International Safeguards in Nuclear Weapons States: Status and Look into the future

ESARDA/INMM

Caroline Jorant SDRI consulting

Aix-en-Provence October 19, 2011
Introduction

NWS Status and commitments (Slides 5 to 7)

International safeguards implementation (Slides 8 and 9)

Evolution of safeguards in NWS in the 21st century (Slides 10 to 12)

Conclusion
**Introduction**

- Non proliferation assurances are a vital need for expansion of nuclear trade and industry

- Cornerstone of the non proliferation regime is the NPT, together with the international safeguards system

- NPT discriminates between the 5 NWS and NNWS but what about the implementation of international safeguards in NWS today?

- The non proliferation regime founded more than 50 years ago, has been constantly evolving partly in reaction to threats or crises, including with the establishment of NSG and the negotiation of Additional Protocols

- More and more, NPT review conferences are seen as opportunities to renew criticisms of the NPT « bargain »

- Beyond the underlying « right » to possess nuclear weapons and the corresponding pledge to work towards disarmament, which is not going to be discussed in this paper, the focus will go to the non proliferation assurances relative to nuclear civil activities and industry in NWS

- This presentation intends to show that from rights to reality, from NPT to the global regime, nuclear industry in NWS is largely under international safeguards although the situation is diverse

- This paper shall also consider ways to increase, in a focused way, the implementation of international safeguards in NWS while making the best use of safeguards resources on a global standpoint
The NWS Status and international safeguards

- No safeguards obligations from
  - NPT
  - NSG, or
  - IAEA Statutes (but provide for the possibility to apply safeguards at the request of a member State)

Voluntary Offer Agreements
- Usually preceded the accession to NPT
- VOAs were signed between mid 70’s (UK) and late 80’s (China)
- Same basic principles and structure (INFCIRC 153)
- Euratom as part of two VOAs

Additional protocols
- All five NWS have concluded specific APs
- Additional information and access are linked to the cooperation with NNWS
Different bilateral commitments of NWS on nuclear material, resulting from:

- Bilateral commitments on nuclear material and facilities accepted from supplier countries (Australia, Canada, or US)

- Bilateral commitments accepted from customer countries on material transferred for further process in NWS (reprocessing for Japan, Switzerland)

Specific commitments of NWS as importers of nuclear technologies

- Russia/China arrangement for the Shanxi enrichment plant

- The AREVA George Besse 2 plant

- The next URENCO or AREVA ETC plant in the US
NWS: different commitments

- Multilateral commitments
  - The Euratom Treaty and its safeguards obligations
  - The Euratom Treaty and international cooperation agreements

- Multilayer obligations and complex situations
  - Australian mined Uranium, enriched in France, fabricated in US, used in a Japanese power plant and sent to France to be reprocessed will be subject while in France for reprocessing, to Australia/France and Euratom/Australia agreements, as well as to US/Euratom agreement, and to France/Japan and Euratom/Japan agreements.
Safeguards implementation: a contrasted situation

Voluntary Offer Agreements’ special features compared with comprehensive safeguards agreements
- Apply to materials in a list of « eligible facilities » offered to be safeguarded
- List of facilities may be modified at NWS’s will; no perpetuity clause
- Facilities have to be « designated » by IAEA for regular inspections; IAEA is not bound to select a specific, nor any facility at all
- Transmission of accountancy reports on material subject to safeguards

Some differences among VOA’s
- France and UK transfer global information on material subject to IAEA safeguards; in addition, Euratom transfers very detailed accountancy reports relative to some facilities (15 in France)
- US and Russia’s VOA’s specify same procedure to be followed for same type of facilities in NNWS
**Safeguards implementation: a contrasted situation**

**Practical implementation**
- Same principles, tools and methods as in NNWS (accountancy reports and verification, design information verification, sampling and analysis, confinement and surveillance devices and equipment)

- Transmission of accountancy reports covers all eligible facilities in the case of France and UK, while it only relates to material in facilities designated for IAEA safeguards application in the other States

**Facilities currently selected by IAEA**
- China: a power plant (Qin Shan), a research reactor (Nankou HTR) and an enrichment plant (Shanxi)
- UK: enrichment plant (Capenhurst) and Plutonium storage facilities (Thorp, Sellafield)
- US: plutonium storage offered as excess weapons material facilities (Savannah River, Hanford, Oak Ridge) and HEU downblending facility (BWXT, Lynchburg)
- France: used fuel pools (UP2 and UP3 at La Hague), the Uranium enrichment facility Georges Besse 2 and although not mentioned on the IAEA website, MELOX plant subject to inspections in relation with exports to NNWS

- Russia: no facility under safeguards until the Angarsk “multinational “LEU storage was selected in 2010.
Safeguards on civil sensitive facilities (enrichment and reprocessing)

- The concept
  - If an enrichment or reprocessing facility in a NWS serves customers in a NNWS it would be legitimate to have it placed under IAEA safeguards

- Why?
  - To support the MNA concept, to alleviate the criticisms against the NPT

- How?
  - Commitment of NWS to maintain these facilities in perpetuity on the « Eligible » list. This should not require to re-negotiate the VOA’s but just to amend them, or add a new and very short protocol that all NWS would sign and ratify
  - IAEA should have no choice but to select or designate those facilities for regular inspections, in perpetuity. Need a decision by Board of Governors?
  - The expenses for such a commitment by IAEA should be borne by the international community, and the regular IAEA budget should be increased consequently
A State level approach applied to safeguards in the NWS

The concept

- Differentiation is not discrimination: to take full account of the situation of NWS that are « legitimate » to possess weapon grade material uncontrolled, and include the “non-attractiveness” assessment of a diversion scenario with small quantities, and « poor quality » material in relation with a vertical proliferation
- Apply a NWS State level approach designed to check that the facilities are not used to contribute to the weapons programs (only LEU production, only reactor grade fuel reprocessing)
- This would not exclude the need for transmitting full accountancy reports to IAEA for the facilities concerned

Why?

- In relation with the above concept, give a credible assurance of non use of civil facilities for a vertical proliferation scheme
- Decrease the burden for the community with a pragmatic approach
- Pave the way for a verifiable cut off Treaty
- Create a level playing field for operators of such facilities sited in NWS

How?

- Review and adapt the diversion scenario and the safeguards schemes in terms of scope, frequency, using the same tools and general procedures as in NNWS
Evolution of safeguards in NWS

Taking advantage of existing safeguards; better use the Euratom mandatory safeguards system

The concept

• IAEA « Independent conclusions » (versus independent verification) could be drawn on the basis of quality control and certain monitoring of Euratom safeguards, but keeping all legal possibilities for IAEA direct inspections

Why?

• In relation with the above mentioned concepts this would be part of a specific State level approach
• Reduce IAEA effort (saving budget and human resources) and enhance the overall performances (namely UK and France’s enrichment and reprocessing facilities but also all other facilities)

How?

• Euratom would agree to perform its safeguards under the « supervision » of IAEA and agree on the ways and means to perform and transfer all data to IAEA
• Euratom could operate under the “scrutiny” of IAEA and accept “unannounced” co inspections, accept inspections or verification of their performance in Luxemburg,
• IAEA and Euratom could exchange inspectors, IAEA inspectors could be assigned directly at the Luxembourg safeguards office.
Conclusion

Beyond their status, Nuclear Weapons States have already accepted to take not only peaceful uses but also safeguards commitments on their nuclear civil activities.

However, the situation is contrasted with regards to the implementation of safeguards in particular taking into account the implementation of Euratom safeguards in France and UK.

Together with the evolution of IAEA conceptual framework, a risk-oriented and innovative consideration of the future safeguards in the weapons States would be appropriate. This is in view of the 2015 NPT review conference, US/Russia political postures and discussions on disarmament, FMCT « revival », MNA proposals.

A pragmatic but comprehensive approach to safeguarding commercial sensitive facilities in NWS should and can be devised for the benefit of the international community without putting a disproportionate effort in relation with the risk of vertical proliferation.
Conclusion

Without waiting for the success of a Cut Off Treaty (FMCT) negotiation, some practical proposals can be crafted but this calls for a strong will and sustained efforts of NWS themselves, but also of Euratom, and IAEA; who should take the initiative? Could ESARDA/INMM contribute?

Having in mind the perhaps delayed but expected expansion of nuclear energy worldwide, such initiative would support the efforts to promote a new global fuel cycle arrangement in the benefit of non-proliferation.

I hope these (personnal) ideas will be disseminated overtime and contribute to the enhancement of the international safeguards and non-proliferation regime, contributing to the acceptance of nuclear energy.