



The Non-Proliferation Treaty Review Conference: Breakthrough or Bust in '05?

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The Need for a Strengthened IAEA Safeguards System

Background

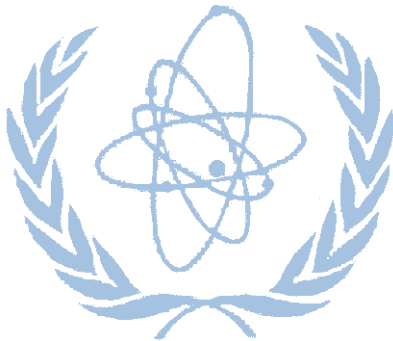
Established in 1957 the International Atomic Energy Agency (IAEA) had its genesis in US President Eisenhower's 'Atoms for Peace' policy. The Agency has thus always had the dual, even contradictory, role of promoting the peaceful use of 'atomic energy' whilst simultaneously trying to ensure, via safeguards, that this use was not put to military purpose. Articles IV and III, respectively, of the Non-Proliferation Treaty (NPT) reinforced this dual role and Non Nuclear Weapon States (NNWS) were obliged to accept comprehensive safeguards agreements (CSAs) with the IAEA.

However, with the discovery of Iraq's clandestine nuclear weapons programme and difficulties in verifying North Korea's safeguards declaration, it was recognised that the traditional CSAs were failing adequately to verify compliance with the NPT, especially in regard to detecting undeclared nuclear activities.

To strengthen the safeguards system, the Agency launched the '93+2 Program' in December 1993. In addition to new measures under existing CSAs, this also expanded the IAEA's legal mandate by the adoption in May 1997 of a model Additional Protocol (AP), designed to allow more intrusive inspections and give greater assurance about the absence of clandestine activities.

Recent Developments

Many States see the IAEA framework as a 'bargain' between the provision of technical aid and nuclear technology and their acceptance of safeguards. They therefore apply pressure to maintain the rough balance between the IAEA's efforts in each sphere. From the mid 1980s the Agency's safeguards budget had zero real growth despite an ever-



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increasing range of countries, facilities and nuclear materials coming under its remit.

Whilst modest budget increases have been agreed for 2004-2007, resource constraints mean that the IAEA still has to look for cost effectiveness in applying safeguards. It is thus developing the concept of 'integrated safeguards', formally adopted in March 2002. Essentially this 'customises' verification for individual states that have both a CSA and AP, and where the absence of diversion of nuclear materials for military purposes and of undeclared nuclear activities can be credibly assured. Once introduced the integrated approach enables the level of safeguards activities to be reduced.

Currently only a handful of States have integrated safeguards systems, while some 39 States have yet to introduce the mandatory CSA under the NPT. Moreover, only 65 of the 188 States have brought APs into force. This is a disappointing rate of uptake, especially as the IAEA's original goal was to conclude such protocols with all Member States before the 2000 Review Conference.

To bolster the NPT regime, the Agency has also promoted the idea of international and regional management of the processing of plutonium and highly enriched uranium and of spent fuel and nuclear waste. This issue will be discussed in a later briefing.

Comprehensive Safeguards Agreements (CSAs)

The main method used in traditional CSA safeguards is material accountancy, whereby the nuclear materials fed into a State's nuclear plants are checked against those that are produced. This is essentially an audit system that seeks to establish the quantities of nuclear material present within defined areas and whether there are any changes in these quantities over time. It can only detect the diversion of material after it has occurred, *not prevent it*, and is restricted to declared facilities only.

This is supplemented by containment and surveillance measures (e.g. use of seals and cameras) and on-site inspections. Such inspections are limited to designated areas in declared facilities, as agreed by the State concerned. Whilst it is possible for the IAEA to make 'special inspections' of other areas this facility has been invoked only once, in 1993 in North Korea, which refused to cooperate.

Additional Protocol (AP)

The AP changes the IAEA's safeguards system from the accountancy based CSA to a more qualitative approach "aimed at gathering a com-



prehensive picture of a State's nuclear and nuclear-related activities", including nuclear-related imports and exports. States have to provide much more detailed information and the number and type of facilities the IAEA can inspect and monitor is considerably increased. Short notice inspection of all declared and, if necessary, undeclared facilities, is guaranteed. The IAEA can use environmental sampling during inspection and makes much greater use of open source and intelligence related information.

The AP thus allows the IAEA to look for clandestine nuclear facilities by giving it the authority to visit any facility – declared or not – to “investigate questions about, or inconsistencies in a State's nuclear declaration”.

Weaknesses of the Safeguards Regime

- Implementation has tended to be bureaucratic, cautious and focused on formal rules and guidelines specifically designed not to be too intrusive or disruptive.

- There are limits on the number and frequency of inspections, which can only take place at agreed key points in declared facilities. States can reject inspectors, delay their designation and entry visas and insist that they are accompanied.

- The concentration on material audit has inevitably meant that most inspections occur in states with large nuclear infrastructures. Over 70 per cent of IAEA safeguards effort has taken place in Canada, Germany and Japan, which are arguably of less proliferation concern.

- Safeguards are meant to detect the diversion of a ‘significant quantity’ (SQ) of nuclear material which is defined as 8kg of plutonium and 25kg of highly enriched uranium, based on advice from the 1960 -70s. On today's standards these figures are far too high and a state could manufacture nuclear weapons with much less material.

- Detection of possible diversion is also meant to be timely, but in practice the Agency rarely meets its timeliness criteria, i.e. one month for unirradiated plutonium and highly enriched uranium and three months for irradiated direct-use material.

- The use of material accountancy is particularly problematic in facilities handling bulk quantities of nuclear materials, such as enrichment, reprocessing and fuel fabrication plants. Losses of nuclear material inherent in these processes and measurement uncertainties mean that even with the best available and foreseeable safeguards technology it is not possible to get the accuracy necessary to ensure that diversion would be detected. Reprocessing plants, for example, typically handle tonnes of plutonium per year, yet just 3–4kg of this material is needed to make a nuclear weapon.

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States are allowed to accumulate weapon–usable material and develop civil nuclear technologies and infrastructures that can be used for nuclear weapons purposes. They can then withdraw from the NPT at 90 days notice whilst retaining the facilities and materials acquired under it. The Nuclear Weapon States (NWS) are not obliged to accept safeguards, although they voluntarily place some of their facilities and nuclear material under them.

The IAEA has no power to compel a state to take or refrain from any action and there are no explicit enforcement mechanisms within the NPT. Universal and sustained application of the AP and integrated safeguards would address many of these problem areas. Even without a new agreement to limit the processing of weapon-usable material in civil nuclear programmes, the safeguards regime can provide credible assurances of the absence of undeclared materials and activities. Such guarantees would be relative and can never be absolute, especially where a nation deliberately sets out to deceive the Agency.

However, there is no doubt that the safeguards regime enhances non-proliferation objectives and international security. But the authority of the IAEA needs to be enlarged and backed by the enforcement responsibilities of the United Nations Security Council (UNSC) in verifying compliance with the NPT.

Recommendations

- **State Parties that have not yet done so need to sign and implement CSAs and conclude and bring into force APs as a matter of urgency.**
- **It should be the norm that any country seeking nuclear technology for peaceful purposes must fully implement CSAs and conclude an AP.**
- **The NWS need to increase the scope of their voluntary safeguards offers and allow greater IAEA access to their nuclear facilities and materials.**
- **Member States should agree a substantial further increase in the IAEA's regular budget, particularly for safeguards work.**

British American Security Information Council (BASIC)

The Grayston Centre, 28 Charles Square, London N1 6HT
tel: +44 (0)20 7324 4680
110 Maryland Ave., N.E., Suite 205, Washington DC 20002
tel: +1 202 546 8055
web: www.basicint.org

Oxford Research Group (ORG)

51 Plantation Road, Oxford, OX2 6JE, UK
tel: +44 (0)1865 242819
web: www.oxfordresearchgroup.org.uk