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REVIEW OF NEGOTIATING HISTORY OF  
INTERNATIONAL ATOMIC ENERGY AGENCY  
[IAEA] DOCUMENT INFCIRC/66/REV.2,  
"THE AGENCY'S SAFEGUARDS SYSTEM"

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FINAL REPORT

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Prepared for

ARMS CONTROL AND DISARMAMENT AGENCY  
Washington, D.C.

Prepared by

INTERNATIONAL ENERGY ASSOCIATES LIMITED  
Washington, D.C. 20037

July 30, 1984

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**UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY**

Washington, D.C. 20451

**PREFACE**

September 5, 1984

This report was prepared to facilitate understanding of the intent of Information Circular 66, Revision 2, of the International Atomic Energy Agency. It was prepared by International Energy Associates Limited, which is responsible for its contents, based on official documents of the IAEA and reflecting the considered judgments and understandings of active participants in the development of the INFCIRC.

The report quotes extensively from official documents of the IAEA Board of Governors and its committee which developed the INFCIRC. The distribution of such Board documents is restricted by the IAEA. Consequently, this report has been classified "CONFIDENTIAL" to comply with that restriction.

A handwritten signature in cursive script that reads "Frank S. Houck".

Frank S. Houck

Project Officer



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Review of Negotiating History of International Atomic Energy  
Agency [IAEA] Document INFCIRC/66/REV.2,  
"The Agency's Safeguards System"

SCOPE AND PURPOSE

The basic authority for the application of international safeguards by the International Atomic Energy Agency (IAEA) is the IAEA Statute. The instructions of the IAEA Board of Governors (the Board) to the IAEA Secretariat for negotiation of safeguards agreements with states not party to the Nuclear Non-Proliferation Treaty (NPT) are contained in INFCIRC/66/REV.2 (hereafter referred to as above, or as INFCIRC/66, or the Safeguards Document), "The Agency's Safeguards System (1965, as Provisionally Extended in 1966 and 1968)." The initial document and its extensions were developed in a series of intensive meetings in Vienna in 1964-1965 and again in 1966 and 1967.

The document itself is written in rather general terms, and certain elaborations and further developments are embodied in subsequent safeguards agreements based thereon. For the most part, these instruments reflect compromise formulations between more extensive and more restrictive safeguards provisions for the IAEA, which in turn reflect the position of countries which actively participated in the development of the basic safeguards document or with whom the Agency negotiated particular safeguards agreements.

Over the course of years, a number of questions of interpretation of INFCIRC/66/REV.2 have arisen. Some member states have pressed the IAEA to reduce the intensity of safeguards as applied to them, based on restrictive interpretation of their safeguards agreements which are based on INFCIRC/66/REV.2. Further, efforts by the IAEA to improve safeguards implementation have been opposed on the basis inter alia that explicit provision is not in the relevant agreement. This is particularly true of some older INFCIRC/66-type agreements which lack in explicit form some of the provisions found in recent agreements. However, even some of the latter type agreements lack in explicit form certain essential provisions that are explicit in INFCIRC/153, "The Structure and Contents of Agreements in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons", which is applicable to states that are party to the NPT. On the other hand, certain restrictions which appear in INFCIRC/153 in particular those pertaining to maximum routine safeguards effort and those restricting routine access to "strategic points" are absent from INFCIRC/66.

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The purpose of this study is to review and analyze INFCIRC/66/REV.2 and subsequent Board decisions in order to establish the approach and intent of the United States and other key countries in developing the basic document and subsequent agreements. This history is incorporated in several categories of documents:

(1) IAEA records of the negotiation which include the Official Records (ORs) of the Working Group to Review the Agency's Safeguards System (Committee 14) in which INFCIRC/66 and its later extensions were developed, together with proposals and memoranda considered by the Working Group in the course of its deliberations, as well as the deliberations of the Board of Governors on the documents prepared by the Working Group and the Agency Secretariat; (2) National records and documents relating to the negotiation of the Safeguards Document and Safeguards Agreement, including instruction and reporting cables of the United States Mission to the IAEA relevant to these Board documents and meetings; (3) written studies and recollections of INFCIRC/66/REV.2 by Secretariat and national representative personnel who were directly involved in the development of the Safeguards Document, or its implementation; and (4) official records of the Board of Governors related to Safeguards Agreements and to general safeguards issues as in GOV/1621.

The results of this review are presented in this report. While the study has been prepared with the benefit of access to restricted Agency records and in some cases classified United States materials, and the report has been written without constraint on the use and citation of such materials, the report has been prepared in a manner to facilitate development of unclassified documents for presentation outside the United States Government.

The study is divided into five parts. Part I presents some background material regarding the origins and procedural development of INFCIRC/66 including a schematic overview of its scope and structure as well as a statement of objectives sought by the United States Government and other principal participants in the review exercise which led to the adoption of the Safeguards Document. Part II identifies the key issues that were the subject of the bulk of the discussion in the Working Group that carried out the review as well as in the Board of Governors meetings that were devoted to assessing and passing judgment on the draft Safeguards Document that emerged from the Working Group discussions. Part III constitutes a paragraph by paragraph description and analysis of INFCIRC/66/REV.2. Part IV contains a description and analysis of Annexes I and II of INFCIRC/66/REV.2 which deal respectively, with reprocessing plants and conversion and fabrication plants. Part V selectively treats the evolution of Safeguards Agreements negotiated under INFCIRC/66, focusing on particular issues and provisions. It also identifies the key factors contributing to differentiation of agreements negotiated under INFCIRC/66 and INFCIRC/153.

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I. INTRODUCTION

1. Background

INFCIRC/66/REV.2 is one of two documents - the other is INFCIRC/153 - developed to facilitate the carrying out by the International Atomic Energy Agency (IAEA) of safeguards responsibilities entrusted to it by its Statute, or as a consequence of other international instruments providing for the application of Agency safeguards to nuclear activities. INFCIRC/66/REV.2 is the result of a review of an earlier Agency safeguards document, INFCIRC/26, which was adopted by the Agency's Board of Governors in January 1961 but restricted to reactors of less than 100 MWT, and INFCIRC/26/ADD.1 of February, 1964 which extended the initial safeguards system to large reactors.

Review of INFCIRC/26 was based on several considerations. The document itself called for review after two years "in light of the actual experience gained by the Agency as well as of the technological development which has taken place". [¶5] In addition, the Agency's General Conference to which the Board had submitted the provisionally approved text of INFCIRC/26 "for consideration and appropriate action in accordance with the Statute", had invited the Board to report to the Conference the results of a general review after two years experience. [Szasz, P.553] Finally at the time that it approved INFCIRC/26/ADD.1 extending safeguards principles and procedures to large reactors [GOV/DEC/35 (VII)], the Board mandated the undertaking of a general review.

It appears that for some governments at least, approval of the extension document was predicated on the expectation that such a review would be undertaken. [McKnight 54] There are several reasons for this, including the view that INFCIRC/26 was difficult to follow and complicated. More importantly, INFCIRC/26 and ADD.1 were developed by a Working Group composed of only seven Board members [United States, United Kingdom, the Soviet Union, France, India, Brazil, and Romania (later Czechoslovakia)], a situation which had led to some concern that the Group was too small to ensure that the full range of views regarding safeguards principles and procedures would be adequately taken into account. [ibid.] As a result, review of INFCIRC/26 as well as subsequent preparation of documents for the extension of INFCIRC/66 to re-processing plants [REV.1, 1966] and to conversion and fabrication facilities [REV.2, 1968] was conducted by a Working Group of the Board on which all Board members were invited to serve [approximately 18 Board members participated in the Working Group but several were not active] and to which all members of the Agency were invited to communicate their views. [Szasz 553-4]

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This was not the only procedure adopted to ensure that all of the key elements of the Agency's safeguards system received wide exposure before being adopted and brought into effect. Initial Board approval of the Safeguards Document was provisional and only became final after submission to the General Conference "for consideration and appropriate action in accordance with the Statute," a formulation which left unclear whether the Conference was being asked to take a decision or only to respond to an invitation to discuss the Document and make recommendations.

Similarly, approval of the Annexes incorporating the two extensions noted above was made final only after the General Conference had an opportunity, following notification of the provisions of the text by the Director General of IAEA, to express any views regarding their content. [Szasz 554-5]

Throughout the period under review the Working Group was chaired by Dr. Gunnar Randers, at first acting as Governor of Norway and subsequently in his personal capacity. The Working Group was not a continuing body but was reconstituted by the Board on each occasion that required it. General acceptance of this continuity of leadership and structure would seem to signify overall satisfaction in the professionalism and even-handedness with which the Working Group conducted its business, much as the evolution of General Conference votes on resolutions relating to the various safeguards instruments [43-19-2 on the Resolution taking note of the draft of INFCIRC/26; 57-4-6 on the Resolution supporting INFCIRC/26/ADD.1; and unanimous support for the draft of INFCIRC/66 as well as for REV.1 and REV.2] appears to attest to the emergence of political acceptance of basic international safeguards principles and procedures and of a readiness to deal with safeguards issues and procedures with considerable deliberation rather than polemically. These considerations of procedure in the Working Group, the Board, and the General Conference leave no doubt regarding the adequacy of opportunity for all Agency members to participate in and contribute to the deliberations, or of the legitimacy of the final products.

INFCIRC/66/REV.2 calls for periodic review of the principles and procedures contained therein [¶8] without, however, requiring it, and review of the document per se has never been undertaken. Negotiation of the Nuclear Non-Proliferation Treaty of 1968 (NPT), however, resulted in an adaptation of the Agency's Safeguards system for NPT parties, precipitated by the fact that ratification of NPT would result in a non-nuclear weapon state party to the Treaty being obliged to place under Agency safeguards its entire peaceful nuclear program. The consequence of that action was the development of a second safeguards document, INFCIRC/153, to govern principles and procedures of safeguards applied under the NPT. INFCIRC/66/REV.2, however, remains in effect for non-NPT states which are subject to Agency safeguards.

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2. Schematic Overview

INFCIRC/66 consists of a basic document and two annexes: REV.1, which extends its provisions to reprocessing plants; and REV.2, which brings conversion plants and fabrication facilities into the system. The basic document contains four parts:

- (1) General considerations, which deals with the purpose and general principles of the document and Agency Safeguards;
- (2) Circumstances requiring safeguards, which establishes the materials subject to safeguards as well as exemption, suspension, and termination provisions, including the manner of handling the transfer of safeguarded material out of the jurisdiction in which it is being safeguarded;
- (3) Safeguards procedures, both in general and with respect to reactors and to materials outside principal nuclear facilities, including records, reports, and inspections; and,
- (4) Definitions of the key terms and concepts incorporated in the document.

Part II of this report discusses in detail the key issues which arose during the course of developing INFCIRC/66/REV.2, and Parts III and IV contain, in brief form, a paragraph by paragraph description and interpretation of its contents. Here, attention is limited to identifying and discussing certain basic features of the Safeguards Document which in turn reflect some of the more persistently expressed themes of Working Group participants and members of the Board of Governors to which the draft document was submitted for review and approval; and to emphasizing aspects which enhance understanding of why certain matters developed into key issues or were subject to close scrutiny or modification in subsequently negotiated Safeguards Agreements. These are dealt with below in terms of opportunities, constraints, and extensions.

2.1 Opportunities

Broadly defined, INFCIRC/66 is an instrument designed to establish a system of controls to permit the Agency to comply with its statutory obligation to ensure that assistance or activities under its supervision or control are not used to further any military purpose.

Its emphasis on principle more than practice underscores an essential point: it is of fundamental importance to understand that INFCIRC/66 is really a "compendium of guidance to the Board on how the Agency should apply safeguards" [GOV/OR.356, ¶77, Working

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Group Chairman Randers] -- a general prescription of what will be done under most circumstances, in applying safeguards; a list of principles to govern the application of safeguards as well as the general approaches and procedures to be used.

Although it is not, and was not intended as, a detailed statement of how safeguards will in fact be conducted in each particular instance, it was clearly intended as a statement of what would at a minimum be entailed in the implementation of Agency safeguards. It could be enhanced and improved; but it could not be derogated from. Thus, while INFCIRC/66 differs in certain respects from INFCIRC/153 -- in establishing a framework rather than a standard format for the structure and content of the safeguards agreements to be negotiated; in lacking a statement of technical objectives for safeguards; and in not specifying what conclusions the Agency is to draw from its verification activities -- it nevertheless establishes in clear and concise terms what is de minimus for effective international safeguards.

Several points which derive from the preceding observation deserve emphasis here. One is that under its Statute the Agency has safeguards rights and responsibilities "to the extent relevant to the project or arrangement." [Article XII.A] While this could be interpreted to imply circumspection and limitation of the scope of Agency authority (i.e., "only" to the extent relevant...), it can also be regarded as the rationale for the development of a more detailed framework for safeguards implementation, and in fact was so.

A second point is that given the open-ended and framework character of INFCIRC/66, it could be foreseen that the Agency would be left with substantial discretion with regard to individual safeguards agreements (e.g., freedom of choice in the mode or intensity of safeguards implementation within the boundaries established in the safeguards document) and that the Board of Governors would have flexibility to determine what to accept or reject with respect to the draft agreements placed before it for approval. Indeed, in accepting particular provisions or phrasing which tended to delimit Agency activities or procedures, a number of participants in the Working Group underscored their understanding that the Board retained ultimate authority to accept or reject a particular agreement, and that the Safeguards Document, as a guideline instrument, could not foreclose the Board from exercising its judgment or authority.

It is significant in this regard that upon reviewing the draft document, one member of the Board expressed concern that "too much responsibility was transferred to the Board." [GOV/OR.356, ¶10-Argentina] For its part, the United States, which supported the principle that the Board retain general authority, asserted that while this was so "it was the clear intention of the Working Group, and should be the intention of the proposed new safeguards system, that the principles and rules therein should apply in all normal cases." [GOV/OR.357, ¶1]

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A third point relates to the matter of flexibility itself. Flexibility is one of, if not the single most important characteristic of the Safeguards Document. The more than fifteen-year history of INFCIRC/66 amply demonstrates this. The use of subsidiary arrangements is a case in point. Subsidiary arrangements are nowhere mentioned in INFCIRC/66, but even though not provided for they have become central features of safeguards implementation serving, pursuant to safeguards agreements, as the administrative vehicle for recording information on a facility by facility basis and for establishing procedures and practices relevant to design information, record systems, reporting, sampling, and similar safeguards measures.

Their use has evoked criticism, particularly the fact that they are unpublished and contain privileged information shared between the safeguarded state and the Secretariat of the Agency. This has generated concern that the subsidiary arrangements can result in differential treatment in the application of safeguards, and more importantly that they might constrain the safeguards agreements entered into under INFCIRC/66 and subjected to Board approval. Any such outcome could not be tolerated as it would mean erosion not only of the agreements, but of the authority of the Board and the Safeguards Document itself, and hence of the entire system. Concerns such as these have in recent times stimulated recommendations for more open and transparent safeguards practices.

Flexibility is demonstrated not only by the practice of subsidiary arrangements. In fact a substantial number of provisions found in safeguards agreements negotiated under INFCIRC/66 have no particular documentary antecedent but have become accepted and approved by the Board and thus made a part of the broader safeguards system. Several examples will suffice:

1. Since the mid-1970s, safeguards agreements involving the transfer of technological information have included a provision covering the information transferred and providing that certain items such as equipment, facilities, or material derived from the transferred technological information would fall under permanent safeguards. In addition, in the event of a transfer of safeguarded technological information to a third state, Agency safeguards would apply. It is important to understand, however, that safeguards triggered by technology transfer never was precluded by INFCIRC/66, and that the document facilitates the application of safeguards whenever they are triggered by virtue of a bilateral or other agreement.
2. Certain non-nuclear materials such as heavy water and graphite, although not specified in the Safeguards Document are treated similar to nuclear material, being sub-

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ject to safeguards and triggering safeguards on nuclear materials and facilities with which they are associated. Similarly, heavy water production plants have been covered in safeguards agreements under procedures applied to nuclear material under INFCIRC/66.

3. Containment and surveillance measures have, since the mid-1970s, been included in safeguards agreements negotiated under the auspices of INFCIRC/66. They are not specified in detail but are to be agreed on in the context of the subsidiary arrangements. Containment and surveillance are supplementary procedures which, if effective, can reduce the actual agency inspection effort at a given facility. Where they are not provided for it should be anticipated that the Agency would increase its inspection effort to whatever level is necessary in order for it to acquire the information necessary for meeting its safeguards responsibilities.
4. Finally, in the case of safeguards termination for which INFCIRC/66 made provision only in respect to nuclear material, more recent safeguards agreements contain provisions for termination of safeguards on items other than nuclear material. Normally, the conditions for termination are similar to those which apply to nuclear material under paragraphs 26 and 27 of the Safeguards Document.

These instances of safeguards agreement provisions which do not have a specific antecedent in INFCIRC/66 make abundantly clear the evolution which has taken place with regard to the scope and character of safeguards agreements in the past decade and a half. Most significantly, their acceptance and incorporation by the Board reveals the degree to which the basic Safeguards Document itself has been seen as a framework and set of guidelines rather than as a comprehensive and immutable statement of a safeguards system.

This evaluation and accommodative development furthermore demonstrates the ability of INFCIRC/66 to deal effectively and satisfactorily with virtually any problem or adjustment with which it has been confronted. There would seem to be no evident reason why past experience cannot continue into the future, assuming continued Agency commitment to implementation of the safeguards system, and a firm assertion of Agency rights and responsibilities. Under these conditions, INFCIRC/66, like any basic document can continue to grow and expand in response to the changing environment in which it operates.

## 2.2 Constraints

It is generally acknowledged that the development and widespread acceptance of a system of safeguards which entail international verification of national commitments including on-site inspections

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are unprecedented in international relations. Furthermore, although Article III.A.5 of its Statute authorizes the IAEA to establish and administer safeguards in specified cases, it does not contain any obligation for a state to submit to Agency safeguards. That obligation derives from legal instruments to which a state is a party in the case of voluntary submissions (in pursuit of bilateral or multilateral agreements), or from the fact that a state is a beneficiary of an Agency project in the event that the Agency provides assistance.

Against this background it is not surprising that the Safeguards Document would contain provisions designed to afford states some assurance against the risk of arbitrary or capricious Agency conduct in the administration of safeguards. The text of INFCIRC/66 was arrived at after "extended and intensive efforts...to accommodate the differing views to the greatest possible extent" [GOV/OR.356, ¶4-United States] and in the end reflected a substantial degree of unanimity in regard to the provisions it contained. Approval by the Board of the draft document by a vote of twenty-one to none with only two abstentions (South Africa, Switzerland), documents this overwhelming support, but it also suggests attention to features of INFCIRC/66 which enhanced its political acceptability.

One of those features is found in INFCIRC/66, ¶4 which establishes that the provisions of the document become legally binding only upon entry into force of a safeguards agreement and then only to the extent that such provisions are incorporated therein. Another equally significant feature is the very structure of the Safeguards Document which, responsive to the concerns of developing countries and newer and/or smaller industrial state entrants into the nuclear arena, emphasize at the outset not only the purposes of the Document, but also the Agency's obligations and restrictions in carrying out its safeguards responsibilities. The essence of these concerns is conveyed by the hope expressed at the Board meeting to review the draft document that "the Secretariat would exercise the authority vested in it...only to the extent necessary to ensure the effective application of safeguards so that the industrial use of atomic energy would not be hampered." [GOV/OR.356, ¶38-Japan]

The Agency obligations in applying safeguards which concerned states enough to seek specific inclusion in the Safeguards Document include:

1. Implementing safeguards in a manner designed to avoid hampering the economic or technological development of the state under safeguards; [INFCIRC/66, ¶9]

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2. Implementing safeguards in a manner designed to be consistent with prudent management practices. [INFCIRC/66, ¶10] This provision evoked considerable discussion. The United States was of the view that "the safeguards procedures set forth in this document are consistent with prudent management practices required for the economic and safe conduct of nuclear activities [COM.14/OR.15, ¶12] while India and several others advocated that procedures "shall be" consistent with prudent management practices [ibid., ¶17] with a view to setting standards for Agency conduct. The language eventually adopted, "shall be implemented in a manner designed to be consistent with prudent management practices," was drafted by the United States as a compromise between a mandatory and a purely informative outcome.
3. A requirement that any request for a state to stop construction or operation of a principal nuclear facility occur only on the basis of an explicit Board decision. [INFCIRC/66, ¶11] There was little dispute over whether the Board as distinguished from the Secretariat should have to make such a decision; however a number of countries would have preferred a specific provision that a two-thirds majority of the Board would be required to take such a decision. This was resisted on the ground that under the provisions of Article VI.E of the Statute "the Board itself determined which...questions should be decided by a two-thirds majority vote." [COM.14/OR.31, ¶35]
4. Requirements that the Agency "take every precaution to protect commercial and industrial secrets" [INFCIRC/66, ¶13] and that no "commercial or industrial secret or any other confidential information" acquired by reason of safeguards implementation be disclosed except under designated circumstances and to designated individuals. [INFCIRC/66, ¶14] These provisions while stated in mandatory fashion do not go as far as to assign absolute responsibility to the Agency for protecting commercial and industrial secrets as some participants would have preferred. [COM.14/OR.15, ¶70]
5. Finally, under the heading of principles of implementation, a provision similar to one which appeared in paragraph 22 of the first safeguards document, INFCIRC/26, that safeguards agreements should take account of all pertinent circumstances, meaning that in determining the relevance of particular safeguards provisions account should be taken of the form, scope, and amount of as-

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sistance supplied, the character of the project, and the degree to which such assistance could further any military purpose. [INFCIRC/66, ¶17] A number of participants regarded such a provision as establishing an important general principle that should govern the safeguards to be applied [COM.14/OR.13, ¶29,33 - South Africa, India]. Others while not objecting shared the view that "the wording should not be open to misinterpretation and care should be taken to ensure that the Board would not take arbitrary action which would be contrary to the provisions of the document as a whole." [ibid., ¶34,35 - Canada, United States] The source of concern, according to one participant-observer, was that in so far as the principle in question emphasized particular circumstances it represented a retreat from a focus on general principles toward a case-by-case approach which could lead to frequent revision of agreements in light of changing relevant circumstances. [McKnight, 103] To the extent that implementation risked derogation from general principles, it threatened to weaken the system.

The inclusion of these provisions, as noted earlier, was significant in that they enhanced general acceptability of the safeguards system, and made possible the "approval of provisions that might otherwise give rise to controversy." [GOV/OR.356, ¶20 - Brazil] As one Board member noted, while any system to be credible must have effective guarantees based on inspection, "the application of safeguards must not constitute a burden to countries, violate their sovereignty or hamper their development" [ibid., , ¶30 - Poland], and the Safeguards Document submitted for approval met those criteria. It deserves emphasis that there is no reason why, reasonably interpreted and applied, the incorporated constraints should impede safeguards effectiveness. That was the conclusion of a number of countries which held strong views in favor of effective international safeguards including the United States. [ibid., ¶4]

### 2.3 Extensions

Widespread agreement was achieved in the Working Group that safeguards should be extended to the full fuel cycle including enrichment, fabrication, and particularly reprocessing facilities, but views differed on where specific provisions to deal with these facilities should be formulated and made part of the safeguards system. The Soviet Union, in particular, while accepting the principle of extending safeguards to the complete fuel cycle, took the position that there was as yet no experience on which to base the application of safeguards and that consequently there was no point in trying to specify a system. [COM.14/OR.5, ¶9-10] Instead, the Safeguards Document should deal only with matters directly related to present activities of the Agency, and reprocessing, enrichment, and fabrication should be omitted. However,

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explicit provisions should be made that safeguards relating to principal nuclear facilities other than reactors would be developed as required. [COM.14/OR.13, ¶26]

This formulation was accepted by most other participants including the United States for whom the extension of safeguards to reprocessing plants was nevertheless a priority objective. Only South Africa, which considered emphasis on nuclear material rather than produced special fissionable material somewhat misguided, demurred. [COM.14/OR.16, ¶48]

The United States position on reprocessing plant safeguards deserves further discussion. Although supporting the proposal to temporarily set aside development of reprocessing plant safeguards procedures, primarily out of a sense that the political climate for going ahead with the kind of system that would be required was not quite right, the United States strongly reaffirmed its commitment to the principle of bringing reprocessing facilities under safeguards. It saw such facilities as "the point in the fuel cycle system offering the greatest opportunity for diversion of materials" [COM.14/OR.5, ¶2] but underscored a point sometimes misunderstood or overlooked by some of the other participants, namely that "strict control measures at (reprocessing plants) would not...constitute an adequate basis for safeguards as a whole. Effective control was also needed at...the reactor and other points of the fuel cycle...to ensure that material under safeguards reached the reprocessing plant..." [ibid.,] The United States also envisaged for reprocessing plants a system "similar to that adopted for application to large reactors, whereby access at all times was provided for. Such access would be essential." [ibid., ¶8, emphasis added]

A number of other countries, in particular Switzerland and Japan, saw the application of safeguards to the entire fuel cycle and especially to reprocessing plants as enabling less stringent procedures at reactors [COM.14/OR.5, ¶13, 15], a view which brought a controversial note from the United States that the application of safeguards to reprocessing plants "would not of itself warrant the withdrawal of other control measures" because it was essential to know that "all material produced in and discharged from a reactor under safeguards did in fact reach the...processing plant..." [ibid., ¶9] Nevertheless, even when the Board formally decided to reconstitute the Working Group to prepare a draft document extending INFCIRC/66 safeguards to reprocessing plants, the Japanese Governor expressed his view that "as a result of the application of safeguards to reprocessing plants, their application to reactors could be simplified" [GOV/OR.367, ¶52] and indicated interest in submitting an amendment calling upon the Working Group to also consider simplifying the procedures applied to reactors. However, because INFCIRC/66 was still so recent a document, Japan decided against pursuing this initiative. [ibid.]

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The extension of the Agency's safeguards systems to reprocessing plants was achieved in May 1966, largely by incorporation of the relevant INFCIRC/66 provisions. Importantly, the document provided that "for plants having an annual throughput of more than 60 effective kilograms, the right of access at all times would normally be implemented by means of continuous inspection." For some reason, almost certainly political, this provision only could be agreed upon as a footnote. Similar provisions were agreed to one year later with respect to conversion and fabrication plants where once again the continuous inspection formula was relegated to a footnote.

With the extension of Agency safeguards to reprocessing, conversion, and fabrication facilities, safeguards procedures were available for virtually all important elements of the fuel cycle. Enrichment was, and remains the only exception at present.

### 3. Objectives

#### 3.1 United States Objectives

The United States entered into the general review of the Agency's safeguards system with several objectives in mind:

1) First and foremost, to preserve the legitimacy, integrity, and effectiveness of the principles and procedures of international safeguards contained in the existing Safeguards Document, and to ensure that every effort was made to maintain the broad base of support which the safeguards system enjoyed. This was the overriding United States objective. The United States consequently stressed [OR.2 & COM. 14/4] the importance of taking INFCIRC/26 and ADD.1 as the points of departure and of studying them to see how they might be improved rather than starting afresh and running the risk of undermining or compromising some of the already achieved agreements on procedure and principle.

(2) Second, to enhance international safeguards, in particular by extending them beyond reactors to other fuel cycle facilities, most immediately reprocessing plants, including the principle of continuous inspection.

3) Third, to the extent that it was consistent with the first objective, to seek adjustments or corrections in the existing Safeguards Document that would result in better organization, greater clarity of language, and easier incorporation of the Document, possibly by reference only, into bilateral or multilateral agreements. To this end, the United States favored reorganization of the Safeguards Document to specify first the circumstances which bring into force or trigger Agency safeguards and second, the actual procedures to be followed by the Agency in implementing

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safeguards once they had been brought into force. The United States, however, preferred that these two matters be discussed in reverse order, with procedures for the implementation of safeguards discussed before dealing with the issue of circumstances bringing safeguards into play, so as to avoid any implication that the nature of the safeguards applied were dependent on the circumstances that initially brought them into effect.

A full appreciation of the nature and priority of these objectives requires some further discussion of the earlier history of the IAEA safeguards system, especially United States preferences and concerns and consequent method of approaching safeguards development.

A close proximity existed between the provisions in Article XII of the IAEA Statute which set forth the Agency's safeguards rights and responsibilities, and the correlative provisions contained in United States bilateral agreements for cooperation. While the United States as an internal matter developed plans and adopted procedures for applying safeguards under these agreements, those plans and procedures did not become the subject of negotiated understandings between the United States and its agreement partners. Rather, the United States simply carried out its safeguards activities under the agreements for cooperation. The United States hoped that this approach might be a precedent for IAEA safeguards implementation, thus avoiding the risk that the statutory rights granted to the Agency might be restricted through the negotiation of instruments designed to spell out in some detail the procedures for implementing international safeguards. The political contexts of the two situations being rather different, however, this outcome never materialized, and negotiation of implementing documents became the norm.

In any event, the United States preference for avoiding the negotiation of documents defining and establishing the safeguards system, and for direct implementation of IAEA safeguards, conditioned the attitude and approach of the United States toward the negotiation of those documents. Specifically, the United States focused attention on seeking to ensure that such documents did not impose any restrictions upon, or incur diminution of the Agency's safeguards rights as defined in the Statute. A number of tactics were devised toward this end including, where limitations on Agency rights were being sought by others, pressing for language that was hortatory rather than operative; and seeking to ensure to the extent possible that the safeguards documents would be viewed not as statements of the limits of Agency rights, but rather only of how the Agency would in general, and under normal circumstances exercise its safeguards rights.

Additionally, the United States took the view that in light of the apparently unavoidable need to elaborate guideline documents for the implementation of Agency safeguards, it would be preferable to

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approach the task of developing the safeguards system in an incremental manner. This approach had the merit not only of appearing to gear safeguards activities to levels of requirement and thus allow for programmatic growth of the Agency's safeguards system, but it avoided the need to confront some sensitive questions, such as resident inspection in larger and more complex facilities, at a time when the political climate surrounding Agency safeguards discussions was confrontational and inhospitable to reasoned and professional exchanges of view. The principal drawback to incrementalism was that it meant that there would be repeated opportunities for those seeking to impose limits on Agency safeguards to bring their case forward. In fact, however, the record indicates that the costs of incrementalism in this respect were few, and that United States objectives in preserving the gains made and in securing acceptance of additional measures such as increasing the maximum permissible frequency of inspection to "access at all times," and making subsequent generations of produced nuclear materials subject to safeguards, both of which were elements of ADD.1 to INFCIRC/26, generally were achieved.

These outcomes notwithstanding, the United States approach to the review which led to INFCIRC/66 was guided largely by concerns over the risk that the exercise might result in successful efforts to constrain the Agency from exercising its full statutory rights in the implementation of safeguards. Preservation of the integrity of the existing system, not its improvement and the rectification of deficiencies, was the paramount United States concern, and its principal objective.

As might be expected these objectives were not fully shared by all of the participants, and even where there existed a substantial identity of views on the importance of ensuring international safeguards effectiveness, nuances existed. Thus, while a number of countries including Canada, Sweden, the Netherlands, and the Soviet Union shared the view that INFCIRC/26 was the appropriate starting point for review and that it was unnecessary to make a new beginning, most of them were prepared to go further than the United States in fundamental restructuring of the Safeguards Document and appeared less concerned than the United States that intensive review and restructuring would threaten the integrity of the principles and procedures already adopted.

Canada, Sweden, and Australia, [COM.14/2 ADD.2 and ADD.4] for example, regarded INFCIRC/26 as too complicated in language and substance and were anxious to see the Document reformulated particularly to reflect the fact that the major safeguards responsibility of the Agency in the future would be to exercise safeguards on international atomic cooperation under bilateral agreements rather than as a consequence of Agency projects. This was not seen by

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these countries as constituting any change in basic principles of safeguards, but rather as being consistent with the assertion by the Netherlands that "modification of the principles only seems desirable in order to attain a greater measure of simplification and...practical solutions for existing technical problems."

[COM.14/2]

3.2 Objectives of Other Participants

There were in addition to these differences of degree some more far reaching or fundamental differences which conditioned the nature of the review discussion and the character of the final document. Invariably these entailed efforts to restrict the scope of safeguards or the procedures employed in carrying them out.

1) Ensuring that safeguards did not impede progress. A cluster of issues centered around concerns over the possibility that safeguards might impede economic and/or nuclear development. This set of concerns involved developing and industrial countries. [COM. 14/OR.2] India and Brazil, for example, emphasized the importance of taking into account the interests of developing countries and ensuring that the Safeguards Document would not hinder economic development. This theme was raised repeatedly throughout the discussions and was incorporated as one of the Agency's obligations in INFCIRC/66. [¶9]

From the vantage point of the industrial states Japan [COM.14/OR.2, ¶29] and Switzerland [COM.14/1 ADD.2] were prominent in emphasizing the need to ensure that neither the principles nor the procedures of international safeguards entailed any unnecessary restrictions or any hindrance to the development of peaceful nuclear energy. Japan argued in favor of as universal a system as possible, while the Swiss, claiming that the "system in its present form is not satisfactory...because it permits interventions which can seriously interrupt the normal operation of the plant..." [op.cit.] recommended adoption of a special system of safeguards for reactors which were refuelled at intervals of a year or more in which control would mainly cover "fabrication and retreatment of fuel elements." While nothing so dramatic came about during the review and revision of INFCIRC/26, the new Safeguards Document was responsive in a number of provisions to these kinds of concerns. [e.g., INFCIRC/66 ¶10-14]

2) Application of safeguards to equipment and non-nuclear materials. A long standing issue of concern, largely but not entirely to developing countries, involved the application of safeguards to items other than nuclear nuclear material, and in its decision to undertake a review of the safeguards sytem the Board called for "giving particular attention to the provisions relating to the

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attachment of safeguards to equipment." [GOV/DEC/35 (VII)] This became one of the more intensely discussed matters during the course of the review with a number of countries pressing to confine safeguards to supplied nuclear materials alone.

3) Exemption Limits. A number of countries including India, France, Romania, Australia, and Sweden [See COM.14/OR.2 ¶35, OR.2 ¶33, OR.2 ¶26, COM.14/2/ADD.2, COM.14/2/ADD.4, respectively] regarded the exemption limits for safeguards for both source and special fissionable material as too low (200 grams of Pu, U-233, or fully enriched U or their equivalents), reflecting the applications of safeguards initially to small reactors and needing to be raised in the light of the size of facilities then coming under safeguards. In principle the United States was in agreement. [COM.14/OR.2, ¶44]

4) Source Materials. For several of the uranium producing countries, but also for some of the user states, there was an interest in seeking to focus safeguards on those points in the fuel cycle where materials were in a form where they could be most readily appropriated and used for nuclear weapons. South Africa, for example, suggested that the objective of safeguards be defined "to ensure that plutonium and other fissionable materials produced with equipment, material, or facilities subject to Agency safeguards should not be diverted to non-peaceful purposes;" [COM.14/OR.2, ¶38] and Sweden emphasized the need to control materials that could be readily transformed for weapons use by simple metallurgical or chemical processes, asserting that if satisfactory control of such materials is achieved "the control of source materials and materials of low enrichment could be more simple...." [COM.14/2/ADD.4, ¶11]

This orientation, together with the objective noted above of countries seeking to ensure that safeguards not hinder economic development or peaceful nuclear activity, reflects the general disposition to keep safeguards to a minimum. It is clear that even for the many countries persuaded of the importance of effective international safeguards, a principal objective is to limit external intrusion to the extent possible. Thus, while supporting the basic concept and practices of safeguards, few countries were prepared to easily acquiesce, let alone take the lead, in promoting a system which was explicitly liberal in specifying safeguards and, especially, inspection procedures. That task fell largely to the United States and, to a somewhat lesser extent, Canada.

### 3.3 Achievement of United States Objectives

On the whole, the United States achieved most of its objectives. Certainly the Safeguards Document that emerged from the review was simpler and easier to follow than its predecessor and lent itself

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to incorporation in bilateral agreements. In addition, it separated the conditions under which safeguards would come into play. Importantly, the United States was successful in its suggestion that procedures for implementing safeguards be discussed and basically settled before discussing the circumstances which could bring the procedures into play thus minimizing the risk that debate would develop over whether different procedures should apply given the different conditions which involved safeguards in the first instance.

Concern that review of INFCIRC/26 might entail more cost than benefits and that the outcome might be a weaker safeguards system than was then in existence proved unfounded. None of the basic safeguards principles were altered in a way that might impair safeguards effectiveness; the improvements introduced at the time of the extension of the first Agency Safeguards Document to large reactors (pursuit of subsequent generations of produced nuclear material and adoption of the concept of "access at all times" in any situation where the maximum frequency of routine inspections of a reactor exceeds twelve per year) were preserved; the procedures regarding inspection, records, and reports which were developed in INFCIRC/26 were substantially the same in INFCIRC/66; and in those instances in which compromises had to be agreed to in order to achieve consensus, the United States often was able to recommend language which simultaneously met the major concern of the other participant or participants while largely preserving the Agency's statutory safeguards rights. Even where the United States was not entirely successful in this regard it managed to avoid genuinely harmful outcomes.

Insofar as extension of safeguards to reprocessing facilities - a strong United States priority - was concerned, there was common agreement that specific provisions for the control of reprocessing plants needed to be formulated but there were differences of view on when that should be done. In the event, it was ultimately agreed that provisions for dealing with reprocessing, fabrication, and enrichment facilities should be treated separately from the present review. [GOV/COM.14/OR.19 ¶62] Reprocessing was subsequently dealt with in a manner consistent with United States preferences in REV.1 of INFCIRC/66 as were conversion and fabrication plants in REV.2.

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II. KEY ISSUES

This part of the report identifies and analyzes the principal issues which arose during the course of the review which resulted in the adoption of the Agency's Safeguards Document, INFCIRC/66. Issues which arose subsequently and involve implementation of INFCIRC/66 or entail matters not explicitly covered or provided for in the Document are dealt with in a later section.

For each issue covered the report is divided into three parts:

- Background and Issues which identifies and explains the issue or issues under consideration, drawing upon the record to shed light on the nature of the problem and of the resolution agreed to;
- Analysis which draws upon the record to establish the intent of the Committee with respect to the issue or issues under consideration; and
- Interpretation which provides a statement of the intent of the document with respect to each issue considered.

Not every issue raised during the Agency review of the safeguards system will be discussed here, but those relatively minor issues deserving of attention will be covered in this report where appropriate, and properly identified. In particular they will emerge in the paragraph by paragraph analysis of INFCIRC/66/REV.2 which follows the discussion of key issues.

1. Scope of Agency Safeguards [Paragraphs 19 and 20]

Background and Issues

One of the most controversial issue-areas in the development of INFCIRC/66 involved agreement on the rules defining the scope of Agency safeguards: this is, the activities, items, or facilities with respect to which Agency safeguards would be applied. This was foreshadowed in the Board's decision to undertake a review of the Agency's safeguards system. It will be recalled that the decision in question provided for "giving particular attention to the provisions relating to the attachment of safeguards to equipment," [GOV/DEC 35 (VIII)] a provision reflecting the keen sensitivity, particularly but not exclusively among developing countries, about the scope of safeguards. As has been observed elsewhere, the rules defining the scope of safeguards are crucial because, "depending on how they are formulated, the Agency's safeguards may spread widely and quickly or only narrowly and slowly through the domestic atomic energy program of a state receiving some international assistance or otherwise submitting itself to the Agency's controls." [Szasz, 583]

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In the following discussion it is useful to bear in mind, in addition to the notion of invoking or triggering safeguards, two conceptual terms which were employed in INFCIRC/26: "attachment of safeguards," and "application of safeguards." The former was defined [INFCIRC/26 ¶19] to mean "the requirement to apply appropriate safeguard procedures" while the definition of the latter [INFCIRC/26 ¶20] was "the implementation of appropriate safeguard procedures." In practical terms, invoking or triggering safeguards meant that safeguards would come into effect with respect to all source and special fissionable materials passing through or being used, produced, or processed in a facility involving any trigger item supplied regardless of whether it was itself subject to safeguards. Attachment conveyed somewhat the same concept, but had proven to be confusing in practice because it was generally employed with reference to a specific item of equipment or material, and did not clearly carry with it the principle that all materials used, produced or processed in connection therewith would be safeguarded. Additionally, attachment meant not only keeping track of the material in regard to which safeguards were invoked, but also Agency responsibility for keeping track of the supplied item itself wherever it may be used or transferred.

Application meant all of the above and actually accounting for the item in the sense of counting, weighing, measuring, etc.

In effect two basic questions arose in this context:

- i) Whether facilities as well as materials should be subject to safeguards, i.e., whether safeguards apply to facilities as well as materials; and
- ii) Which items, if supplied, would bring into effect or 'trigger' safeguards even if the item itself were not subject to safeguards. Closely related is the question of operationally defining the concept of 'substantial assistance' which was regarded as a principal rationale for triggering safeguards and then for identifying the items the supply of which should trigger safeguards.

Analysis

The argument in favor of limiting safeguards to nuclear material was carried principally by India, but with substantial support from a wide range of other countries. The debate turned on questions of principle and practicality.

From the point of view of principle, India contended that "the object [of the review] was to draw up a reasonable and practical system of safeguards which did not attempt to extend controls where they could not and should not be applied and did not raise

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questions that could have an adverse effect on normal transactions between the developed and developing countries." [COM.14/OR.9, ¶48] In this regard it was asserted that isafeguards were attached to equipment it would result in even greater discrimination against developing countries who were dependent on external sources of supply both for nuclear materials and equipment unlike many advanced countries which were in a position to manufacture their own equipment for nuclear purposes. [COM.14/OR.10, ¶4] This position was predictably supported by other developing countries such as Brazil and the United Arab Republic.

In terms of practicality, the argument was advanced that it was pointless to attach safeguards to specialized equipment much of which already was or soon would become conventional and widely available and thus less amenable to effective control. [(India) COM.14/OR.10, ¶3] Considerable sympathy existed for this point of view across the economic-industrial spectrum of participants including countries strongly supportive of effective international safeguards. Thus, the Netherlands stated that "as the attachment of safeguards to specialized equipment and non-nuclear materials does not seem to be essential for a good operation of the system, it could either be omitted entirely or be restricted to specific cases of an exceptional character, which in the opinion of the Board of Governors warrant the attachment of safeguards." [COM.14/2, ¶3] Similarly, Norway [COM.14/OR.10, ¶28], Sweden [COM.14/2/ADD.4, ¶7], Italy [COM.14/OR.10 ¶8], and to an extent even Canada [COM.14/OR. ¶34] expressed concurrence with the general point of the difficulty and hence impracticality of applying safeguards to specialized equipment and non-nuclear materials in the absence of a clear case to the contrary. Canada, however, was careful to emphasize that the transfer of certain non-nuclear materials such as heavy water could, and indeed should invoke safeguards with respect to the facility in which it was being used, even if safeguards should not be applied to such materials because of the difficulties in accounting for it and because of the need to avoid saddling the Agency "with responsibilities which it couldn't carry out." [COM.14/OR.10, ¶16 and COM.14/OR.9, ¶34]

An alterative point of view on the appropriate scope of safeguards was sustained by the United States. For the United States the overriding principle was that the Agency had a statutory responsibility to ensure that non-nuclear material and equipment that it furnished was not used for any military purpose, and also "to apply safeguards in any case where the end result of such assistance would be the production of fissionable material." [COM.14/OR.9, ¶38] In other words, the fundamental criterion for safeguards is that if material and equipment is of substantial assistance in making plutonium it should be safeguarded. [COM.14/OR.9, ¶24]

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Seizing upon what it regarded as the confusion and misunderstanding of many with respect to what was meant by "subject" to safeguards, and the "application," "attraction" or "triggering" of safeguards, the United States underscored that "what we are dealing with...primarily are not controls over materials per se, but rather the invoking of controls by the supply of these materials to the project in which they are employed, including its output of fissionable material, so that the Agency will know that the entire project is being used for peaceful purposes." [COM.14/6 ¶12 (emphasis supplied)] This formulation helped to clarify the distinction between items or activities which were themselves subject to safeguards, and items which though not themselves subject to safeguards in the strict sense of the term would, as a consequence of their use in the activity or project for which they were supplied, result in the invoking of safeguards. This conceptual approach was ultimately adopted by the Working Group and is reflected in INFCIRC/66 paragraph 19 which, in contrast with the first Safeguards Document, provides that only nuclear material is subject to safeguards, while, however, clearly implying that the supply of nuclear facilities or substantial components thereof would trigger safeguards, and would involve them in the application and implementation of safeguards by the Agency.

With only nuclear material technically being subject to safeguards, but other items invoking safeguards, there arose the issue which items, if supplied, would result in safeguards coming into play. INFCIRC/26 paragraph 37 provided that Agency safeguards would attach to "specialized equipment and non-nuclear material supplied by the Agency, which in the opinion of the Board could substantially assist a principal nuclear facility." However, this was the provision which a number of countries found offensive and which had been singled out by the Board for particular attention in its decision to review the safeguards system.

On the other hand, United States support for the approach of providing that only nuclear material was subject to safeguards was predicated on the expectation that the triggering concept which related to items in addition to source and special fissionable material (which were also subject to safeguards) would be broadly and liberally interpreted and that safeguards would be invoked by the Board in any situation where the supplied item could contribute substantially to the production of significant quantities of special fissionable material.

INFCIRC/26 also provided for Agency safeguards attaching to "principal nuclear facilities supplied or, in the opinion of the Board, substantially assisted by the Agency." [INFCIRC/26 paragraph 36] A number of Working Group participants viewed favorably the possibility of extending the concept of substantial assistance in the

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revised safeguards system to all forms and items of assistance that could not be classed as source or special fissionable materials, thus embracing non-nuclear materials and specialized equipment. This approach stimulated further controversy precisely because those who rejected the notion that safeguards should be invoked as a consequence of the supply of non-nuclear materials and equipment saw it as merely a substitute measure for achieving that end. [See Chairman's summary of the issue in COM.14/OR.10, ¶37]

Nevertheless, the Secretariat was instructed to draw up for Working Group consideration a list of materials and equipment designed and used specifically for nuclear work and unavailable in the open market. If agreement on such a list could be achieved, it would give substance to the concept of substantial assistance and facilitate its adoption as a basic safeguards principle.

In fact, the hoped-for consensus was not achieved. Three attitudes toward the list developed by the Secretariat emerged paralleling the earlier discussions over whether and to what extent safeguards should be applied to non-nuclear material and equipment: (i) that the notion of a list should be abandoned (because the supply of such items should not invoke safeguards); (ii) that the Board should decide the question of substantial assistance case-by-case but on the basis of an illustrative list; and (iii) that a comprehensive list should be established. While a near-consensus appeared to develop that heavy water, nuclear-grade graphite, and failed fuel element detection and locating equipment would be appropriate items to include on a list defining substantial assistance, sharp differences arose over whether reactor plant control and instrumentation systems, control and safety rods, or even pressure vessels should so qualify. [See generally COM.14/OR.17] Ultimately, the idea of adopting a list was abandoned and a substantial but not universal consensus was reached that the revised document should provide that "nuclear material shall be subject to safeguards if it is or has been: ...produced, processed or used in a principal nuclear facility which has been: supplied or substantially assisted under a project agreement..." [GOV/COM.14/19 Annex I, ¶20d,(i)] and that "a principal nuclear facility shall be considered as substantially assisted under a project agreement if the Board has so determined." [GOV/COM.14/19 Annex I, ¶21]

India reserved its position on this formulation and introduced alternate language when the Board met to consider the report of the Working Group in February, 1965. Arguing that the scope provision "was one of the most important parts of the entire safeguards document, since it laid down the conditions under which

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safeguards would be brought into play" [GOV/OR.357, ¶21] the Indian Governor emphasized that the words "or substantially assisted" could cover a wide spectrum of "assistance" to which the application of safeguards was not relevant [ibid] which words India would prefer to see "completely deleted," as would a number of the other developing countries. In the interest of reaching an acceptable compromise the Indian delegation proposed that the words "substantially assisted" be amended to read "substantially supplied." [GOV/1053] This language was accepted and incorporated in INFCIRC/66, paragraph 19d(i) and 20 respectively. In accepting the Indian amendments the United States, in particular, made clear that it "did not regard acceptance of [the] amendment as in any way derogating from the Agency's authority and responsibilities as laid down in Article III.A.5 of the Statute." [GOV/OR.357, ¶26] For some Governors (Argentina, United Kingdom, Netherlands) the amendments didn't represent any significant improvement and might even generate new problems as in the situation where a principal nuclear facility not originally supplied in its entirety subsequently received substantial assistance. [GOV/OR.357, ¶35, 36 and 32 respectively] It must not, of course, be overlooked that the United States and others recognized that Agency projects would be involved in only a few cases, and that in the bilateral situation which dominated safeguards applications, the Parties to the bilateral agreements would determine what triggers safeguards regardless of any list. Clearly, this knowledge facilitated achieving consensus.

Interpretation

The Agency must be able to track material subject to safeguards wherever it may be. Hence, while only nuclear material is subject to safeguards, it is clear that plants and facilities are involved in their application at the very least because, if safeguards are applied to nuclear materials in a plant, e.g., the latter must be accessible to inspection and its records must be available. Thus, plants and facilities are inspected, but only for the purpose of safeguarding the involved nuclear material. What is actually being safeguarded is not the plant, facility, or equipment, but the safeguarded nuclear material. The statement in this study that only nuclear material is subject to safeguards subsumes the above interpretation.

Nuclear materials as defined by paragraph 77 of INFCIRC/66 are subject to safeguards if they have been produced, processed, or used in a principal nuclear facility supplied wholly or substantially under a project agreement.

The Board of Governors has the authority and the responsibility to determine whether a principal nuclear facility has been substantially supplied under a project agreement, in accordance with its

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statutory responsibility as defined in Article III.A.5 to establish and administer safeguards designed to ensure that "special fissionable and other materials, services, equipment, facilities, and information made available by the Agency or at its request or under its supervision or control are not used in such a way as to further any military purpose...."

INFCIRC/66, paragraph 17 which contains principles of implementation of the Safeguards Document indicates that the form, scope, and amount of assistance supplied are principal factors to be considered by the Board in determining the relevance of particular provisions of the Document to various types of materials and facilities thus reinforcing the discretionary authority of the Board to determine the conditions invoking safeguards under project agreements.

2. Exemption From Safeguards [Paragraphs 21-23]

The establishment of limits and conditions for exemption from safeguards raised a number of issues. Principal among them were:

- (1) whether to increase the amount of plutonium and uranium to be exempted from safeguards;
- (2) the equivalence formula to be applied in equating enriched uranium at different levels of enrichment; and
- (3) what the exemption limit for a single reactor should be.

No one of these issues raised particularly serious problems in the Working Group but as a group they involved important questions deserving of separate treatment under key issues. A related set of issues involving suspension is dealt with separately in the following section.

2.1 Exemption Limits [Paragraphs 21 and 22]

Background and Issues

From the very outset of the development of the international safeguards system it had been recognized that it would not be feasible to account for every gram of nuclear material and that it would be impractical and even counterproductive to impose unreasonable requirements on the Agency. Thus, the purpose of exemption was to facilitate the safeguards task of the Agency by relieving it "from unnecessary work in relation to amounts of nuclear material that were unimportant from a safeguards point of view rather than to secure greater freedom for States parties to safeguards agreements." [Statement by W.G. Chairman Randers COM.14/OR.29, ¶18] Principally affected by an exemption would be material supplied for small-scale equipment and scientific research.

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INFCIRC/26, paragraph 32, established exemption levels for different nuclear materials. For special fissionable material, defined as "plutonium, uranium-233, or fully enriched uranium or its equivalent in the case of partially enriched uranium" [INFCIRC/26 ¶32b] the exemption level was set at 200 grams. This figure had been agreed to in the context of small reactors covered by the first document but even by the time INFCIRC/26/ADD.1 extending the safeguards system to large reactor facilities had come into force it was recognized that a 200-gram diversion detection capability would not be feasible at least within the 3 to 5% margins of error originally envisaged, and that a somewhat higher exemption limit would therefore be in order. [See United States statement in GOV/COM.14/OR.2, ¶44] The only significant question, then, was to establish a new exemption threshold.

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Analysis

A number of different views were expressed on what would be an appropriate exemption limit. [COM.14/OR.6, ¶70] Some, like Canada questioned whether exemption limits might be a function not only of what amount of material was supplied, but also of what already existed in the state. Others, such as Japan [COM.14/OR.6, ¶67] and Brazil [COM.14/OR.6, ¶68] favored liberal exemption limits for special fissionable material in the 5 to 6 kilogram range, but these broader exemption limits were not seriously argued for.

Agreement was reached without much difficulty on limiting exemptions of special fissionable material to 1 kilogram in total per country at any one time. There was some concern by Finland and others that a 1-kilogram limit could create difficulty for states with one exempted kilogram of material that wished to acquire nuclear instruments containing some fissionable material and Finland consequently urged that a specific clause exempting such nuclear instruments be introduced. [COM.14/OR.18 ¶48, ¶59] This approach, while not strongly challenged, was resisted on the ground that a "one kilogram threshold should be regarded as an absolute limit beyond which safeguards in every case should be applied." [COM.14/OR.19, ¶11]

Interpretation

Upon request, states may exempt from safeguards up to one kilogram of special fissionable material consisting of one or more of several designated materials (plutonium, uranium enriched above 20%, and uranium enriched below 20%). Unlike the provisions for suspension of safeguards (discussed in Section 3 below) the Agency is not given a discretionary right to grant or withhold a state

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request to exempt the specified amount of eligible material from safeguards. This does not mean that the Agency lacks any discretionary authority. It could reject the request where to do otherwise would entail acquiescence in abuse of the exemption right. The Agency's first obligation is to fulfill its statutory responsibilities.

The purpose of exemptions is not to free states from the application of safeguards but to facilitate utilization of very small quantities of material which would in any event be difficult to track (e.g., material in scientific instruments or small research activities), thereby relieving the Agency of responsibility for safeguarding quantities of material that do not have any danger potential. The thrust of exemption purpose was emphasized by a Finnish proposal, ultimately not adopted in the interest of maintaining as simple a document as possible, that exemptions be conditioned by the provision that "the equipment using the exempted quantity of nuclear material does not form an essential structural part of a principal nuclear facility." [COM.14/OR.19, ¶9]

## 2.2 Equivalence Formula [Paragraph 21]

### Background and Issues

In establishing exemption limits, INFCIRC/26 utilized an equivalence formula to determine for different levels of enrichment the amount of enriched uranium equivalent to full enriched uranium and therefore qualifying for exemption from Agency safeguards. This was set at 200 grams for fully enriched uranium. The preliminary draft of INFCIRC/66 contained the same formulation except that for special fissionable material the limit was raised to 1 kilogram of plutonium and/or equivalent enriched uranium. Several participants, however, including the United States [COM.14/OR.18, ¶46] and Finland [*ibid.*, ¶8, 10] did not find the formula for defining the equivalence of enriched uranium entirely satisfactory because of the relatively large quantities of material that might qualify for exemption, and they consequently sought change.

### Analysis

The United States introduced an alternative formulation for consideration by a technical sub-group established to deal with technical problems submitted by the Working Group. The United States proposal [GOV/COM.14/15] recommended that in order to maintain a uniform exemption of 1 kilogram U-235 throughout, two equations be adopted for calculating equivalence: one for uranium enriched between 100% and 20%, and another for uranium between 20% and natural.

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The practical effect of this formulation would be to limit the amount exempted at virtually all levels of enrichment in comparison with what would result from adoption of a formulation based on different considerations involving the concept of "effective kilogram" which was used to establish inspection frequencies at reactors in normal circumstances. Thus, under the United States proposal approximately 5 kilograms of 20% enriched uranium and 4 metric tons of slightly enriched uranium (0.0075) would qualify for exemption whereas application of the "effective kilogram" formula would result in 25 kilograms and 10 metric tons exemptions, respectively.

At one point, inspired by a desire to simplify the Safeguards Document to the extent possible, the United Kingdom had introduced a proposal that the "effective kilogram" formulation be adopted for determining not only the incidence and frequency of routine inspections but also exemption and suspension limits for safeguards application. [GOV/COM.14/21, ¶5] However, it subsequently withdrew its suggested amendment recognizing, as demonstrated by the above cited figures, that "it would introduce loopholes into the safeguards system and thus make it less effective." [COM.14/OR.29, ¶20]

The formula ultimately adopted for purposes of determining general exemption limits was that proposed by the United States. The practical effect was to avoid the risk of unduly large exemptions being invoked for lower enrichments while also keeping to a minimum the amount of material subject to exemption at the higher enrichment levels. However, as discussed in Section 3.3, an effort to apply the general exemption formula to the suspension of safeguards under specified circumstances did not win general support thus creating a situation in which different formulae were adopted for closely related circumstances.

Interpretation

A constant ratio is maintained for the whole range from 100% to 20% enrichment, avoiding excessively large exemptions for lower enrichments. As the purpose of exemption is not to relieve states from safeguards, but to facilitate the Agency's work in carrying out its safeguards responsibilities, the equivalence formula is appropriately keyed to minimizing the amount of material which would fall outside safeguards and which could, if combined with other exempted material, contribute to the production of substantial quantities of fissionable material that would not be subject to safeguards. The formula adopted for general exemption does not apply in the case of suspension of safeguards which is governed by the concept of "effective kilogram." Similarly, determination of frequency of inspection is governed by the "effective kilogram" formula.

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2.3 Single Reactor Exemptions [Paragraph 22(b)]

Background and Issues

A third exemption-related issue involved the treatment of small reactors of less than 3 thermal megawatts capacity. INFCIRC/26 paragraph 36 provided that reactors of less than 3 thermal megawatts were exempted from safeguards up to a total exemption limit of 6 thermal megawatts for any one state. As in the other exemption cases, the purpose was to avoid the application of unnecessary controls. The question was the disposition of this provision in the revised document.

Analysis

Japan raised the possibility of increasing the exemption for a single reactor to 6 megawatts, arguing that there was no specific reason for a limit of 3 megawatts and that such a revision "would be in keeping with the general tendency of easing controls and of encouraging wider use of atomic energy." [COM.14/OR.12, ¶3] This view was not shared by others who felt that this would create a different and higher risk situation than the one then in effect. In the United States view, "producing plutonium in two or more reactors totalling 6 megawatts would be so uneconomical that that in itself gave a certain assurance that such reactors would not be used for military purposes. On the other hand, a 6 megawatt reactor might well be used for such purposes." [COM.14/OR.12, ¶6] Even though a 3-megawatt reactor could produce 1 kilogram of plutonium in a year, the United States believed that exemption would be justified on "purely practical grounds since it was very unlikely that anybody building a reactor for unauthorized purposes would limit its power to 3 megawatts (th) or request assistance from the Agency." [COM.14/OR.19, ¶44]

Some countries (India, South Africa) [COM.14/OR.19, ¶45, 46, respectively] rejected the notion of tightening the safeguards system beyond what had been obtained in INFCIRC/26, while Canada expressed concern that if provisions of the safeguards system were made more lenient, they might prove ineffective. Against that background of view it was agreed not to alter the 3-megawatt (th)/6-megawatt (th) formulation for exemptions related to reactors.

Interpretation

Plutonium produced in a reactor having a maximum calculated power for continuous operation of less than 3 megawatts (th) is exempted from safeguards; however, the total power of reactors included in this exemption may not exceed 6 megawatts (th). Only the material produced or used in the reactor, not the reactor itself is exempt from safeguards. INFCIRC/26 had referred to exemption from safeguards of such reactors but INFCIRC/66 makes no provision for the

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application of safeguards to facilities but deals rather with materials. Additionally, material which is used in such a reactor and would otherwise have been subjected to safeguards for another reason, such as having been supplied by the Agency, would be exempt.

3. Suspension, Termination, and Substitution [Paragraphs 24-26]

Except for the debate over the application of safeguards to equipment and non-nuclear material and the related problem of defining substantial assistance, no issue provoked as much discussion and controversy as that involving suspension and termination of safeguards, particularly the practice of substitution in that context. Unlike some of the other issues where differences of view reflected differences in levels of economic and technological development and/or degree of commitment to strong and effective safeguards, this issue pitted some advanced countries and strong supporters of safeguards against one another.

As in the case of exemption from safeguards, the provision for suspension, termination, and substitution had antecedents in the first Safeguards Document, INFCIRC/26. The chief differences between the latter and INFCIRC/66 were in form and language rather than intent and scope. Nevertheless, negotiation of the INFCIRC/66 provision was time-consuming and detailed. Three issues in particular merit discussion:

- (1) Whether suspension of safeguards for the purpose of reprocessing should be allowed without substitution or only with substitution, and, if the latter, then subject to what conditions;
- (2) Whether suspension provisions should apply only to external transfers or apply as well to transfers within the requesting state; and
- (3) What formula to apply in establishing the amount of material regarding which safeguards could be suspended.

3.1 Suspension and Substitution [Paragraph 25]

Background and Issues

INFCIRC/26 paragraph 39 provided for suspension of safeguards for processing, reprocessing, and other purposes when approved by the Agency either on the basis of substitution, in which event there was no limit on the amount of material that could be involved, or in the absence of substitution, suspension of safeguards up to specified amounts which in the case of fissionable material was 1000 grams. These provisions reflected a time when the magnitude of reprocessing activity was limited and large-scale reprocessing

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of commercial fuels was still some time away. It was also evident that when commercial fuel reprocessing began in earnest it would at least at first be limited to a few countries with nuclear programs sufficiently advanced to accommodate such activities, in particular the nuclear weapon countries. At the same time, safeguards provisions for reprocessing plants were not yet formulated, and in any event in some countries the same facility might be used to process civil and military fuels in which case Agency safeguards could not apply unless the two kinds of material were segregated and dealt with separately. This posed economic difficulties in light of the fact that the amounts of civil fuel likely to be processed would be limited in quantity while high-throughput operation was necessary to economic plant operation.

Analysis

These considerations underlay a United Kingdom proposal that provision be made to suspend safeguards for up to six months on material transferred for processing or reprocessing [COM.14/OR.19, ¶66] without invoking provisions for substitution of nuclear material of "at least equal value" as called for in the draft safeguards document under consideration. The rationale for the proposal was that "such substitution would impose a heavy burden on the economic and technological development of the countries concerned", which could "hardly be reconciled with the first general principle of the safeguards system namely that it should not hinder such development". [ibid., ¶67]

In making this proposal the United Kingdom emphasized that it was "not intended as a means of securing exemption from safeguards but was aimed merely at a suspension of safeguards in specified circumstances and in a strictly limited period". [ibid., ¶68]

The proposal encountered strong opposition, principally from the United States, the Soviet Union, Canada, and Australia all of whom believed it would in the final analysis undermine the safeguards system. Discussion of this issue evoked some of the strongest and most unequivocal statements on safeguards. The Soviet representative "doubted whether the revised safeguards document could make any reference to the suspension of safeguards for any period let alone for six months" [COM.14/OR.22, ¶7 (emphasis supplied)] and asserted that "no opportunity should be left for the uncontrolled use of nuclear materials, and especially plutonium and highly enriched uranium. Nor should they be exempted from supervision during any period of custody or processing." [ibid., ¶8] As far as the Soviet Union was concerned it was worth the deletion from the text of any reference whatsoever to the idea of suspending the application of safeguards. [ibid.]

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The United States for its part declared itself "opposed in principle to the idea of suspending safeguards" [COM.14/OR.22, ¶2] and concluded that the problem could best be solved by substitution at the time of reprocessing. Granting that substitution was not a complete solution the United States emphasized that it would contribute substantially to general safeguards purposes: "As substitutions would have to come from material not otherwise subject to safeguards, they would tend to ensure that no substantial contribution could be made to unsafeguarded material from material subject to safeguards". [COM.14/OR.19, ¶71]

The principle of unconditional suspension of safeguards having been rejected, attention turned toward identifying conditions of substitution, especially conditions that might offer a degree of flexibility to meet the problems of large-scale substitution posed by the United Kingdom. The idea of a shortened suspension period of three months, suggested by the United Kingdom [COM.14/OR.22, ¶9] was rejected, demonstrating that what was important to the Group was not the length of period of suspension, but the principle itself. An alternative notion of substitution "at a time to be agreed", suggested by the Netherlands [COM.14/OR.22, ¶10] also met with resistance and elicited the view expressed by Canada, that "to be effective, substitution should take place at the time the material was removed"; [ibid., ¶12] that safeguards could not be replaced by an undertaking to substitute; and that "the only possible course was to lay down that substitution must take place before safeguards were suspended or terminated with regard to the material originally supplied..." [ibid., ¶28] This view was shared by the United States, [ibid., ¶3] although with more apparent readiness to search for a flexible formula, very likely in view of anticipated reprocessing services being offered by the United States and the possible need for flexibility in its own situation with respect to substitution.

The issue remained unresolved despite continued Working Group discussions until the Board itself met to consider the proposed revised Safeguards Document. At that time, the United Kingdom introduced amended wording [GOV/1049/REV.1] which constitutes the final version as inscribed in INFCIRC/66 paragraph 25. The amendment deleted the concept of substitution "at a specified time" thus eliminating the notion of any interval between transfer of material and substitution of other material, with the effect that substitution would occur simultaneously. In addition, the United Kingdom amendment introduced the concept of substitution for plutonium of uranium enriched to not less than 90% thereby introducing a degree of flexibility into the substitution principle. Unlike the provision for substitution of plutonium, however, this option limits substitution to a period of 6 months while reprocessing is taking place. United States support for this limited exception to the substitution rule was given in full knowledge

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that the only states which could take advantage of the provision would be weapon states which already had large quantities of un-safeguarded highly enriched uranium at their disposal and thus could not "benefit" significantly from a limited term substitution of this material for a like quantity of plutonium.

Interpretation

Suspension of safeguards for the purpose of reprocessing may take place with the agreement of the Agency if substitute nuclear material of a like kind and amount has been placed under safeguards during the period of suspension. Suspension under these conditions is not limited in time or quantity, if the Agency agrees, so long as the requesting state or states have placed substituted materials under safeguards.

The option also exists for substitution for plutonium contained in irradiated fuel of uranium enriched to 90% if the Agency so agrees. This option, unlike that related to the substituting of like material is limited to 6 months duration. Upon expiration of the 6 month period or on the completion of reprocessing whichever comes first, safeguards revert from the substituted material to the recovered or contained plutonium. This provision presumes that materials transferred for reprocessing would be reprocessed in an even shorter period of time. In any event, safeguards would be reapplied.

It bears emphasis that in all cases the Agency must agree to the arrangement before it can be implemented, and that the Agency is not obliged to accept any arrangement. Unlike the provision for exemption ("shall be" exempted) suspension is discretionary ("may be").

3.2 Suspension and Transfers [Paragraph 24]

Background and Issues

INFCIRC/66 contains two provisions related to suspension. One, contained in paragraph 25 and discussed above, covers suspensions exclusively for the purpose of reprocessing. The other, contained in paragraph 24, provides for suspension for the purpose of processing, reprocessing, testing, research, or development and, unlike paragraph 25, is subject to quantitative limits which will be discussed in Section 3.3. In the case of paragraph 24 there is explicit reference to Agency-approved transfers "within the State concerned" as well as to any other member state. Internal transfer is only implicit in paragraph 25, on the other hand, but nevertheless intended. This section deals with intra-state transfers and suspension of safeguards.

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Analysis

INFCIRC/26 incorporated the concept of involving suspension procedures for intra-state transfers, and retention of this approach was supported on the ground that it seemed inconsistent to grant a suspension of safeguards when material was being transferred abroad while denying the same benefit to a state moving material within its own borders as long as the same conditions and requirements applied. Not all members of the Working Group shared this view, however.

The Soviet Union viewed the notion of permitting safeguards to be suspended for transfers within a state with great concern. [COM.14/OR.19, ¶95; COM.14/OR.22, ¶8] Arguing that supplied nuclear material that remained in a country should remain under safeguards, the Soviet representative urged deletion from the suspension provision of the words "within the State concerned." [COM.14/OR.23, ¶2-4] The United States and Romania supported this amendment [ibid., ¶4], and while a number of other participants had no strong objection, they did voice concern that deletion of the provision for intra-state transfer, thereby changing an existing practice, could result in greater reluctance on the part of some countries to place facilities under safeguards in the first instance: [e.g., United Kingdom remarks, ibid., ¶5]

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Resolution of this question was only brought about by the virtually unique procedure of the Chairman calling for a vote. A majority of the Group favored retention of the intra-state transfer suspension provision but five countries - Brazil, Canada, Romania, the Soviet Union, and the United States dissented.

Of greater importance than the particular outcome on this issue are two other considerations. First, the very fact that the issue occasioned one of the rare votes recorded in the Agency's Board or one of its committees makes unmistakably clear how seriously the suspension provision was taken even when only small quantities of material were involved. It also diminishes the strength of any claim that might be made that the Group intended liberalization or permissiveness in agreeing to any provisions allowing a state to reprocess any amount of material without Agency safeguards.

Second, the discussion leading to the outcome underscores the narrow and limited context in which even supporters of suspension in the case of intra-state transfers gave their approval. Thus, as several of those who favored retaining the suspension provision noted: (1) "the Agency would not...be compelled to suspend safeguards" but only "may" suspend them [United Kingdom, COM.14/OR.23, ¶13]; (2) "the Agency would not approve the transfer even of small amounts of material if it considered it inappropriate to do so,"

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(India, ibid., ¶8); and (3) in any event "suspension would be subject to an agreement approved by the Agency, and if the terms of that agreement were not complied with, the Agency could immediately call for the re-introduction of safeguards." [South Africa, ibid., ¶13] These careful qualifications establish the boundaries within which any suspension of safeguards for any purpose whatever might be granted by the Agency and demonstrate the intent of participants to limit severely any liberalization in the application of safeguards.

Interpretation

Suspension of safeguards may be authorized with respect to transfers within the state concerned subject to specified conditions and quantitative limitations where substitution is not involved. The suspension is limited to specific purposes including processing, reprocessing, testing, research, or development, and it only can take place "under an arrangement or agreement approved by the Agency." The amount of material to which suspension may be applied depends upon its form and character which are specified in INFCIRC/66, paragraph 24.

The suspension provision of paragraph 25 which provides for suspension exclusively for the purpose of reprocessing, and entails substitution of a like amount and kind of nuclear material in advance of suspension, applies as well to intra-state transfers as it does to inter-state transfers. It does so, of course, under the particular terms and conditions specified in that paragraph.

3.3. Suspension Formula [Paragraph 24 (a)]

Background and Issues

As noted in the introduction to the previous section on transfers, INFCIRC/66 contains two provisions related to suspension. One, paragraph 25, relates to suspensions exclusively for the purpose of reprocessing and contains no limitation on the amount of material regarding which safeguards can be suspended as long as there is appropriate substitution of material and the Agency approves the arrangement. The other, covered in paragraph 24, is the general suspension provision. It derives from paragraph 39 of INFCIRC/26, and like its predecessor encompasses suspension for processing, reprocessing, and other purposes, subject to quantitative limits for specified materials. Despite some differences of view regarding the precise formula to be utilized in implementing the paragraph 24 suspension provision, it clearly was intended by all to deal only with small quantities. The basic issue was what formula to apply in determining the one kilogram limit for the suspension of safeguards on special fissionable material.

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Analysis

The draft revised Safeguards Document contained two formulas for defining equivalence of a kilogram of fully enriched uranium. One formula appeared in the paragraph dealing with general exemptions and provided a 5-kilogram equivalence at 20% enrichment and approximately 4 metric tons at very slight enrichment (0.75%). The other formula occurred in the definition of "effective kilograms of nuclear material" which was devised to deal with inspection frequencies and provided higher equivalence than the exemptions formula at different levels of enrichment, most significantly a 10-ton equivalence at enrichments between 0.5% and 1%. [COM.14/OR.29, ¶22-23]

Whichever formula was used, there would be in addition to suspension with regard to special fissionable material the possibility of suspension of safeguards on: (a) 10 tons of uranium with enrichment greater than 0.5% but not greater than that of natural uranium, (b) 20 tons of depleted uranium with an enrichment of 0.5% and below, and (c) 20 tons of thorium.

In the view of the United States, application of the "effective kilogram" formula "would make it possible, under exemption or suspension, to use 10 tons of 1% enriched material and 10 tons of natural uranium in a reactor, together with exempted depleted uranium, to permit production of approximately 80 kilograms of plutonium yearly." [COM.14/OR.19, ¶25] This consideration led the United States, supported by Canada, to favor use of the same criteria for suspension limits as were applied in the case of exemption. Canada was even more adamant, arguing that the exemption limits already were very high and even if they were adopted as the base formula "caution would be necessary before extending them to temporary exemptions" which is how Canada viewed the whole notion of suspension. [COM.14/OR.29, ¶27]

India argued the opposite case, consistent with its general view that to be acceptable the revised safeguards system should not be any more rigorous than it had been in the past. [COM.14/OR.19, ¶45] Indeed, India went so far as to urge that the general exemption formula be amended to use the effective kilogram formula for special fissionable material. India asserted that suspension was different from exemption, that this difference had been acknowledged by the technical sub-group established to discuss technical problems referred to it by the Group, and that on several occasions participants had stated that the formula devised under United States initiative with a view to maintaining uniformity of exemption of 1 kilogram of U<sup>235</sup> above and below 20% enriched (see COM.14/15) would apply only to exemption limits. As to suspension, India could see no justification for introducing increased rigidity.

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Effort was made to reach an agreed solution in informal consultations. In the final analysis the United States, acquiescing in an apparent majority view in favor of the more liberal "effective kilogram" formula, indicated willingness, with reluctance but not wishing to call for a formal vote on the matter, to accept that formula. In doing so, however, the United States representative stressed "the importance of the views already expressed by the representative of India relating to approval by the Agency, the purposes involved, the permissive character of the provisions, etc." [COM.14/OR.31, ¶2] Thus, INFCIRC/66 retained two different equivalence formulae, each to be used in particular cases. To this extent the objective of simplification was not achieved.

Interpretation

Suspension of safeguards for the purpose of processing, reprocessing, and other activities may be allowed by the Agency under an arrangement or agreement which it approves, provided that the suspension may not at any one time exceed with respect to special fissionable material, one effective kilogram.

This provision requires explicit Agency approval of the arrangement or agreement, including its purpose, and it is permissive rather than mandatory. As noted earlier in discussing other aspects of suspension, the Agency is not in any way compelled to grant suspension and indeed would be expected not to approve any transfer even of small quantities of material if it didn't consider it appropriate to do so. And even where approval was granted, the Agency would retain the right to reintroduce safeguards if it was of the opinion that the terms and conditions of the suspension agreement or arrangement were not being complied with.

3.4 Termination [Paragraph 26]

Background and Issues

The draft provisions regarding termination of safeguards generated considerable discussion, but on only a few points were there any fundamental differences of view. Differences did exist with respect to the concepts of substitution and equivalence, both of which were discussed earlier, and involved more than the question of termination per se. Aside from the addition at United States initiative of several clarifying provisions involving the return of supplied nuclear material in unimproved form to the original supplier, the only other substantive issue to arise in the context of the termination of safeguards related to continued application of safeguards to produced nuclear material after the expiration of the safeguards agreement under which it was produced.

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In effect, the discussion on continued application of safeguards involved two separate but related issues which were not always precisely distinguished in the Working Group. One was the question of pursuit, meaning continued application of safeguards to subsequent generations of produced nuclear material. The other was the question of duration or perpetuity, meaning what happens to safeguarded material of any generation when the agreement under which the safeguards initially were brought into play expired. INFCIRC/66 dealt largely although not exclusively with pursuit. Duration became the subject of a later Board decision, GOV/1621 (1974).

Since IAEA safeguards rights derive from a safeguards agreement, the duration of these rights is dependent on the provisions and intent of the relevant agreements. Project agreements involving Agency assistance were drawn up without any expiration date thereby averting the problem of a termination in which provided materials or subsequent generations would remain in the hands of a recipient state without Agency safeguards. Under INFCIRC/26, however, safeguards agreements relating to bilateral agreements could be concluded only for a specific period (normally the term of the bilateral); after termination, bilateral safeguards rights and obligations presumably would automatically revive, but in the absence of specific agreement Agency safeguards might not continue. The initial draft of what became INFCIRC/66, while reaffirming that nuclear material would not be subject to safeguards after the "safeguards agreement pursuant to which it had been submitted to Agency safeguards had expired", nevertheless provided that safeguards agreements do not terminate with respect to produced special fissionable material...." The question which arose was whether it was in fact possible to provide for safeguards to continue with respect to produced special fissionable material after the expiration of a safeguards agreement unless the agreement itself so provided, and just how to deal with the principle of pursuit.

Analysis

(A) Pursuit [Paragraph 16]

The Chairman underscored that "it had been agreed in principle that the pursuit of nuclear material through the second and subsequent generations were inherent to any safeguards system". [COM.14/OR.21, ¶37] That principle was embedded in the provisions specifying the circumstances requiring safeguards wherein safeguards were extended inter alia to: materials supplied under an agreement; produced in a supplied principal nuclear facility; or produced in or by the use of safeguarded nuclear material. Canada felt that the principle of pursuit was so obviously incorporated in these provisions as to render further mention superfluous. [ibid., ¶42]

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For a number of countries, including the United States, it was essential to ensure that the principle of pursuit be maintained; that "assistance provided by the Agency could not be used to further a military purpose simply because a safeguards agreement had expired," [COM.14/OR.21, ¶.45]; and that there be no loophole through which any material, and particularly produced nuclear material might pass. This view was shared by the Secretariat which was further concerned lest the absence of a provision for continuous safeguarding of produced material leave the matter open "for separate negotiation in respect of each safeguards agreement" which could significantly hamper the Agency. [COM.14/OR.21, ¶.41]

On the other hand, the United States also was concerned to avoid a situation in which the provisions of the Safeguards Document made it particularly difficult if not impossible for states to submit voluntarily to Agency safeguards. Consequently, the United States asserted in response to a draft provision requiring continuance of safeguards, that while it "was in favor of the continuance of safeguards with regard to produced special fissionable material, it was strongly opposed to the idea of introducing that concept into the safeguards document in the form of a categorical requirement." [COM.14/OR.22, ¶.46] From the United States viewpoint when it came to unilateral or bilateral submissions "it was not realistic to insist that safeguards should continue to be applied for an indefinite period of time, and it was certainly better that safeguards should be applied for a limited period than not at all." [ibid.] However, the statement of a general rule which should be approximated in usual circumstances was seen as more than appropriate and in consequence the United States recommended inclusion of a provision that "safeguards agreements should provide for the continuance of safeguards with regard to produced special fissionable material, (or with regard to any material substituted therefore)". [ibid., ¶.52] This language was ultimately incorporated as a general principle in paragraph 16 of INFCIRC/66.

(B) Duration [GOV/1621]

INFCIRC/66 did not rule out the concept of perpetual safeguards (i.e., the notion that a recipient should be subject to control even after an agreement expires until such time as the termination provisions of the Safeguards Document have been fulfilled); it simply did not require it. In the case of bilateral agreements, the closest that INFCIRC/66 came to a direct statement on the question was the provision in paragraph 16 just discussed and there it essentially left the matter to parties to the arrangement. Awareness of this limitation in the Safeguards Document together with the continued negotiation of limited-duration agreements with non-NPT states in so far as the perpetuation of safeguards was concerned [exemplified by the IAEA-Argentine Atucha Power Reactor agreement, recorded in INFCIRC/168], stimulated a

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number of countries including the United States as well as the Secretariat, to seek agreement that a stricter provision for duration and termination of safeguards be adopted in the future. Conceptually, this approach encountered very little resistance despite the fact that only non-NPT countries would be affected and a number of less developed countries challenged the notion that such provisions should be made obligatory rather than left to state discretion.

At its September 1973 meeting, the Board considered a proposal set forth by the Director-General, that henceforth Agency safeguards agreements require specified duration and termination provisions but opposition to the obligatory nature of the provision [see Statement by Governor from France, GOV/1631] made it impossible to achieve consensus. Decision was taken to postpone final consideration until February 1974, at which time a consensus was reached that "the concepts set out in document GOV/1621 (on duration and termination) should normally be reflected in any such agreements as might henceforth be included under the Agency's Safeguards System...." [GOV/OR.464, ¶.1, emphasis added].

In consequence, future safeguards agreements would contain provisions ensuring continued application of Agency safeguards as long as any significant nuclear material or any material produced from it remained in the country. If a safeguards agreement were to terminate, the rights and obligations of the parties would continue to apply to any supplied material or items and any special fissionable material produced, processed, or used in connection with supplied materials or items. These would be included in an inventory to be established to record supplied equipment and non-nuclear material. Actual termination of the operation of the provisions of the safeguards agreement would take place only when everything had been removed from the inventory. In practical terms this created the possibility of a perpetual application of safeguards, and closed the gap with respect to duration.

How much of a concession this less than mandatory language represents is uncertain. The negotiated compromise still creates a strong presumption that the duration and termination provisions of GOV/1621 will be incorporated in IAEA safeguards agreements, and while leaving the door to an alternative formulation slightly ajar, nevertheless imposes the burden of establishing exceptional circumstances justifying departure from the norm on the state making the claim. For its part, the Agency is substantially protected from having to agree to arrangements which are defective with respect to duration and termination provisions. In view of the fact that any state that seriously questioned the terms of an agreement negotiated with the Secretariat would almost certainly have access to the Board for a hearing, the language used in GOV/1621 would appear quite adequate for its intended purpose.

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Interpretation

Termination of safeguards takes effect in a number of stipulated circumstances including expiration of the agreement under which nuclear material initially became subject to safeguards.

However, as a matter of general principle, it is anticipated that produced nuclear material such as plutonium will remain subject to safeguards as a consequence of explicit provisions to that effect in the relevant safeguards agreement.

Implementation of this general principle is further developed through the provision that the duration of a safeguards agreement with respect to nuclear material, equipment, facilities, or non-nuclear material normally is to be governed by actual use of same in a recipient state. Such materials are deemed to be in actual use as long as they appear on an inventory from which they may be removed only when the termination provisions in INFCIRC/66/REV.2 are met. Actual termination of the operation of the provisions of the agreement take place when everything has been removed from the inventory.

Any exception to these rules would depend upon the Board having agreed to alternative provisions in approving the safeguards agreement in the first instance. While exceptions may be granted, the burden of sustaining the case for any derogation of the rule falls fully on the state making the request. The Secretariat for its part is effectively bound to present to the Board a draft agreement that meets the terms of GOV/1621.

4. Issues Related to Safeguards Approaches

All of the issues discussed in the preceding section involved conditions for bringing safeguards into effect or for exempting, suspending, or terminating safeguards. Although these matters consumed a very substantial portion of the Working Group's time, they were not the only ones to command attention. A second cluster of issues existed with respect to safeguards approaches. While certain of these issues were important in general, or to certain participants, they were on balance less complicated and less controversial than the issues related to the scope of Agency safeguards. No major issue of procedure was raised in the Board discussion of the Working Group report, and overall the Board devoted little time to discussion of safeguards approaches.

Only the more prominent issues of procedure to arise in the Working Group are dealt with here. For the most part, the approaches which were agreed upon in the development of the first Safeguards Document were incorporated subsequently in INFCIRC/66. Changes were largely presentational in nature rather than substantive.

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As the discussion which follows demonstrates, this does not mean there were no differences of view or that efforts were not made on one side or the other to strengthen or to weaken certain procedures; but it does mean that the two documents are substantially the same in terms of meaning and intent.

Two sets of issues can be identified - those involving general safeguards approaches and those relating to particular approaches applied to nuclear reactors. Some features of both sets of issues will recall principles and points raised in Section I.2 in which general considerations regarding the structure and content of INFCIRC/66 were discussed. As particular approaches are normally a specific application of a general principle, either enlarging upon or curtailing the scope of the latter, the two are treated together.

How the Agency will apply its rights and discharge its responsibilities in carrying out the safeguards obligations it assumes as a consequence of assistance it provides, or by accepting the transfer of bilateral or multilateral safeguards, or by virtue of unilateral submission, are established in the Agency's Statute. Article XII.A outlines a number of basic approaches four of which are central to INFCIRC/66: design review, maintenance of records, providing of reports, and conducting of inspections. Two other approaches, the deposit of excess produced material and measures in the event of non-compliance, were not developed in the Agency's safeguards documents, and a final one relating to requiring observance of health and safety measures was separated from safeguards at a very early stage.

The following are the issues to which the Group devoted the most attention and which were regarded as most important:

- a) How the concept of "design approval" should be defined and implemented;
- b) What the role of safeguards should be during construction of a principal nuclear facility;
- c) The manner of defining and interpreting frequency of routine inspections; and, most importantly
- d) How the concept of "access at all times" should be understood and implemented.

As noted above, these were not the only issues debated in the development of INFCIRC/66, but the most salient ones. Other issues worthy of note will be identified in the paragraph by paragraph presentation of the Safeguards Document which follows the discussion of key issues.

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4.1 Review and Approval of Design [Paragraphs 30-32]

Background and Issues

Article XII.A.1 of the Agency Statute and paragraphs 40(a), 42, and 43 of INFCIRC/26 established the principle and procedures for design review and approval. The issue in question was whether such a procedure was necessary and if so, how it should be carried out.

Discussion of this issue highlighted an important transitional feature of the safeguards system, namely that its principal application would involve transfers of bilateral safeguards and voluntary submissions rather than Agency projects. It also was a microcosmic reflection of a feature common to much of the review, namely the tendencies of different participants toward a narrow or broad construction of Agency authority.

Analysis

The central point of discussion was what was intended by the provision that the Agency would "approve" the design of a facility. For some countries such as Canada "approval" meant just that: "Where the design of a reactor suggested that it could be used for a purpose other than was claimed it would not be inconsistent with the Statute or with the safeguards document to voice disapproval." [COM.14/OR.13, ¶29] For others, like Brazil and Romania, the concept of "approval" implied a too far-reaching jurisdictional power for the Agency. [COM.14/OR.3 ¶31, 17] Still others found it difficult to visualize how the Agency could in any event "approve" a design of an already constructed facility that was being transferred for safeguards purposes to Agency supervision. [Soviet Union, ibid., ¶14]

From the point of view of the United States, a distinction needed to be made between Agency projects and other situations. In the former instance "the Agency would obviously approve the design before sponsoring a project" while in the latter "the Agency would examine the project to determine whether safeguards could be effectively applied..." [ibid., ¶28] For both situations, approval in this context really amounted to a "decision" as to whether safeguards could be effectively applied. In other words, approval "referred to the Agency's decision to assume...responsibilities and had no bearing on the execution of the design." [ibid., ¶24, statement by Chairman] If the Agency felt that it could not effectively apply safeguards, "it could either decline responsibility for administering the safeguards or suggest the necessary alteration to make acceptance possible." [ibid., ¶22, India]

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The intention to interpret approval as something less than authorization or non-authorization can be seen in the Group agreement to change the terminology in the French text from "approbation des plans" to "examination des plans." [COM.14/OR.24, ¶1-2]

Canada's observation noted above, about the purposes to which a reactor might be put highlighted another dimension of the approval issue, namely how to deal with the statutory reference to assuring, in reviewing a design "that it will not further any military purpose." Largely in response to the reality that design review alone could not establish the use to which a facility might be put and that the main aim of the Safeguards Document was the effective application of safeguards which in turn served as a means of achieving the statutory objective of ensuring that Agency or bilateral projects would not further a military purpose, the Group agreed that review should be limited to the criterion that the facility would permit effective application of safeguards.

Thus, the fact that a facility might be suitable to contribute to a military purpose would not preclude design approval or Agency acceptance of safeguards responsibility. This would not of course foreclose the Agency from inquiring "into the real purpose before sponsoring a project" or ensuring, once it had accepted responsibility, "that the use made of the reactor was consistent with that originally announced." [COM.14/OR.3, ¶28]

Design review approval elicited a number of other questions and concerns, particularly on the part of Japan [COM.14/2/ADD.1, COM.14/OR.3 ¶23] who was concerned that the Agency be limited to just such information necessary to ensure effective application of safeguards, and that a time limit be established for the Agency to review and approve designs. These concerns, which a number of other states shared, [COM.14/OR.3, ¶18, 21, 22] reflected a widely held view that the Agency should exercise its responsibilities with restraint and in a manner calculated to minimize the risk of necessary or undue interference in national nuclear activities. As this genre of concern is dealt with elsewhere in this study, in particular Section I.2 which provides an overview of the character of INFCIRC/66, it is not discussed in any further detail here.

Interpretation

The principal purpose of design review is to enable the Agency to determine whether the facility in question will permit the effective application of safeguards and thus enable the Agency to carry out its responsibilities. The Agency is entitled to receive whatever information is necessary to make such a judgment, and if it

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were of the view that the facility would not permit effective safeguards it could decline responsibility for administering safeguards or recommend alterations necessary to make acceptance possible.

Approval is not intended to mean Agency authority to permit construction of a reactor, but only "that the Agency approved of the design as being satisfactory for the purpose of permitting acceptance of safeguards responsibilities." [COM.14/OR.3, ¶24] In practical terms, for Agency projects, insofar as Agency approval is a precondition to entering into a safeguards agreement, approval does provide substantial leverage to ensure that a facility is so designed as to facilitate the application of effective safeguards. And, its ability to decline to accept safeguarding responsibility with regard to a transfer arrangement or unilateral submission provides leverage to ensure that the facility in question meets the requirements the Agency deems necessary to exercise safeguards.

4.2 Safeguards During Construction [Paragraphs 41, 51, 52]

Background and Issues

Closely related to design review was the issue of safeguards during construction, in particular the question of whether the implementation of safeguards at this stage was necessary, and if so how they should be carried out. Then as now this question was particularly relevant to concerns about eventual safeguarding of reprocessing plants and the utility of frequent if not continuous onsite inspection during construction in order to ensure that the facility was in fact constructed in accordance with the design of which the Agency had been informed, and to enhancing agency knowledge of and familiarity with the facility for which it was to assume safeguards responsibility; but it also related to the construction of other facilities including reactors.

Unlike design review, the provisions of INFCIRC/26 for safeguards during construction [paragraph 55] did not have a specific statutory antecedent. Rather, it had been introduced as a logical corollary to the notion that the Agency would undertake to review facility designs in order to satisfy itself that safeguards could be effectively applied.

Analysis

The issue of safeguards during construction embraced two closely related procedures, inspections and reports. The two were never fully separated in the Working Group deliberations despite the fact that they were dealt with independently in the draft document

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that became INFCIRC/66, and discussion tended to shift back and forth between them with emphasis initially on inspections and later on reports.

The United States, joined by Canada and the United Kingdom, carried the argument in favor of optimizing safeguards during construction while Japan, Switzerland, India, and the Soviet Union formed the core of resistance to anything more than very modest provisions.

In the United States view if the review of design was an important feature of safeguards then "the opportunity to ensure that the facility was constructed in accordance with the design would seem to be a logical consequence" and inspections an appropriate element of this effort. [COM.14/OR.3, ¶49] Furthermore, if the Agency could confirm that "there was no departure from planned design or equipment, subsequent inspection procedures might wish greater assurance," be simplified. [ibid.] In addition to establishing an important principle, this assertion served as an inducement to those who were uncertain whether to support so early an implementation of inspection procedures, but who also were anxious to minimize Agency intrusion in facility operation and thus might be encouraged to support provisions which held out some promise of limiting Agency involvement.

The United States view on the potential benefits of safeguards and especially inspection during construction was shared by a number of others including Canada which contended that "the opportunity of access to more highly active parts of the plant...would enable a knowledge of them to be gained that could not be acquired from design plans" and which "together with the possibility of verifying the instrumentation at the time of the installation, would greatly simplify the task of applying safeguards during operation." [ibid., ¶54]

The principal arguments against inspection during construction were its alleged impracticability (availability of inspectors, costs) and the "unnecessary difficulty in building operations" that it would cause [ibid., ¶44, India] -- a claim made on several occasions but for which no evidence was ever adduced. Additionally, the procedure of pre-operational inspection was seen as introducing a logical contradiction in the sense that while it could be applied to Agency projects to build facilities, it could not be applied to existing facilities placed under safeguards as a consequence of bilateral transfers or voluntary submissions. These differences invited the conclusion that the most that could be said in seeking to define a Group consensus was that "inspection during construction was considered not strictly necessary but desirable where physically possible." [ibid., ¶57]

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Indeed, the system could not logically require inspection during construction since the system had to be able to apply to existing facilities, and the provisions finally incorporated in the Safeguards Document (INFCIRC/66, ¶41, 51 and 52) reflect this reality. The requirement that "the State shall submit progress reports on the construction of a principal nuclear facility" at the Agency's request [COM.14/7, IIIA.4.5] was restructured to provide that "if so provided in a safeguards agreement" the Agency may request information "as to when particular stages in the construction of a principal nuclear facility have been or are to be reached. [INFCIRC/66, ¶41] Thus, what had been intended as mandatory was rendered permissive only. The permissive language which was drafted by the United States delegation in the spirit of compromise and to facilitate achieving consensus, does not however entirely preclude the Agency from acquiring whatever information it deems necessary to fulfill its safeguards responsibilities, for it remains free to refuse to consummate a safeguards agreement which it regards as defective or insufficient. Importantly, this provision was incorporated over and against an earlier Soviet proposal, supported by India, Japan, and the United Arab Republic to delete any requirement at all for progress reports during construction [COM.14/OR.24, ¶81-82] thereby demonstrating basic support for the general concept.

Insofar as the pre-operational inspection of facilities was concerned, this was treated in the context of initial inspections of principal nuclear facilities to verify that construction was in accordance with the design reviewed by the Agency. The initial discussion at the level of general principles, reported earlier had not resulted in a clear outcome, but left the issue in abeyance. When subsequently revisited in the context of the first draft of the INFCIRC/66 document and after discussion of the role of reports during construction, pre-operational inspection elicited limited commentary. The provision was harmonized with that for reports by inclusion of the phrase "if so provided in a safeguards agreement," as soon as possible after the facility has come under Agency safeguards" in the case of an already operating facility, and "before the facility starts to operate" in all other cases. [INFCIRC/66, ¶51]

Provision also was included for reviewing and testing measuring instruments related to safeguards data acquisition. This was the feature of the original Safeguards Document that had most concerned Japan and Switzerland, in particular the possibility that such procedures might interfere with facility operations. [COM.14/OR.3 p.43] Consistent with the general principle that safeguards should entail a minimum of interference and not constitute an undue burden, provision was made at the initiative of the United Kingdom that instrument testing "shall not hamper or delay the construction, commissioning or normal operation of the facility." [INFCIRC/66, ¶52]

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Interpretation

By explicit provision in the Safeguards Document the Agency may call upon a State to provide information with regard to construction progress of a principal nuclear facility. Although this is predicated on the relevant safeguards agreement containing the appropriate provision, there would seem to be little doubt but that the Agency has the authority to make such a request even in the absence of such a provision. As one of the steadfast opponents to its inclusion in the Safeguards Document noted, "If the Inspector General were to write to an undertaking and ask how far construction was advanced, no one would deny him the information." This representative did not think "that conclusions which were obvious to every reasonable person should be written into the document." [COM.14/OR.25, ¶21, Soviet Union] And, as a staunch supporter of its inclusion asserted, the Agency "did not need an agreement to 'request' anyone to do anything." [ibid., ¶54 Canada] In any event, as stated earlier, the Agency is free to refuse to conclude a safeguards agreement that is deficient in providing it whatever is necessary to the effective fulfillment of its statutory responsibilities.

Pre-operational inspections of principal nuclear facilities, or in the case of already operating facilities, initial inspections, including review of operating characteristics and testing of measuring instruments to ensure that construction was carried out in accordance with design, also fall within the purview of Agency safeguards authority.

As in the case of progress during construction, implementation is linked to provisions in the safeguards agreement by virtue of which Agency safeguards come into effect. In this manner the safeguards agreement defines the character of inspections, but equally clear is the fact that even in the absence of such a provision the Agency could decline to accept safeguarding responsibility if it were unable to assure itself otherwise that it could effectively apply safeguards. The optional form of presentation and the permissive nature of the provision do not diminish the statutory rights of the Agency.

4.3 Inspection Frequency [Paragraphs 57, 58]

Background and Issues

Although discussion of inspection procedures generally evoked little controversy, having adopted the provisions already recently agreed upon in INFCIRC/26, adoption of the relevant provisions did raise some questions of potential importance. INFCIRC/66 set

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forth the nature and scope of routine inspections and established a schedule of inspection frequency based on annual usage or maximum potential production of specified nuclear materials also taking account, for purposes of actual implementation, of characteristics of the inspected state's nuclear program. These provisions were largely incorporated in the preliminary draft of the revised Safeguards Document that eventually became INFCIRC/66. The key questions involved the presentation and interpretation of these provisions. The important related question of limiting frequency of access ("access at all times") is treated separately in the next section.

Analysis

INFCIRC/26, ¶65 calculated frequency of routine inspections on the basis of annual usage or maximum potential production of special fissionable material. The preliminary revision while retaining the latter proposed to base inspections either on the fuel loading or on the facility inventory in excess of fuel loading, whichever was larger. The United States opposed this formulation contending that for purposes of establishing the maximum number of routine inspections "the total amount of material on the reactor site should be taken into consideration just as the total amount of produced fuel was in the case of other provisions. [COM.14/OR.27, ¶41] In consequence, the United States proposed that the relevant sub-heading in the table specifying routine inspection frequencies be modified to provide that facility inventory including loading serve to define those frequencies. [COM.14/9, ¶15]

France concurred in the United States suggestion, noting that the "Group must be careful to avoid a situation where a country could limit the number of inspections at one facility simply by storing the facility's excess fuel on the site of a different facility." [ibid., ¶53] The issue was nevertheless seen as sufficiently technically complex (i.e., the logic and technical basis for treating inventory and annual output on the same basis given the fluctuation of the former in contrast with the latter were sufficiently unclear) as to result in the formation of a technical sub-group which recommended against adoption of the United States proposal. [COM.14/OR.28, ¶4] However the United States persisted, and in slightly altered form resubmitted its proposal to combine the two components. Following a Secretariat statement that it "could not conceive of any case in which the maintenance of the existing separation of components...would be of any great practical significance" [COM.15/OR.32, ¶7] the proposed amendment was finally adopted.

The specification of the maximum frequency of routine inspections only determined what could be done, not what the actual frequency of inspection might be. INFCIRC/26 ¶64, provided that inspections

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would be kept to a minimum consistent with the effective application of safeguards, but this left a wide berth for Agency flexibility.

Views on the issue of inspection frequency differed. The United States asserted that "the number of inspections should not be limited. The very concept of an unlimited number of discrete inspections that could be made at all times would lead to simplification of the inspection system and was in itself a deterrent." [COM.14/OR.11, ¶35] Japan, on the other hand, embraced a more restrictive view that "in normal cases" four inspections a year should be sufficient since inspections constituted only one element of safeguards which also involved records, reports, and design reviews. [COM.14/OR.27, ¶56] This was consistent with an earlier expressed Japanese view that in the matter of frequency of routine reports, which was closely related to the frequency of inspections, "quarterly reports were sufficient irrespective of reactor power." [COM.14/OR.11, ¶20] Additionally, Japan emphasized the desirability of making extensive use of instrumentation which would be calibrated by the inspectors and which, together with a "small number of surprise inspections as well as routine checks," would permit achievement of high safeguards effectiveness. [ibid., ¶33]

In support of these views Japan urged incorporation in the revised document of a provision in INFCIRC/26 to the effect that the actual frequency of routine inspection would take into account broader fuel cycle and programmatic considerations such as the nature of material used or produced in the reactor and whether the state in question possessed fuel reprocessing capacity. Despite its uncertainty about whether the Agency would necessarily have knowledge whether a particular state possessed a reprocessing facility, the United States supported the Japanese suggestion on the understanding that the Secretariat would bear that point in mind in interpreting the provision. [COM.14/OR.27, ¶59] The Japanese suggestion was accepted by the Group leading to incorporation INFCIRC/66. Similarly, that document includes a general principle that the number, duration, and intensity of inspections (which elements were viewed by a number of participants in the discussions as trade-offs) would be kept to the minimum consistent with effective implementation of safeguards, and that fewer than the authorized number of inspections could be carried out if the Agency so decides. [INFCIRC/66, ¶47]

Interpretation

For reactors, the maximum frequency of routine inspections is determined by taking into consideration the totality of inventory and in-reactor material; annual throughput; and maximum potential annual production of special fissionable material, and using the largest of these three numbers.

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The actual frequency of reactor inspection takes a number of factors into consideration including the nature of the reactor, its material, and, insofar as the Secretariat feels confident that it can make such a judgment, whether the country in question possesses fuel reprocessing capacity.

More generally, the Agency maintains discretion with respect to the number of inspections it is authorized to carry out that it will actually conduct, and the number, duration, and intensity of inspections will be consistent with what is minimally necessary to implement effectively its safeguards responsibilities.

4.4 Access At All Times [Paragraph 50]

Background and Issues

One of the most important issues to arise in the review of the Safeguards Document involved defining the scope and intent of the concept of "access at all times" which became operational in the context of establishing the frequency of routine inspections of safeguarded nuclear material. INFCIRC/26 which dealt only with small reactors had provided for a maximum of 12 inspections a year. ADD.1 of that document, which extended Agency safeguards to large reactor facilities, raised the upper limit of inspection frequency to "access at all times", a concept which figured in the Agency Statute (Article XII.A.6), but which never was given a clear definition. The initial draft of INFCIRC/66 proposed that when the Agency had access at all times it could assign one or more inspectors to reside in the state in accordance with arrangements made between the state and the Agency, and it specified the basic rights of such inspectors as well as the Agency's responsibility to keep the state informed of results of inspections.

At issue were such questions as: what relationship existed between "access to all times" and the notion of resident inspectors; whether the concept of access at all times implied regular inspections at specified intervals or inspections at irregular intervals whenever the Agency's inspectors wanted it; and how to deal with the question of notice when invoking the access at all times provisions. More than any other issue, this one touched the sensitive nerve of sovereignty and evoked the strongest and most direct statements of the rights of sovereign states and the principles of international law. Yet it was not so much the question of basic principle that was at stake as the matter of implementation.

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Analysis

General agreement existed that there should be some correlation between the type and power of a reactor and the number of inspections [COM.14/OR.4, ¶4 - Soviet Union, ¶8, - India, ¶9, - United Kingdom, e.g.,]; that there existed a difference between "access at all times" and resident inspectors [ibid., ¶20 - India, ¶21 - South Africa, and ¶22 - Chairman's Summary e.g.,]; and that there was nothing inherently objectionable in the principle of access at all times.

Japan took the lead in contending for a narrow construction of the concept however. In the Japanese view "inspections in normal cases should be carried out twice a year with advance notice and one a year without advance notice." The Japanese Government felt that this "satisfied the need for 'access at all times' under normal circumstances" and that "the adoption of some such norm would not prevent the Director General from authorizing additional inspections without advance notice if he considered that circumstances warranted such action." [ibid., ¶5]

Elaborating its position, Japan asserted that states would be under no obligation to accept resident inspectors; that the Agency could assign such inspectors only with the consent of the state concerned; that "access at all times" was different from resident inspection; and that such access could be amply assured by giving to the Agency the right to carry out a certain number of routine inspections without prior notice. [COM.14/OR.25, ¶84-87] From the Japanese perspective, having agreed to the general principle of 'access at all times,' "a country should be free to decide in conjunction with the Agency on the most effective procedures to be employed;" the practical arrangements should be the subject of a joint state-Agency decision. [COM.14/OR.26, ¶9] In general, these views were endorsed by a number of other countries including India, United Arab Republic, and France although as will be noted below, these countries did not fully share views on how to deal with the issue.

The United States reflected a different perspective on these questions, one which started from the proposition that the number of inspections should not be limited and that "the very concept of an unlimited number of discrete inspections that could be made at all times would lead to simplification of the inspection system and was itself a deterrent." [COM.14/OR.11, ¶35] The United States concurred in the Chairman's interpretation of the relevant safeguards provision that "when the Agency had the right of access to a principle nuclear facility at all times its inspectors could be entitled to enter the country and the facility at any time and without advance notice. When the Agency felt it convenient to do so, it would have the right to station its inspectors in the country concerned; details of how such resident inspectors should

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operate would be laid down in a special agreement between the Agency and the state concerned." [COM.14/OR.26, ¶4]

For the United States and some others, resident inspection was a means of implementing the principle of access at all times and offered the prospect of a more simplified set of procedures. Additionally, it saw nothing in the Inspectors Document (INFCIRC/39) to "prevent an inspector from being assigned to a country and from staying there as long as he needed to." [COM.14/OR.27, ¶6] This interpretation was sharply contested by the Japanese representative who asserted that "the absence of such (negative) specific provisions did not imply that the Agency had any positive right to assign inspectors on that basis. The implied meaning of the document was that the Agency did not have the right to assign a resident inspector to a State unless that State agreed." [COM.14/OR.26 ¶10]

In an effort to sidestep the resident inspector issue France suggested that it was essentially an organizational problem and needn't be specifically referred to in the Safeguards Document. What was essential was the general agreement on the fundamental point that the Agency should have access to principal nuclear facilities at all times. [ibid., ¶11] While "acceptance of resident inspectors in a particular case might be a practical consequence of acceptance of that principle...it was a matter that would have to be agreed upon between the Agency and the State in question." [ibid., ¶13]

India endorsed this view noting that it was "undesirable to elevate the matter of resident inspectors which was...an administrative issue, to the rank of a principle...." However it was "convinced that, once the idea of access at all times was accepted, countries would not have difficulty in working out suitable practical procedures in consultation with the Agency. [ibid., ¶17]

Asserting that "it went without saying that inspectors could not be assigned to a country for long periods of time without the consent of the country involved [COM.14/OR.27, ¶11] the United States proposed alternative language entailing the deletion of specific reference to resident inspection "on the understanding that the existing document relating to the Agency's inspectors did not preclude the Agency from making long-term assignments of inspectors to a State under agreed arrangements." [ibid., ¶12, emphasis added]

Subject to relatively minor editorial revision the United States-proposed language ultimately was adopted as the core of the provision on access at all times but not before extended debate stimulated by a United Arab Republic initiative to limit 'access at

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all times' without prior notice to situations in which the parties to the safeguards agreement had so agreed [COM.14/OR.27, ¶15], and a supporting Indian proposal that notice need not be given only "if so provided in the safeguards agreement." [ibid., ¶17]

This posed more serious problems because it risked undermining a basic principle of the safeguards system rather than involving a matter of administrative detail.

The United Arab Republic affirmed acceptance of the principle that there must be an effective safeguards system "and that in certain cases inspectors must have the right of access at all times." [COM.14/OR.30, ¶38] This was not, however, interpreted to mean coming without giving notice. Rather, it was deemed essential that the relevant paragraph in the Safeguards Document "should contain recognition of the necessity of providing for a certain minimum period of notice" [ibid., ¶45] which the United Arab Republic representative believed should be 72 hours at a minimum.

Resolution of the issue came from a Netherlands proposal that the actual procedure for implementing the principle of access without notice would be dealt with in the safeguards agreement itself. This was seen as preserving the principle of access at all times while introducing an element of flexibility enabling states to take "their own administrative regulations into account when the procedure to be followed for implementing the safeguards system was formulated." [COM.14/OR.31, ¶23, Belgium] By avoiding provision of a specific time limit or even the notion thereof, and by not conditioning relevance of the provision on its explicit inclusion in a safeguards agreement, the basic principle was preserved.

Interpretation

The principle of 'access at all times' under specified circumstances is a basic principle of the safeguards system. When the Agency has a right of 'access at all times' it means all times and not just any time. The right is not one that can be used up.

This right is incorporated in safeguards agreements and it is not expected that the Agency would negotiate an agreement not containing such a right.

The administrative procedures required to effect implementation of the principle are to be worked out between the Agency and the state in question consistent with the purposes of the safeguards system and the Agency's Safeguards Document.

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The provision that prior notice need not be given where the Agency has a right of 'access at all times' is to be interpreted in this light. However, the Agency is expected to utilize this right of inspection without prior notice judiciously, that is to say only in so far as doing so is necessary for the effective application of safeguards, and thus to avoid unnecessarily inconveniencing the safeguarded state.

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III. SECTION BY SECTION REVIEW OF INFCIRC/66

INFCIRC/66 contains four parts:

1. General Considerations which deals with the purpose and general principles of the document and agency safeguards including agency obligations and principles of implementation;
2. Circumstances requiring safeguards which establishes the materials that are subject to safeguards as well as provisions for exemption, suspension, and termination of safeguards, including the manner of handling the transfer of safeguarded material out of the jurisdiction in which it is being safeguarded;
3. Safeguards Procedures, both in general and with respect to reactors and to materials outside principal nuclear facilities, including records, reports, and inspections; and
4. Definitions of the document's key terms and concepts.

Part III of the report provides a paragraph by paragraph review and analysis of (1), (2), and (3) above, with respect to INFCIRC/66. The two annexes, subsequently developed, extend the system to reprocessing facilities and to fabrication and conversion plants, which are respectively identified as REV.1 and REV.2, and are treated separately in Part IV. REV.1 and REV.2 fully incorporate all of INFCIRC/66 [except those paragraphs which deal specifically with reactors.]

1. General Considerations

Unlike the earlier Safeguards Document, INFCIRC/66 establishes in an orderly and systematic manner its purposes and scope, the strictures under which the agency is to carry out its safeguards responsibilities, and certain principles of implementation. For the most part the provisions included as general considerations were responses to the concerns voiced by a number of the participants including India, Brazil, Japan, and Switzerland that safeguards not hinder peaceful development of atomic energy or intrude unduly on legitimate peaceful nuclear activities. From the United States point of view such provisions did not derogate the ability of the Agency to carry out its safeguards responsibilities. The rights and responsibilities the Agency was to have with respect to any safeguards arrangement were set forth in Article XII.A of the Statute and this was expressly recognized in paragraph 2 of

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INFCIRC/66. In addition as inscribed in paragraph 3 of the latter, the principles and procedures set forth were to provide guidance to the Board and other agency organs to determine what provisions to include in safeguards agreements. In the last analysis, however, it was up to the Board whether or not to accept a particular safeguards agreement.

The first eight paragraphs of INFCIRC/66/REV.2 establish the purpose and scope of the document:

Paragraph 1: This paragraph recites Article II of the Statute of the IAEA in which the Agency's two fundamental objectives - promotion of the peaceful uses of atomic energy, and ensuring that in doing so it does not promote military atomic purposes -- are established. The linkage between peaceful and military technology in the second sentence was retained at United States urging over the objection of the Indian representative who regarded "explanations of why particular provisions had originally been adopted" as out of place in the new Safeguards Document. This difference of view does not appear, however, to be of any substantive significance. [See GOV/COM.14/OR.14, ¶2,3]

Paragraph 2: The second paragraph explicitly establishes the purpose of the Safeguards Document to be to enable the Agency to fulfill its statutory obligation. Articles III.A.5 and XII.A are cited to establish the authority for such a system in the first instance and, in the second, to identify the basis and nature of Agency rights and responsibilities with respect to its safeguards activities. In neither this nor the previous paragraph (both of which were part of a single paragraph in the initial draft) did any issues of substances arise. Changes, to the extent they were introduced, related only to clarification or ensuring consistency with IAEA statutory language.

Paragraph 3: Paragraph 3 is intended to make clear what the application of safeguards would involve both in terms of principles and manner of implementation and to underscore that once an agreement entered into force the freedom of action of the Secretariat was limited and that the safeguards provision would have to be interpreted consistently with the safeguards system. It thus has an informational purpose designed to ensure that the parties to an agreement understood the nature and scope of safeguards activities before concluding an agreement.

Paragraph 4: An important issue at the time that the Statute of the IAEA was negotiated was whether membership in the

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organization mandated the acceptance of safeguards. It was then decided that membership did not automatically entail safeguards and that they only came into play under explicit circumstances and conditions which are set forth in Article III.A.5. Paragraph 4 reflects a carryover of that orientation in explicitly asserting that provisions of INFCIRC/66 only become legally binding upon entry into force of a safeguards agreement and then only to the extent that they are incorporated therein.

Paragraph 5: In anticipation that many sections of the Safeguards Document would be incorporated into bilateral or multilateral agreements and that most cases would involve transfers of bilateral safeguards to the Agency, the United States recommended insertion of a provision that would facilitate such incorporation. Additionally, the United States urged inclusion of a provision that the Agency would not assume responsibility for administering safeguards unless the principles and procedures of such safeguards were essentially consistent with those set forth in the Safeguards Document. This underscores the fact that the Board of Governors has the final decision on whether or not to approve a particular safeguards agreement negotiated with the Agency and it forewarns parties not to anticipate less rigorous standards where arrangements other than Agency projects were involved. At the same time it admonishes the Secretariat to negotiate agreements that meet the norms and criteria of the Safeguards Document, and the Board to be vigilant in its review of agreements placed before it which entail acceptance by the Agency of safeguards responsibilities.

Paragraph 6: Development of a revised Safeguards Document raised the question of how to treat safeguards agreements established under INFCIRC/26 and ADD.1. The purpose of paragraph 6 is to affirm that the adoption of a revised safeguards system would not require the Agency to call for revision of earlier agreements and to establish that while existing agreements could be revised in light of the new document they would continue to be administered in accordance with the original provisions unless and until such revision took place. While there was a general view that eventually the new system would replace the then existing system, it also was widely felt that it was up to the parties concerned to change existing agreements, and not a function of the Working Group. In addition the transfer of safeguards under bilateral agreements had proven to be time-consuming and this provision ensured continuity of agreements and their implementation either during or in the absence of renegotiations of existing agreements.

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Paragraph 7: While there was general consensus that all phases of the fuel cycle should be controlled and that provisions would have to be made for safeguarding other principal nuclear facilities than reactors, it also was agreed that for purposes of the document under consideration [INFCIRC/66] the focus should be on nuclear reactors. At the same time it was believed that some clause was necessary to the effect that specific provisions relating to facilities other than reactors would be developed and incorporated in the revised system as soon as they were required. [See GOV/COM.14/OR.16, ¶41-54] Only South Africa opposed omission of specific reference to facilities other than reactors in the Safeguards Document itself. [*ibid.*, ¶48 and GOV/COM.14/OR.13, ¶37] This was consistent with the general South African view that plutonium and other fissionable materials should be the principal focus of the Agency's safeguards system. [GOV/COM.14/OR.2, ¶38] Paragraph 7 reflects the common agreement that the provisions of the Safeguards Document would relate to reactors and that additional provisions for other types of principal facilities would be developed as necessary. REV.1 and REV.2 contain such additional provisions for reprocessing, conversion, and fabrication plants.

Paragraph 8: The original Safeguards Document [INFCIRC/26] had provided for a review after 2 years "in light of the actual experience gained by the Agency as well as of the technological development which has taken place" (paragraph 5).

The initial draft of INFCIRC/66 contained a similar provision but instead of designating a specific period in which such a review should take place, left the issue open by referring only to "periodic review." Japan, in particular, took strong exception to this manner of dealing with the issue of timing of the review and urged that "as experience would perhaps prove some of the procedures specified...to be impracticable" [GOV/COM.14/OR.14, ¶53] a first review should be carried out in 2 or 3 years. Others, however, felt that any risk that the Board was locking in procedures without an adequate basis of experience, particularly with large power reactors, could be adequately dealt with in the framework of a provision for "periodic review." Consensus formed around this position leading to retention in the final document of the "periodic review" language.

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Similar concerns were expressed with regard to REV.1 (re-processing plant safeguards) and REV.2 (conversion and fabrication facilities) resulting in the use of more urgent and time-specific provisions -- "Because of the possible need to revise these procedures in the light of experience, they shall be subject to review at any time and shall in any case be reviewed after two years' experience of their application has been gained." [paragraph 1 of both Annexes to INFCIRC/66]

Revision of the Safeguards Document provided not only the opportunity to clarify and consolidate the earlier Document and its extension to large power reactors but also an occasion for those concerned about the possibility that safeguards might be implemented in such a manner as to impede economic progress or nuclear development to seek adoption of general principles that would mitigate such risks. These concerns are reflected and dealt with in paragraphs 9-14.

Admonitions regarding the importance of avoiding a situation in which safeguards impeded peaceful nuclear development were frequent during the Working Group discussions and resurfaced at the time the Board met to consider the Document submitted to it for review and decision. The concern was not limited to developing countries although India, Brazil, and the United Arab Republic lost no opportunity to reiterate the point, but also was expressed by newer advanced industrial state entrants into the nuclear arena such as Japan and Switzerland.

Paragraph 9: This paragraph, recalling the objectives of Article II of the Agency Statute to promote peaceful uses of atomic energy while seeking to ensure against abuses of its assistance, underscores the general expectation that safeguards are to be implemented in a manner designed to avoid hampering economic or technological development. The intention of this provision is to reassure states and to remind the Secretariat on the point dealt with.

Paragraph 10: An important philosophical discussion emerged over whether the procedures prescribed in the Document were or should be consistent with prudent management practices. The intention of this paragraph, as originally drafted, was to assert that the experience gained in applying safeguards had demonstrated that it had been unnecessary to invoke requirements or procedures with respect to records or reports beyond those already available in a well run establishment and that safeguards procedures were consistent with prudent management practices. The proposed wording, which was informative rather than mandatory in character, stimulated discussion of whether safeguards practices were or should be consistent with prudent management.

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The United States view, not fully shared by many others, was that "the procedures required for adequate safeguards were in fact very similar to those demanded by prudent management" and although not identical posed "no basic conflict" to one another. [GOV/COM.14/OR.15, ¶30] The prevailing view, however, was that regardless of experience what was necessary was language establishing what the standard should be and the norm to which the Agency should be held. The formulation finally adopted [at United States suggestion] established that safeguards procedures shall be implemented in a manner consistent with prudent management practices, thus passing no judgment on the nature of the system, but establishing a standard of conduct.

Paragraph 11: At the initiative of the United States a provision not contemplated in the initial draft of the proposed revised Safeguards Document was introduced to further assure states regarding the implementation of safeguards. This provision affirmed that only the Board of Governors itself, and not the Secretariat or even the Director General can request a state to stop the construction or operation of any principal nuclear facility to which Agency safeguards procedures extend.

When introduced [GOV/COM.14/OR.15] this provision was accepted virtually without any discussion. However, at a later point the question arose whether a Board decision to request correction of construction or operation of a principal nuclear facility pursuant to this paragraph should require a two-thirds majority of members present and voting. The issue was not resolved in the Working Group which concluded that only the Board could decide voting rules on particular issues. [GOV.COM.14/OR.31] The Board in discussing this question [GOV/OR.357] decided not to specify the need for a qualified majority, despite the evident concern of a number of Governors. An important reason for this outcome was an understanding concurred in by the United States that if such a serious decision ever were to have to be taken, the presumption would be that a two-thirds majority would be necessary. [ibid., especially ¶8 and ¶9 in which United States and Indian views were expressed.

Paragraph 12: This paragraph contains the obligation for the Agency to consult with states concerning application of the provisions of the Safeguards Document. The initial version of the provision left it up to the Director General to consult with a state if the Agency considered it necessary to do so in the context of implementing safeguards. The final

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version, the substance of which was recommended by the United States [GOV/COM.14/9, ¶10] made consultation mandatory. One of the apparent concerns of some states was that appointment of inspectors should be subject to appropriate consultations. The inclusion of language supporting the view that implementation of safeguards, including by implication appointment of inspectors, would as a matter of course entail consultations helped to reinforce confidence and acceptability in the Safeguards Document. [For this conclusion see Alan McKnight, Atomic Safeguards, p. 100]

Paragraph 13: Article VII.F of the IAEA Statute imposes on the Secretariat a number of obligations one of which relates to non-disclosure of industrial or confidential information coming to their attention in consequence of their official duties. Both paragraphs 13 and 14 of the Safeguards Document elaborate and reinforce the Statute in admonishing the Agency to "take every precaution to protect commercial and industrial secrets" (paragraph 13) and to "not publish or communicate...any information obtained by it in connection with the implementation of safeguards" subject to certain specified exceptions. (paragraph 14)

Paragraph 13 does not, of course, totally foreclose disclosure of any information. What it does is to limit disclosure to the Director General and to such other members of the staff as the Director General may authorize to have such information. The clear implication is that in so far as Secretariat members are concerned the basic test is the "need to know" as determined by the Director General.

In the view of some countries the preferred formulation would have been to make the Agency responsible for protecting all commercial and industrial secrets. [See, e.g., Brazil, GOV/COM.14/OR.15, ¶70] This was rejected on the ground that it was practically speaking impossible to hold the Agency absolutely responsible for protecting all information or to require it to ensure the protection of all commercial and industrial secrets. The most that could reasonably be expected was to request the Agency to take all reasonable steps to protect such secrets.

Paragraph 14: This paragraph elaborates further the general principle laid down in the preceding paragraph. On the one hand, it ensures that relevant information can be made available to the Board to enable it to fulfill its safeguards

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responsibilities; on the other it allows for certain broader publication of information with respect to lists of items (equipment and materials) being safeguarded in particular states if the Board so decides, and with respect to other safeguards related information if the states directly concerned agree. No discussion took place with regard to what might be intended by "additional information" but presumably it could include matters related to input information (such as which facilities were being safeguarded or what amounts of material were under safeguards), safeguards experience (for example aggregate results of Agency safeguards activities) and conclusions (such as an assessment of safeguards efficiency or effectiveness). Clearly, if the specified conditions are met (concerned states agree and the Board so decides), a wide range of information could be published.

The preceding six paragraphs all emphasized the Agency's obligations in the implementation of safeguards and responded to the concerns expressed by a number of states that safeguards not hamper the peaceful development of atomic energy.

The tenor of the discussion in the Working Group and the Board regarding the Safeguards Document strongly suggest that inclusion of these provisions at the outset where they could serve as a frame of reference for the prescribed principles and procedures facilitated achieving agreement on the substance of the document itself.

Finally, the section on General Considerations includes several general principles the Agency is to follow in entering into and implementing safeguards agreements.

Paragraph 15: This paragraph reaffirms the basic principle that implementation of safeguards depends on the existence of a safeguards agreement and that such an agreement is necessary whether the safeguards result form the conclusion of a project agreement between the Agency and a state; from submission of a bilateral or multilateral arrangement; or from a unilateral submission. It also makes clear that where materials, equipment, etc. are transferred under a bilateral or multilateral arrangement they are to be governed by a safeguards agreement concluded between the state and the Agency.

Paragraph 16: Paragraph 16 lays down as a desired general rule that safeguards on produced special fissionable material should continue even after the expiration of a safeguards agreement. This reflects the common agreement of the Working

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Group that pursuit of produced nuclear material through subsequent generations was inherent to any safeguards system. [GOV/COM.14/OR.21, ¶37] It also responds to the Agency's concern that in the absence of such a principle continuous safeguarding of produced material could become a matter of separate negotiation in respect to each safeguards agreement, thus complicating the Agency's task and creating the risk that an uneven safeguards system would result. [ibid., ¶41]

Questions arose whether such a provision should be made a categorical requirement or rather a stated general principle. The United States, despite its concern to "ensure that assistance provided by the Agency could not be used to further a military purpose simply because a safeguards agreement had expired" [ibid., ¶45] nevertheless argued in favor of adoption of a general principle rather than an operative provision on the ground that in the latter instance some states might find it unfeasible to submit voluntarily to Agency safeguards and that in consequence the opportunity to extend Agency safeguards even for a limited time could be lost. A statement of preferred principle would leave the door open to bilateral and unilateral submissions, many of which would likely conform to the general principle and provide for continuation of safeguards, and at the same time the Agency could ensure that the principle was incorporated in any project agreement where the Agency had supplied material.

Although not mandatory, this statement of general principle creates a strong presumption in favor of its inclusion in safeguards agreements which is reinforced by other provisions of the Safeguards Document such as paragraph 19 which lays down the circumstances requiring safeguards.

Paragraph 17: INFCIRC/26 paragraph 22 incorporated as a general principle the provision that safeguards agreements should take into account all pertinent circumstances. This had been left out of the first draft of the revised Safeguards Document (INFCIRC/66) partly because it was specifically linked to Agency assistance in INFCIRC/26 while the revised Document was being drafted to embrace bilateral and unilateral arrangements, and partly because it was regarded as redundant. A number of participants, however, felt otherwise and at the urging of South Africa and India the concept underlying paragraph 22 of INFCIRC/26 was reintroduced and incorporated in INFCIRC/66 as paragraph 17. [See GOV/COM.14/OR.13, ¶29-36]

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Essentially paragraph 17 asserts that the form, scope, and amount of assistance supplied, the character of the individual project, and the degree to which any provided assistance could further any military purpose are to be considered by the Board in determining the relevance of particular provisions of the Safeguards Document to various types of material and facilities. The safeguards agreement is to take into account all pertinent circumstances at the time of its conclusion.

While the records indicate relatively little further discussion of this provision, the then Inspector General of the IAEA noted in a later analysis of Agency safeguards that the paragraph revived the case-by-case concept which had earlier been rejected as inappropriate to the objective of standardized safeguards, and that it could operate to disrupt the stability of safeguarding arrangements. [See Alan McKnight, Atomic Safeguards, p.103]

Paragraph 18: This paragraph, which was accepted without comment, simply affirms the Agency's right to act in accordance with the provisions of Article XII of the Statute in the event of non-compliance.

## 2. Circumstances Requiring Safeguards

The second part of INFCIRC/66 sets forth the circumstances under which nuclear materials are to be subject to safeguards. It also establishes the conditions under which they may be exempted from safeguards and under which safeguards may be suspended or terminated, and it does so more comprehensively than did INFCIRC/26. Provision for the transfer of safeguarded material out of the jurisdiction in which safeguards are being applied also is dealt with in this part.

Paragraphs 19 and 20: Paragraph 19 is one of the most important elements of the Safeguards Document for it establishes the conditions under which safeguards are to be brought into play, making clear that safeguards may be invoked directly or derivatively. Paragraph 20 deals with a particular aspect of paragraph 19, the issue of substantial supply of a principal nuclear facility as it applies to the invoking of safeguards. As indicated in the Key Issues section of the Report these were perhaps the most extensively discussed and hotly debated provision of the Safeguards Document and were not finalized until the Board met in February, 1965 to consider the Report of the Working Group. A more complete discussion will be found in Section II.1 above.

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The two principal questions involved the application of safeguards when ~~equipment~~ rather than nuclear material was being supplied, and the concept of substantial assistance, which was introduced as a standard against which to determine whether nuclear material not supplied, but produced, processed, or used in a principal nuclear facility should be subjected to safeguards - yes, in the case where substantial assistance for the facility had been rendered; and presumably no in other situations. The initial draft of paragraph 19 provided that the supply of know how, design drawings, and financial resources all could be determined by the Agency to constitute substantial assistance. The final version, as appears in INFCIRC/66, refers to substantial supply rather than substantial assistance as the criterion for invoking safeguards where other than nuclear material supply is involved, and leaves it to the Board to make the determination.

The United States from the beginning took the view that it was essential to maintain the principal that "if material or equipment was of substantial assistance in making plutonium it should be safeguarded" [GOV/COM.14/OR.9, ¶24]; that the Agency had a "statutory responsibility to apply safeguards in any case where the end result of such assistance would be production of fissionable material" [ibid., ¶38]; and that the underlying principle was that "in providing assistance for a project capable of producing weapons material, the Agency must have an assurance that the non-nuclear material garnished was not being used for any military purposes." [¶45] In accepting the Indian-sponsored amendment at the Board of Governors to substitute the concept "substantially supplied" for "substantially assisted" as the criterion to be considered by the Board in decisions in applying safeguards to nuclear material produced, processed, or used in a principal nuclear facility made available by the Agency under a project agreement, the United States stated that it "did not regard acceptance of those amendments as in any way derogative from the Agency's authority and responsibilities as laid down in Article III.A.5 of the Statute." [GOV/OR.357, ¶26]

India, supported by other developing countries, contended from the outset that it "would be wrong to extend safeguards to non-nuclear materials either under the concept of substantial assistance or otherwise" [GOV/COM.14/OR.9, ¶48]; that the supply of specialized equipment "should on no account involve the attachment or 'working' of safeguards in

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respect of whole facilities" [OR.10 ¶6]; and that "safeguards should be a consequence of the supply of material, and not of facilities alone." [OR.16, ¶24] It strongly opposed the notion that know-how, design drawings, or financial involvement constituted substantial assistance in any sense related to safeguards, and that an attempt to apply safeguards to equipment was impracticable and "would serve merely to add to the discrimination against under-developed countries and increase the distrust of the safeguards system as a whole...." [OR.16, ¶27] India's view expressed in the Board meeting and supported by the Governor from the United Arab Republic and the Congo [GOV/OR.356, ¶34, 35, 55] was that any reference to substantial assistance should be deleted. India made clear that the suggested alternative language, "substantially supplied," was intended to help achieve a compromise in light of the strongly held views of certain other delegations that the concept should be maintained. [GOV/OR.357, ¶23]

Thus, the application of safeguards by virtue of the substantial involvement of the Agency in a project agreement even where the transfer of nuclear material is not involved, remains intact. However, the basis for agreement on its interpretation was laid in the discussions in the Working Group and the Board. This may not be very meaningful, however, since the Safeguards Document, by consensus also leaves final determination of what constitutes "substantial supply" to the Board. Of relevance here is the fact that consensus could not be achieved on an illustrative list of specialized equipment and non-nuclear materials drawn up by the Secretariat for discussion in the Working Group. [See GOV/COM.14/10 and GOV/COM.14/OR.17]

Paragraph 21: This paragraph deals with the question of general exemptions from safeguards, a matter that was discussed extensively in the preparation of the first Safeguards Document. While the basic rationale for exemptions remained the same between INFCIRC/26 and INFCIRC/66, there were some differences, particularly with respect to quantities of material to be exempted from safeguards.

INFCIRC/66 raised from 200 grams to 1 kilogram the amount of special fissionable material that could be exempted from safeguards. Based on the experience gained over several years of applying INFCIRC/26 and the expansion of nuclear programs, the 200-gram limit was considered too low to cover all scientific purposes, and the difference between 200 grams and

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1 kilogram was not judged to be significant in terms of safeguards. [COM.14/OR.19, ¶11] During the course of discussing the exemption limit question it was emphasized that the basic rationale for exemptions was not to secure greater freedom for states, but to relieve the Agency from unnecessary work in relation to amounts of nuclear material not important from a safeguards point of view; that 1 kilogram was "an absolute limit beyond which safeguards should in every case be applied," [OR.19, ¶11]; and that "it was never intended that the fuel or any part of the fuel in a reactor should be exempt." [OR.19, ¶8]

Several countries, among them Finland, India, and the United Arab Republic, urged introduction of a specific clause exempting nuclear instruments from safeguards. [OR.18, ¶59] However, the Agency resisted this recommendation pointing out that it could create difficulty since some nuclear instruments contained substantial quantities of fissionable material [ibid., ¶90] and the matter was later dropped.

The United States supported raising the exemption limit for special fissionable material to 1 kilogram, but found the formula defining the equivalence of enriched uranium unsatisfactory. [OR.18, ¶46] It subsequently introduced an alternative formulation [COM.14/15] that had the effect of limiting the amount of material subject to exemption at different levels of enrichment, which was adopted for purposes of calculating exemptions. An effort to extend the formulation to determinations of the amount of enriched material for which safeguards might be suspended, however, failed. [See INFCIRC/66, ¶24]

The United Kingdom subsequently introduced an amendment to apply the "effective kilogram" formula (used for suspension of safeguards in INFCIRC/66, ¶24), for exemptions as well but withdrew it upon realizing that such a formulation would weaken the effectiveness of safeguards by opening loopholes in the system. [OR.27, ¶19, 20] The suspension formula conforms more closely to the provisions of INFCIRC/26 while the exemption formula involves a more strict definition for enriched uranium. In neither case is the isotopic composition of plutonium regarded as a relevant consideration; all plutonium is treated the same.

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India and Brazil questioned the need for treating thorium on the same basis as depleted uranium, contending that the production of special fissionable material from depleted uranium would always be more significant than from thorium [OR.19, ¶20] thereby justifying higher exemption limits for thorium. India went so far as to assert that given the wide availability of thorium and its use in a variety of non-nuclear industries, it was questionable whether including it in the safeguards system at all was necessary. [OR.19, ¶27] This point was not, however, pursued.

Paragraph 22: Paragraph 22 deals with exemption of produced or used nuclear material that would otherwise be subject to safeguards with the principal question being the character of the reactor in which such material were produced.

Japan urged increasing the exemption limit for a single reactor from 3 MW to 6 MW (th) "in keeping with the general tendency of easing controls and of encouraging wider use of atomic energy." [OR.12, ¶3] The United States and the United Kingdom objected that while it would be so uneconomic to try to produce plutonium in 2 MW reactors that "that in itself gave a certain assurance that such reactors would not be used for military purposes [ibid., ¶6], a 6 MW reactor might well be used for such purposes. Canada was concerned that a 3 MW (th) reactor could produce a kilogram of plutonium in as little as 1 year but the United States reiterated its view that while this was true it was unlikely, on practical grounds, that anybody building a reactor for unauthorized purposes would limit its power to 3 MW (th) or request assistance from the Agency. [OR.19, ¶44]

The first draft of INFCIRC/66 contained a provision for the exemption of produced nuclear material if it were a sample or produced in a sample of nuclear material not otherwise subject to safeguards. The Soviet Union participant pointed out that under the draft a country could add up to 10 tons of natural uranium in the form of samples of fuel elements of various types without being subject to any control; that it could insert the samples, withdraw them, put in new ones and repeat the whole process without any control. Accordingly it was recommended either that fissionable materials accumulating in such samples must not exceed the levels giving rise to the application of safeguards or that the provision be omitted entirely. [OR.19, ¶53, 49] The United States supported deleting the provision on the ground that the 1-kilogram exemption already agreed to would cover any relevant situation. [OR.19, ¶50] This was the solution followed.

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This paragraph thus makes it possible to exempt from safeguards some of the test reactors which contained highly enriched fuel and therefore produced very small amounts of plutonium. In the case of reactors operating at a power exceeding 3 MW (th) but producing less than 100 grams of plutonium a year the plutonium, not the reactor, would be exempt from safeguards. In any event, where the fuel used in a reactor was supplied by the Agency or otherwise submitted to safeguards, the proposed exemption in this section would not apply. [See OR.19, ¶32, 34, 41]

Paragraph 23: This paragraph deals with the question of reactors containing fuel only part of which is subject to safeguards which may arise where a state's safeguards obligation is partial or limited.

The main question addressed was whether to distinguish between partly safeguarded and partly unsafeguarded fuel, or between safeguarded and non-safeguarded reactors. The latter alternative though simpler also meant contemplating a level of produced material below which no control at all would be contemplated and above which all material would be subject to safeguards. Canada preferred that if any safeguarded material went into a non-safeguarded reactor the entire flow of fuel during the time safeguarded material was in it should be subject to safeguards. [OR.8, ¶30] The United States agreed with the already embodied principle that when the proportion of Agency-safeguarded material exceeded a specified limit then all of the output of the reactor should come under safeguards, but a proportional rule was preferable to an absolute rule in terms of getting more material under safeguards. [ibid., ¶34] Group consensus formed around the original principle: if more than 0.3 ratio of safeguarded to unsafeguarded fuel was in a reactor, it all came under safeguards; if less than 0.3, only a proportional part of the output came under safeguards.

Paragraphs 24 and 25: As noted in Section II.3.1 - 3.3 under Key Issues, there was considerable discussion of the question of suspension of safeguards. Discussion here is limited largely to a review of the issues discussed in greater detail elsewhere in this Report.

The United Kingdom proposed an amendment which would have permitted suspension of safeguards for up to 6 months on material transferred for processing or reprocessing. The

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rationale for such suspension rested on the fact that in some situations, including the United Kingdom, it was intended to use the same plants for military and civil nuclear material, and that it was not feasible to accept Agency inspection on those plants without first segregating the two types of material which would greatly increase the cost of handling safeguarded material. Substitution of an amount of nuclear material "of at least equal value" to that being subjected to safeguards suspension as provided for in the termination of safeguards provision of the Safeguards Document was regarded by the United Kingdom as unfeasible because "such substitution would impose a heavy burden on the economic and technological development of the countries concerned." [OR.19, para.67] For the United Kingdom, suspension of safeguards in specified circumstances and for a strictly limited period was the preferred means of handling this problem.

The United States objected, successfully, that such an approach was unsatisfactory for it foreclosed the ability to ascertain the amount of produced nuclear material actually delivered and to be accounted for. [ibid., ¶70] Substitution, however, since it would involve material not otherwise subject to safeguards, would tend to ensure that no substantial contribution could be made to unsafeguarded material from material subject to safeguards. While not a complete solution to this problem, substitution nevertheless reduced it to manageable proportions. This approach is reflected in paragraph 25 of the Safeguards Document.

A second issue, raised by the Soviet Union, involved the question of whether suspension of safeguards even with respect to very limited quantities of material (e.g., one effective kilogram of special fissionable material) should be allowed when the transfer took place within a country rather than from one jurisdiction to another. The United States supported the proposal that intra-state transfers be deleted from the provision authorizing suspension of safeguards. [OR.19, ¶75; OR.23, ¶2,4] The rationale for including intra-state transfers in the suspension provisions originally had been the perceived illogic of permitting suspension where material was sent abroad for processing but denying similar provisions for movements for the same purpose within a state. [OR.19, ¶74]

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The United Kingdom pointed out that adoption of such an amendment might make some countries reluctant voluntarily to place facilities under Agency safeguards thus diminishing the potential reach of the system, an argument raised on several occasions by the United States for not imposing so rigorous a system as to deter potential participants. Additionally, the United Kingdom pointed out that any transfers involving suspension of safeguards required an arrangement or agreement approved by the Agency thus reducing the risk that material would be diverted for military purposes. [OR.23, ¶5] India noted that "it was obvious that the Agency would not approve the transfer of even small amounts of material if it considered it inappropriate to do" thus confirming the non-mandatory nature of such suspensions. [OR.23, ¶8] In any event, the question of whether or not to permit intra-state transfers involving suspension was brought to a vote, one of the only occasions upon which such a procedure was invoked. The outcome was to retain the provision for suspension of safeguards in cases of transfers "within the State concerned." The United States, Soviet Union, Canada, Brazil, and Romania dissented. [OR.23, ¶22]

The final question of significance to arise with respect to suspension of safeguards involved the formula to be employed in calculating the amount of material that could be subject to suspension, in particular the calculation for uranium at different levels of enrichment. The United States argued that the same formula should apply to suspension that applied to exemption and that the effective kilogram formula being proposed for cases of suspension would result in higher limits for suspending safeguards from special fissionable material which under certain circumstances could result in the uncontrolled production of approximately 80 kilograms of plutonium yearly. [OR. 29, ¶25] India on the other hand contended that the "technical sub-group had agreed that suspension was different from exemption" and that there was "no need for removing flexibility with regard to suspension." [ibid., ¶24] The United States ultimately acquiesced in the retention of the more liberal formula but in so doing emphasized the importance of the permissive character of the provision and the requirement of Agency assessment of the purpose involved in implementing suspension of safeguards. [OR. 31, ¶2]

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Rejection of the United Kingdom effort to achieve agreement on suspending safeguards on material transferred to a third state for purposes of reprocessing led to an effort to find a means of accommodating the problem involved. The United States considered that the problem "could best be solved by substitution at the time of reprocessing". [OR.22, ¶3] The United Kingdom endeavored to negotiate a reduction in time for suspension of safeguards from 6 to 3 months but this was rejected by others. Nevertheless, as the Chairman observed, "the Agency would always be prepared to terminate the safeguards on particular material if an adequate substitute was offered for safeguarding in its place." [ibid., ¶23]

This raised the question of the time of substitution. Canada contended that "the only possible course was to lay down that substitution must take place before safeguards were suspended or terminated with regard to the material originally supplied; in other words, there must be an overlap" [ibid., ¶28] while the United Kingdom pressed for a formulation that left flexibility by providing for substitution at "a time to be agreed". A draft allowing for substitution "at a specified time" was put forth [OR.23, ¶16] with the support of the United States and the acquiescence of Canada but rejected by the United Arab Republic [ibid., ¶19] which reserved its position on the entire issue of safeguards suspension.

Subsequently, South Africa, contending that "it was necessary to exert the strictest control at the processing stage" later concurred with the United Arab Republic [OR.29, ¶33-34], joined by Brazil. [ibid., ¶38]

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The matter was finally resolved at the Board with the United Kingdom acquiescing in the conclusions that substitution would take place simultaneously rather than "at a specified time" but also with plutonium and highly enriched uranium being interchangeable with the agreement of the Agency. [GOV/OR.35, ¶64-65]

Paragraph 26: Issues regarding termination of safeguards generally were viewed as of equal importance to issues involving the invoking of safeguards in the first instance and were, as a rule, equally complex.

The United States submitted two amendments each of which was adopted. One provided that if material that was supplied and irradiated was returned to the original supplier only

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after any produced plutonium had been separated from it, it would be considered unimproved material and no longer subject to safeguards. The other provided that material which became subject to safeguards only as a consequence of having been used in a principal nuclear facility in which special fissionable material was produced would be relieved of safeguards once any produced special fissionable material had been separated. The two amendments were intended to ensure that safeguards on the residual material in these cases would be terminated in the circumstances specified. It also reaffirmed by implication that Agency safeguards would continue to apply to produced nuclear material at all stages. With respect to the first amendment the United States asserted that if material that was irradiated was sent to a third country for reprocessing "there could be no question of safeguards being terminated either with regard to the produced material or to the residual material. Safeguards only could be terminated with regard to residual material when the latter was returned to the state that had originally supplied it." [OR.20, ¶11]

A second question arose with regard to situations in which substitution of material took place. The first draft of the revised Safeguards Document referred to "an amount of nuclear material determined by the Agency to be of at least equal value to that with respect to which safeguards are to be terminated." The provision itself was based on paragraph 39 of INFCIRC/26 which was intended to deal only with transfers for processing, reprocessing, or testing. In the revised document, however, termination itself and not just suspension was being addressed. The Soviet Union proposed a formulation that any substituted material be "of not less enrichment and of at least equal fissile value" to the original material. [OR.20, ¶38] The United States stated that if substitution were to occur the material substituted and the material replaced should be "of the same element" [ibid., ¶39], the essential point being that states should not be able to acquire material of which they were in short supply in exchange for materials of which they had an excess. [ibid., ¶75] France and the United Kingdom felt it should be possible to replace one element by another if the equivalence was there and France stated that in its view it went beyond the objective that agency safeguards were intended to achieve if "a country be required to provide not only plutonium but even uranium of comparatively low enrichment as a substitute...." [OR.21, ¶23] India [OR.21,

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¶16] supported by the United States [ibid., ¶17] recommended that it be stipulated that substitute material must come from material not otherwise subject to safeguards, and the United States urged that this be reinforced with a requirement that it be "of the same type and of similar or higher concentration or enrichment." A middle ground was struck between the United States and French/United Kingdom positions noted above in allowing that plutonium could be substituted for uranium where the level of enrichment is 5 percent or less subject to Agency agreement.

One condition stipulated for termination in the draft revised Safeguards Document was that the safeguards agreement pursuant to which material had been submitted to Agency safeguards had expired except with respect to special fissionable material. This issue was discussed earlier with regard to INFCIRC/66, paragraph 16 which contains a desired general principle for continued safeguards on any produced nuclear material. INFCIRC/66, paragraph 26(f) nevertheless provides for termination of safeguards if the conditions specified in the safeguards agreement no longer apply by virtue of expiration of the agreement or otherwise. The United States had been prepared to accept omission of this provision on the understanding that omission would be without prejudice to the principle that just because an agreement expired Agency assistance could not be used to further any military purpose. [OR.21, ¶45] The final document nevertheless made appropriate provision in response to the view of some that some guidance was necessary for dealing with safeguards in the context of an expired safeguards agreement.

Paragraph 27: This paragraph deals with the termination of safeguards on safeguarded source material which is used for non-nuclear purposes. It evoked little comment.

At the recommendation of the Indian delegate it was agreed to delete a requirement that the state agree with the Agency on accounting procedures for such material because of the difficulties inherent in accounting where materials were used in ceramics and alloys. [OR.27, ¶94-97]

The Chairman, responding to a question from the Australian delegate on how the Agency could be empowered in the first instance to continue to apply safeguards to source material

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used for non-nuclear purposes, asserted that if a state decided to use such materials for non-nuclear purposes, safeguards might continue to be applied because the material might remain in a form which could be used for nuclear purposes; termination would take place once that was no longer possible." [ibid., ¶93]

Paragraph 28: INFCIRC/26, paragraph 39 contained provisions relating to the transfer of safeguarded items out of a state.

These were regarded by the Working Group as incomplete and not entirely satisfactory. Among other things, the Agency could not maintain control over materials shipped to a state with which it had no safeguards agreement. The questions raised in regard to transfers overlapped to some extent the question of suspension of safeguards discussed in paragraphs 24 and 25. The Working Group in its initial review of the transfer question appeared to conclude that "if material was transferred from one country to another, either that material should have Agency safeguards applied to it, or should be replaced by substitute material. The amount to be substituted should be described in simple, practical terms.... The revised regulations should also make clear the need for agreement between the Agency and the State concerned on the composition of the substitute material." [OR.6, ¶59]

The draft revised document, which is largely reflected in INFCIRC/66 paragraph 28 evoked only one issue of importance. The United States sought confirmation that the provision for the application of other than Agency safeguards in the case of a transfer from a state where Agency safeguards are being applied could not apply to material safeguarded under Agency projects. In the United States view "materials safeguarded in connection with Agency projects should be subjected only to Agency safeguards. Material voluntarily and directly subjected to Agency safeguards could, on the other hand, be withdrawn and put under some other safeguards." [OR.26, ¶70] The Soviet Union and Canada concurred in this interpretation. The language was amended accordingly.

The Chairman noted that the idea embodied in the above provision was "not entirely consistent with the basic principles of the Agency's safeguards, and that the Agency, once having applied safeguards, ought logically to continue to do

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so" [OR.27, ¶8] but that it was a compromise which many felt was necessary "if the Agency's system was to be accepted at all by parties to bilateral arrangements."  
[ibid.]

A certain ambiguity remained with respect to the provisions of this paragraph in so far as other safeguards systems were concerned. This was finally clarified by an Agency statement that with respect to material provided by the Agency itself "the Agency would have no power to allow the material to be transferred unless its safeguards continued. However, in a...case where States had voluntarily placed material under Agency control the Agency could permit transfer to, for example, a reprocessing facility that was subject to adequate safeguards consistent with those of the Agency." [OR.31, ¶53] This put the issue at rest for the Working Group.

### 3. Safeguards Procedures

Part three of the Safeguards Document contains the procedures for applying safeguards, including records, reports, inspection, and related matters. As reported in the Key Issues section, especially II. 4, there were several important questions raised regarding safeguards procedures, but overall relatively few issues arose and only 6 of the 32 working sessions altogether were devoted to procedures matters.

Paragraph 29: This paragraph stipulates a general principle with respect to the implementation of safeguards procedures.

In response to a question by the South African delegate, it was explained that the term "relevant" as used in the statement that safeguards procedures "shall be followed as far as relevant" meant that in a given case "only such of the listed procedures would be followed as were appropriate to the situation." [OR.23, ¶42] This was also responsive to an Indian concern expressed at the outset of the discussions on the revised Safeguards Document that the Working Group's purpose was to establish a framework and that identical procedures ought not be applicable in all cases. India felt it was important to give recognition to this fact. [OR.3, ¶3]

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The paragraph also provides that the relevant procedures extend to facilities which contain or will contain safeguarded nuclear materials thus clarifying the situation with regard to principal nuclear facilities supplied by the Agency or directly submitted to safeguards, despite the focus on nuclear material.

Paragraphs 30-32: The question of design review as a safeguards procedure was discussed in detail as a Key Issue as described in II.4.1 above.

The Chairman explained at the outset that the general idea was to provide the Secretariat with all relevant information about a particular facility "including detailed plans when the Agency was asked to safeguard that facility" as provided in Article XII.A.1 of the Statute. The question was "how much it was necessary to know of the detailed designs of nuclear facilities in order to work out an effective and practical system of safeguards for them." [OR. 3, ¶15, 16]

Discussion centered on the meaning of the term "approval". Romania contended that while the Agency was entitled to know the designs it was not entitled to approve them. [*ibid.*, ¶17] India agreed that the work "approval" was wrong. If the Agency felt that a design would not permit effective safeguards, it could decline safeguards responsibility or recommend alterations to make acceptance possible. [*ibid.*, ¶22] In any event, "the main purpose should be to ascertain that a facility was so designed as to permit effective application of safeguards," a point in which the United Kingdom concurred. The United States "welcomed the general agreement that in the present context the word 'approval' really meant 'decision' as to whether safeguards could be effectively applied to a project." [*ibid.*, ¶28]

The United States also distinguished between Agency projects and voluntary submissions asserting that in the first case the Agency would have not only to approve the design but also to inquire into the real purpose before sponsoring it while voluntary submission would focus attention on whether safeguards could be effectively applied. Of course, once having accepted responsibility the Agency "would ensure that the use made of the reactor was consistent with that originally announced." [*ibid.*]

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Canada preferred a stricter rule which would require actual approval and involve disapproval where the design of the reactor suggested that it could be used for purposes other than was claimed, [ibid., ¶29] while Brazil argued for a more liberal standard by substituting "acceptance" for "approval." [ibid., ¶31]

Further discussion revealed some confusion as to whether the criterion for approval should be whether a facility could serve a military purpose or whether it could be effectively safeguarded. The Working Group concluded that while the primary objective as far as the Agency Statute was concerned was to ensure, by examining the design, that a facility would not further any military purposes, the primary objective of the Safeguards Document was to ensure the effective application of safeguards, an approach which obviated the need to distinguish between Agency and non-Agency projects. The Safeguards Document language accords with this view.

Japan expressed concern that a time limit should be set for the Agency to approve designs, recommending a 2-week limit [OR.3, ¶23], a view concurred in by Switzerland [OR.24, ¶12] and Australia [ibid., ¶14] although with different time-frames being recommended in each case. Others including the Netherlands and the United States [ibid., ¶16, 29] did not agree there was a need to stipulate a time limit, and the Agency [ibid., ¶20] also resisted the idea of being so bound. A consensus formed around the notion of Agency review as quickly as possible following receipt of the minimum amount of information necessary to perform its task, and around draft language orally proposed by the United States. [OR.24, ¶37] This language appears in INFCIRC/66, paragraph 32. Importantly, India noted that if the Agency did not receive the relevant information to pass judgement it could always ask for additional data thus confirming that the state would have to provide adequate information to enable the Agency to ascertain whether safeguards could be effectively applied and making timeliness of Agency response a function of state cooperation.

Paragraphs 33-36: These paragraphs stipulate the scope and nature of state responsibility in maintaining records of safeguarded nuclear material and facilities producing, processing, or using such materials. They are substantively

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similar to provisions contained in INFCIRC/26, paragraphs 44 through 46, and they attracted relatively little comment in the Working Group. Two questions, however, did arise.

India asserted that the revised safeguards system should be concerned mainly with safeguarded nuclear materials and consequently recommended that the provision for general obligation on records should refer to the keeping of records relating to the use and production of all safeguarded nuclear materials rather than specifying both such materials and principal nuclear facilities. [OR. 24, ¶39, 41] The Agency on the other hand viewed the language of the relevant paragraph [INFCIRC/66, ¶33] as setting out the general requirement for records maintenance and facilitating their organization by specifying that in the case of nuclear materials in facilities, the record should entail "both those concerning the accounts for the materials and those on the operation of the facility." ibid., ¶40] The initial draft language proposed by the Secretariat was maintained.

An issue arose over whether Agency inspectors not only had the right of access to records but to secure those records as well. Canada maintained that they did and that the Safeguards Document should give the Agency the right to obtain copies of records rather than simply requiring that all records shall be retained for at least 2 years. [OR. 29, ¶53] Japan supported by India contested the right of the Agency to get records pointing out that it "would be supplied with reports in accordance with the safeguards system." ibid., ¶54] The Chairman agreed that under the existing safeguards system the Agency was not entitled to ask that records be transmitted to it; only reports need to be submitted ibid., ¶55] and the United States confined itself to the observation that reports would include some records "and what those records were to be could be settled by mutual agreement." ibid., ¶57] The Agency felt it was premature to ask the Secretariat to take a stand and saw "no obligation on the part of States to transmit any records to the Agency, but...hoped it would be possible for the Agency to obtain copies of records if and when it required them." ibid., ¶61] The matter was left at that.

Paragraph 37: The general requirements for reports that are to be submitted by the state to the Agency are set forth in paragraph 37. As in the case of records, the system used is to be agreed between the state and the Agency on the basis of proposals submitted by the state.

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Discussion focussed on the problem of accounting for materials on which safeguards had been terminated or suspended. Brazil noted that neither in the case of reports or records was there any provision for accounting for materials on which safeguards had been suspended or terminated. [OR. 24, ¶48] The Chairman pointed out that the concept of nominal safeguards had earlier been dropped and that it had been agreed that "exemption would relieve the Agency of all further responsibility for the administration of safeguards with regard to the material concerned and so would suspension, though of course only temporarily." [ibid., ¶49] The Agency, speaking through the Inspector-General, asserted that in the case of suspension, states would have to maintain records regarding such material so that the Agency could verify that the material returned to safeguards was the same as that on which safeguards had been suspended. [ibid., ¶52] The United States, anxious not to reopen the matter of suspension, agreed that it might be convenient if such records were kept during suspension but felt it would be up to the state, not the Agency, to do so. [ibid., ¶55]

India suggested revising the language to focus on nuclear materials only. [ibid., ¶56] The United States did not object to language emphasizing that the main purpose was to safeguard materials but was concerned that such a change might not cover operating records of facilities which was one of the simplest reports required, and it felt that if any change were made "the paragraph should still make it clear that a lot of reports would be necessary." [ibid., ¶64] Canada argued that either full access to all records should be allowed or reports should be comprehensive and in full detail. Canada's preference was for free access to all records, a policy that had been embodied in the Canadian-Indian bilateral agreement. Since the safeguards system was not following the same principle, "the only alternative was to ensure very full reports." [ibid., ¶61]

In any event, the language of paragraph 37 as it appeared in the initial draft of the revised Safeguards Document remained largely intact in INFCIRC/66.

Paragraph 38: This paragraph which deals with working languages as they relate to reports was not discussed at all.

Paragraph 39: The United Kingdom offered an amendment, adopted in INFCIRC/66, paragraph 39, which clarified the basis upon which the records and reports in question should be based.

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Romania, supported by Switzerland, Australia, and India [OR.24, ¶71-73, 76] was concerned about the extent of information that might be called for in routine reports and proposed adding the words "in so far as this is necessary for the application of safeguards." The United States was opposed, stating that "the nature of the reports would be discussed beforehand by the parties concerned" [ibid., ¶74] and the Chairman confirmed that it was "not intended that the reports should be highly detailed." [ibid., ¶75] It also was pointed out by the Agency that the paragraph in question stipulated that "the State and the Agency shall agree on a system of reports...." thus making clear that the concerns reflected in the proposed amendment were not well founded. The Working Group concluded that it was unnecessary to add the proposed amendment.

Paragraph 40: This paragraph which deals with the timing of the first routine report elicited only one question. Japan inquired as to whether the provision that a report would be submitted as soon as "the principal nuclear facility to which it relates is in a condition to operate" meant that a report had to be submitted before criticality was reached. The Chairman asserted that "in general, the phrase (in a condition to operate) should be taken as meaning as soon as construction was virtually complete and the facility was capable of operation." If on the other hand the question of criticality arose, the report would already have been due as soon as there is any safeguarded nuclear material to be accounted for. [OR.24, ¶79, 80]

Paragraph 41: The issue of progress reports on the construction of peaceful nuclear facilities, described in the Key Issues section, II. IV. 2, generated considerable discussion. The considerations enumerated in the Key Issues treatment are not repeated here.

INFCIRC/66, paragraph 41 differs noticeably from the draft paragraph discussed in the Working Group in so far as both its nature (more optional than mandatory in presentation) and the scope of anticipated information are concerned. In particular, the draft provision called for up to four reports a year during construction including forecasts of work to be accomplished between reports.

The Soviet representative, supported by India, Japan, Brazil, Poland, Romania, and the United Arab Republic, called for deletion of the paragraph in question [OR.24, ¶81,82 and

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OR.25, ¶4,6,11,13] primarily on the grounds that it threatened to hamper economic and technological development, would be an obstacle to technical operations, and would contribute nothing from a safeguards point of view. [OR.25, ¶7] Additionally, the requirement [INFCIRC/66, ¶40(b)] to file a routine report as soon as a principal nuclear facility is in condition to operate could, in the Soviet view, serve to notify the Agency that construction had been completed. [ibid., ¶8] Finally, the Soviet member asked where the Agency would find adequate inspectors and the resources to pay them if inspections were to be required while construction was going on. [ibid., ¶9]

The Chairman objected that it already had been agreed in earlier meetings of the Working Group that a provision along the lines of the one being discussed should be included in the revised Safeguards Document, among other reasons because the submission of reports during construction "would simplify the scheduling of inspections and in some cases reduce the number of inspections that could subsequently have to be made." [OR.24, ¶83 and OR.25, ¶3] He felt that the Group accordingly should limit its discussion to whether any modification of language was required.

The United States favored retaining the provision as drafted. [OR.24, ¶84] Belgium and Canada concurred. [OR.25, ¶26, 28] In the view of the United States, rather than increasing the burden on the Agency, the provision in question "might well have the contrary effect because the Agency would be aware ahead of time of specific requirements. As to the reports the Agency might request the States to submit...they would probably involve only a slight modification of the routine reports which were essential anyhow if a construction project was to run in a well-organized manner." [OR.25, ¶18] While agreeing with the Inspector-General's point that the provision in question was particularly valuable in its applicability to other principal facilities than reactors, such as chemical reprocessing plants, [ibid., ¶14] the United States felt the paragraph was justified in terms of reactors themselves quite aside of its eventual applicability to other principal nuclear facilities. [ibid., ¶18]

South Africa regarded the provision to be a useful one in terms of helping to bring facilities more rapidly into operation and favored its retention. Supported by Australia (which also emphasized that reports and not inspectors were

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involved, contrary to what was suggested by the Soviet representative) and the Netherlands, ibid., ¶23, 25] South Africa recommended introductory language having the effect of making the paragraph optional. ibid., ¶10] The United States volunteered to undertake to redraft the paragraph in consultation with others and shortly thereafter a new draft, optional in tone, was presented and accepted. At the urging of India, the heading was changed to "progress in construction." Canada, while endorsing the result, objected that "the Agency did not need an agreement to 'request' anyone to do anything." [OR.25, ¶54]

Paragraphs 42-43: Special reports were designed to cover unusual occurrences or major changes in planned programs and one of the questions placed before the Working Group was whether their requirements should be maintained. Provisions in INFCIRC/26, paragraphs 51 and 52 dealing with special reports had, in practice, given rise to some difficulties especially where advance notifications of actions were involved, and the Agency itself was anxious to clarify the procedures.

The Chairman was of the view that "as a matter of principle no advance reporting should be required in respect of actions where later reporting could offer the same security in so far as safeguards were concerned." [OR.11, ¶9] The United States resisted the notion that the reporting requirement implicitly entailed the need to obtain prior Agency consent for making changes in planned programs. Rather, "the sort of major change that might be reported in advance was where an indicated stoppage for refuelling and maintenance purposes was cut short, so that the inspecting authority might arrange to be present at the time operations were restarted." ibid., ¶10] The United Kingdom thought the difficulty might be in the mandatory form of the wording and the Chairman, sensitive to the desirability of fulfilling the minimum interference principle, stated that an attempt would be made to formulate more lenient provisions in the revised Document. ibid., ¶15]

The revised Safeguards Document recast the basic principle of official reports in less rigorous language than appeared in INFCIRC/26. Several questions of interpretation nevertheless were raised in the Working Group.

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The United Kingdom recommended that special reports be required only if it is confirmed that safeguarded nuclear material is lost or unaccounted for rather than if it only appears that such is the case. [OR.25, ¶34] The Agency opposed this on the ground that it might take a year to confirm an apparent loss [ibid., ¶35] as did the United States which noted that some of the most serious losses in the United States had not been confirmed and that confirmation was not an appropriate criterion "in deciding whether a State should report to the Agency if an unusual incident occurred." [ibid., ¶36] A subsequent United Kingdom suggestion to use the words "if it appears that" was adopted and incorporated in INFCIRC/66, ¶42(b).

India urged confining reference to "nuclear material" and deleting any reference to "principal nuclear facility." [ibid., ¶38] The United States disagreed stating that if the Agency had provided a reactor or substantial assistance to a reactor it should be informed of any loss even if the reactor contained no material. [ibid., ¶39] And the Agency asserted the need to know if a reactor containing safeguarded material ceased operating so that appropriate administrative arrangements, including timing of inspectors' visits, could be worked out. [ibid., ¶44] However, the Agency felt that requiring a report within 48 hours was unnecessary and it recommended that such reports be submitted "without delays."

The United Kingdom also questioned the meaning of "transfer not requiring special approval" that the state had to report. [OR.25, ¶49 and GOV/COM.14/9/Add.1, ¶21] The Agency drew up a list of cases in which the Agency's special approval of transfers would be required including transfers leading to a suspension of safeguards, transfers involving a substitution of nuclear material leading to termination of safeguards, and others. [GOV/COM.14/17] However, the Working Group concluded it was not desirable to specify the cases in the Safeguards Document itself, and it was agreed that the list would be forwarded to the Board for information under cover of the Group's final report. [OR.28, ¶5] Japan's disinclination to retaining the concept of "advance approval" led to adoption of a United Kingdom recommendation that "not requiring advance notification" be substituted for "not requiring special approval" thereby avoiding the risk of misinterpretation of intent of the paragraph. [ibid.,

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¶7, 8] This corresponded with the earlier reported United States view that no permission was required for making changes in planned programs. [OR.3, ¶10]

Paragraph 44. At Romania's suggestion, and without any discussion, the provisions that states shall submit amplification and clarification of reports was qualified by the words "in so far as this is necessary for the application of safeguards."

Paragraphs 45-48: These four paragraphs set forth the general principles to apply with respect to the implementation of inspection procedures.

Paragraph 45 which asserts that the Agency may inspect safeguarded nuclear materials and principal nuclear facilities received no discussion or comment whatsoever and was adopted as drafted.

Paragraph 46 which sets forth the purpose of safeguards inspections was adopted without comment and incorporated a United States recommendation on language modification for purposes of clarity only. [GOV/COM.14/9, ¶14]

Insofar as Paragraph 47 is concerned, only a minor alteration of language which was accepted without discussion arose. The United Kingdom pointed out [OR.25, ¶81] that the provision, which related to the number, duration, and intensity of inspections, was really a statement of general principles and that the word "routine" before inspections should therefore be deleted, enabling the paragraph to stand as a generally applicable statement.

There was, however, some interesting discussion with respect to paragraph 48 which establishes that an inspector will neither operate any facility nor direct a member of the operational staff to carry out any particular operation. The original draft, while consistent with the above, also provided that any handling of samples an inspector may have to do should be left as much as possible to the operators' staff and that if an inspector deemed a particular operation necessary or a sample taken the appropriate official would be informed and with the latter's consent the activity left to be fulfilled by the facility operator. [GOV/COM.14/7, III.A.5.3]

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India favored deletion of the latter provision on the ground that it was already clear "that inspectors would not be empowered to interfere with the operation of a facility". [OR.25, ¶61] Japan on the other hand favored retaining the entire paragraph as drafted [ibid., ¶63] presumably because it felt that limitations on the Agency in conducting safeguards should be as explicit as possible. The United States and the Agency were prepared to accept deletion "provided it was already understood that inspectors should be able to obtain samples when necessary" which the United States believed was already covered in what became INFCIRC/66, ¶49(b), and as long as there was "no doubt about the right of inspectors to request that a certain operation be performed." [ibid., ¶62, 66] In the view of the United Kingdom, "at the very least...inspectors were entitled to ask for an operation to be performed or a sample taken." [ibid., ¶64]

Paragraph 49: Discussion regarding routine inspections focussed on whether to characterize the specified procedures as fixed and required or discretionary.

The United Kingdom, supported by Japan and India, felt that whether or not specified procedures should be carried out in specific instances should be left to the discretion of inspectors. [OR.25, ¶68,69] The Inspector General asserted that the Secretariat would prefer a more firmly worded directive and that it may be made clear that each of the listed procedures must be seriously considered in connection with any inspection. He consequently proposed that the introductory line read: "Routine inspections shall include, to the extent relevant...." [ibid., ¶70] The United Kingdom suggested replacing the word "relevant" with "necessary" but the United States contended that that was "a rather too strict criterion" and that not every inspection would require all the procedures listed; it instead recommended the formulation "Routine inspections may include...." [ibid., ¶72] This conformed to the intent of the paragraph which, according to the Chairman, was "to enumerate the procedures that might be involved in a routine inspection." [ibid., ¶73]

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A question arose over the use of the term "review" in referring to measuring instruments and operations at principal nuclear facilities. The basic concern as expressed by Switzerland [ibid., ¶78] was that such inspection procedures not result in interference with the normal operations of the facility. The Netherlands stated that "the basic principles of the system made it abundantly clear that no safeguards procedures would be carried out unless it was relevant and that none would be allowed to impede normal operation" thus making unnecessary a Swiss suggestion that a caution to that effect be added to the paragraph. [ibid., ¶79]

Subsequently the word "review" was changed to "check" in order to reduce the force of the procedure. However, Romania proposed amending the provision for examining principal nuclear facilities including a check of measuring instruments and operating characteristics by adding "to the extent necessary for the application of safeguards." [GOV/COM.14/23] Japan, supported by the United States, was concerned that adding such clauses in some places and not others could lead to differences in interpretation of different paragraphs and felt that the introductory words "as appropriate" with respect to what routine inspections may include was sufficient. [OR.31, ¶62,63] India sought and received Agency confirmation that the words "as appropriate" at the beginning of paragraph 49 were intended to apply to all four sub-paragraphs and meant "only to the extent necessary for the application of safeguards." [ibid., ¶64] In these circumstances amendment was considered unnecessary [ibid., ¶66,67]

Paragraph 50: Paragraph 50 incorporates one of the most important and vigorously discussed provisions in the Safeguards Document, the right of "access at all times." The most salient aspects of that discussion were reported in subsection 4.4 of the Key Issues section of this report to which the reader is referred for detailed analysis.

Japan took the lead in seeking to affirm that there was a difference between "access at all times" which was a principle of inspection frequency adopted when INFCIRC/26 was extended to cover reactors larger than 100 MW, and "resident inspectors;" that acceptance of the former did not imply acceptance of the latter; that "access at all times" could be ensured by giving the Agency "the right to carry out a certain number of routine inspections without prior notice"

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[OR.25, ¶84]; and that the Agency could assign resident inspectors" only when the arrangement - to be worked out in advance - was acceptable to the State concerned." [ibid., ¶85] Additionally, Japan noted that "having agreed to the principle of access at all times, a country should be free to decide in conjunction with the Agency on the most effective procedure to be employed...[t]he important point was that the practical arrangements should be the subject of a joint decision by the Agency and the country concerned." [OR.26, ¶9]

The Chairman acknowledged that the question of resident inspectors had been left open but pointed out that under the concept of "access of all times" the Agency must be able to get its inspectors to facilities whenever it wished to do so if the concept were to be workable [ibid., ¶85] and that many believe the simplest solution would be for the inspector to live in the country in question. This was the general intent of the draft provision in the revised Safeguards Document. [OR.29, ¶4] The United States endorsed this view noting that the United States itself had no objection to the idea of resident inspectors and that the Inspectors' document did not contain any provisions which would prevent an inspector from being assigned to a country and from staying there as long as required. [ibid., ¶6]

France stated that there was general agreement on the fundamental point that the Agency should have access to principal nuclear facilities at all times and that the question of resident inspectors really was an organizational one that need not be specifically addressed in the Safeguards Document itself but was a matter to be agreed between the Agency and the state in question. [ibid., ¶11-13] India concurred, noting that it was "undesirable to elevate the matter of resident inspectors which was...an administrative issue to the rank of a principle..." and that "once the idea of access at all times was accepted, countries would have no difficulty in working out suitable practical procedures in consultation with the Agency." [ibid., ¶17]

The United States proposed language that was less categorical on the issue of inspections but left open the possibility of Agency-state agreement on essentially continuous inspection in certain cases [ibid., ¶19] and this became the core of INFCIRC/66, ¶50. At the suggestion of Japan the principle was clarified with the words "in so far as it is necessary for the effective application of safeguards".

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A second issue that emerged related to the notion that access could be had without prior notice. The Chairman asserted unequivocally at the outset of the discussion that "it was understood that no prior notice need be given" [OR.25, ¶88] and the Soviet delegate noted that "The Agency could, of course, send its inspector at any time, without notification." ibid., 31] And he recommended that it should be left up to negotiators of project agreements to decide on an acceptable system. India concurred but was prepared to accept language allowing for no prior notice if qualified by the provision "if so provided in the safeguards agreement." [OR.27, ¶17] Both the Indian and United Arab Republic proposals were interpreted as efforts to deal with administrative procedures related to inspection procedures and not as an abandonment of the principle of "access at all times." [OR.30, ¶34] The notion of establishing procedures in detail rather than general principles was not favorably viewed by most of the participants and the Netherlands proposed language, ultimately incorporated, that administrative procedures would be agreed on in the relevant safeguards agreement. However, the United Arab Republic made clear that what it was after was recognition in the statement of principle itself of the need of providing for a minimum period of notice. ibid., ¶45] The United Arab Republic, however, finally agreed that the Netherlands proposal met its main concern and supported it. [OR.31, ¶24] In any event what this paragraph affirms is that where the Agency has a right of access at all times, no prior notice is required in the exercise of that right.

Paragraphs 51-52: These two paragraphs cover the initial inspections of principal nuclear facilities. As in the case of other safeguards procedures the underlying question of presentation related to the degree of constraint or latitude that would apply to the Agency in carrying out its responsibilities.

The United Kingdom recommended modifications in the draft Safeguards Document language to establish at the outset the purpose of the initial inspection and to ensure that inspections related to the testing of instruments that might be carried out during the initial period would not constitute an undue burden on the facility. [GOV/COM.14/Add.1, ¶18] The United States endorsed this proposal underscoring "that it would further the agreed purpose of initial inspections, i.e., to ensure that construction was carried out in accordance with design." [OR.26, ¶44]

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India suggested qualifying the provision with the term "if so provided for in the safeguards agreement" which was accepted by the Working Group. However, India's opposition to including a separate paragraph on instrument testing was not accepted.

Paragraphs 53-54: Paragraph 53, which indicates the conditions under which special inspections may be conducted, was accepted with only minor amendment (for purposes of clarification) as introduced by the United Kingdom. The paragraph deals with an abnormal situation at a safeguarded facility and provides for special notification to the Board in such circumstances.

Paragraph 54 covers special inspections in the particular case of a substantial amount of safeguarded material being transferred outside the jurisdiction where it is under safeguards, even where there is nothing abnormal about the situation. India suggested deleting the paragraph on the ground that routine and special inspections already were provided for but the Agency resisted this asserting that the different provisions covered different situations. [OR.26, ¶83] The United States regarded it "essential to retain...since it gave the Agency the opportunity to carry out a last inspection of the safeguarded material before transfer." [ibid., ¶84] In the alternative the United States felt it would be necessary to reconsider the provisions of INFCIRC/66, paragraph 28 which covers transfers of safeguarded nuclear material out of state in general.

Paragraph 55: During the initial Working Group discussions of basic principles and procedures and prior to submission of a draft revised Safeguards Document by the Secretariat for Working Group consideration, attention focussed on particular safeguards procedures for reactors.

INFCIRC/26, paragraph 62, which dealt with such matters, contained an ambiguity in that it referred on the one hand to the norm of biannual routine reports and on the other to the principle that actual frequency of reporting shall be related to frequency of inspection. INFCIRC/26/Add.1, paragraph 4 established the principle that for large reactors there could be as many as 12 routine reports a year but possibly fewer depending on the circumstances.

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The United Kingdom believed it appropriate to bring the frequency of routine reports as far as possible into line with the normal reporting procedures otherwise required at the reactor facility (e.g., patterns established for operator reports to state authorities) and stated that in so far as the inspection/report linkage was concerned "the Agency could be content...provided there were at least as many routine reports as routine inspectors." [OR.11, ¶18] Japan on the other hand contended that frequency of routine reports was closely related to frequency of inspections and that quarterly reports were sufficient irrespective of reactor power. [ibid., ¶20] Canada asserted that "whatever the frequency of reports finally approved...it should be without prejudice to the Agency's right to ask for and obtain information (on reactor power and materials in the plant) at any time." [ibid., ¶19]

In the United States view, the right to request additional reports at any time was important and should be clearly stated; reporting frequency was related to the contents of reports; and as long as the frequency and content met minimum requirements the routine reports prepared for submission to national authorities would usually suffice.

Once an actual draft was tabled for discussion Japan sought again to get agreement on four reports a year being adequate [OR.27, ¶35] but failed to get support in the Working Group. The United Kingdom [OR.30, ¶55] suggested the Secretariat be asked to redraft the paragraph to relate the number of reports to the number of inspections as was the case in paragraph 59 of the revised Safeguards Document and it was so agreed.

Paragraph 56: This paragraph involves the timing of initial inspection of reactors. Australia sought assurance that it was the Agency's responsibility to ensure that the inspector was present at the specified time and that in event of a delay "the reactor operator should be entitled to continue bringing the reactor up to criticality without fear of subsequent censure or criticism." [OR.27, ¶37] The Chairman felt the point was covered by the provision that safeguards were not to interfere with the facility operator either technically or economically [ibid., ¶38] and the paragraph remained unchanged.

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Paragraphs 57-58: The important question of the frequency of routine inspections is dealt with in these two paragraphs. The United States proposed combining "fuel loading" and "facility inventory in excess of loading", which were to serve as alternative bases for determining inspection frequency, to read "facility inventory including fuel loading" [GOV/COM.14/9, ¶15] on the ground that the total amount of material on the reactor site should be taken into consideration "just like the total amount of produced fuel was in the case of other provisions." [OR.27, ¶41]

India questioned the rationale for treating inventory and annual output (another criterion for determining inspection frequency in the draft paragraph table) on the same basis in establishing the number of inspections a year. [Ibid., ¶47]

France underscored that the Group must be careful to avoid a situation where a country could limit the number of inspections at one facility simply by storing excess fuel on the site of a different facility. [ibid., ¶54]

Japan asserted that 4 inspections should be sufficient in normal cases [ibid., ¶56] while the table allowed for 12 inspections in cases of 55-60 equivalent kilograms of material per year. Japan also contended that "safeguards procedures were based on design reviews, reports, records and inspections" and suggested including a provision which appeared in paragraph 65 of the original Safeguards Document, INFCIRC/26, which provided that determination of the actual frequency of inspection would take into account whether the State possessed a chemical reprocessing facility, the nature of the reactor, and the nature of the nuclear material produced or used in the reactor. This became INFCIRC/66, paragraph 58.

The United States in general supported this Japanese proposal but with a caveat: since the Agency would not always know if a particular state possessed an irradiated fuel reprocessing facility the Secretariat in making its determination should bear that uncertainty in mind. With that understanding the United States could support inclusion of the proposed paragraph. [OR.27, ¶59] Japan was willing to see the subclause on reprocessing facilities excluded but India insisted on its retention [ibid., ¶61] and the Agency itself saw no reason not to include it.

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A technical subgroup was established consisting of the Chairman, United States, India, France, Canada, Switzerland, and the United Kingdom to discuss technical problems created by the United States proposal to merge fuel loading and facility inventory into one criterion for determination of inspection frequency. This subgroup recommended against the United States proposal. [OR.28, ¶4] However, Romania, in responding to the second draft of the Revised Safeguards Document [GOV/COM.14/19] supported the United States proposal thus reviving it, and further proposed substituting a formula to calculate maximum routine inspections in lieu of the table, the purpose being to determine more precisely and in light of changing technology, the amounts of nuclear material in a reactor. The underlying objective was to ensure that the number of inspections would be reduced as accuracy of techniques improved.

The Chairman preferred retaining the table [OR.32, ¶2] on the ground that the "relative-error" concept incorporated in the proposed formula gave rise to a number of technical difficulties and that the figures in the table could be reviewed in any event in light of technological developments. He also noted that the number of inspections in the table represented the maximum for corresponding amounts of nuclear material and that the Secretariat already was required to keep the number of inspections to a minimum.

As for the revived United States proposal, the Secretariat, responding to an inquiry from the Indian representative, felt that there was no conceivable case in which keeping the existing separation of components (fuel loading, facility inventory) would be of any great practical significance [ibid., ¶9] and the Working Group accordingly adopted the revision.

The result of the paragraphs relating to special procedures for reactors then is that the maximum frequency of routine inspections at reactors is determined by the quantity of effective kilograms of nuclear material [as defined in paragraph 72 of INFCIRC/66] contained in whichever is largest: facility inventory including loading; annual throughput; or maximum potential annual production of special fissionable material. ~~If less than 1 kilogram is involved, no inspection takes place.~~ If more than 60 kilograms are involved, the Agency has a right to access at all times as defined in paragraph 50 of INFCIRC/66. Reports are keyed to the frequency established for inspections but shall not be less than 2 nor more than 12 in number. X

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The final 10 paragraphs relate to special procedures for safeguarded nuclear material outside principal nuclear facilities, i.e., in research and development facilities and in storage.

Paragraphs 59-60: These two paragraphs deal with nuclear material in research and development facilities which were excluded from the definition of principal nuclear facilities in the revised Safeguards Document. Paragraph 59 relates to routine reports and paragraph 60 to routine inspections.

The United States proposed a revision of the draft paragraph on reports to ensure inclusion of a brief statement of the use to which the nuclear material has been put [GOV/COM.14/9] but withdrew it since accounting reports already were defined in INFCIRC/66, paragraph 39a to include information on the use of material. The wording of paragraph 59 was changed to correspond to the wording of paragraph 55 of INFCIRC/66 which deals with reports in the case of reactors. [OR.31, ¶29-30] This did not change the purpose or intent of the provision however.

The question was raised by the Soviet Union of whether there was any point of submitting reports on nuclear material that was already exempt from safeguards under the exemption provision. The Chairman pointed out ibid., ¶87 that the paragraph would apply only if total amounts of material in the state exceeded the exemption limit and therefore at least some of the material was subject to safeguards.

Paragraph 60 on routine reports evoked no comment on its substance but was revised in order to conform it to the decision taken to use the "effective kilogram" formula for suspension of safeguards [see paragraph 24 and Key Issues II.3] which also is used for determining frequency of routine inspections in INFCIRC/66, paragraph 57. The exemption from inspection is provided for by the first entry in the table in paragraph 57 [up to 1 effective kilogram of nuclear material results in no routine annual inspection]. Direct reference to paragraph 24 of the Revised Safeguards Document was omitted.

Paragraphs 61-65: These paragraphs cover the situation of stockpiled source material [as defined in Article XX of the Agency Statute] in sealed storage and which cannot, according to INFCIRC/66, paragraph 61, be removed without

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first informing the Agency and giving it adequate time to enable the Agency to continue safeguarding the material after its removal [paragraph 65]. A maximum of one routine inspection and two routine accounting reports per year for each storage facility are provided for in paragraph 63 and 64 respectively.

The only paragraph to evoke any discussion was paragraph 65, removal of material from storage. The other paragraphs were accepted by the Working Group without comment. Australia questioned whether paragraph 65 was superfluous in that arrangements for safeguarding could be made in advance in the agreement by virtue of which the material was safeguarded while in storage [OR.27, ¶68] but the Agency noted that material might be removed to meet "a number of potential and possibly undefined needs and the nature of the safeguards that would be required upon its withdrawal from storage would depend on the purpose for which it was ultimately used." [ibid., ¶69] The United States took the view that if material were used for purposes not covered by safeguards procedures the Agency would have to establish them on an ad hoc basis which would not hamper the economic use of such material. [ibid., ¶78]

South Africa recommended including the words "in time" to ensure timeliness in informing the Agency of an intent to remove material and this was accepted by the Working Group. In consequence, materials placed in sealed storage are not to be removed without prior notice to the Agency sufficient in time and information to enable the Agency to arrange to safeguard the material upon removal.

Paragraphs 66-68: These three paragraphs deal with safeguards on nuclear material outside principal nuclear facilities and not covered by provisions for research and development facilities or sealed storage facilities.

The principal question related to inspections to be carried out for this category. The draft paragraph established a maximum of one annual routine inspection for up to 5 effective kilograms of nuclear material. France challenged this non-exemption even for quantities of material of 1 kilogram or less as unreasonable. [OR.32, ¶15] The Agency, however, argued that under the provisions for reactors [INFICRC/66, ¶57] a state might have up to 1 effective kilogram of material in a reactor and incur no inspection,

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and if a similar amount were exempted under this paragraph it could be used in a reactor leading to a situation in which there would be no inspection requirement with regard to a quantity of material that should be safeguarded. [ibid., ¶15] Canada concurred, noting that materials outside principal nuclear facilities could be more easily diverted than material in reactors. In fact, Canada believed a case also could be made for requiring inspection of kilogram amounts or less in research and development facilities [ibid., ¶16], but did not press the issue. The Chairman, asserting that a kilogram outside a reactor or a research and development facility could be much more easily used for an undesirable purpose, and therefore reasonably subject to one annual inspection, urged retention of the paragraph as drafted. [ibid., ¶17] The Working Group so agreed. [ibid., ¶18]

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IV. ANNEX I [REPROCESSING PLANTS[ AND  
ANNEX II [CONVERSION AND FABRICATION PLANTS]  
KEY ISSUES

The preliminary draft of the revised safeguards system [INFCIRC/66], drawn up by the Working Group chairman in collaboration with the Secretariat, contained headings for extraction (i.e., chemical reprocessing), enrichment, and processing (i.e., conversion and fabrication) facilities in addition to reactors. These headings were included primarily for the sake of continuity and in anticipation of future extensions of the safeguards system to cover these types of facilities rather than in the expectation of their immediate inclusion in the Safeguards Document. It already had been agreed during the discussions of INFCIRC/66 that second and later generations of fuel placed under safeguards must be followed up, so there was an acknowledged specific need for supplementing the safeguards system with provisions relevant to reprocessing plants. Similar understandings existed with respect to the other segments of the fuel cycle all of which was reflected in paragraph 7 of INFCIRC/66 which states that additional provisions for principal facilities other than reactors would be developed as necessary. With the inclusion of paragraph 7, the references to other principal facilities were deleted from the text.

Annex I and Annex II, relating respectively to reprocessing plants and to conversion and fabrication facilities, contain provisions extending the safeguards system to cover more of the nuclear fuel cycle. The revised system, as set forth in INFCIRC/66, was approved by the Board of Governors in 1975. [GOV/DEC/42 (VIII), decision number (70)] In 1966, the Board reconvened the Working Group that had developed INFCIRC/66 and charged it to formulate procedures for extending the system to chemical reprocessing plants [approved by the Board in GOV/DEC/45 (IX) decision number (40)], and in 1967 it again convened the Working Group for the purpose of preparing provisions to extend the system to plants for ~~converting or fabricating nuclear material.~~ [approved by the Board in GOV/DEC/53 (XI), decision number (14)] Substantial portions of INFCIRC/66, in particular, Part I (General Considerations), Part II (Circumstances Requiring Safeguards), Part III (Safeguards Procedures - General Procedures), encompassing paragraphs 1 through 53, and Part IV (Definitions) including paragraphs 69 through 85 are incorporated verbatim and are fully applicable to the facilities covered in Annex I and Annex II and require no additional comment here. (There is one minor exception. Paragraphs 22 and 23 relate explicitly to exemptions relating to reactors.) The annexes did, nevertheless, raise certain questions which are dealt with in this section.

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The following discussion will be limited to identification and treatment of the key issues raised by the extension of INFCIRC/66 to reprocessing, conversion, and fabrication facilities. It should be noted at the outset that this section was prepared without the benefit of records of the discussions of the Working Group on Annex I. Inquiry of the IAEA indicates that no records were prepared of these discussions.

1. Extension of Agency Safeguards System to Reprocessing Plants

Although there existed general agreement on the principle of eventual extension of the Agency safeguards system to facilities other than reactors, not everyone shared the same view of the urgency of early implementation of that principle. The Netherlands sponsored a draft resolution [GOV/1117] shortly after the adoption of INFCIRC/66 proposing the extension of the system to reprocessing plants. This was supported by the United States which was preparing to reprocess, under Agency safeguards, a number of irradiated fuel elements containing plutonium that had been produced under Agency safeguards. The United States, which had initially hoped to include coverage of chemical reprocessing plants in the original INFCIRC/66 document [see in particular COM.14/OR.5] urged that extension be studied as quickly as possible and that provisions for safeguarding reprocessing facilities "be written into the safeguards system at the earliest possible date." [GOV/OR.357, ¶59] India and the United Arab Republic, while not seeking to block a convening of the Working Group to draft recommendations, argued against haste and urgency. [ibid., ¶49,57] The question of urgency arose periodically during the deliberations over both Annex I and Annex II.

Considering the sensitivity of plutonium and reprocessing in the nonproliferation dialogue of the past decade and the acknowledged complexity of reprocessing plants and the related difficulties in finding a widely endorsed balance between effectiveness and acceptability, it is surprising that the extension of the Agency's safeguards system elicited relatively little debate. Six Working Group meetings over a period of two and a half days sufficed to achieve agreement on recommended provisions for the extension of safeguards to reprocessing plants. The ensuing Board discussion of the Report of the Working Group [GOV/1139] was extremely brief, occupying no more than a half hour of time. [GOV/OR.376]

Three issues of importance can be identified: the application of safeguards to nuclear material or to installations per se; the matter of continuous inspection; and the provisional character of the document.

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### 1.1 Focus of Safeguards

On the issue of to what safeguards applied, a question arose as to whether a clear distinction was to be made between the application of safeguards to nuclear materials and their application to installations as such. India was insistent on recognition of this distinction and of the need for the extension document to reflect the principle established in paragraph 29 of INFCIRC/66 that the safeguards procedures were to be followed with respect to safeguarded nuclear materials. Recognition of this principle, which was a condition sine qua non to Indian and other country support, was achieved by incorporating in the preambular language of the Board Resolution endorsing and accepting the Working Group Report, specific reference to INFCIRC/66 and especially to paragraph 29. [See GOV/1147/REV.1]

### 1.2 Inspections Provisions

Continuous inspection was the key issue in the discussion of INFCIRC/66, with the United States position being that such inspection is necessary for large scale reprocessing plants. While the term "access at all times" was construed as including, in the limiting case, continuous inspection, the United States felt that the issue was of such importance that the Agency should not rely on interpretation, and that the right of continuous inspection should be explicitly set forth in the document. This position prevailed, in the form of the footnote of Annex I. While not in any way affecting the rights of the Agency, the fact that the understanding on continuous inspection was reflected the difficulty of negotiating "continuous inspections" and symbolically underscored the political sensitivity of that concept.

A related issue was whether the arrangements should be designated "resident inspection" or "continuous inspection." In the final analysis, the term continuous inspection was found to be both more acceptable to many delegations and a more accurate description of what was intended, and agreement was therefore reached on its use.

Another point of some importance regarding "continuous inspection" was the need to make it clear that, by the use of the term in the reprocessing Annex, the possibility of conducting continuous inspection at other facilities subject to "access at all times" was not being foreclosed. This objective was accomplished in the wording of the footnote, which indicates that the right of access at all times will normally be implemented through continuous inspection.

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### 1.3 Provisional Character

Finally, considerable emphasis was given to the provisional nature of the extension document. This point was repeated by several Governors at the Board meeting in which the Annex to INFCIRC/66 was approved even though the relevant Board Resolution [GOV/1147 REV.1] already acknowledged "the possible need to revise the special procedures for safeguarding reprocessing plans contained in the Working Group's report in the light of experience and of any suggestions made since that report was submitted" [ibid., preambular paragraph (E)] and the Annex itself asserted in its introduction that the procedures laid down "shall be subject to review at any time and shall in any case be re-viewed after two years' experience of their application has been gained." [GOV/1139]

In this context, it is interesting to note that throughout the discussion on reprocessing plant safeguards, dating back to the initial consideration at the time of the review leading to INFCIRC/66 [e.g., COM.14/OR.5] Japan emphasized the potential for reprocessing plant safeguards to lead to simplifying controls at nuclear power plants and reactors. In accepting the draft resolution extending Agency safeguards to reprocessing plants the Japanese representative stressed the provisional character of the Document, asserting that "when the time came to review the procedures, the possibility of simplifying the applications of safeguards to reactors should not be overlooked." [GOV/OR.376, ¶14]

The insistence on the provisional character of the document largely explains why the Group decided to present the provision in the form of an addendum to the safeguards system rather than as paragraphs for direct incorporation into it.

More significant than these issues, however, is the fact that the Working Group and the Board were able to achieve agreement in a relatively short period of time regarding the nature of the principles which should govern the application of safeguards to one of the most important segments of the nuclear fuel cycle from the point of view of accessibility of weapons-usable material.

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2. Extension of Agency Safeguards System to Conversion and Fabrication Plants

At the initiative of the United States the Board reconvened the Working Group to prepare provisions to extend the Agency's safeguards system (1965, as Provisional Extended in 1966) to conversion and fabrication plants. [GOV/DEC/49 (X) decision number (47)] When the question was first raised at the February, 1967 Board [GOV/OR.384, ¶42] several countries, in particular India, reacted sharply. The Indian Governor urged that the question, which had been added to the agenda as a supplementary item, be withdrawn, noting that "it seemed as though nothing were of greater importance than a fresh extension of the safeguards system every six months" [ibid., ¶44] and that "extensions of the safeguards system were being carried too far." [ibid., ¶57] Nevertheless the Board asked the Director General to prepare suggestions regarding procedures that the Board might consider at its June 1967 meeting with respect to the extension of the safeguards system to fabrication and processing (conversion) plants. At the June meeting the decision to convene the Working Group was taken without serious issue.

Unlike Annex I, for which there was neither an advance draft prepared by the Secretariat for Working Group consideration, nor any solicitation by the Board of Member State views in advance of the preparation of such a draft, Annex II was more systematically developed and open to broad participation.

Countries not then members of the Board, but interested in participating in the deliberations of the Working Group were invited to send observers to the meetings. Several countries, including Sweden and the Netherlands, did.

The draft provisions passed through several iterations including a Secretariat proposal [GOV/COM.18/4] which was substantially altered during the course of Working Group discussions and two draft reports to the Board reflecting the deliberations of the Working Group. The first report [GOV/1245] was provisionally approved by the Board at United States urging, but subject to an Indian amendment requesting the Working Group to meet again prior to the next Board meeting (June, 1968) to study a number of amendments submitted by India at the time the Board was discussing GOV/1245, as well as any other observations or amendments that might be presented in the ensuing weeks. This procedure was adopted in order not to delay provisional implementation of safeguards

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measures, but to nevertheless allow for serious consideration of the Indian proposals after careful review by national governments. The second report [GOV/1282] which incorporated a number of the proposed amendments replaced GOV/1245 as Annex II to INFCIRC/66 following the June, 1968 Board meeting.

Several issues elicited significant discussion and deserve to be singled out as key issues: one related to the focus of Agency safeguards -- was it to be nuclear material or nuclear facilities? A second turned on the acceptability of the concept of strategic points for safeguarding conversion and fabrication facilities. A third concerned the provisions for continuous inspection and "access at all times." A fourth question involved definitions and rules covering the scope of safeguards in situations involving the blending of safeguarded and unsafeguarded nuclear material.

#### 2.1 Focus of Safeguards

As in the case of extension of the safeguards system to reprocessing, questions arose over the formulation used to establish the focus of safeguards with respect to conversion and fabrication activities and whether the intention was to safeguard conversion and fabrication plants or the nuclear material in them. The Secretariat document [COM.18/4] provided that "This Annex lays down the additional procedures which are applicable to the safeguarding of conversion plants and fabrication plants" (paragraph 1) following the language used with respect to reprocessing in Annex I. South Africa proposed that the sentence be amended to read "...are applicable to safeguarded nuclear material in conversion plants and fabrication plants." [COM.18/OR.1, ¶40] While this is the language that was ultimately adopted in Annex II, it was not accepted by the Group at the time. This was not because there was any disagreement that safeguards applied to material and that it was material in the plants that was the main concern, but because it was believed that the situation already had been clarified in INFCIRC/66, paragraph 29 and that the proposed amendment would be "inconsistent with the procedures laid down for other types of principal nuclear facilities" and with the mandate from the Board to extend the system to conversion and fabrication plants. [*ibid.*, ¶41] Additionally, it was felt inadvisable to assert such a general principal (that safeguards were to be applied to nuclear material) in the introduction to a set of provisions designed to apply only to certain types of facilities. [See introductory paragraph 5 of GOV/1245, Report of the Working Group to the Board.]

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India reopened the issue in the Board when the latter was considering the Working Group Report [GOV/1245]. The Indian Governor contended that the entire safeguards system was based on the principle of voluntary submission to Agency safeguards, and that as was already made clear in Part II of the Safeguards Document, INFCIRC/66, emphasis clearly was laid on nuclear materials. The essential point was that no material that was subject to safeguards should escape control, and emphasis on the application of the new provisions to material was thus important. [GOV/OR.398, ¶5] Based on these considerations, India essentially reintroduced the earlier South Africa suggestion by way of formal amendment to paragraph 1 of Annex II. With some misgiving, the United States and Canada, both of whom earlier had spoken against amending the language, acquiesced. They did so, however, on the basis of explicit understandings -- that the alternative language "involved no substantive change in the System"; that "plants and facilities were to some degree involved in the application of safeguards;" and that the system "provided for safeguards to be applied to a plant, but only for the purpose of safeguarding the nuclear material in it." [COM.18/OR.6, ¶14-16] Thus, it appears to be understood that although Annex I and Annex II employ somewhat different terminology ("additional procedures which are applicable to the safeguarding of reprocessing plants" and "additional procedures which are applicable to safeguarded nuclear material in conversion plants and fabrication plants") there is no substantive difference between them and that safeguards are applied to a plant only for the purpose of safeguarding the nuclear material in it.

## 2.2 Strategic Points

A second key issue involved the formal proposal by the Federal Republic of Germany (FRG) to consider the concept of "strategic points." Since the objective of safeguards was to focus attention on safeguarding the flow of fissionable material, it was contended, safeguards could be implemented in conversion and fabrication plants by carrying out inspections at designated strategic points. [COM.18/6 and COM.18/OR.1, ¶27,37]

Three such points in particular were suggested: the entrance, the exit, and the point between the storage and manufacturing sectors of the plants. [COM.18/OR.3, ¶6] Several countries endorsed the strategic points concept, in particular Japan which while concerned about safeguards effectiveness had a strong and persistent interest in gaining support for the simplification of safeguards procedures including reducing the intensity of inspection especially at reactors.

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Japan also was continuously concerned about protecting proprietary information and saw the strategic points concept as a way to meet the latter concern with respect to facilities where proprietary information might be substantially exposed (fabrication and conversion facilities). It also viewed the strategic points concept as a way to focus on the flow of material where it was most vulnerable to diversion and in a most usable form from a weapons point of view, and therefore as an attractive way to reduce intensity of inspection at reactors. [See e.g., COM.18/OR.3, ¶21]

Others, including the United States, Canada, the Soviet Union, and the United Kingdom, while not opposed in principle to the concept, emphasized the need for more investigation and experience before reaching any judgments. They considered it premature to give detailed consideration to the proposal with respect to near-term application of safeguards to actual facilities. [COM.18/OR.3, ¶10,17,24] More importantly, both the United States and Canada emphasized the problem of adopting a principle which in effect would restrict the authority and freedom of access of inspectors, suggesting that they would be reluctant to support approaches which might inhibit safeguards effectiveness. The Secretariat concurred in the judgment that for the time being it would be premature to restrict inspections of conversion or fabrication plants to several strategic points as suggested in the FRG proposal.

Although rejecting adoption of the strategic points concept for the purpose of implementing safeguards with respect to nuclear material at fabrication and conversion plants, the Working Group, nevertheless, did find sufficient merit in the idea to warrant bringing it to the Board's attention in its formal report containing the draft proposal for Annex II. [GOV/1245] This was done partly in the expectation that the Board, apprised of the ongoing research and development on strategic points would endorse continuation of such work in the context of seeking technical improvement of the Agency's safeguards system.

### 2.3 Inspection Provisions

The provision contained in a footnote to paragraphs 3 and 4 of Annex II and which deal with inspection frequency -- ("the right of access at all times would normally be implemented by means of continuous inspection") -- gave rise to some controversy as it had done on earlier occasions. The United States, in communicating preliminary views to the Director-General, asserted the belief

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that "inspection frequencies should follow those approved for chemical processing plant safeguards provided that inventories or annual throughputs of 60 effective kilograms or more call for mandatory continuous resident inspection." [COM.18/ point K, page 15. Emphasis supplied.] During the course of the meetings, however, Japan once again expressed concern about the meaning of "continuous inspection" and argued that it should not automatically be interpreted to mean "resident inspection." [COM.18/OR.2, ¶37] The Chairman, in response, stated that "continuous inspection had in the past been taken to mean that the inspector had the right of access at all times without advance notice, and could in fact be continuously present if he so wished." [ibid., ¶38. Emphasis supplied] The Working Group dropped discussion at that point.

The issue arose again, however, when the Board met to consider the Report of the Working Group. On that occasion India asserted that "there was a danger that continuous inspection might impair the flexibility of the safeguards system"; that the flexibility should be maintained in all circumstances; and that the Agency should be allowed full freedom of decision and not lock in to a procedure that it might not consider necessary. [GOV/OR.389, ¶7] At first India moved that the footnote on "access at all times" be deleted in its entirety [GOV/1259, ¶4] but it later altered its amendment to call for substituting the words "may be implemented" for "would normally be implemented" by means of continuous inspection. [COM.18/12, ¶4] The United States objected to either deletion or change on several grounds. First, it noted that the footnote had been inserted both in the draft being reviewed and in Annex I to provide guidance to the Agency and to make "clear to any State which placed a plant under safeguards what procedures it might expect the Agency to carry out." Deletion would lead to "confusion and mutually unsatisfactory discussion would ensue as to how the Agency was to discharge its obligation." [COM.18/OR.7, ¶41] Second, the United States pointed out that the word "normally" meant that continuous inspections "could be waived where appropriate." [ibid., ¶40] Finally, the United States said that even though the present wording was permissive, it "implied that continuous inspection was normally the rule, whereas the amended version implied that continuous inspection was to be the exception" and that would lead to misunderstanding and difficulty. [ibid., ¶45]

The Working Group rejected the Indian amendment and retained the original wording ("would normally be implemented") but in doing so took note, at FRG urging, that technological advancements were likely to be made in safeguards and to have a bearing on the

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techniques of continuous inspection and that progress in this regard deserved constant review. [GOV/1282, Second Report of the Working Group, ¶4] In this manner the basic principle was left intact while the potential for improved implementation, consistent with safeguards effectiveness, was taken into account.

#### 2.4 Blending Provisions

Several questions arose with respect to the provisions covering the blending of safeguarded and unsafeguarded nuclear material. One question involved the respective obligations and rights of states and the Agency where the mixture of such materials was to take place. While there was not disagreement about the right of the Agency to inspect blending procedures, several states were concerned that language not be introduced that might suggest that a state must obtain prior Agency approval before undertaking blending activity. The language finally agreed to eliminated any implication that prior permission was necessary, but preserved the Agency's right to be notified of such operations in advance and to obtain evidence necessary to satisfy itself that the blending activity in fact was being carried out as proposed.

A more complex question related to the concepts to govern determination of the amount of material to be safeguarded in the case of blending safeguarded and unsafeguarded materials. The underlying concern was the possibility of the upgrading of ~~unsafeguarded material by blending higher quality safeguarded material with lower quality unsafeguarded material.~~ Two problems arose in this regard: whether a provision should be included to the effect that when the ratio of fissionable isotopes in a blend is 0.3 (30%) or greater, then the whole of the blend shall remain subject to safeguards; and in cases involving less than a 0.3 ratio what rule should govern determination of the proportion of the blended material to be safeguarded. The United States took strong interest in both problems.

The 30% rule originally was introduced as a compromise between those who preferred a formulation that did not result in the extension of safeguards to a greater proportion of the total material in question than was represented by the proportion of material originally under safeguards, [e.g., India, COM.18/OR.7, ¶66] and those who felt that when safeguarded nuclear material was blended with unsafeguarded nuclear material the entire product of the operation should be subject to safeguards. [e.g., Canada, COM.18/OR.8, ¶32] The United States-sponsored compromise provided that only where safeguarded nuclear material exceeded 30% of the blended material should the entire product be safeguarded.

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The figure of 30% was selected for two reasons: one was that figure was regarded as a threshold of dependency. Any reactor needing as much as 30% of its total fuel charge in the form of safeguarded material "was largely dependent on that material." [COM.18/OR.7, ¶61] The other reason was consistency and completeness with INFCIRC/66, paragraph 23 which created a partial exemption of produced special fissionable material if it is produced in a reactor in which the ratio of fissionable isotopes in safeguarded nuclear material to all fissionable isotopes is less than 30%. In the United States view, if there were not 30% rule for fabrication plants, an important inconsistency with INFCIRC/66 could arise because the product of the blending operation could be separated into safeguarded and unsafeguarded proportions with the latter going into "reactors where the plutonium produced would not be subject to safeguards" and that "would be in conflict with the System." [ibid., ¶62]

Resolution of this issue was found by taking into account, when applying the 30% rule, whether or not the unsafeguarded material was improved in isotopic content. If unsafeguarded material was not improved by blending, the 30% rule would not apply. When the materials were of the same isotopic composition or when blending reduced the quality of unsafeguarded material, the separation of the end product would be carried out in a manner proportional to the amount introduced at the outset. If there were improvement, the 30% rule would apply and the whole blend remains subject to safeguards.

The other problem was what rule to apply when the 30% rule was not in effect and only a proportion of the blend would be under safeguards. Two possibilities were raised: the square rule which utilized the effective kilogram concept; and the linear rule which focussed on the number of fissile atoms of material. It was generally agreed that the square rule should apply with respect to uranium/uranium blends, but India and the Federal Republic of Germany, among others, felt that a rule involving the concept of effective kilograms was not appropriate to plutonium/plutonium blends and that a linear rule was to be preferred. [See COM.18/OR.8, ¶1,2] This position was based on the fact that the square rule would bring more material under safeguards (an outcome not favored by several states), but also on scientific grounds, namely that "in the future most of the plutonium would be used in fast breeder reactors, where the plutonium-240 content was self-sustaining, unlike the case of uranium-238 in reactors in the thermal fission range." [ibid., ¶2]

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This observation highlighted the existence of another consideration -- the relationship between the proportion of plutonium-240 present in material and the value of the latter for military purposes. It was this consideration that concerned the United States while the FRG emphasized the relationship of plutonium-240 content to reactor criticality, asserting that "the principle of 'effective kilograms' had originally centered on reactor criticality, not on nuclear weapons production, and the square approximated the power to which enrichment was needed to make criticality obtainable." ibid., ¶5] The point also was made that there was not a common definition of "effective kilograms" for both plutonium and uranium and that the square rule could be adopted if a common definition could be arrived at and incorporated in the Safeguards Document.

The issue was resolved in favor of retaining the square rule but with the addition of a qualification, proposed by India, that "the number of fissionable atoms in the portion of the blend that shall continue to be under safeguards shall in no case be less than the number of fissionable atoms in the originally safeguarded plutonium" [Annex II, ¶11(a)(ii)] thus bringing the linear rule together with the square rule and meeting the objective of preventing the upgrading of unsafeguarded material.

In making its Report to the Board the Working Group concluded that the concept of "effective kilogram" was defined differently in INFCIRC/66 paragraph 72(a) as compared with paragraph 72(b-d), that the term "was unusable in the provision governing plutonium/plutonium blending", and that "at a convenient time, consideration should be given to redefining the term." [GOV/1282, ¶4 of Working Group Report]

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## V. EVOLUTION OF SAFEGUARDS AGREEMENTS

### Introduction

This part of the report focuses on the evolution of treatment of selected issues and provisions in safeguards agreements negotiated under INFCIRC/66/REV.2 with a view to documenting their development and interpretation.

IAEA nomenclature designates the published texts of safeguards agreements as INFCIRCS, numerated sequentially according to date of publication. This is the same nomenclature used to identify the Safeguards Documents (66 and 153) of the Agency safeguards system. The use of INFCIRC, which appears frequently in the following discussion, is intended to apply to safeguards agreements. The Safeguards Document will be identified as just that or as INFCIRC/66, or INFCIRC/153. Any reference to INFCIRCS in general or INFCIRC without a specific numerical reference should be read as a safeguards agreement text, not as the Agency's Safeguards Document.

#### 1. Scope And Range Of Inventories; Notification; Information

Those sections of INFCIRC/66-based safeguards agreements dealing with inventories and inspected-state obligations with respect to records, reports, and notifications have evolved considerably since the first such agreements were made. The scope of the inventories has expanded to encompass matters such as technological information that were not specifically included in INFCIRC/66 (but also not excluded since anything the parties to a bilateral arrangement agreed on would be covered under INFCIRC/66, ¶19b); while reporting requirements have, as a general rule, been tightened to facilitate more effective safeguards implementation. There remains, nevertheless, a not insignificant degree of variability in the agreements, which in some cases reflects the timing of the negotiations to draw up the safeguards agreement, and in others what terms the Agency and a specific state could agree upon. Whether a particular safeguards agreement effects a transfer of bilateral safeguards, results from a unilateral submission, or is part of an IAEA project agreement also affects these provisions.

Most of the agreements contain a three-part inventory determining when and where safeguards apply. The main part (Category I in early agreements) include (i) material and equipment transferred to the inspected state or otherwise placed under safeguards for the period specified in the agreement; (ii) substituted material; (iii) special fissionable materials (SFM) (as defined in Article XX of the Agency's

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Statute) produced in the state in or by the use of any materials, equipment, or facilities listed in Category I; and (iv) any other material processed or used in any of the main part items, or any substituted therefore. The subsidiary part (Category II) includes any facility while incorporating equipment listed in the main part, and any equipment or facility while it is containing, using, fabricating, or processing material from the main part. The inactive part (Category III) contains any material normally listed in the main part, but is not so listed because it is exempt from safeguards, or safeguards have been suspended.

The inspected state must notify the Agency within 2 weeks of receipt of main part items, except for source material in quantities less than 1 metric ton, for which notification must be made within 3 months. Produced SFM must be notified in the regular reports required by INFCIRC/66. Notifications of proposed transfers within the state, back to the supplier, or to third parties must be made 2 weeks in advance (see Section 3 below for additional discussion of within-country transfers).

This approach to inventories and notifications as described above was incorporated in INFCIRCS/92, 98, 110, 119, and 130, which are transfer agreements involving the United States. (Agreements not involving the United States rarely specified that a facility containing transferred equipment was to be added to the subsidiary part.) The notification requirement was modified somewhat in INFCIRC/130, the U.S.-Argentina-IAEA trilateral safeguards agreement, which replaces the "two weeks in advance" requirement with a new one requiring that the notification of internal and external transfers must be made "sufficiently in advance so as to enable the Agency to make any arrangements required by these Sections (of INFCIRC/130) before the transfer is effected." The Agency, in turn, shall take any necessary action promptly. This revised approach is repeated in INFCIRC/158. The notification provision was further tightened in INFCIRC/202 (1974), which required the safeguarded state to provide "sufficient information" to enable the Agency to determine "whether, and under what conditions," it can apply safeguards in connection with the facility, where an internal transfer to a previously unsafeguarded facility is involved. INFCIRC/296 (1982) specifies that this notification be provided at least 3 months in advance.

The formulations found in either INFCIRC/202 or 130 tend to be repeated in subsequent agreements, with some notable exceptions. The treatment of the notification requirement in INFCIRC/168 (1973), under which the Agency safeguards the Atucha I reactor in Argentina,

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addresses neither the timing nor content of notifications for internal transfers, and calls only for "prompt" notification for external transfers. INFCIRC/135 (1969), the Canada-Pakistan safeguards transfer agreement, calls simply for notification. This is also true of INFCIRCS/244, 248, 250, 239, 237, 233, and 224.

The major innovation with respect to defining the range of inventories was the development and incorporation of the principle of extending safeguards to transferred specified information or relevant technological information beginning with INFCIRC/233 in 1976, which was to have extended safeguards to a French-supplied reprocessing plant to South Korea. The practical effect of what we might, for the sake of simplicity, label as "technology safeguards" is to expand the scope of the main part of the inventories of INFCIRCS incorporating this principle.

There are two important aspects to such safeguards: what they cover; and their duration. With respect to scope, two basic and complementary approaches were developed. The first tied "technology safeguards" to areas of know-how designated by the supplier, or to information derived or obtained from that know-how. For example, INFCIRC/239 (France-Pakistan-IAEA), applied safeguards to (and listed in the main part of the inventory) "any other reprocessing facility or specified equipment for reprocessing which is designed, constructed, or operated on the basis of or by the use of 'relevant technological information' transferred from France. The term "relevant technological information" refers to information designated by the supplier on the design, construction, or operation of a facility, in all forms in which the information can be transferred, excepting information available to the public. INFCIRCS/233, 237, 244, 247, 250, 251 and 294 (which adds information already in use in Argentina to that excluded from technology transfers) repeat this formulation.

The second way of dealing with technology safeguards addressed the specific matter of sensitive facilities. A conclusive presumption was established in several INFCIRCS (237, 239, 247, and 250) to the effect that any such facility, for which equipment or a facility had been transferred, would be deemed, for a certain period of time, to be a replica of the transferred technology, regardless of whether transferred blueprints, etc. were used in their design, construction, or operation. The purpose of this approach was to avoid difficult and potentially inconclusive arguments as to whether transferred know-how actually had been used. The applicability of this "presumption" was subject to the qualification that the physical or chemical process involved was the same or essentially the same as the transferred know-how.

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In implementing these provisions, the supplier normally designates to the Agency what know-how had been transferred. In INFCIRCs/250, 251, and 294, all of which involve transfers of facilities to Argentina, the Agency must list such designated know-how, from which deletions can be made when the information is "no longer significant for any nuclear activity relevant from a safeguards point of view or when it becomes freely available to the public." This list is very important, since safeguards remain in effect until there are no more items on the list (or as agreed by the Agency and the inspected state). It is important to note that although Argentina is obliged to notify the Agency of receipt of items that are required to be listed, failure to so inform or delay in doing so does not in any way affect the Agency's right to apply safeguards. The inventory provisions of the safeguards agreements clearly state that safeguards shall apply to items and material that are required to be listed; thus the applicability of safeguards is not contingent upon prior notification of receipt to the Agency.

There are also several approaches to duration. Already mentioned is the duration of the "conclusive presumption," which in INFCIRC/237 (Brazil) and 250 (Argentina) runs 20 years from the first notification of the Agency that transfer of know-how has begun, in INFCIRC/237 (Pakistan) is determined by Pakistan and France, and in INFCIRC/247 runs 20 years from first use or start of operation of the facility for whose construction the technology was transferred. The duration of the technology safeguards themselves, i.e., where use of transferred know-how has actually been made, opposed to where the presumption is that such use had been made, also varies, but is potentially unlimited. In INFCIRCs/233, 237, 239, 244, and 247 the safeguards agreement is reinstated, even after its expiration, if the country subsequently designs, constructs, or operates a facility or equipment on the basis of or by the use of transferred information. In INFCIRCs/250, 251, and 294 the presence of items of the Agency's list mentioned above determines duration. In these cases, however, transferred know-how must have been used, and although in almost all cases the supplier has the right to notify the Agency unilaterally that replication has occurred, the replicating country could well challenge this contention.

As important as the issue of duration may be, even more important is the basic principle reflected in the agreements discussed above, notably the transfer of technology can trigger the invoking of safeguards; and furthermore, that a majority of the Board considered such a provision to be consistent with the Agency Statute [A.III.A.5] which establishes that the Agency is to apply safeguards at the request of the parties to any bilateral or multilateral arrangement, and with paragraph 15(b) of INFCIRC/66/REV.2 which lays down an implementing principle of the statutory provision.

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## 2. Definition Of Facilities Including Principal Facilities

In addition to technology safeguards, a second area in which INFCIRC/66 type agreements have evolved with respect to inventories is in the determination of what is included in the subsidiary part (Category II in early INFCIRCS) of the inventory. As noted earlier, the subsidiary part of the inventory normally includes any "facility" while it incorporates transferred equipment (or any equipment listed in the main part of the inventory), and any facility while nuclear material from the main part of the inventory is located there. Thus, how "facility" is defined is of major importance in determining what kinds and/or size facilities are encompassed by this term.

Early INFCIRC/66-type agreements do not define the term "facility." Most of these are agreements for transferring United States bilateral safeguards, and speak simply of "any facility" while it is "containing, using, fabricating or processing" any Category I material. However, INFCIRC/135, the Canada-Pakistan transfer agreement, employs a different formulation, and speaks of "facilities...while containing" Category I material, and "nuclear materials and heavy water not listed in Part I while they are contained in a principal nuclear facility or in facilities while incorporating any transferred equipment or containing materials listed in Part I." No definition of the term principal nuclear facility is provided, and by implication the definition contained in INFCIRC/66 would appear to cover this case.

Although INFCIRC/154 (United States-India) employs the definition of reactor contained in the original United States-India agreement on Tarapur, no definition of the term facility or principal nuclear facility appears in the INFCIRCS themselves until the mid-1970s. INFCIRC/168 (1973) simply incorporates by reference the definition of principal nuclear facility found in paragraph 78 of INFCIRC/66. The potential limitations presented by the term "principal nuclear facility" as defined in paragraph 78 were overcome with the introduction of a new term -- "nuclear facility" -- which, in INFCIRC/221 (a Spanish unilateral submission in 1975), includes a principal facility as defined in paragraph 78, as well as a critical facility or a separate storage installation, or "any location where nuclear material in amounts greater than one effective kilogram is customarily used." This term is then used in the subsidiary part of the inventory of that agreement.

The INFCIRCS subsequently entering into force (with the exceptions of INFCIRC/249, which was negotiated in 1975, and INFCIRC/224, the Argentine unilateral submission for Embalse) contain the definition and terminology found in INFCIRC/221, or, later, in INFCIRC/247 (1977), which expands the definition of nuclear facility to include heavy water plants.

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INFCIRC/291 (1982), which applies safeguards to four Spanish reactors, further expands the scope of facilities potentially included in the subsidiary part of the inventory by providing a detailed appendix further defining terms, in which "equipment" is defined to include any reactor, regardless of size, except for a zero energy reactor. This appendix was also included in INFCIRC/292 (also involving Spain), but not in INFCIRCS/294, 296, and 297 which involve Argentina.

The evolution of the definition of the term "facility" to include principal and other nuclear facilities would in general thus appear to reflect acceptance of a broader interpretation that helps to reinforce safeguards effectiveness.

3. Internal Transfers To Non-Safeguarded Facilities:  
Procedures And Notice

One contingency for which INFCIRC/66-type safeguards agreements have had to provide is a transfer of safeguarded nuclear material to previously unsafeguarded facilities within the inspected state. These agreements provide that facilities, while they contain safeguarded material (or equipment in some INFCIRCS) listed in the main part of the inventory, themselves be listed in the subsidiary part of the inventory, and that safeguards be applied during that period. Thus, all of the INFCIRCS contain procedures for adding facilities to the list in the subsidiary part.

While these procedures have evolved in a way that strengthens the Agency's ability to carry out its safeguards responsibilities, the agreements have remained silent on procedures governing movement of material exempted from safeguards or for which safeguards have been suspended (i.e., material listed in Category III or the inventory); nor do they specifically address the question of procedures where material from the main and inactive parts of the inventory are co-located.

The initial formulation, found, for example, in INFCIRC/92, simply states that when the state intends to transfer material or equipment listed in the main part of the inventory to a facility which the Agency has not previously accepted for listing in the inventory, it must provide the Agency with 2 weeks advance notice, and can make the transfer only after the Agency has "accepted" the facility for listing in the inventory. Other provisions in the INFCIRC state that the safeguards procedures in INFCIRC/66 shall be applied to the items in the inventory, and that the Agency has the right to request the information referred to in paragraph 41 of INFCIRC/66 and make the

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inspections authorized in paragraphs 51 and 52. An alternative formulation found in INFCIRC/98, and repeated in INFCIRCS/119, 130, 135, 158, 168, and 224, allows transfer to occur after the Agency "accepts the notification of intent to transfer."

The procedures were progressively strengthened in other INFCIRCS. In INFCIRC/116, which applied safeguards in connection with IAEA and United States assistance (the United States provided enriched uranium for booster rods through the Agency) to Pakistan's KANUPP reactor project, Pakistan would, in addition to providing advance notice, also have to provide the Agency with "sufficient information to enable it (Agency) to determine whether, and under what conditions, it can apply safeguards in connection with the facility." The transfer could take place only when "all necessary arrangements" with the Agency had been concluded for the application of safeguards "in connection with the facility." This formulation was repeated in INFCIRCS/202 and 218. INFCIRC/221 applied it to transfers to a "facility or location."

INFCIRC/211 (1974) while retaining the 2 weeks notice requirements, is more specific as to the type of facility involved (for the purpose storing, containing, using, fabricating, processing, or reprocessing), and requires the inspected state (India) to supply "such information as may be required by the Agency, to the extent that it is relevant to the implementation of this agreement." This INFCIRC also provides that the details of the system of records and reports be mutually agreed upon between India and the Agency. INFCIRC/233 (1976) provides that transfer cannot occur until the Agency had "confirmed that it has made arrangements to safeguard the items in question." Moreover, this INFCIRC replaces the 2-weeks notification requirement with a general one requiring that notice be given "sufficiently in advance" to enable the Agency to make the arrangements required in the agreement before transfer occurs. The Agency, in turn, must act in a timely fashion. This general approach was repeated in several subsequent INFCIRCS, although some of these explicitly required that the safeguards be in accord with those sections of the INFCIRC specifying what the subsidiary arrangements should include (i.e., containment and surveillance), rather than simply stating "safeguards" (INFCIRCS/237, 247, and 251) be applied. Two INFCIRCS (247 and 251), in which Canada was the supplier, require notification to Canada as well as the Agency of internal transfers. The three recent INFCIRCS involving Argentina (INFCIRCS/294, 296, and 297) specify 3 months advance notice, as opposed to the more general provision described earlier with respect to INFCIRC/233.

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4. Exemption And Suspension From Safeguards

Although the meaning of the provisions for exempting an item from safeguards or suspending safeguards are currently the subject of question (in particular, whether exemption provisions can be used repeatedly possibly leading to the accumulation of unsafeguarded plutonium through systematic understating of the amount being recovered), there was little variation among the early INFCIRCs as to the treatment of either issue. Most of the agreements incorporate by reference paragraphs 21-23 (exemption) and 24 and 25 (suspension) of INFCIRC/66. Consistent with those provisions in the Safeguards Document the agreements leave the Agency little discretion with respect to exemption, but more with respect to suspension.

These provisions of INFCIRC/66 apply to nuclear material. Exemption and suspension with respect to items other than nuclear material have generally been addressed by including an additional statement in the INFCIRC. INFCIRC/233 (France-South Korea-IAEA), for example, requires the two governments and the Agency to agree on conditions for exemption and suspension of safeguards on "other items," although exemption and suspension with respect to nuclear material continue to be governed by the regular paragraphs of INFCIRC/66. In INFCIRC/239 (France-Pakistan-IAEA), Pakistan and the Agency must agree on suspension and exemption for "other items." France is not involved in this case.

In INFCIRC/247 (Canada-Spain-IAEA), paragraphs 21 and 22, but not 23, of the Safeguards Document govern exemption; and safeguards can be suspended under paragraphs 24 and 25 only with Canadian concurrence. In INFCIRC/251 (Argentina-IAEA, in connection with nuclear cooperation with Canada), nuclear material can be exempted under paragraphs 21 and 22 of INFCIRC/66/REV.2 (paragraph 23 does not apply), while the Agency can suspend safeguards under paragraph 24 only with Canadian consent (paragraph 25 does not apply). In INFCIRCs/291 and 292 (both involving Spanish unilateral submissions), the suspension language is permissive. INFCIRCs/294, 296 and 297 (Argentina), which are more recent, revert to the more general pattern of incorporating by reference the relevant paragraphs of INFCIRC/66 providing that they "shall" be applied. However, it bears emphasis that the Safeguards Document itself makes Agency suspension of safeguards a discretionary action and the Agency needn't suspend safeguards unless and until it approves of the arrangement with regard to which suspension is to apply. (INFCIRC/296, which applies safeguards to the Arroyita heavy water plant, adds that the conditions for exemption and suspension with respect to heavy water plants are to be developed in the Subsidiary Arrangements.) Thus, it is in the more recent

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agreements that there is greater variability with respect to this issue. The overall effect of these variations, however, does not appear to have weakened the Agency's ability to determine whether it can or cannot grant requests for suspension consistent with its safeguards responsibilities.

5. Introduction of Improved Safeguards Technologies, Containment And Surveillance

The extent to which INFCIRC/66-based safeguards agreements explicitly recognize and accommodate advances in safeguards technologies has evolved in a steadily more positive direction over time. Provision was always made for amending or modifying a safeguards agreement. The governing provision typically allowed agreements to be modified to take into account changes made by the Board of Governors in INFCIRC/66, the Inspectors Document, or, in the case of most INFCIRCS, in the "scope" of safeguards, although not all of the INFCIRC/66-type agreements included even the general "changes in the scope of safeguards" clause, but limited the scope of amendments to changes in the Inspectors Document or INFCIRC/66 itself. [INFCIRCS/166 and 168] A few spoke not of "changes in the scope of safeguards," but, rather, of changes in the "general nature" of Agency safeguards agreements. [INFCIRCS/154 and 211, both involving India] In either case, these formulations could encourage states to interpret the clause to imply generally applicable changes and to ones limited to a specific agreement. However, the nonproliferation significance of these provisions was limited by the fact that the agreements could not be amended without the concurrence of the inspected country.

The INFCIRCS containing such a potentially narrow formulation, however, were few in number and were confined for the most part to the early years after INFCIRC/66 had been established. These early limitations were eased to some extent by the introduction of new provisions allowing the parties to the safeguards agreement to consult about amending it and to take such action as might be mutually agreed upon. This provision offered an agreement-specific alternative to otherwise generally applicable changes in INFCIRC/66 or the Inspectors Document, while retaining the requirement of concurrence by the parties to the agreement. This more liberal provision is found in agreements negotiated in the 1970s [INFCIRCS/202, 218 onward] but, importantly, can also be found in INFCIRC/135 (Canada-Pakistan transfer agreement), which entered into force in October 1969.

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It was not until the mid-1970s that explicit provision for containment and surveillance, and for technological advances in safeguards in general, was made. INFCIRC/233 (1976), a France-South Korea-IAEA trilateral intended to apply safeguards to a French-supplied reprocessing plant, provided that, in addition to the safeguards procedures contained in INFCIRC/66, "such additional procedures as result from technological developments, including containment and surveillance measures, as may be agreed between the Agency and the government concerned" would be applied. [section 18] INFCIRC/233 further provided that the subsidiary arrangements for implementing the safeguards procedures "shall include any necessary arrangements for the application of safeguards to specified equipment and material," [ibid.] which in this particular INFCIRC included any equipment especially designed or prepared for the reprocessing, use, or production of nuclear material, and deuterium, heavy water, and nuclear grade graphite, respectively. Thus, while the Agency explicitly could implement containment and surveillance measures, or other technological advances under this INFCIRC, it did not acquire a free hand for doing so, in that the concurrence of the inspected state was required for these additional measures to be implemented. This formulation was repeated, in equivalent if not exactly the same wording, in INFCIRC/239. Both of these agreements were for safeguards in connection with the transfer of reprocessing technology from France to South Korea and Pakistan, respectively.

This formulation was revised in several important respects in INFCIRC/237, the West Germany-Brazil-IAEA trilateral which was to apply safeguards to, among other things, sensitive facilities. This INFCIRC retained the general proviso that additional procedures resulting from technological developments would require Agency-inspected state concurrence, but added in a separate provision that the subsidiary arrangements "shall include appropriate containment and surveillance measures as well as any procedures for maintaining and verifying the correctness of the inventory with respect to specified equipment and specified material." This information provided more explicit authorization for the establishment of containment and surveillance, and was more direct than INFCIRC/233 about the purpose of the procedures for sensitive facilities. (INFCIRC/233 spoke merely of "any necessary arrangements for the application of safeguards" at such facilities.)

With the exceptions of INFCIRCS/239 and 249, which were negotiated prior to INFCIRC/233, all subsequent INFCIRCS followed the INFCIRC/237 approach of stipulating that the subsidiary arrangement shall

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include appropriate containment and surveillance measures. INFCIRCs/294, 296, and 297, all of which involve Argentina and which entered into force in 1982, however, qualify the Agency's ability to implement additional procedures resulting from technological developments by stating that such developments must be of "proven reliability." INFCIRC/250, which applies safeguards to West-German supplied fuel fabrication equipment transferred to Argentina, and which entered into force in 1977, does not contain this qualification. INFCIRCs/296 and 297 go further, and require that the safeguards procedures enable the Agency to fulfill its obligations in an "effective and efficient manner." The other post-INFCIRC/233 agreements speak solely of effective safeguards.

It is noteworthy that although no specific reference is made in INFCIRC/66 to containment and surveillance - either in the sense of explicitly sustaining or rejecting their utilization for safeguards purposes - they were introduced into safeguards agreements without need to amend the basic Safeguards Document. Their incorporation would at a minimum seem to establish that they are in no manner inconsistent with INFCIRC/66, and more broadly that they are examples of the spirit of INFCIRC/66, paragraph 2 which asserts that the principal purpose of the Safeguards Document is to establish a system of controls to enable the Agency to comply with its statutory obligations. This provision together with the provision in paragraph 8, that experience and technological developments should guide the evolution of the principles and procedures laid down, would seem to provide a sound positive basis for progressive modifications of the Document in the direction of greater effectiveness.

6. Inspection Frequency, Access At All Times, And Safeguards Procedures

While inspection frequency and the concept of inspector access to principal nuclear facilities at all times may have been contentious issues during the development of INFCIRC/66, their treatment in the safeguards agreements is relatively straightforward. Virtually all of the agreements specify that "in applying safeguards, the Agency shall observe the principles set forth in paragraph 9 through 14 of the Safeguards Document" thereby reaffirming the Agency's obligations to carry out its responsibilities prudently and in a manner such that safeguards not interfere with peaceful nuclear development. While setting a tone, this provision adds nothing in the way of obligations that did not already exist.

Almost all safeguards agreements contain common language with respect to inspection frequency and access at all times: agency inspectors performing functions pursuant to the safeguards agreement in question are to be governed by paragraphs 1 through 7 and

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9, 19, 12, and 14 of the Inspectors Document except that paragraph 4 of the latter document does not apply with respect to any nuclear facility or nuclear material to which the Agency has access at all times, meaning that the notice called for in paragraph 4 is not required in cases where the Agency has access at all times. The actual procedures to implement paragraph 50 of INFCIRC/66 which deals with the situation in which the Agency has the right of access at all times is to be agreed between the Agency and the government of the state in question before the facility or material is listed in the inventory. The same provisions using basically the same language are to be found in both the early and most recent safeguards agreements negotiated under the auspices of INFCIRC/66.

The only exception to this general treatment of inspection frequency and access can be found in INFCIRC/135, the Pakistan-Canada transfer agreement for KANUPP. Section 25 of that safeguards agreement states that "when the Agency has the right of access at all times, it may perform inspections without the notice required by paragraph 4 of the Inspectors Document insofar as this is necessary for the effective application of safeguards." What is unique about this provision is that it incorporates the first sentence of paragraph 50 of INFCIRC/66 without including the second, which states that the procedures for implementing paragraph 50 are to be worked out by the Agency and the inspected state, and, by implication, mutually agreed upon, which could lead to a compromise outcome on this issue. This provision of INFCIRC/135 appears to establish an uncontested right for the Agency to have access to KANUPP at all times.

The agreements also provide that the safeguards to be applied by the Agency are those procedures specified in the Safeguards Document although some of the more recent agreements, as noted in section 5 above, also include language allowing for additional procedures resulting from technological developments as may be agreed between the Agency and the state in question. In general, the implementation of safeguards procedures is left for inclusion in subsidiary arrangements to be negotiated between the Agency and the state, and the agreements themselves say very little with respect to content or interpretation. Some of the agreements are a little more explicit. INFCIRC/250 (Argentina-FRG-IAEA) for example provides that the subsidiary arrangements "shall specify in detail, to the extent necessary to permit the Agency to fulfill its responsibilities in an effective and efficient manner, how the

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procedures of this Agreement shall be applied" which may be interpreted as an admonition to the Agency to act with restraint in the application of safeguards, or as a reaffirmation of Agency rights to do whatever is necessary to fulfill its statutory responsibilities, or both. This, however, appears to be one of the few innovations in the articulation of safeguards procedures in the safeguards agreement.

7. Duration And Termination Of Safeguards

The duration of safeguards, and the circumstances under which they would terminate, attracted considerable attention during the deliberations leading to the establishment of INFCIRC/66. At issue was how far into the future safeguards would apply, especially if the agreement for cooperation necessitating the safeguards had expired.

The initial safeguards agreements based on INFCIRC/66 provide that safeguards in the inspected country terminate upon retransfer of the item or material in unimproved form to the supplier, where it may come under safeguards applying in that country, or upon transfer to a third party. In this second case, arrangements must have been made to safeguard the item in the third party, or to place the item under equivalent safeguards acceptable to the Agency. This latter contingency reflected the existence of the separate Euratom safeguards system. This explicit provision was largely phased out, however, beginning at the end of the 1960s, and was replaced by statements simply incorporating by reference paragraph 28 of INFCIRC/66, which addresses the issue of safeguards applying to transfers out of state. In doing so, some but not all agreements allowed transfer pursuant to sub-paragraph (b) of paragraph 28, which deals with suspension of safeguards and substitution where the transfer is for out-of-state reprocessing. INFCIRC/233 (1976) introduced a stiffer provision repeated in subsequent agreements (with the exception of INFCIRC/249) that required, without qualification, IAEA safeguards on all out-of-state transfers other than the return of unimproved material to the original supplier.

A general termination clause was still required in the agreements to address the duration issue with respect to items and material remaining within the country. The initial formulation (see INFCIRCS/92, 98, 110, 202, and 218) required the Agency to terminate safeguards in accordance with paragraph 26 of INFCIRC/66. In addition, the safeguards would remain in force, regardless of all other provisions as to the duration of the agreement, with

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respect to produced material (or any material substituted therefore in accordance with paragraphs 25 or 26 (d)) until the Agency notified the government that it had terminated safeguards in accordance with the agreement's termination clause (e.g., transfers to third parties, retransfers, under paragraph 26). Some INFCIRCs also allowed, but did not require, the Agency to terminate under paragraph 27 conditions (non-nuclear use) (INFCIRCs/118, 135).

These provisions applied only to nuclear material, however. INFCIRC/119 (United States-Japan transfer agreement of 1968) added the provision that the parties to the agreement would determine the termination conditions on items not covered by the usual INFCIRC/66 provisions for termination with respect to materials. Thus, the duration of safeguards on transferred equipment and facilities would be set by mutual agreement.

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INFCIRC/233 (1976) which incorporated a decision of the Board of Governors [GOV/1621] introduced what subsequently became the standard format followed by most agreements brought into force after it. The standard provision on retransfers and transfers to third parties was included. The agreement added that safeguards on nuclear facilities, specified equipment, and material would remain in force until the Agency determined that it had "been consumed" or was "no longer usable for any nuclear activity relevant from the point of view of safeguards," or had "become practically irrecoverable." Safeguards on nuclear material would be terminated in accordance with paragraphs 26 and 27 of INFCIRC/66.

In this connection, the terms "specific equipment" and "specified material" were new. As defined in this INFCIRC they referred to "any equipment or material which is especially designed or prepared for the processing, use or production of nuclear material." "Specified material" included deuterium, heavy water, and nuclear grade graphite.

The agreement also introduced what became standard terminology -- "subsequent generations" -- in stating that safeguards would remain in effect on produced material and "subsequent generations" until terminated in accordance with the agreement. Any replica facilities or equipment, likewise, were covered by the termination provision of the agreement, and safeguards could be reinstated, following their termination, if South Korea built a nuclear facility on the basis of or by the use of transferred specified information. Other INFCIRCs simplified the format by stating that safeguards remained in effect until terminated for all nuclear

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material, including subsequent generations, and until all other items had been deleted from the inventories established in the agreement. However, the procedures for such deletions were the same in INFCIRC/233.

INFCIRC/296 (1982) addressed the issue of termination where heavy water is concerned. Safeguards would be terminated when (1) the government substitutes the same amount of heavy water of the same or higher ratio of deuterium atoms to hydrogen atoms, or (2) when the Agency confirms that it has been consumed or degraded to a point where the ratio of deuterium to hydrogen atoms is equal to or less than 1 to 5000.

8. Confidentiality Of Safeguards Information

With one exception, all of the safeguards agreements incorporate by reference paragraph 14 of INFCIRC/66, which prohibits disclosure of information obtained in connection with safeguards except under conditions specified in that paragraph (e.g., within the Agency to the extent necessary for the Agency to fulfill its safeguards responsibilities, disclosure of summarized lists of items being safeguarded, or disclosure of additional information upon decision by the Board of Governors and with the concurrence of all directly concerned states). The only variation on this approach, and it is a slight one at that, is found in INFCIRC/248, which applies safeguards on uranium concentrate supplied by Niger to Pakistan. This agreement allows the Agency to communicate safeguards information to another state if Pakistan so agrees. Otherwise, paragraph 14 prevails.

9. INFCIRC/66 And INFCIRC/153

INFCIRC/153 and consequently the agreements negotiated under its auspices contain a number of features not presented in INFCIRC/66, but the basic thrust of the system, specifically the central role of inspections to achieve independent verification with the assistance of records and reports provided by the states, is preserved.

The difference between the two documents result from a number of factors including the requirement of the Non-Proliferation Treaty that safeguards extend to all peaceful nuclear activities in a state; the adoption of constraints on the Agency resulting from advancing safeguards technology and improved opportunities for verification created by full-scope safeguards; and even the manner of presentation of particular provisions which, unlike the previously mentioned factors had little bearing on substance. Some of the principal differences (also reflected in the safeguards agreements) and their significance are:

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- The right and obligation of the Agency to apply its safeguards with respect to all peaceful nuclear activities in a state which accepts the undertakings prescribed in the Non-Proliferation Treaty. This key provision provides full-scope safeguards covering all nuclear materials present in all facilities and locations or to which those materials might be transferred in contrast with the more limited safeguards scope in INFCIRC/66.
- The greater restraint on inspection effort in INFCIRC/153 in contrast with INFCIRC/66. Under INFCIRC/66 the basic control of intensity of inspections is exercised through limitations on inspection frequency, and for most major nuclear installations the frequency allowed is "access at all times" thus imposing no ceiling on routine inspection effort other than that resulting from resource limitations or subsidiary arrangements. INFCIRC/153 provides for inspection effort limitations although as a practical matter resource availability rather than maximum routine inspection effort limits has governed actual safeguards effort. Furthermore, the limitations apply only to maximum routine inspection effort and do not restrict the Agency's ability to carry out additional ad hoc and special inspections as circumstances require.
- INFCIRC/153 calls for the application of the "strategic points approach" which limits routine inspections to strategic points. These, however, are defined as all of the points necessary and sufficient for effective verification, and they do not define the scope of special inspections should they be undertaken. INFCIRC/66 on the other hand embraces no such limitation even in routine circumstances.
- Containment and surveillance are explicitly identified as "important complementary" safeguards measures in INFCIRC/153. INFCIRC/66, on the other hand contains no explicit authorization of containment and surveillance, although the absence of explicit inclusion does not a priori foreclose their application and more recent safeguards arrangements have included specific provision for their use.
- INFCIRC/153 provides for broader access than does INFCIRC/66 for verification of design information by inspection of facilities under construction.

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- INFCIRC/153 gives the Board of Governors broader and more explicit authority to call for action urgently needed to allow verification, e.g., interruption of plant operations, than does INFCIRC/66.
- Although under both INFCIRC/66 and INFCIRC/153 only nuclear material is "subject to safeguards" when that material is in a facility it is evident that the facility comes within the purview of safeguards. However, only under INFCIRC/66 is the examination of facilities explicitly provided for.
- Unlike INFCIRC/66, INFCIRC/153 takes explicit account of domestic safeguards in that it includes a provision, in the safeguards agreement negotiated with the Agency, for a state system of accounting for and control of nuclear material (SSAC). Due account is to be taken of the technical effectiveness of this SSAC in the Agency's conducting of verification activities under INFCIRC/153. The absence of such a provision in INFCIRC/66 implies greater Agency discretion and scope of action in implementing these safeguards, perhaps best exemplified by the right of access at all times.

The representative differences between the two safeguards documents indicate that INFCIRC/153, which provides broader coverage, and is a more detailed and carefully drawn document than INFCIRC/66, also contains more constraints on Agency implementation. It is not the purpose of this analysis to evaluate in any precise way the exact limits and opportunities of INFCIRC/153 or to comment extensively on how those constraints might be interpreted. What is important is recognition of the scope of authority of the Agency under INFCIRC/66; and what is clear in that context is not only that the Agency is endowed with statutory authority for broad access to accomplish its safeguards function but that despite its less than comprehensive coverage or the absence of explicit reference to specific procedures, INFCIRC/66 substantially facilitates implementation of that authority as does INFCIRC/153 when applied in its own particular set of boundaries and authorizations.

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AC2NC103

5 OR 67

India: "...the words 'of a facility' should be replaced by the words 'in a facility'."

8 OR 67

U.S.: "...the words 'by the operator' should be inserted after the words 'should be carried out' in the third sentence of the revised text."

11 OR 67

IAEA: Doc 147/Rev.1 as amended orally was accepted.

20 OR 67

"The Committee accepted Paragraph 57.G,...as formulated in [Doc 143]."

22 OR 67

"The paragraph [57.H] was accepted."

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INFCIRC/153 Paragraph 90

STATEMENTS ON THE AGENCY'S VERIFICATION ACTIVITIES

90. The Agreement should provide that the Agency shall inform the State of:

- (a) The results of inspections, at intervals to be specified in the Subsidiary Arrangements; and
- (b) The conclusions it has drawn from its verification activities in the State, in particular by means of statements in respect of each material balance area, which shall be made as soon as possible after a physical inventory has been taken and verified by the Agency and a material balance has been struck.

58 Doc 62/Rev.1

58. The Agreement should provide that the Agency shall inform the State of the conclusions it has inferred from its verification activities in the State and that it shall do so by means of statements in respect of each material balance area, which shall be made as soon as possible after a material balance has been struck for that material balance area.

Doc 62/Rev.1

IAEA: "The Inspectors Document provides that after an inspection has been carried out the State concerned shall be duly informed by the Agency of its results. However, the verification exercise in respect of a given material balance area can be said to be completed only after the physical inventory has been verified and therefore a statement of the kind intended is not necessarily meaningful after each inspection. The frequency with which the statements are made is determined by the timing of the material balance and they must be made individually for each facility involved when the balance for the various material balance areas composing that facility has been struck and verified. Attempts will be made to combine the statements in case the facility is composed of several material balance areas. If the state disagrees with a statement, it shall have the right - provided in Paragraph 19 of Part I, in respect of any question arising out of the interpretation or application of the Agreement - to request the Board to consider the matter."

27 OR 64

F.R.G.: "...[P]aragraph 58 should be presented separately from the section on inspections."

AC2NC103

39 OR 64

Hungary: "Paragraph 58 should constitute a separate section; the Agency should make a final statement not on the basis of the verification of only one material control area but after obtaining several sets of data over a given period."

56 OR 64

Australia: "...[T]he material accounting and verification system to be established by the State was supposed to serve as a basis for the Agency's safeguards operations. After each inspection it would be appropriate for the Agency to make available to the State a critical study of the State's national system, indicating the improvements that could be made."

59 OR 64

India: "With regard to Paragraph 58, a State would naturally wish to know the result of an inspection of one of its facilities by the Agency. Even though tentative, the result had to be communicated to the State so that its experts could confer on it with those of the Agency, should the need arise."

Doc 143 IAEA Proposal

STATEMENT ON VERIFICATION CONCLUSIONS

57.1. The Agreement should provide that the Agency shall inform the State of the conclusions it has inferred from its verification activities in the State and that it shall do so by means of statements in respect of each material balance area, which shall be made as soon as possible after a physical inventory has been taken and verified by the Agency and a material balance has been struck.

Doc 148 F.R.G. Proposal

57.I. The Agreement should provide that the Agency shall inform the State of:

- (a) The results of each inspection, at intervals to be specified in the Subsidiary Arrangements; and
- (b) The conclusions it has drawn from its verification activities in the State by means of statements in respect of each material balance area which, in particular, shall be made as soon as possible after a physical inventory has been taken and verified by the Agency and a material balance has been struck.

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23 OR 67

F.R.G.: "...A comma should be placed after the word 'state' and the words 'in particular' should be moved up to follow immediately after that comma. The rewording made it clear that the statements prepared for each material balance area did not constitute the only information provided by the Agency."

24 OR 67

"Sub-paragraph (g) provided that the Agency should inform the State of the results of each inspection. In the safeguards practice of the European Atomic Energy Community (EURATOM) such notification had been found very useful, especially since it afforded a possibility of correcting minor errors and thus of avoiding their accumulation."

25 OR 67

"...The copies of the inventory referred to in Paragraph 15 of [Doc 92/Rev.2] were to be forwarded to the State at agreed intervals and not as soon as possible after the inventory was taken. It was therefore essential to retain the last sentence of Paragraph [57.I Doc 143]."

27 OR 67

U.K.: "...After each inspection the Agency would send a report to the State, without prejudice to whatever conclusions it might reach later, on the basis of all the verification operations - conclusions which would subsequently be communicated to the State."

29 OR 67

IAEA: "...it was really not desirable for the Agency to send a report to the State after each inspection... The reports prepared by [EURATOM] were not sent after each inspection, but at intervals of three months or sometimes even seven months."

33 OR 67

U.K.: "...A particular advantage of the new text was that it made a very important distinction between the short-term conclusions which the Agency communicated to the State for each material balance area inspected (sub-paragraph (a)) and the long-term conclusions which it drew from its verification activities (sub-paragraph (b))."

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35 OR 67

Poland: "...the words 'of each inspection' should be replaced by 'inspection activities'."

40 OR 67

IAEA: "...[T]he proposal by the F.R.G. as amended [was accepted]."

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AC2NC103

INFCIRC/153 Paragraph 93

INTERNATIONAL TRANSFERS

Transfers out of the State

93. The Agreement should further provide that the purpose of this notification shall be to enable the Agency, if necessary, to identify, and, if possible, verify the quantity and composition of, nuclear material subject to safeguards under the Agreement before it is transferred out of the State and, if the Agency so wishes or the State so requests, to affix seals to the nuclear material when it has been prepared for shipping. However, the transfer of the nuclear material shall not be delayed in any way by an action taken or contemplated by the Agency pursuant to this notification.

16 Doc 3

Advance notification of international transfers

16. As foreseen by the provisions in Paragraph 54 of the Safeguards Document, the Agency should be in a position to perform special inspections of significant quantities of nuclear material before these are transferred out of the State. Such special inspection would enable the Agency to measure the nuclear material to be transferred and to check the measures taken for the protection of the nuclear material during transit. Accordingly the advance notification should indicate the protective measures to be taken. The transfer would not be delayed by any action of the Agency taken pursuant to an advance notification. It is expected that, if required, the exporting State will be able to provide the Agency with corroboration from the recipient State that the material has been received so that the material can ultimately be removed from the inventory of the exporting State. When material is exported to another non-nuclear-weapon State for peaceful purposes, it would again have to come under a safeguards agreement with the Agency; in that case advice of the arrival of the material will reach the Agency from the recipient State.

66 OR 29

U.S.: "...[A]dvance notification need only be made after conclusion of a commercial contract. It was important that the Agency should have advance notification so as to be able to ascertain the amount of material being transferred... The interest of the State and the Agency were identical with regard to the need for protection [during transfer], and the Agency could give valuable advice on the measures to be taken..."

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AC2NC103

3 OR 30

Japan: "...[T]he measures taken to protect nuclear materials in transit fell within the responsibility of the State and were no concern of the Agency..."

6 OR 30

U.S.: "...[T]he transfer operation constituted the most valuable part of the fuel cycle as regards the risk of diversion - something which the consignor State had as much interest in preventing as the Agency. However, the protective measures...were very simple, and their cost would not be excessively high. They involved a system of vouchers to be made out whenever the materials passed from one carrier to another, so that in cases of diversion or loss it would be possible to know exactly in whose hands the materials had been at the moment of their disappearance."

7 OR 30

"In addition, seals would be affixed to the packages, and the Agency has great experience in that <sup>field</sup> of which States could make good use..."

48 Doc 66/Rev.1

48. The Agreement should provide that the advance notification shall enable the Agency to verify consignments of nuclear material, subject to safeguards under the Agreement, before these are transferred out of the State; that the advance notification shall normally be made two weeks before the date on which the nuclear material is intended to be transferred out of the State and that it shall consist of an advance inventory change report indicating in addition the protective measures to be taken, the destination, the means and route of transport and the expected dates of export and arrival of the nuclear material. It should be provided, however, that the transfer shall not be delayed by any action of the Agency taken pursuant to an advance notification.

Doc 66/Rev.1

IAEA: "...There is a need for advance information on transfers of significant amounts to permit the Agency to verify the quantity and nature of safeguarded nuclear material that is to be exported and thereby withdrawn from safeguards in the State; to identify the consignment and possibly assure its integrity; e.g., by sealing, for verification on arrival in another State where it will be subject to Agency safeguards."

CONFIDENTIAL

AC2NC103

Doc 62/Rev.1

IAEA: "In accordance with Paragraph 11 of Part I, ~~safeguards on nuclear material are terminated when the material has been transferred out of the State, and the Agency should keep a record of such transfers.~~ Therefore, the Agency should be in a position to verify the quantity and nature of nuclear material shipped. Preparation, travel and the verification itself inevitably take some time, so that an advance notification will be required. Two weeks would seem to be adequate to cover all cases and would give the parties to a transaction ample time for prior completion of all details, including the conclusion of the purchase contract. In the rare case that a sudden decision is taken to export nuclear material, the Agency would be ready to consider waiving the two-week period upon consultation, either by taking exceedingly prompt action or - as may sometimes be feasible when material is transferred to a State where it is again under Agency safeguards and if shipper/receiver differences do not play an important role in the verification of this particular type or quantity of material - by waiving its right of inspecting the consignment altogether."

Doc 111 France/U.K. Comments

- (a) Should any responsibility, as far as safeguards are concerned, be assigned to States involved in international transfers of nuclear material only in the sense that their air space or territory is crossed, or their airlines and ships used? Or should responsibility rest solely on the exporting and importing States?
- (b) Should the Agency be involved in the physical security of safeguarded nuclear material being transferred internationally?
- (c) In the light of conclusions reached in relation to sub-paragraph (a) and (b) above, what provisions should be included in the International Transfers section of Part II of safeguards agreements, and what recommendations on the subject should the Committee make in its report to the Board?

3 OR 51

U.K.: The four delegations [Canada, France, Sweden, and the U.K.] believed that it would be undesirable and impractical to establish a regime under which safeguards responsibilities would be placed on States which were only incidentally involved in international transfers in the sense that their airlines or ships utilized. ...[I]t was legally acceptable to determine in an