security
- Safeguards Agreements (Paragraphs 18, 19)
  - Call for corrective action
  - May report inability to verify non-diversion

RESPONDING TO NON-COMPLIANCE (2)

UN Security Council Action

- Iraq 1991-2002 (UNSCR 687 and others): Required IAEA and UN inspections, elimination of related material and equipment
- North Korea 1993 (UNSCR 825): Called for DPRK to remain in NPT and comply with IAEA safeguards
- Iran 2006-2010 (UNSCR 1737, 1747, 1803, 1929): Required Iran to suspend enrichment, cooperate with IAEA; imposed sanctions
- North Korea 2006 -2009 (UNSCR 1718, 1874): Demanded DPRK return to NPT; abandon nuclear weapons and programs; sanctions

Lessons Learned

- Only UN Security Council has authority to require action
- Agreement to use authority is difficult and far from automatic

IAEA SAFEGUARDS IN THE UNITED STATES

- All five NPT nuclear-weapon states have "Voluntary Offer" safeguards agreements
  - Based on list of eligible facilities
  - IAEA has right (but no obligation) to select for safeguards
  - Each has an Additional Protocol
  - Each is unique
- U.S. safeguards agreement
  - All nuclear facilities are eligible, excluding those of direct national security significance – nearly 300 eligible facilities
  - U.S. Additional Protocol contains all the measures of the Model Additional Protocol

IAEA SAFEGUARDS IN THE UNITED STATES

- Benefits
  - Demonstrate that the United States is willing to accept the same safeguards others are required to accept
  - Demonstrate that states will not be placed at an economic disadvantage by accepting IAEA safeguards
  - Placing excess fissile material under safeguards to demonstrate transparency in nuclear disarmament
  - Develop new technologies and new technical approaches
- Risks
  - Protect national security information
  - Avoid setting bad precedents other countries could exploit to weaken safeguards

CONCLUSIONS

- IAEA safeguards are a critical element in preventing the proliferation of nuclear weapons
- Safeguards have strengthened over time
- Compliance with safeguards is critical
- The United States has played a key role in developing and strengthening IAEA safeguards