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SAFEGUARDS ON NUCLEAR EXPORTS

Five-Power Discussions, London, February/March 1959

Summary Conclusions

Representatives of Australia, Canada, the Union of South Africa, the United Kingdom and the United States met in London from 26th February to 3rd March, 1959 for informal discussions on safeguards against the diversion to military use of nuclear materials and equipment exported for peaceful purposes. They considered the safeguards to be applied both to bilateral transactions and to projects of the International Atomic Energy Agency, in the latter case with an eye to the proposed safeguards scheme which the Agency Secretariat is expected to submit to the Board of Governors in June, 1959.

Their conclusions were reached without commitment and will be submitted to their Governments.

The conclusions are as follows:

Uniform standards and a common front

1. Safeguards of a common standard must be applied by all supplying countries and organisations at least of the Western world if reasonable effectiveness is to be achieved and if countries who apply safeguards are not to be at a political and commercial disadvantage beside those who do not. Should it prove impossible to form a common front among Western suppliers, each of the five powers reserves the right to reconsider whether to apply safeguards to its own exports. Moreover, it would be highly desirable for Russia also to apply comparable safeguards if she becomes a significant exporter of nuclear goods to the free world; for the West to insist on safeguards when Russia did not would give the latter a considerable advantage in the cold war.

2. As the next step towards the establishment of a common front among Western Suppliers, an approach should be made without delay to France, preliminary to discussions with other Euratom countries and the Euratom Commission; and later (depending on what individual materials and plant are to "trigger" safeguards when exported) possibly other suppliers should also be approached. The aim of these approaches is an agreement by the five powers, France, Germany, Belgium and any other supplying countries to export "trigger" items only under an appropriate agreement making provision for safeguards and also to work together for the adoption of a system in terms of which the safeguards applied by the I.A.E.A., other international organisations and individual suppliers are mutually compatible.

International Administration

3. In the interest alike of uniform standards, economy and (most probably) political acceptability, administration of safeguards, whether they spring from a bilateral agreement or from the Statute of the I.A.E.A. or another international body, should wherever possible be undertaken by an international authority. Except where

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the existence of regional organisations already rules this out, this authority should be the I.A.E.A. which should in any event set the standard for other safeguards systems.

4. Exports to the Euratom countries can only be subjected to the Euratom security control and some other Western European countries may prefer to have safeguards administered by the European Nuclear Energy Agency rather than the I.A.E.A. The member countries of these organisations and the I.A.E.A. should be persuaded to work for compatible standards. Moreover, for presentational reasons the announcement of practical measures under these schemes should not precede agreement by the I.A.E.A. on its own measures. It would be desirable for safeguards on exports by Euratom countries outside the Euratom area to be administered by the I.A.E.A. (or the E.N.E.A. in appropriate cases).

5. Should other regional atomic energy organisations be set up, supplier countries should be ready to entrust the administration of safeguards in bilateral agreements to them only if they are satisfied their standards are compatible with the I.A.E.A.'s.

6. Future bilateral agreements could contain, as an alternative to the current clauses in most U.S., Canadian and U.K. bilaterals giving the supplying country the right to impose safeguards, a provision for the safeguards arrangements of an appropriate international authority to be applied. A model article is annexed which could be adapted to particular cases.

7. Some recipient countries may prefer bilateral administration of safeguards, particularly where these are already in force. In such cases the standards of safeguards applied should be compatible with the safeguards which would be applied by the appropriate international authority.

Underlying principles of safeguards measures

8. Safeguards should be presented not as an imposition by the supplier but as a joint duty of supplier and recipient flowing from the fundamental responsibility of Governments to ensure that fissile material is not misused. Responsibility rests primarily with the recipient Government.

9. The aim is not to achieve a foolproof safeguards system, but rather to buy time during which, it is to be hoped, agreement can be reached between East and West involving perhaps control over all means of fissile material production.

10. The approach to safeguards should be evolutionary; methods of application to facilities of different kinds should be worked out, starting with the simpler facilities, only as application to a particular type of facility becomes a practical necessity.

11. The severity of application should be adapted to the size and nature of the assistance supplied and of the facility to be controlled. Facilities can be divided into five categories:

(1) Research reactors

(2) Materials testing and small power reactors

(3) Fabrication plant for natural uranium fuel elements

(4) Large power reactors

(5) Enriched fuel element fabrication and chemical re-processing plant.

It is to be clearly understood that the application of safeguards to facilities in categories (3) and (5) will arise only where they fabricate or process material which is subject to safeguards. The export of plant for such facilities in themselves would not "trigger" safeguards.

12. Only facilities in categories (1) and (2) will require application of safeguards in the immediate future; in the other categories no facilities which will be subject to safeguards will be in operation for the next few years. Consideration of detailed measures of application (i.e. at the I.A.E.A. discussions in June) should therefore for the present be confined to categories (1) and (2), subject however to the clear understanding that farther-reaching measures for larger facilities will have to be worked out in due course. Moreover, in entering into bilateral agreements covering long-term assistance, involving possibly the need to apply safeguards in due course to facilities in categories (3), (4) and (5), supplying countries must ensure that the safeguards clauses include (as do both the alternative formulae referred to in para.6 above) provisions enabling the appropriate measures to be applied when the time comes.

"Trigger items"

13. Supplying countries should permit the export of the following items (save in minimal quantities) only under a bilateral agreement or project agreement of an appropriate international authority incorporating safeguards provisions:

(a) Natural uranium, whether as ore, concentrates, compounds, metal or fuel elements.

Definition:

"Minerals, raw and treated (including residues and tailings) which contain uranium exceeding 0.05% by weight, including pitchblende.

Natural uranium, unwrought or wrought, including alloys and compounds of natural uranium, having a uranium content exceeding 0.05%, excepting medicinals."

(b) Fissile material in all forms.

Definition:

"Uranium 233, alloys containing uranium 233 and compounds of uranium 233.

Uranium enriched in the isotope 235, alloys containing uranium enriched in the isotope 235, and compounds of uranium enriched in the isotope 235.

Irradiated uranium containing plutonium.

Plutonium, alloys containing plutonium and compounds containing plutonium.

Irradiated thorium containing Uranium 233."

(c) Reactors

Definition:

"Any device using nuclear fission for the production of heat, power and radiations."

It is not practicable to identify and define components and sub-assemblies of reactors. In practice reactors will not be exported as a whole, but in parts. It will not, however, be practical or desirable to attempt to attach safeguards for the export of individual components of reactors, most, if not all, of which are standard items, when they are not exported as part of the sale of a reactor. Nevertheless, Governments should in practice be able to ensure that manufacturers do not evade the attachment of safeguards by exporting reactors in the shape of undeclared standard components.

(d) Isotopic enrichment plant

Definition:

"Equipment specially designed for the separation of isotopes of uranium."

14. Heavy water has been proposed as a "trigger item". It is identifiable, used only for nuclear purposes and enables the construction of a natural uranium reactor with a significant plutonium output using a smaller fuel charge than with any other moderator. On the other hand, it is not possible to apply controls to heavy water production plant and it is arguable that the I.A.E.A. Statute does not envisage the application of safeguards to heavy water. The South African representative reserves his position pending a clarification of the attitude in regard to safeguards of other existing or prospective producers (Norway, India, Egypt) and further consideration of South Africa's own plans for production of heavy water.

15. The Canadian representative reserves his position, pending further consideration, regarding attachment of safeguards to the sale of a reactor design. Such a sale to an industrially advanced country possessing its own uranium would enable the latter to avoid safeguards. The U.K. and U.S. representatives emphasise the impracticability of controlling export of information.

16. Natural uranium and fissile material re-exported after, say, fabrication into fuel elements or chemical reprocessing should, regardless of origin or ownership, attract safeguards. In other words, the services of fabricating fuel elements and of chemical reprocessing "trigger" safeguards even if the material belongs to the country for which the service is rendered.

17. Supplying countries must take statutory or other appropriate measures to ensure that "trigger items" cannot be exported without governmental permission.

18. The list of "trigger items" should be periodically reviewed in the light of technical developments.

Exemption of minimum quantities

19. Export of small quantities of natural uranium and fissile material for experimental purposes should be permissible bilaterally without an agreement providing for safeguards. The I.A.E.A. is bound by its Statute, even in the case of minimal quantities, to consider whether and to what extent safeguards should be applied.

20. For natural uranium Canada and the United States favour the following system:

(a) Each supplying country to sell each recipient country not more than a cumulative total (over the years) of 1¼ short tons of contained uranium in any form. This figure is based on the assumption that no recipient country should receive more than a cumulative total of 10 short tons and that eight potential supplier countries are in the market.

(b) Individual sales to be limited to 250 lbs.

(c) Recipient to give an undertaking that material will be used for peaceful research or sampling and not for reactor fuel.

21. An alternative might be:

(a) For each recipient country individual supplying countries to be free to negotiate for a single initial sale of up to 5 short tons of contained uranium in any form, subject to notification to some agreed central register before signature of contract. After the initial sale other suppliers similarly to be free to negotiate sales, provided that the cumulative total (over the years) sold to each recipient country does not exceed 7 short tons (i.e. the minimum charge of a natural uranium reactor) from all sources, including the initial sale. The central register to keep all suppliers notified of sales so as to ensure the cumulative total is not exceeded.

(b) No limit on individual sales within the totals in the preceding sub-paragraph.

(c) Recipient to give an undertaking that material will be used for peaceful research or sampling and not for reactor fuel.

22. Both procedures might be put forward for discussion with Continental suppliers.

23. In the case of enriched material, a cumulative total (over the years) of 100 gms. of contained fissile material might be sold by each supplier country to each recipient country.

Outline of I.A.E.A. safeguards procedures

24. The I.A.E.A. (or other international authority) should adopt minima below which materials (and small reactors) should be subject only to nominal safeguards, whether these stem from a bilateral agreement or from an I.A.E.A. (or other international authority's) project agreement. Nominal safeguards would be sufficient for a research reactor of not more than 50-100 kw. for which the total fuel supplied is contained in the reactor core.

25. For the purposes of the present phase of working out measures of application only for research reactors (above the minimal size), materials testing and small power reactors (para.11 above), reactors may be sub-divided according to power rating as a guide to the frequency of reports and inspection visits.

26. Accounts and reports on reactor operation should be based on the U.S.A.E.C.'s Blue Book ("Materials Accountability - Information for Foreign Nations"). The frequency of their submission, according to the reactor rating, would be:

Below 10 MW(T)	Annually
10 - 40 MW(T)	Six-monthly
40 - 100 MW(T)	Quarterly

27. Initially a reactor should be classified by its nominal power rating, but as some reactors may substantially exceed this rating in actual operation, provision should be made for periodical review and possible re-classification.

28. Countries subject to safeguards will expect to know where they stand in regard to the number of inspection visits, but the inspecting authority must retain both an element of flexibility and surprise and the power to make extra visits in exceptional circumstances. It will normally be desirable, where this is technical relevant, for an inspector to be present when fuel changes take place. The following formula might cover inspection rights:

"Under normal circumstances, taking one year with another, the number of visits shall be of the order of per annum. Visits will be arranged as far as possible to coincide with the changing of fuel elements".

The frequency of visits would vary with reactor size and the Secretariat will doubtlessmake their own proposals. The minimum frequency acceptable to the five powers would (for their own information at present) be of the following order:

Below 10 MW(T)	1 visit per annum
10 - 40 MW(T)	3 visits per annum
40 - 100 MW(T)	6 visits per annum.

In no circumstances would resident inspection be necessary for reactors below 100 MW(T).

29. It is important that inspectors should, to the extent practicable, have qualifications which make them welcome as providers of technical advice and other assistance unconnected with safeguards and that visits should as far as possible also cover other ground. They might for example be combined with those arising from the I.A.E.A.'s obligations regarding health and safety.

30. The Secretariat's general idea on limited "pursuit" of successive generations of derived material appears acceptable, but discussion on details of "pursuit" should not be invited in

June. It could be said that the five powers favour no more than limited pursuit of significant quantities of fissile material.

Cost

31. It would be assumed that recipient countries would bear the cost of accounts and reports, most of which they must keep anyway for their own purposes. The I.A.E.A. or other supplier will probably have to pay for scrutiny and auditing of reports and for visits to the site.

32. Article XIV C of the Statute suggests that the Agency may not be obliged to recover from the parties the full cost of administering bilateral safeguards. The object should be to secure that the cost of scrutiny and audit is borne by the Agency itself, although supplying countries may not be able to avoid reimbursing inspection costs.

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4th March, 1959

Annex to
SG/10/Final

Draft Safeguards Article

1. The Contracting Parties recognise and accept their individual and joint responsibility to ensure that the /identified material/ equipment/* supplied under this Agreement is used solely for peaceful purposes. To that end the Contracting Parties agree to conclude an arrangement with /a competent international authority/** in terms of which the /international authority/** shall have the right, to the extent relevant to the project or projects covered by the Agreement, as decided by the /international authority/** in consultation with the Contracting Parties,

(a) to examine the design of equipment (including nuclear reactors) or facilities in which identified material is to be used or stored, with a view to ensuring that such identified material will not further any military purpose and that effective application of the safeguards provided for in this Agreement shall be feasible;

(b) to require the maintenance and production of adequate records to assist in ensuring accountability for identified material;

(c) to call for and receive progress reports;

(d) to approve the means to be used for the chemical processing of identified material after irradiation, with a view to ensuring that such processing will not lend itself to diversion of identified material to military use;

(e) to send representatives, designated by it after consultation with the Contracting Party receiving the material into the territory of the latter, which representatives shall have access at all times to all places, equipment and facilities where identified material is used, stored or located, to all data relating to such identified material, and to all persons who by reason of their occupation deal with such identified material or such data, as may be necessary to account for all identified material and to determine whether such identified material is being used for peaceful purposes only. Such representatives, provided they shall not thereby be delayed or otherwise impeded in the exercise of their functions shall be accompanied by representatives of the Contracting Party receiving the material if the latter so requests.

2. The arrangement with the /international authority/** referred to in the previous paragraph shall be concluded not later than months following delivery of any of the identified material covered by this Agreement. Should the Parties, by the end of this period, have failed to agree on the terms of the arrangement, the supplying Contracting Party shall have the right to suspend or cancel further deliveries and to require the return of all the material already delivered.

3. Should the [international authority]** at any time after the conclusion of the arrangement referred to in paragraph 1, determine that identified material supplied under this Agreement is furthering a military purpose, the supplying Contracting Party shall have the right to suspend or cancel further deliveries and to require the return of all the material already delivered.

Explanatory Notes

* In the case of agreements relating only to material the "identified material" to which control is to be applied would be defined separately elsewhere in the agreement.

In the case of agreements relating both to material and equipment or to equipment only, the equipment to which control is to be applied would similarly be defined separately elsewhere in the agreement and consequential changes would be necessary where "identified material" is referred to in paras. 1(a) to (e).

** Here would be inserted the name of the competent international authority. It is agreed that such an authority may be the I.A.E.A., Euratom, E.N.E.A. or any other analagous international organisation which the Contracting Parties both recognise as being competent to apply the safeguards provided for in this Article on a basis compatible with the standards applied by the I.A.E.A., Euratom and E.N.E.A.

The provision in paragraph 2 is intended to provide for an interim period prior to the establishment by the I.A.E.A., Euratom or E.N.E.A. of an approved safeguards system. Once such a safeguards system has been established, the Contracting Parties would conclude the arrangement with the international authority, before delivery of any material or equipment subject to control.

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