IAEA INSPECTIONS AND SAFEGAURDS

A presentation by
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AN IAEA PRIMARY GOAL IS TO PROMOTE NUCLEAR ENERGY

IAEA Statute

ARTICLE II: Objectives

"The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world."

IAEA INSPECTIONS MUST NOT HAMPER COMMERCIAL NUCLEAR DEVELOPMENT

INFCIRC 153 Section 4 ***Safeguards should*** "***avoid hampering*** *the economic and technological development of the State*", "*undue interference in* ***the State's peaceful nuclear activities****, and in particular in the operation of facilities*."

Section 5 "*the Agency shall take every precaution to protect commercial and industrial secrets*"… "***The Agency shall not publish or communicate*** *to any State, organization or person* ***any information obtained by it*** *in connection with the implementation of the Agreement*"

Section 9 "*The visits and activities of* ***Agency inspectors shall*** *be so arranged as to reduce to a minimum the possible inconvenience and disturbance to the State and to the peaceful nuclear activities inspected, as well as to* ***ensure protection of industrial secrets****…"*

CONT.

INFCIRC 66

Section 13 *In implementing safeguards, the* ***Agency shall take every precaution to protect commercial and industrial secrets****.*

Section 47 ***The number, duration and intensity of inspections actually carried out shall be kept to the minimum*** *consistent with the effective implementation of safeguards, and* ***if the Agency considers that the authorized inspections are not all required, fewer shall be carried out****.*

Section 52 ***Such testing*** *may include the observation by inspectors of commissioning or routine test by the staff of the facility, but* ***shall not hamper or delay the construction, commissioning or normal operation*** *of the facility.*

IAEA Glossary 3.17 ***False alarm rate should be set at 5%***

INSPECTORS TO BE APPROVED BY THE INSPECTED

INFCIRC 153 Section 85 "(a) *The Director General shall inform the State in writing… of each Agency official he proposes... as an inspector…*

(b) ***The State shall inform the Director General within 30 days of the receipt of such a proposal whether it accepts the proposal;***

(d) …the designation procedures shall be completed if possible within 30 days after the entry into force of the Agreement. If such designation appears impossible within this time limit, inspectors for such purposes shall be designated on a temporary basis."

Section 89 "*the State shall have the right to have inspectors accompanied during their inspections by representatives of the State, provided that inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions."*

INSPECTIONS ARE HARDLY A SURPRISE

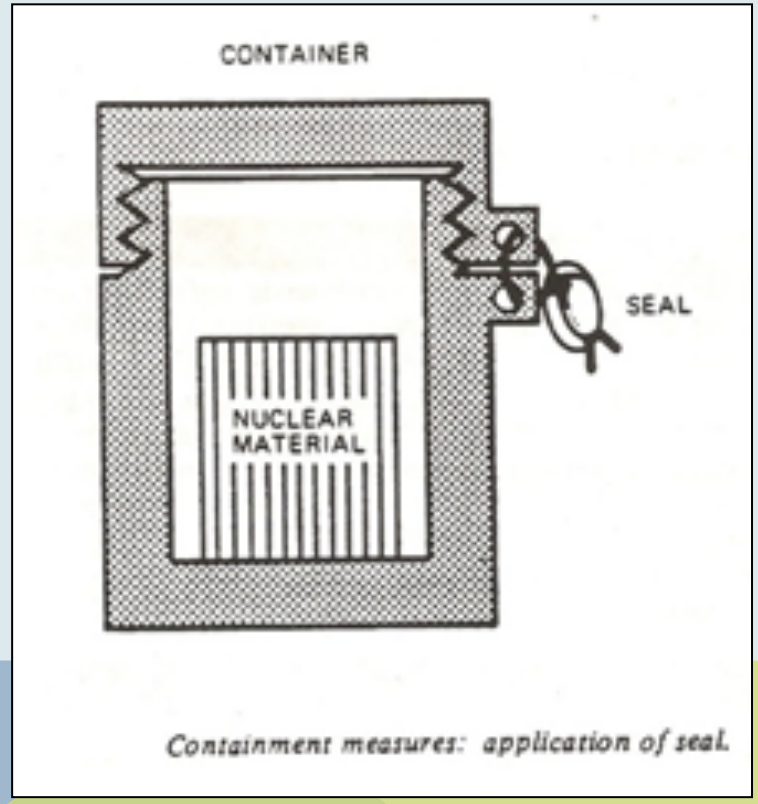
INFCIRC 153 Section 83 *"**the Agency shall give advance notice** to the State before arrival of inspectors at facilities or material balance areas outside facilities, as follows:*

*(a) **For ad hoc inspections… at least 24 hours**, for those pursuant to sub-paragraphs 71(a) and (b), as well as the activities provided for in paragraph 48, at least one week ;*

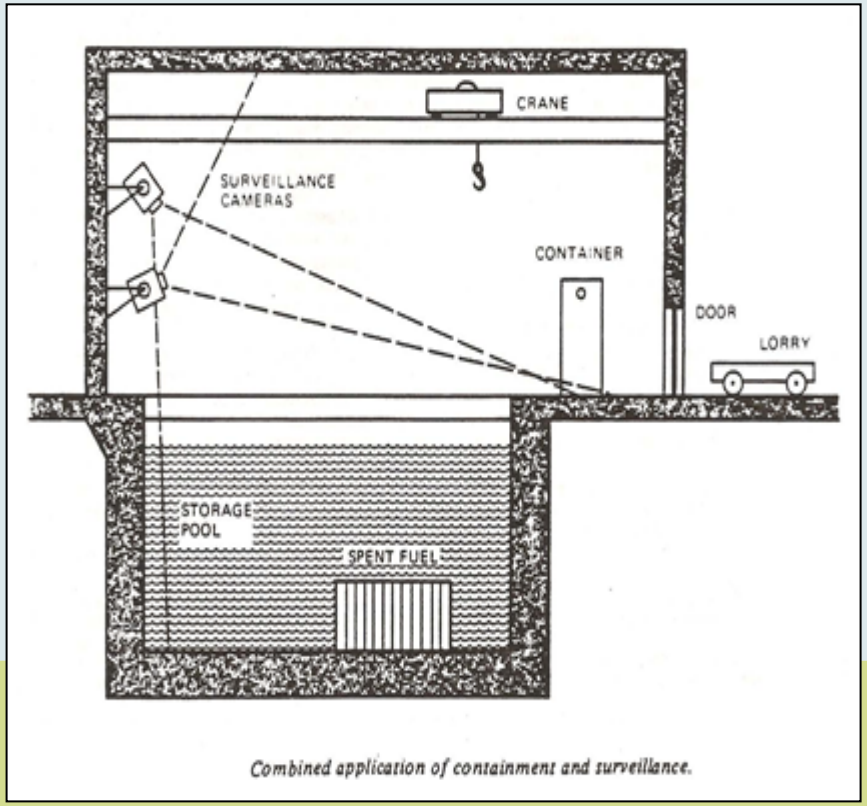
*(b) **For special inspections… as promptly as possible.***

*(c) **For routine inspections… at least 24 hours… and one week in all other cases.***

BASIC IAEA SAFEGUARDS METHODS



Example of IAEA Containment

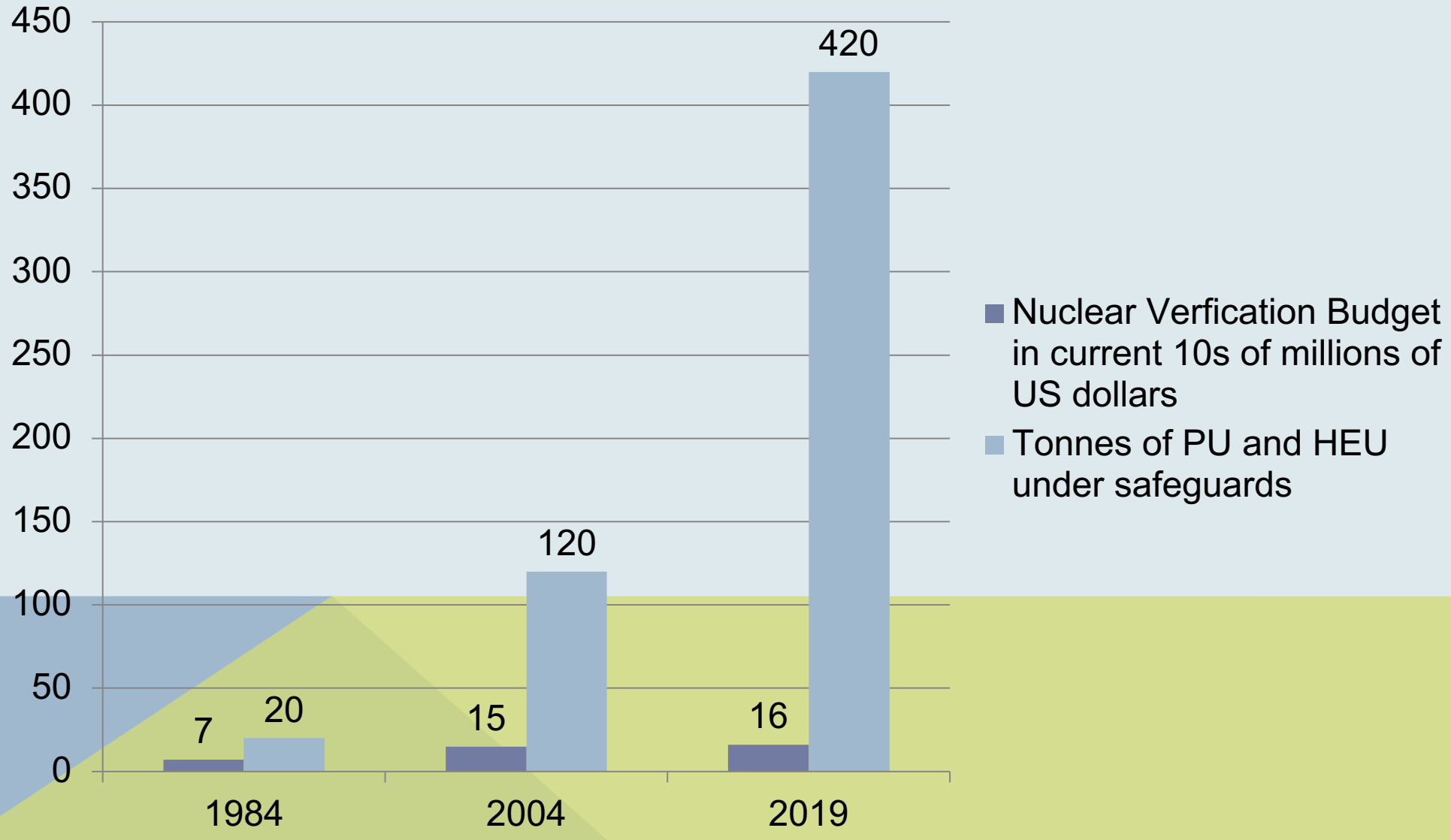


Example of IAEA Surveillance

SOME WORRISOME TRENDS

The amount of separated plutonium and highly enriched uranium (nuclear fuels that can be fashioned into bombs in a matter of hours or days) that the IAEA inspects, for example, has grown more than six-fold between 1984 and 2004 while the agency's safeguards budget has barely doubled. Meanwhile, the number of nuclear fuel fabrication and fuel making plants (facilities that are by far the easiest to divert nuclear material from) has grown in the last 2 decades from a mere handful to 65. Then, there is the number of other plants containing special nuclear material that the IAEA must safeguard: It has roughly tripled to more than 900 facilities today.

FALLING BEHIND: IAEA FUNDING VS. FISSILE



ADDITIONAL PROTOCOL

First years increase staff requirements, (e.g., Japan, Canada 5 years), ultimately reduces costs 5%

Reduces routine inspections (eg, LWR inspections go from 4 to 1/year)

OVERLY GENEROUS IAEA "SIGNIFICANT QUANTITIES"

Weapon-Grade Plutonium (kg)				Highly-Enriched Uranium (kg)		
Yield (kt)	Technical Capability Low	Medium	High	Technical Capability Low	Medium	High
1	3	1.5	1	8	4	2.5
5	4	2.5	1.5	11	6	3.5
10	5	3	2	13	7	4
20	6	3.5	3	16	9	5

Values rounded to the nearest 0.5 kilogram.

Figure 2. NRDC Estimate of the Approximate Fissile Material Requirements for Pure Fission Nuclear Weapons.

AN ASSESSMENT OF IAEA SAFEGUARDS GUIDELINES

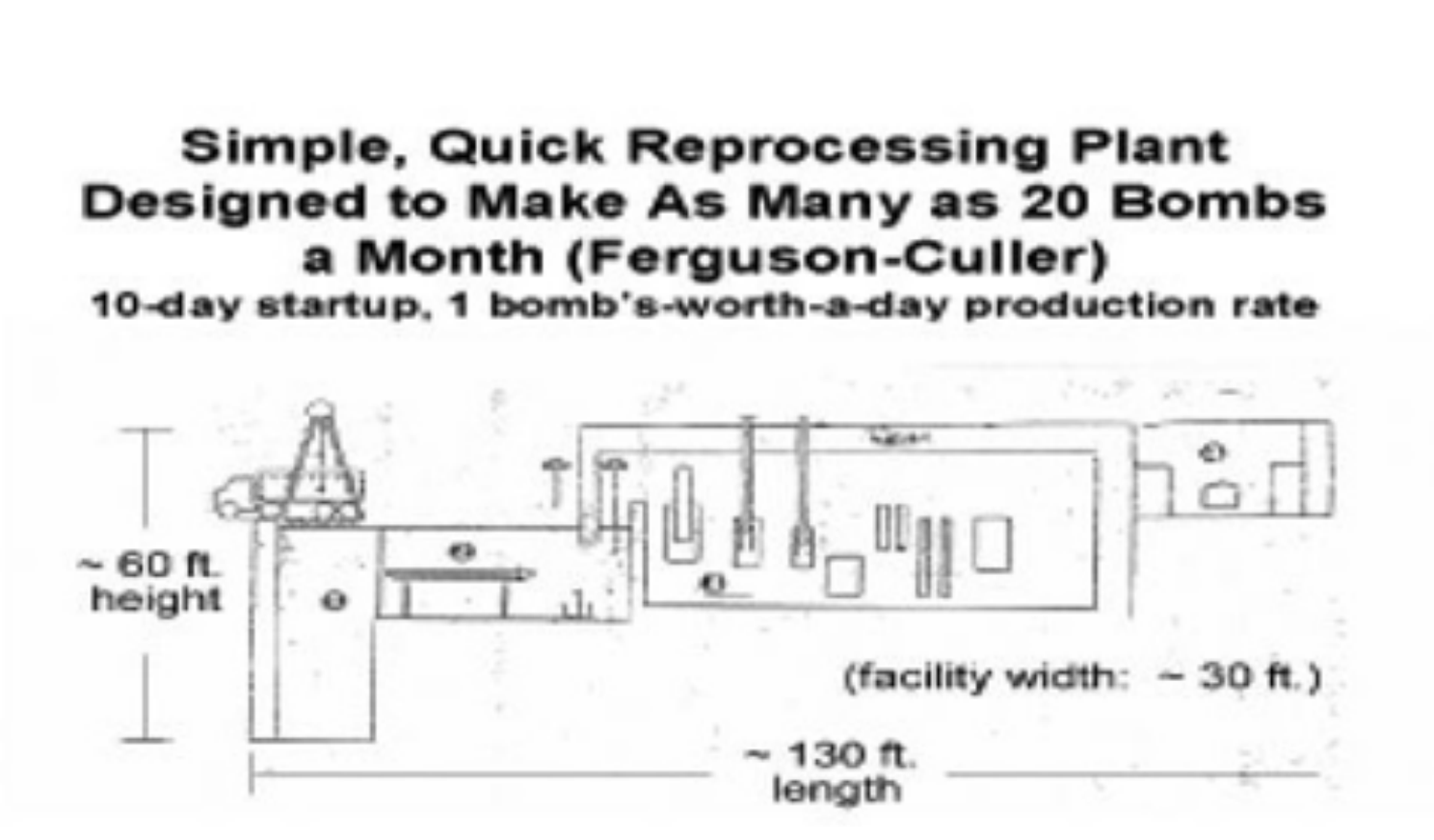
MATERIAL	IAEA Conversion Time	Cochran/ NPEC Commissioned Estimate	Official IAEA Timeliness Detection Goal	NPEC Conclusions and Recommended Timeliness Detection Goals
Pu, HEU, ^{233}U in metal form	Order of days (7-10)	Order of days (7-10)	1 month	Timely detection is not possible
In fresh MOX	Order of weeks (1-3)	Order of days (7-10)	1 month	Timely detection is not possible
In irradiated spent fuel	Order of months (1-3)	Order of months (1-3), if reprocessing - enrichment plant on tap (7-10 days)	3 months	For countries with covert or declared nuclear fuel making plants, timely detection is not possible
Low enriched uranium	Order of months (3-12)	Order of weeks to months	1 year	For countries with covert or declared enrichment plants, timely detection is not possible

MAY 2005 INTERNAL IAEA AUDIT

Most of the currently deployed remote sensors do not allow the IAEA even to know day to day if these systems are on. This is a serious shortcoming. *Over the last 6 years, the agency has learned of camera "blackouts" that lasted for "more than 30 hours" on 12 separate occasions.* What is worse, it only learned of these blackouts after inspectors went to the sites and downloaded the camera recordings as they are required to do every 90 days.16

OCTOBER 2012, IRAN UNLOADS ENTIRE CORE WITH 25 BOMBS WORTH OF PU

FERGUSON CULLER DESIGN: SMALL AND CHEAP



RECOMMENDATIONS

- Distinguish between what can be safeguarded and what can only be monitored
- Update sq, conversion times and timeliness section goals
- Raise tolerated false alarm rates beyond 5%
- Call for physical secuirity standards on plants and stockpiles that can only be monitored to be similar to those for military facilities.
- Promote near real-time surveillance of safeguardable activities and materials
- Consider user fees vs UN formula for funding IAEA; price most difficult monitoring and safeguarding tasks accordingly
- Consider safeguarding tritium, li6 production and stockpiles

ADDITIONAL SLIDES

SCHIZOPHRENIC ON REPROCESSING

IAEA Statute

Section 5

To approve the means to be used for the chemical processing of irradiated materials solely to ensure that this chemical processing will not lend itself to diversion of materials for military purposes and will comply with applicable health and safety standards; to require that special fissionable materials recovered or produced as a by-product be used for peaceful purposes under continuing Agency safeguards for research or in reactors, existing or under construction, specified by the member or members concerned; and to require deposit with the Agency of any excess of any special fissionable materials recovered or produced as a by-product over what is needed for the above- stated uses in order to prevent stockpiling of these materials, provided that thereafter at the request of the member or members concerned special fissionable materials so deposited with the Agency shall be returned promptly to the member or members concerned for use under the same provisions as stated above.

CONT.

INFCIRC 66

Section 25

Safeguards with respect to nuclear material in irradiated fuel which is transferred for the purpose of reprocessing may also be suspended if the State or States concerned have, with the agreement of the Agency, placed under safeguards substitute nuclear material in accordance with paragraph 26(d) for the period of suspension. In addition, safeguards with respect to plutonium contained in irradiated fuel which is transferred for the purpose of reprocessing may be suspended for a period not to exceed six months if the State or States concerned have, with the agreement of the Agency, placed under safeguards a quantity of uranium whose enrichment in the isotope uranium-235 is not less than 0.9 (90%) and the uranium-235 content of which is equal in weight to such plutonium. Upon expiration of the said six months or the completion of reprocessing, whichever is earlier, safeguards shall, with the agreement of the Agency, be applied to such plutonium and shall cease to apply to the uranium substituted there for.

SAFEGUARDS EXEMPTIONS FOR NONPRESCRIBED MILITARY ACTIVITIES

INFCIR153

Section 14. a and b

The Agency can exempt nuclear materials from being safeguarded when a State declares it wishes to use *"nuclear material in a non-proscribed military activity"* that otherwise would have to remain under IAEA safeguards… "*The Agency and the State shall make an arrangement so that, only while the nuclear material is in such an activity, the safeguards provided for in the Agreement will not be applied."*