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"Restricted (International Atomic Energy Agency)"

REVIEW OF THE NEGOTIATING HISTORY OF THE  
IAEA SAFEGUARDS DOCUMENT INFCIRC/153  
VOLUME I: CHAPTERS 1.0 - 3.0

Final Report

Prepared for

The Arms Control and Disarmament Agency  
Under Contract No. AC2NC103  
Washington, D.C. 20451

Prepared by

International Energy Associates Limited  
2600 Virginia Avenue, N.W., Suite 1000  
Washington, D.C. 20037

July 30, 1984

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UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY

Washington, D C 20451

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PREFACE

September 5, 1984

This report was prepared to facilitate understanding of the intent of Information Circular 153 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.

*Frank S. Houck*

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Project Officer



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Summary and Highlights

REVIEW OF THE NEGOTIATING HISTORY OF THE  
IAEA SAFEGUARDS DOCUMENT INFCIRC/153

Introduction and Purpose

The basic statutory authority for the application of safeguards by the International Atomic Energy Agency (IAEA) is its Statute which was approved on October 23, 1956, and came into force in July 1957. This Statute has the status of an international treaty or convention.

Notwithstanding important developments in the delineation of international safeguards principles, criteria, requirements, and procedures such as the issuance of INFCIRC/26 and INFCIRC/66, the manner in which safeguards would be applied under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) remained the subject of debate in the months following the opening of the Treaty for signature on July 1, 1968. In order to develop a concrete approach to this question, the Board of Governors of the IAEA established a committee open to all members of the Board -- the Safeguards Committee (1970) -- to consider the content of safeguards agreements with parties to the Treaty.

The results of the deliberations of this Committee are contained in the document entitled "The Structure and Content of Agreements Between the Agency and States Required in Connection With the Treaty on Non-Proliferation of Nuclear Weapons (INFCIRC/153).\*" This document was developed in a lengthy series of meetings in Vienna in 1970-1971. Its provisions provide authority for the application of safeguards only when incorporated in safeguards agreements between the Agency and the state or states in question, but, in general, these agreements conform closely to the provisions of INFCIRC/153.

The document itself is a highly complex one, with important parts of it reflecting carefully drawn compromises of conflicting views among the participants. These compromises are often expressed in language which, standing alone, is subject to varying interpretations. It is not surprising that, with the passage of time, the

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\*Throughout this report INFCIRC/153 corrected, the final version of the IAEA document, is referred to for convenience as INFCIRC/153.

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"institutional memory" of the principal entities concerned with the administration of safeguards has eroded, as individuals with detailed knowledge of the negotiating history have left their former positions.

By way of illustration, considerable dissension has existed for some time, both within the Agency's Secretariat, and between the Agency and member states, as to the Agency's rights and responsibilities to apply safeguards to "undeclared material," a term which, not unimportantly, is nowhere found in INFCIRC/153. It was a reasonable assumption, which the results of this study have confirmed, that the extensive negotiating history of INFCIRC/153 would shed light on this controversy. Yet another example is the continuing dispute over the relative roles of materials accountancy and containment and surveillance in the implementation of safeguards pursuant to INFCIRC/153 agreements, a full understanding of which requires examination not only of the negotiating history of INFCIRC/153 itself but of the context in which it was developed; in particular, the treatment of this matter in the Agency's safeguards system prior to the development of INFCIRC/153.

Many other examples could be cited of areas of controversy or at least differences of opinion in the interpretation and implementation of INFCIRC/153. These two publicly known and visible issues are mentioned simply to demonstrate that the concerns which led to the performance of this study under the auspices of the Arms Control and Disarmament Agency are not simply academic or hypothetical, but arise out of practical and, in a number of cases, serious issues which affect the implementation of safeguards by the IAEA.

It is the purpose of this study, therefore, to seek to establish the intent of INFCIRC/153, as reflected in its negotiating history. This history is incorporated principally in the IAEA's Official Records ("ORs") of the 1970-1971 meetings of the IAEA Safeguards Committee in which INFCIRC/153 was developed, together with the various proposals and memoranda considered by the Committee in the course of its deliberations. It should be noted that, while the ORs are not verbatim records of the Committee's deliberations, they are quite detailed, are prepared by highly competent professionals in the preparation of meeting records, and are circulated in draft for review by participants before being placed in final form. Thus, their evidentiary value and reliability as a basis for interpretation are quite high.

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In addition to this documentation, a critical ingredient of the review has been the recollections of active participants in the negotiations, which helped not only to fill the gaps in the written records, but to place this record in a coherent overall perspective. This review has, accordingly, been prepared by individuals who served on the delegation of the United States to the IAEA Safeguards Committee (1970).

Since INFCIRC/153 consists of a large number of separate provisions each dealing with a discrete aspect of the system, it is not feasible to summarize the findings of the study with respect to each of these in a brief and concise resume. Consequently, this summary section of the report, after describing the general background of the development of INFCIRC/153, presents selected highlights of the findings, including several of particular significance as well as those which illustrate how analysis of the record can contribute to a better understanding of the intent of the document. Finally, this section of the report expresses a general conclusion as to the overall intent of INFCIRC/153, as reflected in the results of the review.

Background

The development of INFCIRC/153 had its explicit beginning in the negotiation and conclusion of the NPT, and the decision of the IAEA to adapt its safeguards system for application to Treaty parties. The development, however, cannot be isolated from the earlier phases in the evolution of the Agency's safeguards system.

A fundamental aspect of this background is that the negotiation and adoption of the documents which define and establish the "Agency's Safeguards System" were an unanticipated development, not specifically mandated by the Agency's Statute, which itself establishes the Agency's rights and responsibilities to apply safeguards "to the extent relevant to the project or arrangement." These statutory provisions were themselves the result of intensive international negotiations. The heart of the safeguards rights are the inspection provisions of Article XII.A.6 of the Statute, which authorizes the Agency:

"To send into the territory of the recipient State or States inspectors...who shall have access at all times to all places and data and to any person who...deals with materials, equipment, or facilities...required...to be safeguarded, as necessary to account for source and special fissionable materials...and to determine...compliance with the undertaking against...military purpose..." (emphases added).

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Notwithstanding the presence of these broad rights in the IAEA Statute, the circumstances which prevailed at the time the Agency was established led to the conclusion that the safeguards were not likely to be implemented unless more specific guidelines for their application were established and incorporated in agreements between the Agency and member states in which safeguards were to be applied. Since these guidelines could be interpreted or applied in a manner which could diminish the effectiveness of safeguards below that envisioned and authorized by the broad statutory rights, an important objective of U.S. participation in the negotiation of the documents which defined "the Agency's safeguards system," has been to avoid any diminution of the Agency's rights as incorporated in the Statute. This objective, which was shared by a number of the members of the Agency and its Board of Governors, is reflected in the approach, common to both INFCIRC/153 and earlier Agency safeguards documents, of confirming explicit limitations to "routine" inspections, while specifically providing for special inspections which could be undertaken when justified, and which entail the full statutory access. In this sense, the statutory right of "access at all times to all places and data...as needed" has been maintained.

Another key decision, made at the very outset of the process of developing the Agency safeguards system, was that the task should be approached on a step-by-step or evolutionary basis. In implementation of this decision, the Agency's safeguards system, ultimately codified in the Agency document "Information Circular/66/Revision 2" was developed in several steps, beginning in 1961 with safeguards applicable to reactors of less than 100 Megawatts thermal capacity, and continuing in 1965 and 1966 with safeguards applicable to reprocessing and fuel fabrication facilities.

While necessary, the decision to approach the development of the safeguards system in an evolutionary manner entailed some risks to the development of an effective system. This risk was that each negotiation of a safeguards document, or the review of an existing one, presented opportunities for weakening the existing system, given the general attitude that safeguards should not be "intrusive." Accordingly, overall reviews of the safeguards system were avoided insofar as possible. Given this background, the decision to reconvene the Agency's Safeguards Committee to consider the safeguards which should be applicable to parties to the NPT did not come easily and quickly. It was widely recognized among the Agency's members that steps were required to further define the manner in which safeguards would be applied to NPT parties, given the provisions of the Treaty which explicitly established certain principles of such safeguards. At the same

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time, there were concerns that a fundamental "review" of the existing system could lead to undesirable results, both in terms of the safeguards applicable to NPT parties and those which would remain applicable to non-parties.

It is, accordingly, a little noted fact that the development of INFCIRC/153 was specifically undertaken (GOV/INF/222) not to establish a new system distinct from that of INFCIRC/66, but rather to determine the content of safeguards agreements with NPT parties. It was for this reason that INFCIRC/153 is entitled: "The Structure and Content of Agreements..." rather than the "Agency Safeguards System" for NPT parties. Thus, INFCIRC/153 did not formally supersede or displace the "Agency Safeguards System" for NPT parties, but merely adapted it for this use. In reality, of course, INFCIRC/153 does prescribe a significantly different application of the Statute than INFCIRC/66, and in fact, if not in form and title, it is a parallel application with the same standing for NPT parties as INFCIRC/66 continues to have for non-NPT parties.

These origins have led to continuing differences of views, expressed as recently as the February 1983 meeting of the IAEA Board of Governors, as to the applicability of the two documents -- INFCIRC/66 and INFCIRC/153 -- to parties and non-parties to the NPT. While these differences have important implications for Agency safeguards implementation in their own right, this issue is outside the scope of this study.

While there are many distinctions between the safeguards regime established by INFCIRC/66 and that applied under INFCIRC/153, the fundamental principle of the Agency safeguards system is common to both. This is that safeguards are a system for the verification of compliance with undertakings which limit nuclear activities to authorized purposes, dependent upon the ability to detect diversion should it occur through a graduated set of measures related to the kind and amount of material to be safeguarded. Moreover, in both cases, safeguards are designed so as not to hamper the development of nuclear energy for peaceful purposes and to be no more stringent than necessary to accomplish their objective. The differences between the two approaches result, from a technical point of view, from the rationalization and simplifications made possible by the fact that under the NPT, all peaceful nuclear activities in a state are subject to safeguards. A full understanding of these differences and their implications for the effectiveness and efficiency of safeguards represents a desirable area for additional analysis.

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Structure of the Report and Methodology of the Study

In this report, INFCIRC/153 is analyzed in two ways. Section 2.0 identifies and examines a number of key issues which arose during negotiation of the document, or which have emerged subsequently. While a number of these key issues involve or arise out of a specific paragraph of INFCIRC/153, the analysis is issue-oriented, and takes into account all relevant provisions of INFCIRC/153. In Section 3.0 of the report, each paragraph of INFCIRC/153 (or, in a few cases, a set of closely related consecutive paragraphs) is examined individually. In each section, the examination is divided into three parts: a presentation of the background and issues to be considered; an analysis of these issues; and an interpretation, providing in concise form a statement of the intent of the document with respect to each issue considered.

In addition, Section 4.0 of this report in a separate volume, contains the relevant citations from the IAEA records of the negotiations tracing the evolution of the major paragraphs of INFCIRC/153. The final formulation of each paragraph is presented first, followed by the initial proposal which most closely corresponds to the particular paragraph, and then principal comments and amendments proposed by the participating delegations. At the end of Section 4.0, an index of the major subjects covered by INFCIRC/153 and the corresponding paragraphs is provided.

In conducting the analysis, primary reliance is, of course, placed on the language of INFCIRC/153 itself, with every effort being made to examine this language in the context of the document as a whole. For example, the provisions of INFCIRC/153 which limit the Agency's access during routine inspections to strategic points (Paragraph 76(c)) cannot be properly understood without reference to Paragraph 116, which describes "strategic points" as those locations which, taken together, allow the Agency to secure all the information necessary to fulfill its safeguards responsibilities. At the same time, full use has been made of the extensive negotiating history found in the documentation of the meetings of the Safeguards Committee. In many cases, this documentation clarifies uncertainties in the language of INFCIRC/153 itself, or provides strong confirmation of the most evident interpretation. For example, while Paragraphs 1 and 2 unambiguously establish that the Agency has the right and obligation to apply safeguards on all nuclear material in all peaceful nuclear activities in a state, the record reinforces these provisions by establishing that a contrary approach, which would have limited safeguards to "reported" material was explicitly considered and rejected by the Committee.

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At the request of ACDA, a number of senior foreign and international organization officials or ex-officials who participated directly in the development of INFCIRC/153 were requested to review and comment on this report. Based on the comments submitted by these officials, this report was selectively modified to reflect these comments as appropriate. A separate assessment of these comments is provided in a separate report, IEAL-346.

Highlights of Findings

The study has led to a number of conclusions with regard to key issues which should be helpful in resolving or minimizing differences in interpretation which have existed or evolved since the adoption of INFCIRC/153. A small number of these findings are summarized below to illustrate the broad scope and nature of the results of the analysis:

- Undeclared Material - Whether the Agency's safeguards rights extend to nuclear material which has not been "declared" by the state has arisen as a significant issue in several contexts.

As previously noted, the record reemphasizes the Agency's right and obligation to apply safeguards on all nuclear material in all peaceful nuclear activities by establishing that the Committee considered and rejected an alternate proposal (GOV/COM.22/8), which would have limited safeguards to material reported by the state. Similarly, INFCIRC/153 deals with this issue in a number of provisions, providing specific means by which the Agency may fulfill its obligations, including Paragraph 76(a) which provides that the Agency is to have access during initial inspections to any location where either the initial report or inspections carried out in connection with it indicated that nuclear material is present; and Paragraphs 73 and 77, which provide that the Agency may make special inspections with limitations on access when the information made available by the state is not adequate for the Agency to fulfill its responsibilities.

- Safeguarding of Facilities - The emphasis of INFCIRC/153 on the safeguarding of nuclear material has led to concern as to whether the Agency possesses sufficient access to facilities to ensure effective safeguards.

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A number of provisions of INFCIRC/153, as well as the negotiating history, make it clear that safeguards activities, including inspections, may take place at facilities, as necessary to ensure that the Agency can fulfill its responsibilities. In this case, too, the record reveals that the Committee rejected a proposal (GOV/COM.22/116), which would have explicitly limited the right to make inspections to "nuclear material and its flow," deciding instead that inspections would be conducted in accordance with the detailed provisions of the document. A number of these provisions explicitly authorize facility-oriented inspection activities.

The negotiating history also makes it clear that the emphasis on the safeguarding of materials in INFCIRC/153 reflects a trend initiated in INFCIRC/66 and is not a departure from past practice.

- The Starting Point of Safeguards - An issue which has arisen both in the Agency's Board of Governors and elsewhere is the precise meaning and rationale of Paragraphs 33 and 34, which provide, in general terms, that mining and milling activities are not safeguarded, and that full safeguards are to commence only when nuclear material reaches a state of readiness for fuel fabrication or isotope enrichment.

Careful examination of these provisions themselves, as well as the negotiating record, makes it clear that the Committee attached considerable importance to the requirements for reporting international transfers of any material containing uranium or thorium, even in the form of ores, and that the requirement that full safeguards are to commence when nuclear material becomes suitable for fuel fabrication or enrichment, allows inspection access at the plant where this stage is reached, and not simply after material has been transferred from such a plant.

- Strategic Points - A number of observers have questioned whether the adoption of the "strategic point" principle in INFCIRC/153 has prejudiced the effectiveness of safeguards conducted pursuant to this document.

Analysis of both the provisions of INFCIRC/153 itself and its negotiating history indicates that extreme care was exercised by the Committee to ensure that the adoption of the "strategic points" approach would not limit safeguards

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effectiveness. This care is reflected in Paragraph 116, which provides that all the "strategic points" taken together must allow the Agency to secure all necessary information; in Paragraph 47, which calls for the reexamination of design information and the redetermination of strategic points if deemed necessary on the basis of verification experience; and in the provisions for ad hoc and special inspections in which access is not limited to strategic points.

- Independent Verification and the Role of National Systems - Perhaps no safeguards issue has been more persistent than the extent to which the Agency is expected to rely on national systems of accountancy and control, and whether these systems may limit the Agency's right and obligation of independent verification that nuclear material has not been diverted.

The negotiating history reveals an extensive and explicit record, especially in relation to Paragraph 7, that the Agency's right of independent verification is not abridged by its obligation to make appropriate use of the findings of the state system. This record establishes that Paragraph 7 was adopted after the rejection of proposals that would have limited the Agency to verifying the effectiveness of the state system, rather than its findings, and only after explicit assurances were provided by key delegations of their agreement that Paragraph 7 calls for independent verification by the IAEA.

- The Rejection of Inspectors - The right of states to reject inspectors has arisen as a practical problem, in terms of meeting the Agency's need for both an adequate number and an appropriate diversity of inspectors.

The negotiating record establishes that the right of the Board to consider and take appropriate action on the repeated refusal to accept the designation of inspectors was omitted from the draft under consideration by the Committee, and was explicitly adopted by the Committee thus underscoring the importance attached to this principle.

- Unannounced Inspections - A number of observers believe that the effectiveness and efficiency of safeguards could be improved by the conduct of unannounced inspections, but Agency use of this right may have been impeded by a concern that it was not acceptable to member states.

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Paragraph 81, which authorizes the Agency to carry out a portion of its routine inspections without advance notification, was adopted after extensive discussion and explicit rejection of proposals which would have denied the Agency this right.

- The Respective Roles of Materials Accountancy and Containment and Surveillance - The language of Paragraph 29 that describes materials accountancy as a safeguards measure of fundamental importance, with containment and surveillance as important complementary measures has been interpreted by some as limiting containment and surveillance to a decidedly secondary role.

The negotiating history places a different connotation on this relationship, by establishing that containment and surveillance were explicitly included in INFCIRC/153 to rectify their omission from INFCIRC/66, and by reflecting strong support by the Committee for the virtual equivalence in the importance of containment and surveillance with material accountancy. Thus, the record establishes as the correct interpretation that materials accountancy cannot be dispensed with, but that, where applicable and necessary, major emphasis may be placed on containment and surveillance.

These selected examples represent only a few of the numerous instances where the analytical approach employed, including careful examination of the negotiating history, add substantially to an understanding of the content of INFCIRC/153 and, in some instances, correct some common misconceptions of its meaning.

Inevitably, of course, such an examination cannot and did not resolve all uncertainties or shortcomings in the specificity of INFCIRC/153. For example, the official record casts little additional light on the interpretation of Paragraph 81, which establishes the criteria to be applied by the Agency in determining the actual effort of routine inspections. This gap in the record resulted from the fact that the key discussions of provisions took place in informal sessions which were not recorded. Nevertheless, analysis of the provisions themselves, and their relationship to the corresponding provision of INFCIRC/66 adds considerably to an understanding of their intent.

In a similar vein, while the record clearly establishes the importance of avoiding abuse of the right to reject the designation of inspectors, it does not provide criteria for establishing when abuse has occurred. Additionally, while the Agency's right and

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obligation to apply safeguards on all nuclear material in all peaceful nuclear materials is clearly established, the mechanisms available to the Agency for accomplishing this, particularly in relation to material in "undeclared facilities" (as contrasted with "undeclared material" in declared facilities), are less clear.

Here, too, these examples constitute only highlights of some remaining uncertainties, and more could be cited. Nevertheless, the contribution of the record to resolving or narrowing uncertainty is a major one and, if anything, greater than might have been anticipated.

Conclusions

Two fundamental and not always mutually consistent objectives were pursued by the United States in the development of INFCIRC/153. These were:

- 1) To preserve the integrity and effectiveness of the IAEA safeguards system; in particular, its inspection rights, including the right of continuous inspection for reprocessing plants and other bulk handling facilities, and the maintenance of the principle of independent verification by the IAEA.
- 2) To the extent consistent with the above, to make the NPT more acceptable by appropriate simplifications and rationalization of the safeguards to be applied under the Treaty. This meant, among other things, giving visible effect to the Treaty requirements that safeguards be conducted, insofar as possible, in accordance with the principle of strategic points.

To a considerable degree, these objectives were shared by other participants in the deliberations, although the relative emphasis given the two objectives undoubtedly varied.

With respect to the objective of improving the attractiveness of the NPT and the likelihood of its ratification, the evidence is that this objective was achieved. The vast majority of states with significant nuclear programs have adhered to the Treaty and have accepted its safeguards, including some which were active in presenting formulations different from those which were finally adopted in INFCIRC/153. In an article which appeared after conclusion of the Safeguards Committee meeting, Dr. Werner Ungerer, the Chief negotiator of the delegation of the Federal Republic of Germany stated: "...for the industrial non-nuclear states which

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are primarily affected by safeguards, the model agreement...is undoubtedly a success. Their fears that the safeguards...would [impede and impair nuclear energy development and competitiveness] have, to a large extent, been dispelled by the restrictions and protective measures built into the model agreement." Of the states which have not yet acceded to the NPT, only one, South Africa, attributes its decision, at least in part, to concern over the safeguards system.

It is, of course, the first objective, and its achievement, which constitutes the main thrust of the study, and which presents more difficult judgemental issues. The judgement of the United States at the time was that INFCIRC/153 did achieve the objective of maintaining the effectiveness and integrity of Agency safeguards, although in the case of some provisions, particularly those relating to inspection efforts, the margin was close.

From the vantage point of the present, it is difficult to separate the issue of the adequacy of the document from that of the manner in which it has been implemented. In this respect, individual findings such as those highlighted above do not adequately convey a key and perhaps the most important single conclusion which can be drawn from an analysis of INFCIRC/153 and its negotiating history. This is that INFCIRC/153 clearly contemplates and provides for a much more dynamic approach to the application of safeguards than has apparently evolved in practice. A central feature of INFCIRC/153, recognized as such in the negotiating history, is its provision for adjustment of arrangements, and, if necessary, for special and more intensive inspections, as dictated by the results of verification activities or by special circumstances. The details of this approach are described in Section 2.15 of this report, which analyzes the "Flexibility or Action Levels" of INFCIRC/153.

It is not the purpose of this observation to suggest that circumstances have arisen in any of the states in which safeguards are being applied pursuant to INFCIRC/153 which would call for extensive use of the more elevated "action levels" provided for in INFCIRC/153. Neither would it be logical or desirable for the Agency to make use of these provisions simply to demonstrate its resolve. Nevertheless, the ultimate effectiveness and credibility of the safeguards system may well depend on the Agency's readiness and capability to make use of this key aspect of the INFCIRC/153 regime when circumstances so warrant.

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1.0 INFCIRC/153:

ITS BACKGROUND, NEGOTIATING HISTORY, AND INTENT

1.1 INTRODUCTION AND PURPOSE

The basic authority for the application of safeguards by the International Atomic Energy Agency (IAEA) to parties of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is contained in the document entitled "The Structure and Content of Agreements Between the Agency and States Required in Connection With the Treaty on Nonproliferation of Nuclear Weapons" (INFCIRC/153).<sup>\*</sup> This document was developed in a lengthy series of meetings in Vienna in 1970-1971.

The document itself is a highly complex one, with important parts of it reflecting carefully drawn compromises of conflicting views among the participants. These compromises are often expressed in language which, standing alone, is subject to varying interpretation.

It is the purpose of this study, therefore, to seek to establish the intent of INFCIRC/153, as reflected in its negotiating history. This history is incorporated in several categories of documents:

- (1) IAEA records of the negotiation, which include the Official Records (OR's) of the 1970-1971 meetings of the IAEA Safeguards Committee in which INFCIRC/153 was developed, together with the various proposals and memoranda considered by the Committee in the course of its deliberations. (These documents are designated by the symbol GOV/COM.22 followed by a consecutively applied number.)
- 2) Various collateral IAEA records and documents which are relevant to the Agency safeguards system, and particularly to its application to NPT parties. An example of such a document which preceded the formulation of the Committee is the report (GOV/INF/212) of a group of IAEA consultants specifically charged with "studying the impact of the NPT -- on the Agency's safeguards work, and the manner in which the Agency should apply safeguards -- to a country's entire range of peaceful uses..." Also included in this category are some documents which followed adoption of INFCIRC/153, but which shed light on its intent, as viewed by the Agency.

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3) National records and documents relating to the negotiation, including negotiating instructions, contemporary reports of committee sessions and collateral discussions and negotiations, and analyses of these developments prepared for the responsible government agencies or for the public. These records are unilateral in nature, and with the exception of a few documents prepared by foreign officials for public use, only United States' records of this nature were available for this study.

4) IAEA documents relating to the implementation of INFCIRC/153, particularly relatively soon after its adoption, which can shed light on the understandings of the Agency or other parties to the negotiation.

In addition to this documentation, a critical ingredient of the review has been the recollections of active participants in the negotiations, which helped not only to fill in gaps in the written record, but to place this record in a coherent overall perspective.

The results of this review are presented in this report. An important qualification which should be made with regard to the scope of this review is that it has not examined in detail the question of safeguards financing and resources. This qualification is in no sense intended to minimize the importance of these issues. Rather it is because the issues were not resolved by INFCIRC/153, the scope of which is the relationship between the Agency and states in which safeguards are applied, and not internal or global issues such as financing and resources.

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1.2 BACKGROUND

1.2.1 Early History

While the development of INFCIRC/153 can be viewed as having its explicit beginning in the negotiation and conclusion of the NPT, and the decision of the IAEA to adapt its safeguards system for application to Treaty parties, this development cannot be isolated from the earlier phases in the evolution of the Agency's safeguards system. It is, therefore, useful to review briefly certain aspects of this process which shed light on INFCIRC/153 itself.

A fundamental aspect of this background is that the negotiation and adoption of the documents which define and establish the "Agency's Safeguards System" were an unanticipated development per se. The IAEA Statute itself, principally in Article XII, establishes the Agency's rights and responsibilities to apply safeguards, bestowing on the Agency broad rights which were themselves the result of intensive international negotiations. The heart of these rights is the inspection provisions of Article XII.A.6 of the Statute, which authorizes the Agency:

"To send into the territory of the recipient State or States inspectors...who shall have access at all times to all places and data and to any person who...deals with materials, equipment, or facilities...required...to be safeguarded, as necessary to account for source and special fissionable materials...and to determine...compliance with the undertaking against...military purpose...." (emphasis added).

An important fact in placing the development of the Agency safeguards system in perspective is that the safeguards rights set forth in United States bilateral Agreements for Cooperation, which are expressed in terms very similar to those of Article XII of the Statute, were successfully implemented for several years without the development of any more detailed agreements concerning their application.

The safeguards rights of the Statute, however, could not be activated until incorporated in specific agreements between the Agency and a state. While the Agency might have taken the position that the statutory rights were to be incorporated without change in any such agreement, the political realities were that

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these rights would be subject to case-by-case negotiation. Under these conditions, it was argued that there was a positive benefit in the development of a standard which the Agency could defend as being in the common interest of member states and which individual states would find it difficult not to accept.

The issue of whether the statutory rights enumerated in Article XII are or are not subject to diminution through the process of formulating general guidelines -- that is, the Agency safeguards system -- and the incorporation of these guidelines in specific safeguards agreements has never been explicitly considered and resolved. The position of the United States has been that the safeguards documents should constitute a description of how the Agency will, in general, exercise its rights, while ensuring that the full statutory rights remain available if and when needed.

This concept has been generally followed through the approach of confining the explicit inspection limits, in both INFCIRC/66 and INFCIRC/153, to "routine" inspections, while specifically providing for special inspections which could be undertaken when justified, and which entail the full statutory access. In this sense, the statutory right of "access at all times to all places and data...as needed" have been maintained.

Another key decision, made at the very outset of the process of developing the Agency safeguards system, was that the task should be approached on a step-by-step, or evolutionary, basis. This approach was justified on the grounds that both the Agency and states needed to gain experience in the application of safeguards to relatively small and simple facilities before seeking to decide how larger and more complex facilities, which in any event were in the future, should be safeguarded. While this rationale was not invalid, a more basic concern was that the safeguards that would be necessary for larger and more complex facilities, even though not yet developed in detail, would be of an intensity -- extending to resident inspection -- which would not be generally acceptable to states until further experience with IAEA safeguards was gained. Thus, the Agency safeguards system of INFCIRC/66 was developed in several steps, the first applying to reactors of less than 100 MW, the second to reactors of larger size, the next to reprocessing plants, and the last to fabrication and conversion plants. Only enrichment plants were left untreated by INFCIRC/66.

While necessary, the decision to approach the development of the safeguards system in an evolutionary manner entailed some risks to the development of an effective system. This was that each

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negotiation of a safeguards document, or the review of an existing one, presented opportunities for weakening the existing system, given the general attitude that safeguards should not be "intrusive." Thus, overall reviews of the safeguards system have been infrequent.

In illustration of the tendency to avoid "reviews" of the system as a whole, it is a little remembered fact that the development of INFCIRC/153 was specifically undertaken (GOV/INF/222) not as a review on adaptation of the INFCIRC/66 system but to determine the content of safeguards agreements with NPT parties, and it was for this reason that INFCIRC/153 is entitled "The Structure and Content of Agreements..." rather than the "Agency Safeguards System" for NPT parties. In fact, INFCIRC/153 did not formally supersede or displace the "Agency Safeguards System" even for NPT parties, but merely adopted it for this use.

In reality, of course, INFCIRC/153 does prescribe a significantly different application of the Statute than INFCIRC/66 and, in fact if not in form and title, is a parallel application with the same standing for NPT parties as INFCIRC/66 continues to have for non-NPT parties.

In retrospect, the successive safeguards negotiations in the Board, whether involving periodic reviews or the coverage of new areas, did not result in a generally declining level of safeguards effectiveness. In fact, these steps more often resulted in the adoption of important new strengthening measures. For example, in adding the safeguards provision for large reactors to the original system (INFCIRC/26/Add.1), the principle of "pursuit" -- the application of safeguards to successive generations of nuclear material -- was incorporated into the Agency system, correcting an omission which constituted a serious defect in the original document. In adding provisions for reprocessing plants (INFCIRC/66/Rev.1), the principle that large facilities of this category would normally be safeguarded through continuous inspection was explicitly adopted. A number of other improvements were made in specific safeguards agreements, a process which was facilitated by the fact that INFCIRC/66 does not prescribe a model agreement but only a set of general principles. Despite these important indications that reviews of the safeguards system were in fact generally constructive, there was continuing concern that led to the general feeling that frequent reviews should be avoided.

Another issue, or set of issues, which appeared early in the development of IAEA safeguards and continued to arise, ultimately influencing the development of IAEA safeguards, is deserving of mention. This issue, which had its origin as early as IAEA Statute negotiations, was whether safeguards were "applicable" to

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facilities as well as materials, or, put differently, whether facilities as well as materials were subject to safeguards. A closely related question was what items or activities should trigger safeguards, if supplied by one state to another.

One position, which tended to be espoused especially by countries possessing domestic sources of uranium but with limited capacity for manufacturing equipment, was that only nuclear material, and not equipment, should be "subject" to safeguards.

However, the desire to have only nuclear material, and not equipment, "subject to safeguards" also appealed to a number of industrialized countries which were concerned by the possible compromise of proprietary commercial technology through the application of safeguards.

In early safeguards discussions both within the Agency and among suppliers, considerable confusion existed among the concepts of what is "subject" to safeguards; to what are safeguards "applied;" and what "attracts" or "triggers" safeguards. During the early 1960s, therefore, considerable effort was devoted to clarifying these distinctions. The basic concept which evolved was that there were certain items which might "trigger" safeguards on the activity or project to which they were supplied, while other activities or items were themselves "subject" to safeguards.

By establishing that there was a distinction between an item the supply of which would trigger or attract safeguards, and one which was itself "subject" to safeguards, some of the confusion and dissension as to whether equipment as well as materials were "subject" to safeguards was overcome. This was reflected for the first time in INFCIRC/66, which clearly implies (in Paragraph 19) that only nuclear material is subject to safeguards, even though the supply of nuclear facilities, important equipment, or certain materials would trigger safeguards. In addition to the supply of various items, other events might trigger safeguards, including a bilateral understanding between states, or a state's unilateral decision to accept safeguards on some or all of its peaceful nuclear activities. Whatever the triggering mechanism, however, the safeguards applied would be determined by the overall characteristics of the activity or facility to be safeguarded. In the case of the NPT, of course, safeguards are applied to all peaceful nuclear activities in a state and the question of what "triggers" safeguards does not arise. This is an important distinction and simplification from the situation covered by INFCIRC/66.

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The concept that only nuclear material is subject to safeguards derived support from the Agency Statute itself, Article XII.A.6 which authorized inspection as necessary "to account for source and special fissionable materials supplied and fissionable products," a prescription which, in turn, rests on the fact that it is only through the diversion of material, broadly construed, that a nonproliferation violation can occur. It was generally recognized that it was acceptable to view only nuclear materials as "subject" to safeguards, provided that the list of items that could "trigger" safeguards was sufficiently comprehensive; and provided also that it was understood that even though only material was subject to safeguards, safeguards measures would, of necessity be applied at facilities, even when, in the case of inspections to assure construction in conformance with design, no safeguarded nuclear material is present in the facilities.

The understanding that only nuclear material was "subject" to safeguards, although safeguards are necessarily applied at facilities was helpful in rationalizing the safeguards system and was an important positive step in securing improved acceptance of safeguards. A current issue in IAEA safeguards implementation is the belief that the adoption in INFCIRC/153 of the explicit formulation that only nuclear materials are "subject to safeguards" is a sharp break with the past, and that this limits the Agency's inspection capacity in several important respects. In fact, as explained above and confirmed by the record to be presented later, the principle had been established much earlier, and care was taken in the development of INFCIRC/153 to preserve all necessary opportunities for safeguards access to facilities in the safeguarding of nuclear material.

Despite the reluctance of some Agency members to "reopen" the IAEA safeguards system, the successful negotiation of the NPT made it essential to review the application of the system to Treaty parties. Negotiation of the Treaty made it clear that several key potential parties, including the FRG and Japan, would be unlikely to adhere to the Treaty without assurances that Agency safeguards would be applied in a manner consistent with the fact that all peaceful nuclear activities in the state would be under safeguards, the Treaty itself, and the espoused, at the FRG initiative, "principle of safeguarding effectively the flow of nuclear material...at certain strategic points."

The acceptance of the "strategic points" concept by the United States was based on the belief that it, in fact, represented no major departure from the way in which IAEA safeguards were already being applied, and that it could be accommodated provided it was applied in practice only to the extent that advancing technology permitted. In addition to the "strategic points"

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concept, potential Treaty parties had made it clear that they believed that the fact that under the Treaty all of a state's peaceful nuclear program would be subject to safeguards would allow important simplifications and rationalization of the then current system, through the opportunity for cross-checks between different facilities. While there was general acceptance of this proposition in principle, there was disagreement as to the extent to which full-scope safeguards provided a valid technical basis for the relaxation of safeguards, given the fact that the safeguards utility of data from different facilities in the same state would be limited.

Notwithstanding these concerns, there was, no basic disagreement on the need to adopt the Agency safeguards system to the agreements to be negotiated pursuant to the NPT. Moreover, much was at stake in the outcome of these discussions. Broad adherence to the Treaty, including, in particular, certain key states such as the FRG and Japan, was crucial to the success of the Treaty. These countries, along with others, had made their ratification conditional upon a successful outcome of the safeguards discussions. Additionally, there was a widely shared desire to make the safeguards applicable to NPT parties as attractive as possible consistent with maintaining their effectiveness, in order to provide an incentive for NPT adherence.

Finally, the Treaty placed a limit on the time available to parties to initiate and conclude negotiations of their safeguards agreements with the Agency, and it was essential, if these limits were to be met, and delays in implementing the Treaty were not to occur, to initiate the review well in advance of the Treaty time limits for the negotiation of individual safeguard agreements.

It was against this background that the IAEA Board of Governors decided, after extended consideration, at a special meeting held in April 1970, to reconstitute the Board's Safeguards Committee, under the title of "Safeguards Committee (1970)" to distinguish it from its predecessors to "advise the Board as a matter of urgency on the Agency's responsibilities in relation to safeguards in connection with the Treaty, and in particular, on the content of the agreements which will be required..." The Committee convened on June 12, 1970 and held 82 meetings before completing its work -- INFCIRC/153 -- as well as the development of a new formula for the financing of safeguards, on March 10, 1971.

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1.2.2 Objectives of the United States

In concert with a number of like-minded developing industrially-developed member states, the United States entered the discussions with two key objectives:

- 1) To preserve the integrity and effectiveness of the IAEA safeguards system; in particular, its inspection rights, including the right of continuous inspection for reprocessing plants and other bulk handling facilities. This required that the principle of independent verification be maintained and that any efforts to convert the system into one of merely verifying the technical effectiveness of the state system be rejected.
- 2) To the extent consistent with the above, to improve the attractiveness of the NPT and the acceptability of its safeguards by appropriate simplifications and rationalization of the IAEA system. This meant, among other things, giving visible effect to the Treaty requirements that safeguards be conducted, insofar as possible, in accordance with the principle of strategic points.

In line with these basic objectives, there were several other principles adopted by the United States governing its participation in the deliberations of the Safeguards Committee. These included:

- (a) To seek or support moderate formulations for controversial principles, so long as this could be done without prejudice to the underlying principle.
- (b) To support appropriate constraints on implementation of safeguards, when this could be done without prejudice to the system. An example of this was the United States proposal to require the Agency to review sensitive design information in premises of the state rather than requiring its transmission to the Agency.
- (c) To work closely with all delegations and especially those from other industrialized countries in the accomplishment of the foregoing objectives.

1.2.3 Objectives Of Other Participants

As would be anticipated, the objectives of other participants were by no means always identical to those of the United States. It is a truism that inspection is not "popular" even when its

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necessity is fully understood and accepted, and this attitude, of course, affected the views of many delegations in varying degrees. To the extent that the generalization could be reduced to specific concerns, the dominant complaints were that safeguards might interfere with peaceful nuclear activities and development by imposing inconvenience, delays, or costs on construction and operation; and that they might result in loss of valuable industrial secrets. These complaints were often generalized under the label of "intrusiveness." Coupled with this attitude was a generally unspoken concern that the Agency and its personnel might act overzealously, and this risk should be constrained by provisions in relevant agreements.

Despite these predictable concerns, the dominant attitudes of virtually all delegations was to ensure the effectiveness of safeguards, and the deliberations of the Committee were characterized by an exceptional degree of cooperation and mutual understanding.

#### 1.2.4 Achievement Of Objectives Of The United States

The extent to which the two general United States objectives identified above were achieved can best be considered in reverse order.

With respect to the second objective, of improving the attractiveness of the NPT and the likelihood of its ratification the evidence is that this objective was achieved. The vast majority of states of nonproliferation importance have adhered to the Treaty and have accepted its safeguards, including some, which were active in presenting formulations different from those which were finally adopted in INFCIRC/153. In an interesting article which appeared in "Aussenpolitik" in August 1971, shortly after conclusion of the Safeguards Committee meetings, Dr. Werner Ungerer, the Chief negotiator of the delegation of the Federal Republic of Germany (Fed. Rep. of Germany) stated (page 374): "for the industrial non-nuclear states which are primarily affected by safeguards, the model agreement...is undoubtedly a success. Their fears that the safeguards...would [impede and impair nuclear energy development and competitiveness] have, to a large extent, been dispelled by the restrictions and protective measures built into the model agreement." Of the states which have not yet acceded to the NPT, only one, South Africa, attributes its decision at least in part to concern over the safeguards system.

It is, of course, the first objective, and its achievement, which constitutes the main thrust of this study, and which presents more difficult judgemental issues. In the final analysis, the

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question of how well the objective of maintaining the effectiveness of the Agency safeguards system was achieved in INFCIRC/153 can be judged only through issue-by-issue and section-by-section analysis. On an overall basis, the United States judgement at the time was that the document did achieve this objective, although in the case of some provisions, particularly those relating to inspection effort, the margin was close.

From the vantage point of the present, it is difficult to separate the issue of the adequacy of the document from that of the manner in which it has been implemented. In general, however, it appears that, to the extent that safeguards implementation in practice has fallen below the anticipated level, this reflects in some measure the fact that the rights and opportunities available to the Agency under the agreements concluded pursuant to INFCIRC/153 have not been fully and effectively utilized. To the extent that this study helps identify and clarify these rights, it will have served its primary purpose.



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2.0 KEY ISSUES OF THE  
NEGOTIATING HISTORY AND INTENT OF INFCIRC/153

2.1 INTRODUCTION

This section of the report identifies and analyzes a number of key issues which arose during the development of INFCIRC/153, or which have emerged as being of particular importance in the light of subsequent developments. It is of interest and relevance that many of the issues which were recognized at the time INFCIRC/153 was developed as being of importance have been confirmed as such by later developments. The relevance of this point is that, in general, more detailed discussions took place and greater care was taken to reflect views and understandings in the discussion in connection with these key issues than in regard to provisions of more routine significance. As a result, the record in regard to key issues often establishes explicit understandings as to issues of current importance.

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

- Background And Issues, which summarizes the record to the degree necessary to provide an understanding of the evolution of the issue and the key statements, documents, or understandings which shed light on the result achieved, and an identification and explanation of the principal issue or sub-issues under consideration;
- Analysis, which draws upon the record to establish the intent of the Committee with respect to the issue or sub-issues under consideration; and
- Interpretation, which provides in concise form a statement of the intent of the document with respect to each issue considered.

It should be noted that this section of the report is organized in terms of issues, and therefore does not coincide exactly with particular and unique paragraphs of INFCIRC/153, although the principal section or sections in which the issue is dealt with are indicated in parentheses below each key issue. This approach is deliberate since, while INFCIRC/153 itself is generally organized on the basis of specific topics or questions being dealt with in specific paragraphs, important issues are often affected by more than one paragraph of the document.

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This section of the report is followed by a paragraph-by-paragraph analysis of INFCIRC/153, in view of the desirability of having a readily available analysis and interpretation of each section of the document. While this approach necessarily introduces a considerable amount of redundancy into this report, this is justified by the convenience and ability of treating both specific issues and specific paragraphs of INFCIRC/153. In fact, the paragraph-by-paragraph analysis is suggested when reviewing the "key issues" analyses.

The conclusions of the two sections, as expressed in the "analysis" and "interpretation" portions of each issue or paragraph dealt with are, of course, consistent in result, although the specific language will differ, since, as explained, each key issue does not ordinarily correspond to a specific and unique paragraph of INFCIRC/153.

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## 2.2 ESTABLISHMENT OF "SPECIAL" MATERIAL BALANCE AREAS AROUND COMMERCIAL SENSITIVE PROCESS STEPS

(Paragraph 46(b)(iv) and Paragraph 76(d))

### 2.2.1 Background And Issues

As noted in a preceding part of this report, the matter of protection of commercial and industrial secrets in connection with IAEA safeguards has been a preoccupation of member states from the inception of the IAEA and is reflected in its Statute and its safeguards documents predating the Safeguards Committee and INFCIRC/153.

In the Committee's consideration of Paragraph 5 of INFCIRC/153, which addressed the general obligation of the IAEA "to take every precaution to protect commercial and industrial secrets", the particular concept of establishing a special material balance area for that purpose was not discussed. The concept apparently evolved in the deliberations of the IAEA's Safeguards Technical Working Group on Verification of Nuclear Materials which met in September 1970, after the Committee had formulated much of Part I of INFCIRC/153, including Paragraph 5.

The first reference to such a "special" material balance area appeared in Doc 62/Mod.1, issued by the Director General after the conclusion of the meeting of the Working Group. In the introduction to that document, the Director General stated that the conclusions of the Working Group had a bearing on some of his earlier suggestions and that the document accordingly set forth some new formulations. One of the new formulations (4(g)(d) Doc 62/Mod.1) was an additional comment to the suggested provision dealing with the uses to be made by the IAEA of design information, which read: "If the operator so requests, the Agency may agree to establish a smaller than normal material balance area around a process step involving commercially sensitive information." That comment was one of several appearing under the heading of criteria to be used, inter alia, in selecting safeguards material balance areas.

While the Director General's introduction to Doc 62/Mod.1 seems to attribute all of the new formulations to the conclusions of the Working Group, the summary of those conclusions (Doc 65) made no reference to "special" or "smaller than normal" material balance areas; it did mention that one of the criteria to be used by the IAEA in establishing material balance areas was that "due account should be taken of any requirements of the operator" (2 Doc 65).

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The concept of a "special" material balance area implied several issues, only one of which, the first listed below, was discussed at any length by the Committee:

- Whether the request should be made by the operator or by the state;
- The criteria to be met before the IAEA would honor a request for a "special" material balance area; and
- The character of "special" material balance areas.

### 2.2.2 Analysis

Early in the discussions concerning Part I, prior to the issuance of Doc 62/Mod.1, the United Kingdom noted (51 OR 32) that many countries attached great importance to commercial secrets, that some limited protection might be provided in the case of material balance areas containing very small amounts of material, of the order of a few kilograms; secrecy might apply to such matters as the conditions for conversion of uranium oxide to achieve long fuel life or the welding of fuel pins. In its view, secrets could be protected provided that there was continuous inspection at the periphery of the "material control area" and that the inspector was sure that the inventory did not exceed small amounts. The United States pointed out (52 OR 32) that a mechanism already existed whereby commercial secrets could be protected -- the operator merely had to produce the inventory for inspection outside of the "material control area".

It would be useful, at this point, to discuss the significance and development of the terms "material balance area" and "material control area". The Director General introduced the term "material control area" in his initial outline (Part II B(i) and Part II, 9(a) Doc 3) to refer to those areas defined or selected by the IAEA for safeguards purposes. The term "material balance area" was used then to refer to those areas established by the operator (or the state) for operational purposes of the plant; the two types of areas would not necessarily coincide. The exchange between the United Kingdom and the United States noted above took place with that understanding of the two terms.

Objections were raised (30 and 34 OR 29) to the term "material control area" because it was said to suggest that the IAEA might be in a position to direct operations, and other terms were suggested. Subsequently, in the first version of the Director General's detailed suggestions for Part II (Doc 62), that term was

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avoided and the term "material balance area" was used to refer both to those to be used by the IAEA for accounting purposes (14(b) Doc 62) and those established by the operator (14.4 Doc 62). A definition of "material balance area" was included in the document, however, (79 Doc 62) which referred to "an area for accounting for nuclear material"; that definition also called for each material balance area to be defined such that a) inputs and outputs may be measured or determined and "(b) the physical inventory of material in it is measured in accordance with specified procedures".

Before the provisions in Doc 62 were discussed, Doc 62/Mod.1 and then Doc 62/Rev.1 (which reflected the changes addressed in Doc 62/Mod.1) had been issued, reflecting changes made after the meeting of the Safeguards Technical Working Group. In those documents, the definition of "material balance area" was reworded (79 Doc 62/Rev.1), as suggested by the Safeguards Technical Working Group (19 Doc 65), so that item (b) read: "the physical inventory of material in each MBA can be determined when necessary, in accordance with specified procedures" (emphasis supplied). (At no point did the Committee discuss the significance or intention of the underlined phrase in the definition.) A new comment also appeared (14.4 Doc 62/Rev.1), which read:

- 14.4 The Agency will use the following criteria, inter alia, in selecting safeguards material balance areas:
- (a) The size of the area should be related to the accuracy with which the material balance can be established;
  - (b) In defining the area advantage should be taken of any opportunity to use containment and surveillance to help assure the completeness of flow measurements and thereby simplify the application of safeguards and concentrate verification efforts at the measurement points;
  - (c) A number of material balance areas as used by operators, or distinct sites, may be combined in one safeguards material balance area when the Agency determines that this is consistent with its safeguards requirements; and
  - (d) If the operator so requests, the Agency may agree to establish a smaller than normal material balance area around a process step involving commercially sensitive information.

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The foregoing comment was not proposed by the Director General to be included in the relevant provision (dealing with the purposes of examination of design information), but the Fed. Rep. of Germany, in 3 Doc 86, proposed adding the criteria (with minor changes in wording) to the subparagraph of the provision which referred to the defining of material balance areas for accounting purposes. Thus, when the Committee discussed the matter of the purposes of examination of design information, it did so in the context of 14 Doc 62/Rev.1 and the amendment proposed by the Fed. Rep. of Germany in 3 Doc 86, along with the definition of "material balance area" in 79 Doc 62/Rev.1.

No delegation opposed the concept of "special" material balance areas, although Finland (36 OR 41) noted that the proposed wording ("smaller than normal") gave no indication of what normal procedures would be and, therefore, proposed that the provision should either be redrafted or deleted.

India and the United Kingdom explicitly welcomed the provision (54 and 55 OR 41). South Africa made a general plea for a provision to cover the case where a particular feature of a facility was so vital to the state's interests that information about it could not be disclosed to anyone, in which case the IAEA would then have to select an alternative procedure (17 OR 41). Hungary (21 OR 41) said that the amendment proposed by the Fed. Rep. of Germany should meet South Africa's concerns.

The United Kingdom (55 OR 41) referred to the use of "special" material balance areas in cases of serious conflict between the preservation of commercial secrets and the due application of safeguards by the IAEA. India's comments (54 OR 41) also referred to exceptionally important commercial secrets.

Those few brief remarks indicate that the establishment of a "special" material balance area was intended to be unusual and that the request must be based upon serious concern for protection of important proprietary information. (South Africa's statement could be interpreted as referring to information relating to national security, but its delegation did not seek to change the wording of the amendment of the Fed. Rep. of Germany which referred specifically to "commercially sensitive information".)

There was no discussion, however, concerning any information to be provided to the IAEA in support of a request or any other avenue through which the IAEA might evaluate the justification for the request. The absence of such a mechanism implies that the IAEA was expected to consider each request solely on the basis of the IAEA's ability to carry out its responsibilities by alternate means, if it granted the request.

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Australia, in the context of a debate concerning whether the State or the IAEA should have final say in the selection of material balance areas generally, observed that if commercial security were at stake, the onus would be on the state to provide alternate means for the IAEA to obtain the same results (41 OR 41). No other speaker addressed that point directly, although there was extensive discussion concerning the general question of selection of material balance areas. It is clear, however, from the wording adopted, that the granting of a request for a "special" material balance area would be permissive rather than mandatory. That being the case, it should be expected that the IAEA would grant such a request only if satisfactory arrangements were made to permit the IAEA to carry out its responsibilities.

The only issue extensively debated was whether the request should be initiated by the operator or the state. The amendment proposed by the Fed. Rep. of Germany in Doc 86 (and the Director General's comment in Doc 62/Mod.1 on which it was based) called for the operator to do so. India (53 OR 41) thought it should be the state, since the IAEA would not deal directly with operators, but the United Kingdom (55 OR 41) believed that in such cases it was precisely the operators with whom the IAEA was concerned. The Fed. Rep. of Germany (65 OR 41) agreed with India's argument. The question, however, is a procedural one; obviously, the operator could initiate the request to the state which in turn (if it agreed) would forward the formal request to the IAEA. The discussion of alternative arrangements would, as a formal matter, be conducted with the state and it would be up to the state to include the operator in discussions, as necessary.

The character of or criteria for "special" material balance areas was not discussed directly. The wording of the Director General in Doc 62/Mod.1 and the amendment of the Fed. Rep. of Germany (Doc 86) referred to "a smaller than normal" material balance area. Finland (36 OR 41) found that formulation unsatisfactory, because it implied a departure from a "normal" procedure which was not described, and suggested that it be interpreted to mean a smaller material balance area than would normally be specified (62 OR 41). The Fed. Rep. of Germany (65 OR 41) did not disagree with that interpretation but, for what it said were linguistic reasons, suggested replacing "smaller than normal" with "special." The United Kingdom (84 OR 41) was not entirely satisfied with that suggestion and proposed that the material balance areas in question be "smaller than that which would otherwise have been established." No other delegation addressed the point and when the Chairman summarized the concensus (96 OR 41) he used the word "special."

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It would be fair to say, in light of the evolution of the word, that the wording suggested by the United Kingdom best expressed the meaning of "special" that the Committee had in mind. That interpretation was apparently shared by the IAEA Secretariat.

In a paper (A.CONF. 49/P/770) presented at the Fourth United Nations International Conference on the Peaceful Uses of Atomic Energy in September 1971, only a few months after approval of INFCIRC/153 by the IAEA Board of Governors, the IAEA's Inspector General Rometsch stated:

The (Safeguards) Committee even specified detailed criteria for material balance area selection. For instance, on the request of a State a particularly small material balance area may be established around a process step involving commercially sensitive information. The idea being that if there is only a small hold-up of nuclear material within such an area, and continuous input and output flow measurements can be made, this would make it possible to avoid inspection access to the area itself.

Rometsch's paper continued with a discussion of two principles established in connection with the provision of design information for the protection of commercial and industrial secrets. Two classes of such secrets were identified: those, such as data related to nuclear material flow, which must in any case be disclosed to the inspectorate, and second, "the group of industrial secrets -- mainly process know-how of which the disclosure to the Agency's inspectorate can be avoided. The criterion for selection of a particularly small material balance area around a sensitive process is an example of this second principle."

It is of interest that, while the obvious intent of a "special" or "smaller than normal" material balance area was to make it unnecessary for the IAEA to have access to particular technology contained within the area, there is no provision in INFCIRC/153 which prohibits access for IAEA inspections within material balance areas. Access for routine inspections is limited to strategic points (Paragraph 76(c)), which may be either flow key measurement points (normally found at common boundaries of adjoining material balance areas) or inventory key measurement points and those points at which containment and surveillance are employed, which may well be located within a material balance area. Thus, the "special" material balance area concept does not itself provide assurance that the IAEA would be denied access to the technology to be protected. It would appear that the desired

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result could better be achieved (if consistent with the effective application of safeguards) by the careful designation of strategic points.

That the Committee adopted the "special" material balance area concept without identifying and discussing the foregoing considerations is somewhat surprising and probably reflects unfamiliarity with the strategic points approach, which was still evolving, and the fact that the provisions which address access for inspections were considered at a later time. The provision for "special" material balance areas is important, however, as an expression of the Committee's intention to accommodate national interests to the extent consistent with effective safeguards.

Paragraph 76(d) of INFCIRC/153 is closely related to the concept of "special" material balance areas established to protect proprietary information. That provision addresses the situation in which "unusual circumstances require extended limitations on access by the Agency" for inspections and calls for arrangements to be made to enable the IAEA to discharge its responsibilities in light of such limitations. The "unusual circumstances" to which that provision refers were intended to include the desire to protect proprietary information, as well as matters related to health and safety, for example. Its application is limited, however, to those situations in which (a) the "unusual circumstances" were not foreseen at the time the subsidiary arrangements were concluded, and (b) the resulting "extended limitations" on access are of a temporary, rather than permanent, nature. Accordingly, when the limitations on access are likely to become permanent, a "special" material balance area should eventually be established pursuant to Paragraph 46(b)(iv). Any arrangements made pursuant to Paragraph 76(d) must be reported to the Board, but there is no such requirement for the establishment of a "special" material balance area. Therefore, it would appear preferable that a temporary arrangement be promptly made (and reported to the Board) for extended limitation of access to be followed, if appropriate, by the establishment of a "special" material balance area.

### 2.2.3 Interpretation

The criteria for a "special" material balance area are:

- The request for a "special" material balance area must be based on the continuing need to protect process know-how or other industrial secrets, other than material flow data;

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- The IAEA must be satisfied that the anticipated hold-up of nuclear material within the proposed material balance area will, at all times, be sufficiently small and that continuous measurements of the flow of nuclear material into and out of the proposed material balance area must be possible and amenable to verification by the IAEA; and
- The IAEA must have satisfactory means for verifying flow and inventory which would make access within the material balance area unnecessary under routine conditions. (Such alternative means might be simply perimeter measurements and taking advantage of the low hold-up within the material balance area, but other means such as the state making the inventory available outside the material balance area are not precluded.)

The granting of a request for a special material balance area is at the discretion of the IAEA, although its doing so would be expected if the foregoing criteria are satisfied.

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## 2.3 DEFINITION OF "FACILITY"

(Paragraph 106)

### 2.3.1 Background And Issues

INFCIRC/66/Rev.2 classifies installations into "principal nuclear facilities", "research and development facilities", (each of which are defined in paragraphs 78 and 81 of that document, respectively) and storage facilities. Various provisions in the document concerning design review, inspections, records, and reports are applied differently to the three types of facilities. For example, design review is required only for "principal nuclear facilities" (30 INFCIRC/66/Rev.2).

In his initial suggestions, the Director General (Part II, 8 Doc 3) proposed that the same classification of facilities (and some, but not all, of the differentiation in treatment between the three types) be incorporated in INFCIRC/153. However, the Director General's suggestions were not always consistent with the approach initially suggested. For example, the suggested formulation for Paragraph 8 of INFCIRC/153 (Part I, 5(b) Doc 3) called for the provision of information to the IAEA concerning "facilities containing or to contain" nuclear material and the discussion of design review (Part II, 7 Doc 3) uses that same wording, without regard to the classification earlier suggested. The wording which was adopted by the Committee for Paragraph 8 referred to "features of facilities relevant to safeguarding" nuclear material.

The NPT itself, in Article III.1, requires safeguards procedures to be followed "with respect to source or special fissionable material whether it is produced, processed or used in any principal nuclear facility or is outside any such facility" (emphasis added). Given this fact, it might be argued that the definition of "facilities" is of little importance. However, since the NPT itself, as well as INFCIRC/153, are clear that safeguards follow nuclear material regardless of whether it is located within or outside of "facilities," the practical significance of the definition is to govern the installations or locations for which design information must be submitted to the Agency. In general, since significant quantities of nuclear material are customarily located in facilities, the Agency is entitled to design information on locations which are of safeguards importance. Nevertheless, it was recognized that by adopting a definition of facility which relied exclusively on a list of facility types, a basis might exist for states to claim that design information need not be provided on a wide range of auxiliary installations, or new types of facilities not specifically named in the "list."

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Given this background, the question of a definition of "facility" first arose during the Committee's deliberations concerning the provisions for the submission of design information (Paragraph 43 of INFCIRC/153). By that time, it was clear that the Committee had rejected the concept of classifying facilities in the manner of INFCIRC/66/Rev.2. The Director General had accordingly proposed (72 Doc 62) a definition of "facility" which encompassed all the types of installations included in the definition of "principal nuclear facility" in INFCIRC/66/Rev.2, as well as critical facilities and "separate storage or other locations," which contained or were to contain nuclear material.

Another type of issue which arose was whether, if a "functional" definition were adopted -- that is, one based on whether an installation in fact contains or is to contain nuclear material -- the definition should embrace both installations where nuclear material is already located and those in which such material is expected to be located, or only the former. There was an obvious reluctance in the Committee (1-29 OR 56) to follow the Director General's recommendation in 72 Doc 62/Rev.1 that "facility means a reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant, or a separate storage or other location, containing or to contain nuclear material (emphasis added)."

In addition to these general issues, the specific issues which arose were:

- Whether the definition should include small laboratories, pilot plants and other places where inconsequential amounts of nuclear material might be present; and
- Whether any quantity threshold adopted in order to exclude such small laboratories, etc. should apply to such things as sub-critical assemblies and reactors.

### 2.3.2 Analysis

The first formulation of a definition of "facility" was presented to the Committee by the Director General in 72 Doc 62, which read:

"Facility means a reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant, or a separate storage or other location, containing or to contain certain nuclear material."

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In the Committee's discussion of Paragraph 43 (the items to be included in design information), it became clear that a number of delegations, such as France and the Fed. Rep. of Germany, thought that the proposed definition was too vague and that it could be interpreted to require the submission of design information for many small laboratories and other places where inconsequential amounts of nuclear material might be present (49 and 52 OR 40).

The Inspector General (43 OR 40) attributed the proposed definition to the Safeguards Technical Working Group which had met shortly before the Committee's discussion. He reminded the Committee that it had earlier, in the discussion of Part I, rejected the Director General's proposal to adopt the classification found in INFCIRC/66/Rev.2.

India defended the Director General's proposed definition, on the basis that it would encompass all types of situations, such as plutonium-beryllium sources and sub-critical assemblies in which considerable amounts of plutonium might be present (44 and 50 OR 40).

The United States (56 OR 40) said that the proposed definition was too broad, that it would be absurd to include a hospital or a wagon carrying nuclear material, and that a "facility" should include only the places where nuclear material was habitually used in significant quantities, which obviously would have to include storage areas and perhaps sub-critical assemblies.

When the Committee next addressed the definition, it had before it a proposal by the United States in Doc 120 which read:

"Facility means an installation, plant or unit for the production or processing of nuclear material, or an area where nuclear material in amounts greater than one effective kilogram is customarily used or stored."

In the discussion of that proposal, the United States (20 OR 56) stated that the criterion of one effective kilogram applied to all of the elements entering into the definition. The United States was, however, willing to include "a reactor," before "an installation", to assure that borderline cases, such as reactors using less than one effective kilogram, would be included (16 OR 56).

France still believed the proposal by the United States was too general and that, if the criterion of one effective kilogram was not made to apply very explicitly to installations or plants, the

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conclusion might be drawn that pilot plants, research centers and laboratories came within the definition (24 OR 56).

After further consultations, the United States offered a revised proposal in Doc 120/Rev.1 which, except that it is a single paragraph, contains the same wording as appears in Paragraph 106. In explaining its proposal, the United States amended it by dividing the paragraph into two subparagraphs (28 OR 58).

The United States said that under the new definition important nuclear laboratories would be regarded as facilities, but laboratories containing small amounts of nuclear material or locations in which large amounts of material were not customarily found would not be so regarded (28 OR 58). For a "location" to be a "facility," two criteria had to be met: it had to use more than one effective kilogram and its use of such amounts had to be customary (32 OR 58).

When the United States added the first of the specified types (a reactor), its stated intent was to include reactors using less than one effective kilogram. As a result of subsequent consultations, the United States added the other specified types, for the same purpose as in the case of reactors. That intention is confirmed by the change made by the United States in the structure of the definition, so that the reference to the threshold appears only in subparagraph (b), which is separated from subparagraph (a) by the disjunctive "or" and by the fact that in describing the criteria applicable to subparagraph (b), the United States made no reference to the specified types of installation covered in subparagraph (a).

While the word "plant" was not explicitly discussed, the evaluation of this provision makes it clear that the term "plant" is intended to refer broadly to any installation in which the particular function described (reprocessing, isotope separation and the like) is customarily performed, regardless of scale. In practice, it would be unusual if such an installation did not also meet the criteria on Paragraph 106(b), and would thus be classified as a facility for both reasons.

### 2.3.3 Interpretation

Inclusion in the definition of the functional category of "any location where nuclear material in amounts greater than one effective kilogram is customarily used" ensures that a facility includes, and thus design information must be provided on, all those installations and structures associated with any of the several types of facilities which meet the functional definition, regardless of whether they are of a type listed in Paragraph 106(a).

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When a facility is of the type specified in subparagraph (a), however, it is not subject to the one effective kilogram threshold set out in subparagraph (b). Thus, a fabrication plant or re-processing plant handling less than one effective kilogram is a facility, and thus subject to the requirements that relevant design information be provided to the Agency.

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## 2.4 STARTING POINT OF SAFEGUARDS

(Paragraphs 33 and 34)

2.4.1 Background And Issues

The negotiation of Paragraphs 33 and 34 by the Safeguards Committee was carried out, in part, in the negotiation of Paragraph 1, the basic undertaking by the state to accept safeguards on all source or special fissionable material in all of its peaceful nuclear activities. The formulation of Paragraph 112, the definition of "nuclear material", is also relevant.

Positions on the starting point were staked out early in the Committee's deliberations. Uranium and thorium producers such as Australia (50 OR 1), South Africa (27 OR 1), Portugal (12 Doc 2/Add.4, page 3), and Turkey (12 Doc 2/Add.3/Mod.1, page 5) made it clear that they would oppose the application of safeguards to ores or ore processing activities. That position was endorsed by other delegations, including the United States (60 Doc 2, page 47). The United States noted (43 OR 35) that Article XX.3 of the Statute of the IAEA excluded ores from the definition of "source material" and INFCIRC/66/Rev.2 excluded mines and ore-processing plants from the definition of "conversion plant" (12 Annex II, INFCIRC/66/Rev.2).

Differences soon emerged, however, concerning where, beyond the treatment of ores, material should come under safeguards. The Director General's initial proposal was that safeguards should become applicable at the time a concentrate is treated in a conversion plant (Part II, 1(a) Doc 3).

The initial position of the United States, expressed informally was that safeguards should be applied to concentrates (for example, containing five percent or more of uranium or thorium) as soon as they emerged from an ore-processing plant. The written views of the United States, submitted prior to the convening of the Committee (15 Doc 2, page 33), stated that it was essential that fertile material, such as source material or slightly enriched uranium, from which highly enriched uranium or plutonium are derived, be known to and accounted for by the safeguarding authority. The primary objective of the United States, however, was that imports and exports of concentrates (defined as those containing more than a stated percentage of uranium or thorium) would be required to be reported to the IAEA.

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Australia felt that the starting point should be later in the fuel cycle than that proposed by the Director General, with the result that no source material would be subject to safeguards (13 OR 7). South Africa advocated that safeguards should be applied only when nuclear material was introduced into facilities producing special fissionable material (38 OR 35).

The issues, thus, were:

- Where, beyond mines and ore-processing plants should some safeguards measures be applied to nuclear material;
- What measures should be applied, particularly to exports and imports of source material; and
- How should the source material to which safeguards measures were to be applied be defined.

#### 2.4.2 Analysis

Early in the Committee's discussion, the United Kingdom pointed out (36 OR 32) that adoption of a point of entry into a particular type of plant as the starting point would assume that all such plants were comparable, which might prove erroneous; a chemical test, such as an assay of uranium and thorium might be preferable. The United States also considered that approach useful, because materials so defined would then be subject to safeguards wherever they were present in the fuel cycle (41 OR 32).

France, on the other hand, thought it might be possible to define "concentrate" as the material produced by a processing plant (44 OR 32).

When the Committee next addressed the subject, it had before it the Director General's suggestion for Part II in which (3 Doc 62) the material at which safeguards would start to be applied was defined as that containing 95% of U<sub>3</sub>O<sub>8</sub> or ThO<sub>2</sub>, by weight, after conversion to oxide and heating in air at 850 degrees. It was further suggested that, if that concentration is reached in the middle of the process rather than at the end, safeguards shall begin with the next material balance area after that concentration has been attained.

South Africa (36 OR 35) opened the discussion by advocating that the starting point not be defined in the agreement itself, but should vary from state to state and industry to industry. The particular starting point for each case would be set out in the subsidiary arrangements, subject to approval by the Board of

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Governors, if within predetermined maximum and minimum limits. The Fed. Rep. of Germany (41 OR 35) pointed out that, under South Africa's proposal, material which should be safeguarded would not even be considered nuclear material.

The Inspector General noted (42 OR 35) that the IAEA and the state could agree, on the basis of examination of design information, that certain processing plants could be excluded from safeguards. Such exclusion, or the possible starting point for application of safeguards within a plant, could be dealt with in subsidiary arrangements.

The United States (44 OR 35) pointed out that under the NPT, all source and special fissionable materials (as defined in the Statute) in peaceful nuclear activities were subject to safeguards; mines and mills were already excluded from the safeguards system and the United States would not favor departing from that position. It said it was prepared to consider either a quantitative or functional definition of "concentrates", but believed that the definition proposed by the Director General was unsatisfactory because it would divide concentrates into two groups, which arrangement would not be accepted in a competitive industry. The United States also indicated (45 OR 35) that where integrated processing took place, safeguards should be applied at, but not before, the moment when there was a high percentage of uranium in the concentrate.

India agreed generally with the United States (46 OR 35) and noted that under the system proposed by the Director General, safeguards would begin at the exit of material from a processing plant, but if processing and ore concentration were combined a problem would arise. If, at the next state, nuclear-pure uranium was obtained, then safeguards should start at the exit of the pure material from the plant. India also expressed disagreement with the proposal to establish a quantitative limit for concentrates and thought it should be left to each country to decide about the percentage (47 OR 35).

Hungary (51 OR 35) had difficulty with the second part of the Director General's proposal, particularly the words "next material balance area," which was presumed to mean the next processing stage in a fuel cycle. Hungary suggested that the clause should stipulate that the reason for that arrangement was that the concept of material balance areas was connected with material accountability.

Canada (52 OR 35) stated that while safeguards must include provisions for inspections, they must also allow for national procedures whereby the IAEA would be informed about the production

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of source material. The IAEA must be given some latitude in negotiating agreements within clear instructions given by the Board of Governors. Canada also noted (53 OR 35) that INFCIRC/66/Rev.2 excluded source material contained in processing plants.

The Soviet Union (54 OR 35) called for the starting point to be precisely defined and endorsed the Director General's suggestion, because it ensured maximum efficacy and lowest cost; it also excluded mines and processing plants. Any reduction in the percentage for concentrates would in the Soviet Union's view, lead to an unwarranted extension of safeguards and unjustifiable increases in cost.

Finland assumed the role of mediator between the uranium producers and those other delegations which were opposed to excluding all source material from safeguards. Finland's initial proposal (Doc 123) revealed some progress in its consultations in that it evidenced that a consensus was achievable on two basic points: first, safeguards would not apply to material in mining or ore processing and, second, the state should report to the IAEA its exports and imports of source material containing some specified level of uranium or thorium. The second point achieved the principal objective of the United States in the negotiations and ultimately was enlarged (by omitting a threshold based upon uranium or thorium content) in the final wording of Paragraph 34.

Finland had not been able, in its initial efforts, to reconcile the differences regarding where safeguards should be applied in connection with conversion plants. Doc 123 was not discussed by the Committee in its formal meetings, but Finland continued its consultations with other delegations and produced another formulation (Doc 137) which it said was based upon consultations, particularly with the uranium producers. That formulation came down on the side of those advocating that safeguards be first applied on the products of conversion processes. The wording, "leaves the plant or the process stage in which it has been produced," obviously resulted from the consultations which enabled Finland to characterize its formulation as a compromise supported by a majority of delegations involved. Its previous formulation in Doc 123 had referred to material leaving a plant or process stage designed to produce nuclear material of a composition, etc.

A statement by the United States (6-7 OR 60) in addressing subparagraph (c) of the text, referred to lengthy discussions concerning whether the starting point should be at a stage of nuclear purity or when the material left the facility. It went on to state that the second solution had been finally adopted. Since the language of Paragraph 34(c) is explicit in requiring

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that safeguards start when the relevant material leaves the plant or the process stage, the U.S. statement was, either stated or recorded inaccurately, and undoubtedly was a reference to the issue, which was central to the debate on the starting point of safeguards, of whether safeguards should commence when material was introduced into a conversion facility or "process stage," or when it leaves a conversion facility or "process stage". It was the second alternative which was accepted and which is reflected in Paragraph 34(c). In fact, there was no controversy that the "other" safeguards would be initiated either when material left the plant itself, or the "process stage" in which material of specified purity was produced. This feature of the provision is clearly intended to deal with the situation where fuel preparation activities subsequent to conversion, for example, some or all of the steps involved in fuel fabrication, are co-located with a conversion facility. It assures that all safeguards will be applied when material of the specified purity is produced, regardless of whether this is the final step performed in the plant or not.

It is of considerable importance to note that Paragraph 34(c) is carefully drawn to ensure that safeguards start when specified material leaves a plant or process stage, not after this occurs. This condition can, in fact, be met only by the application of safeguards at the plant or process stage itself, and not at some other location to which the material is next transferred.

Another significant and very deliberate feature of the provision is the reference in Paragraph 34(c) to the "other safeguards procedures" specified in the Agreement. This language makes it clear that the reporting requirements established by subparagraphs 34(a) and (b) are themselves safeguards, and that failure to comply with them would, therefore, constitute violation of a safeguards obligation.

#### 2.4.3 Interpretation

Paragraph 33 is straightforward and was undisputed. Paragraph 34(a) and (b) lay down the requirement for information to be provided to the IAEA on the occasion of each import and export (to a non-nuclear weapon state) of any quantity of any material containing uranium or thorium, in any concentration, unless the material is imported or exported for specifically non-nuclear purposes. Exports and imports of ore are specifically included in this reporting requirement, since the reference in subparagraphs (a) and (b) is to "any material" and not to "nuclear material."

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Paragraph 34(c) addresses both the import of nuclear material (defined in Paragraph 112 to exclude ore or ore residue) of the specified composition and purity, as well as the production of such material. With respect to imports of such nuclear material, the applicable safeguards measures, as laid down in the agreement, will apply as soon as the material enters the state.

Paragraph 34(c) requires that the "other safeguards" become applicable when and not after specified material leaves the plant or "process stage" in which it is produced. This requires the application of safeguards at the facility where specified material is produced, and not simply at locations to which it is subsequently transferred.

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## 2.5 SAFEGUARDS ON UNDECLARED MATERIAL

(Paragraphs 1 and 2)

2.5.1 Background And Issues

The issue of safeguards on "undeclared" material (that is, material for which information is not contained in the records and reports made available by the state to the IAEA) arises out of three considerations:

- The unmistakable and explicit obligation of the NPT itself "to accept [IAEA] safeguards...on all source or special nuclear material in all peaceful nuclear activities..." (Article III.1, NPT).
- The fact that IAEA safeguards, as they had evolved, and as understood at the time the Treaty was negotiated, did not provide the Agency with the capability to search out in the territory of states which accept safeguards on all of their activities, those activities whose existence has not been made known to the Agency in some manner.
- As discussed below, this part implies a further distinction: specifically, that between "undeclared" material which might be located within "declared" facilities or activities, and that which is located within "undeclared" facilities or activities.

It was, then, recognized at the time of the negotiation of the NPT, as well as of INFCIRC/153, that a case might conceivably arise where activities or facilities which would, under the Treaty, be required to be safeguarded, would not be disclosed or declared to the Agency, and thus might not, as a practical matter, be safeguarded and inspected.

A further consideration bearing on these issues is that the Treaty requires the acceptance of safeguards on all peaceful nuclear facilities, but prohibits only "nuclear weapons or other nuclear explosive devices." Thus, there is a gap between what is prohibited; namely, "nuclear weapons or other nuclear explosive devices," and what is permitted and safeguarded; namely, all peaceful nuclear activities. This gap; namely, non-explosive military nuclear activities, is therefore permitted but not safeguarded. It is worth noting that this gap was by no means an

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oversight, but was a necessary and deliberate result of the need to attract broad support for the key objective of prohibiting nuclear weapons and other nuclear explosives. As explained in the analysis, the existence of this deliberate gap is important and helpful to an understanding of the issue of safeguards on undeclared activities and materials.

In light of these considerations, it can be seen that the issue dealt with in this section is both part of a larger issue and has, itself, several components:

- The issue of safeguards on undeclared material is related, but not identical to, the larger issue of how undeclared activities (the term "activities" is employed in both the NPT and Paragraphs 1 and 2 of INFCIRC/153) are to be dealt with. The issue of undeclared activities involves both nuclear material and facilities, both of which entail safeguards obligations and activities.
- The issue of safeguards on undeclared material has two components: nuclear material which is present in undeclared activities or facilities; and material which is present in declared or reported activities or facilities, but which is itself undeclared or unreported.

Both of these sub-issues are dealt with in this section.

By way of background, it is of relevance that neither the term "declared" nor "undeclared" appears in INFCIRC/153, and the absence of these terms, for reasons explained in the analysis, can hardly be accidental. Thus, the very concept of "undeclared" materials, facilities, or activities is a derivative one.

The obligation to accept safeguards on all nuclear material in all peaceful nuclear activities is made unmistakeably clear in INFCIRC/153, not only in Paragraphs 1 and 2, which establish the basic undertakings and obligations of the state and the Agency, but in numerous other paragraphs as well, a compilation of which appears at the end of this Background and Issues section. Moreover, Paragraph 2 provides that it is not only the Agency's right, but its obligation to apply safeguards on all nuclear material in all peaceful nuclear activities. (In this regard, it is clear that the phrase "in accordance with the terms of the agreement," that appears in Paragraph 2 of INFCIRC/153 qualifies the application of safeguards and not the Agency's right and obligation.) Thus, INFCIRC/153 establishes an overwhelming record that safeguards are to be accepted and applied on all nuclear material in all peaceful nuclear activities. The significance of the limiting reference to peaceful nuclear activities is discussed in the Analysis.

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Of particular importance is the fact that the issue of undeclared material and activities was not dealt with only by implication but explicitly as well. In its proposal relating to Paragraph 1 (2 Doc 8), South Africa recommended that "safeguarding and inspection...shall be concerned solely with the material reported upon by the state concerned..." This proposal was explicitly objected to by Hungary (22 OR 6), received no support, and was omitted from Paragraphs 1 and 2 of INFCIRC/153.

Also of relevance is the detailed treatment given to the exclusion from safeguards of material in non-proscribed military uses, provided for in Paragraph 14 of INFCIRC/153. It was clear in the development of this paragraph that only the narrowest possible suspension or "non-application" from safeguards was intended for material in non-proscribed military uses, and that this "non-application" is to take place under specific arrangements with the Agency in which the Agency is provided with as much information as possible without compromising classified information to make it clear that "during the period of non-application of safeguards, the nuclear material will not be used for...nuclear weapons or other nuclear explosive devices." Of particular importance was the understanding that facilities, such as re-processing plants which produce or process material to be used in non-proscribed military uses are not themselves exempt from safeguards (28 OR 8).

Another relevant consideration is the use throughout INFCIRC/153 of the term "nuclear material subject to safeguards" (e.g., Paragraphs 7, 8, 11, 12, 13, and 18). This phrase was understood by the Committee (8-12 OR 13) to mean not simply that material which was being safeguarded, but that material which was required to be safeguarded by reason of the fundamental undertakings of Paragraphs 1 and 2. On occasion, (e.g., Paragraphs 14 and 19) the more explicit and emphatic term "nuclear material required to be safeguarded" was employed, with a recognition, however, that the meaning was perhaps clearer, but not different from that of "nuclear materials subject to safeguards" (8 OR 13). Through the use of these terms, the key specific safeguards obligations are made applicable not merely to material being safeguarded pursuant to a state's "declaration," but to that material which ought to be safeguarded pursuant to the fundamental undertakings of Paragraphs 1 and 2.

There is, thus, an unmistakable record as to the obligation to accept safeguards on all nuclear material in all peaceful uses, regardless of whether reported by the state. Moreover, while the record lacks explicit references as to how this is to be accom-

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plished in the absence of a state's declaration or report, INFCIRC/153 includes a number of important provisions which provide the means for assuring this broad application:

- INFCIRC/153 clearly contemplates that safeguarded material will be followed or pursued, with the possibility that this process will disclose additional activities or material to be safeguarded. This is apparent, for example, from Paragraph 76(a) which provides, in part, that "the Agency's inspectors shall have access to any location where the initial report or any inspections carried out in connection with it indicate the nuclear material is present."
- By the same token, Paragraphs 73 and 77 provide that special inspections may be made without limitation on access (other than that imposed by Article XII.A.6 of the Statute), when "the Agency considers that information made available by the state...is not adequate for the Agency to fulfill its responsibilities under the agreement." One of these responsibilities (Paragraph 2, INFCIRC/153) is "the...obligation to ensure that safeguards will be applied...on all source or special fissionable material in all peaceful nuclear activities..."
- Provisions, in particular, subparagraph 46(b)ii, for the application of containment and surveillance measures to help ensure completeness of flow measurements.
- Of particular relevance to the narrower issue of the application of safeguards to "undeclared" material present at declared facilities or activities are the provisions relating to reporting and inspections. For example, Paragraph 64 provides that "inventory change reports shall specify...batch data for each batch of nuclear material..." (emphasis added), and Paragraph 72 provides, inter alia, that "the Agency may make routine inspections in order to...(b) verify...all nuclear material subject to safeguards under the agreement" (emphasis added). These provisions, it is to be noted, appear in Part II of the INFCIRC/153, which specifies implementing procedures, and thus add weight to the expression of principles found in Part I.
- Paragraph 19 also provides an indication as to how the Agency can fulfill its obligations in the event a state fails to declare or report nuclear material subject to

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safeguards. This provision, which incidentally incorporates the emphatic formulation "nuclear material required to be safeguarded," authorizes the Board to take action if it "finds that the Agency is not able to verify that there has been no diversion of nuclear material required to be safeguarded..." It is evident that this formulation does not depend on the declaration of material by states. Moreover, there is no limitation in this provision as to the kinds or sources of information which the Board may consider in reaching such findings.

The following provisions of NPT and INFCIRC/153 relate to the application of safeguards on all nuclear material:

1. Article III.1 of the NPT requires that safeguards "shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such state, under its jurisdiction, or carried out under its control anywhere" (emphasis supplied). This requirement is reflected in INFCIRC/153 by Paragraphs 1 and 2, setting forth the basic undertakings of the state and the Agency, which were adopted after considerable discussion, the relevant aspects of which are described in this section. These two Paragraphs provide:

1) That the state should undertake "to accept safeguards...on all source or special fissionable material in all peaceful nuclear activities...;" and

2) That the Agency should have the "right and obligation to ensure that safeguards will be applied...on all source or special fissionable material in all peaceful nuclear activities..." (emphasis added).

2. Other relevant provisions of INFCIRC/153, which involve state responsibilities to put all material under safeguards and to record and report all materials, include:

- Paragraph 43, which states:

"...the design information in respect of each facility ...shall include..." (emphasis added).

- Paragraph 44, which provides:

"...other information relevant to the application of safeguards shall be made available to the Agency in respect of each facility..." (emphasis added).

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- Paragraph 51, which states that:

"...the state shall arrange that records are kept in respect of each material balance area..." (emphasis added).
- Paragraph 54, which provides that:

"...records shall consist...of:

  - (a) accounting records of all nuclear material subject to safeguards under the agreement; and
  - (b) operating records for facilities containing such material..."
- Paragraph 56, which provides that:

"...the accounting records shall set forth...:

  - (a) all inventory changes...
  - (b) All measurement results that are used for determination of the physical inventory.
- Paragraph 57, which states that:

"...for all inventory changes and physical inventories, the records shall show..."
- Paragraph 62, which provides that:

"...the Agency shall be provided with an initial report on all nuclear material which is subject to safeguards..."
- Paragraph 63, which provides that:

"...for each material balance area, the state shall provide...the following accounting reports:

  - (a) Inventory reports showing changes in the inventory...
  - (b) Material balance based on a physical inventory of nuclear material actually present in the material balance area..."
- Paragraph 64, which states that:

"...inventory change reports shall specify...for each batch of nuclear material..."

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- Paragraph 65 which states:

"...the state shall report each inventory change, adjustment, and correction..."

3. Other relevant provisions of INFCIRC/153 which involve IAEA activities to verify that the records and reports include all material are as follows:

- Paragraph 34 (Starting Point of Safeguards) which provides that "when any nuclear material...suitable for fuel fabrication or for being isotopically enriched leaves the plant or the process stage in which it has been produced...[it] shall become subject to the other safeguards procedures..." (emphasis added).
- Paragraph 46(b) which provides:

"...the Agency shall...:

(b) "...help ensure the completeness of flow measurements..."
- Paragraph 71, which provides that:

"...the Agency may make ad hoc inspections in order to:

(a) Verify the information contained in the initial report...

(b) Identify and verify changes in the situation..."
- Paragraph 72, which provides that:

"...the Agency may make routine inspections in order to..."

(b) Verify the location...of all nuclear material subject to safeguards..."
- Paragraph 73, which states that:

"...the Agency may make special inspections..."

(b) If...information made available by the State...is not adequate for the Agency to fulfill its responsibilities under the Agreement.

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An inspection shall be deemed to be special when it... involves access to information or locations in addition to the access...for ad hoc and routine inspections or both."

- Paragraph 74(b) which provides that the Agency may:
  - (b) "Make independent measurements of all nuclear material subject to safeguards..."
- Paragraph 76(a) which provides that:
  - (a) "...until such time as the strategic points have been specified in the Subsidiary Arrangements, the Agency's inspectors shall have access to any location where... nuclear material is present."

### 2.5.2 Analysis

INFCIRC/153 and its negotiating history provide incontrovertible grounds for the conclusion that "all nuclear material in all peaceful nuclear activities" is to be safeguarded and that the Agency is under an obligation to apply its safeguards to all such material. These obligations are not only explicit in Paragraphs 1 and 2, which were understood to specify the fundamental undertakings of safeguards agreements, but are supported by an extensive number of references to "all" material, and each facility in a number of other paragraphs.

On the basis of these provisions, there can be no doubt that a state is under an obligation to record and report or "declare" all material, and that it is in violation of the agreement if it fails to do so; and that there is a corresponding right and obligation of the Agency to apply its safeguards to all material.

The suggestion is sometimes made that the limitation of the safeguards obligations in Paragraphs 1 and 2 to all nuclear material "in all peaceful nuclear activities" leaves a state free to have nuclear material for nuclear weapons or other nuclear explosive devices which is not subject to safeguards.

It is evident, however, that a state could not claim a right by virtue of this language to do what the NPT is expressly designed to forbid; i.e., the manufacture or acquisition of nuclear explosives. Moreover, there is a clear explanation for the use of this particular language in place of what might otherwise appear to be the more straightforward approach of omitting the word

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"peaceful." This explanation is that because the Treaty does not prohibit military uses other than nuclear explosives, it was necessary to confine safeguards to nuclear material "in all peaceful nuclear activities," since the application of Agency safeguards to military uses, even though non-explosive, would be not only inappropriate for the Agency but unacceptable to most states.

It follows that the meaning of Paragraphs 1 and 2 is that safeguards are to be applied to all nuclear material in peaceful uses, and that there is to be no other nuclear material in a state, with the sole and very limited exception of material in declared, non-proscribed military use (an exception, incidentally, which has yet to arise).

The unambiguous obligation of the Treaty to accept safeguards on all nuclear material (except for the unavoidable but limited exemption for non-proscribed military use) makes it easily understandable that there was no extensive discussion of whether safeguards were to be applied to "undeclared" material. Any suggestion by a state that the Agency had no such right would likely have been dismissed out-of-hand, and this is precisely what took place in connection with the rejection of South Africa's proposal of Doc 8. The very absence from INFCIRC/153 of references to declared or undeclared material strengthens the conclusion that no distinction was intended, or could have been intended, with respect to the right and obligation of the Agency to apply safeguards to all nuclear material.

Neither is there any lack of clarity that material, whether declared or undeclared at "declared" or reported facilities is to be inspected and accounted for. This is clear from the explicit authorization of Paragraph 72(b) to "verify the location, identity, quantity, and composition of all nuclear material," even in routine inspections, and is further strengthened by the provision for special inspections, which may involve access "in addition to the access" for routine inspections including, if necessary, access directed by the Board without regard to the procedures for settlement of disputes. The extensive negotiating history of Paragraph 7 stresses that the Agency is not confined in its verification to validating information provided by the State and thus confirms the Agency is not limited to verifying what a state has reported.

Most persuasive in establishing the right of the Agency to apply safeguards to all nuclear material, regardless of whether it is "declared," is Paragraph 19, which authorizes the Agency to take action when it finds that it can no longer verify that there has

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been no diversion of nuclear material required to be safeguarded. To argue that the Agency is concerned only with the safeguarding of "declared" material, and, thus, can only reach findings when declared material can no longer be accounted for is to deprive this Paragraph of its evident meaning.

What emerges from this analysis is that the Agency has both the right and obligation to apply safeguards to all nuclear material in a state (other than that in the declared, limited exception), and that it has both a realistic opportunity, and the clear charge, to exercise this right, even as to "undeclared" material at declared or reported facilities, a right and opportunity which the Board can insist upon even without the state's agreement.

It is, of course, always open to a state to refuse to permit these verification activities to take place, just as it may refuse to permit the most routine and undisputed inspection or verification to occur. In such cases, the Board is presented with a clear-cut basis on which to find that the Agency can no longer verify that there has been no diversion, and would presumably do so.

The case of undeclared material at undeclared activities or facilities presents greater programmatic difficulties, but no differences in principle. If such activities or facilities remain both undeclared and unknown, the issue of how to apply safeguards to them will not arise. However, such activities have become known through other means. If this should occur in a State with an INFCIRC/153 agreement and is brought officially to the Agency's attention, logic demands that the Agency should inform the state of its desire to inspect the facility or activity in question and agreements under INFCIRC/153 clearly provide the juridical basis for such a request or challenge. The state's response to such a request would be an important item to be taken into account by the Board in considering whether to make a finding under Paragraph 19.

### 2.5.3 Interpretation

INFCIRC/153 authorizes and requires the application of safeguards to all nuclear material in all nuclear activities in a state, except that material in declared, non-proscribed military uses. In practice, this right is more easily exercised in respect to undeclared material at declared or reported facilities. In particular:

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- Paragraph 46(b)(ii) provides for the use of containment and surveillance to help ensure the completeness of flow measurements.
- Paragraph 72(b) provides that routine inspections are to verify the location, identity, quantity and composition of all nuclear material subject to safeguards under the agreement.
- Paragraph 73(b) authorizes the Agency to make special inspections "when it considers that information provided by the State is not adequate for the Agency to fulfill its responsibilities under the agreement."

The Agency's right and obligation to apply safeguards to all material in all peaceful activities extends as well to undeclared material in undeclared facilities. As a practical matter, however, the Agency lacks the capability to search out activities or facilities which have not been reported to it. Nevertheless, in the event the Agency has reasonable cause to suspect the existence of such facilities or activities, INFCIRC/153 provides the Agency with the means to request access to such facilities, through special inspections pursuant to Paragraph 73.

The state's response to any such request for special inspections would be an important factor for the Board to consider in deciding whether to make a finding pursuant to Paragraph 19.

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## 2.6 STATUS OF FACILITIES

(The relationship of the application of safeguards to materials to the safeguarding of facilities.)

(Paragraphs 1, 2, 6, and 48)

### 2.6.1 Background And Issues

Both the NPT itself and INFCIRC/153 stress the application of safeguards to nuclear materials, leading to some concern that facilities cannot be adequately safeguarded under NPT safeguards agreements. The Preamble of the NPT, for example, expresses support for "the principle of safeguarding effectively the flow of...materials..." and Article III.3 calls for the implementation of safeguards in accordance with this principle. Article III.1 provides that "procedures for the safeguards required shall be followed with respect to...material whether it is...in any principal nuclear facility or...outside." This article further provides that the "safeguards required...shall be applied on all...material..." Despite this emphasis on the application of safeguards to materials, the basic undertaking of Article III.1 is that the state is "...to accept safeguards as set forth in an agreement...with the International Atomic Energy Agency in accordance with the Statute of the...Agency and the Agency's safeguards system..." Thus, it is the agreement, the Agency's Statute, and the Agency's system which are controlling as to the nature of the safeguards to be applied.

INFCIRC/153 also contains numerous provisions emphasizing the application of safeguards to material. In addition to Paragraphs 1 and 2, which restate the language of Article III.1, Paragraph 6 restates the NPT principle of safeguarding effectively the flow of nuclear material at certain strategic points but, significantly, qualifies the application of this principle with the provision "to the extent that present or future technology permits." Throughout INFCIRC/153 reference is made to "nuclear material subject to safeguards under the agreement," and no comparable references to facilities subject to safeguards are present. Nevertheless, there are no exclusions, limitations, or prohibitions either in Article III of the NPT, or in INFCIRC/153 with respect to the application of safeguards to or at facilities; that is, there are no provisions which state the Agency is precluded from receiving information on or inspecting facilities. On the contrary, there are a number of provisions which explicitly call for such information and/or inspections, including Paragraph 48, which provides for inspection of facilities to verify construction in accordance with design even in advance of the introduction of any nuclear material.

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The viewpoint that safeguards should be concentrated on materials and not on facilities or hardware is of long standing, as has already been commented upon in some detail in the introduction to this report. Indeed, the concept is unavoidable, since, in the final analysis, it is only nuclear material that can find its way into a nuclear explosive, and not the facilities or hardware in which the material was produced.

As expressed in the comments of the United States to the Safeguards Committee before the initiation of deliberations (39 Doc 2), the emphasis on making safeguards applicable to materials prescribed by the NPT was not new. On the contrary, the United States pointed out that "much of the effort that went into [INFCIRC/66] was devoted to making it clear that nuclear materials are the focal point of safeguards, and...a careful reading of [INFCIRC/66] will show that only nuclear materials are subject to safeguards. Clearly, however, since such materials are employed in...facilities, the document cannot avoid reference to...safeguards procedures applicable at...facilities in which safeguarded materials may be employed." In short, as the United States pointed out, the question of whether nuclear material alone was subject to safeguards or whether safeguards were also applicable to or at facilities was largely a semantic issue, with the important issue being the adequacy of the procedures themselves, and not the abstraction of what is or is not "subject to safeguards."

In its preliminary views on the content of NPT safeguards agreements (Doc 3), the Secretariat made no explicit reference to the emphasis placed by the NPT on the application of safeguards to materials. By implication, however, it is apparent that the Secretariat did not see this as an obstacle to effective safeguards. On the contrary, it expressed the view (Introduction 6 Doc 3) that the fact that "all the peaceful nuclear activities of states will have to be safeguarded will permit an important simplification...will result in a several fold decrease in the specific safeguards effort per unit of nuclear power installed..."

In the same document, the Agency stated (Introduction 4 Doc 3), "technically speaking, safeguards invariably consist of verifying the status of material in specified nuclear activities..." (emphasis added), and added that four elements were essential for any safeguards system, including:

- a) "...knowledge of the facilities" (emphasis added).
- b) "...records on material production..."

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- c) "...reports on material production..."
- d) "Independent verification...of material inventory and movement."

In short, the Secretariat clearly shared the view of the United States that materials were the appropriate focus of safeguards, provided that there was adequate knowledge of the facilities in which they were employed, produced, or stored.

The issue of whether making only material subject to safeguards would hamper the effectiveness of safeguards under INFCIRC/153 arose explicitly on one occasion. In connection with Paragraph 70 (derived from 37 Doc 68/Rev.1), which expresses the overall right of the Agency to undertake inspections in accordance with the detailed provisions which follow, Japan proposed (Doc 116) the elimination of the right to inspect "facilities containing or to contain nuclear material," preserving only the right to inspect "nuclear material and its flow." The solution adopted was to reword this section to provide for "the right to make inspections as provided." The Inspector General confirmed (15 OR 48) that this would "solve the problem" provided the governing paragraphs contained adequate rights.

Thus, the Committee specifically rejected an effort to restrict inspections to material only, adopting the solution that the procedures would speak for themselves. In fact, these procedures necessarily involve facility access, and often involve specific facility related measures such as:

Paragraph 73(a): Verify information in special reports which, in accordance with Paragraph 68(b), are to include unexpected changes in containment.

74(c): Verify the functioning and calibration of instruments and other measuring and control equipment.

74(d): Apply and make use of surveillance and containment measures.

75(b): ...to observe the calibration of the instruments and equipment involved.

75(e): To apply its seals and other identifying and tamper-indicating devices to containments...

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One of the areas of closest interaction between safeguards and facilities is that of review of design information. Paragraph 8 of Part I of INFCIRC/153, and Paragraphs 42-45 of Part II call for the provision by the state to the Agency of design information relevant to the application of safeguards. While the specific language defining the scope of design information to be made available under INFCIRC/153 differs from that of INFCIRC/66, the basic concept, namely, that the information to be provided is that which is relevant to safeguards and that only the minimum amount necessary for this purpose shall be required is the same in both documents. While the relevant sections in Part II of INFCIRC/153 were discussed at length (23-43 OR 25; and 37-57 OR 28; and 1-40 OR 40), much of the discussion related to such matters as the timing of submission of design information, and collateral issues such as whether organizational information on state systems of accounting and control should be required. There was no fundamental disagreement that the Agency should receive design information relevant to safeguards, nor was there disagreement in principle with the Agency's right to send inspectors to facilities to verify that construction was in accordance with design (Paragraph 48). The provision for such inspector functions is, in fact, more explicit than that in INFCIRC/66 (Paragraph 50(b)).

A closely related question to that of the status of facilities is the introduction in INFCIRC/153 of the principle of strategic points. This principle is also discussed as the next topic in the "key issues" section of this report. It is, in fact, the principle of strategic points and the provisions by which it is reflected in INFCIRC/153 which have more impact on the Agency's access to facilities than the principle of focussing safeguards on material. As one example, Paragraph 76(c) of INFCIRC/153 provides that in the case of routine inspections "inspectors shall have access only to the strategic points specified in the subsidiary agreements..." No comparable limitation is found in INFCIRC/66.

### 2.6.2 Analysis

Despite the shift in INFCIRC/153 to a more explicit formulation that only nuclear materials, and not facilities, are "subject to safeguards," this concept is largely semantic and has no direct impact on the Agency's access to facilities or the purposes and scope of Agency inspections. Even under INFCIRC/66, the phrase "subject to safeguards" is found only in conjunction with "nuclear materials" (Part II.A, Paragraphs 19, 20, 21, and 23). The

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provision of Paragraph 45 that "the Agency may inspect safeguarded nuclear materials and principal nuclear facilities" (emphasis added) is a procedural statement, rather than an expression of a safeguards principle. Indeed, the fact that the word "safeguarded" modifies only "nuclear materials" confirms that the concept that only nuclear materials are "subject to safeguards" was already reflected in INFCIRC/66.

Nevertheless, safeguards agreements entered into pursuant to INFCIRC/66 include explicit references to equipment and facilities which are "subject to safeguards". See, for example, the trilateral safeguards agreement between the United States, Japan, and the IAEA of July 10, 1968, INFCIRC/119, Section 10 (a) of which states in part: "...the inventory...shall list: (i) equipment and facilities transferred...which are subject to safeguards under the Agreement for Cooperation".

This language makes it clear that the evolution of thinking as to what is to be "subject to safeguards" was not complete at the time INFCIRC/66 was adopted. Thus, the language of INFCIRC/153 represents a significant clarification of the principle under development, but not a wholly new development. The important point is that questions of whether facilities as well as nuclear material are "subject to safeguards" is intended to convey the purpose and emphasis of safeguards, and not to define scope or access of inspections and other concrete verification activities. It reflects the fact, already given emphasis in Article XII of the Statute, that it is the diversion of material which is the key and indispensable step in the misuse of peaceful nuclear activities for nuclear weapons or explosives.

While the clarification that only nuclear material is subject to safeguards which appears in INFCIRC/153 does not in itself affect the Agency's verification activities, the related concept of concentrating the Agency's inspection activities at "strategic points" can have such an impact. The extent of this impact is discussed in the topic which follows.

### 2.6.3 Interpretation

The understanding, implicit in INFCIRC/153, that only nuclear material is "subject to safeguards," is an expression of safeguards intent, and has no direct impact on the access or scope of inspections. These are defined in specific paragraphs of INFCIRC/153, and clearly provide for access to facilities, including those in which nuclear material has not yet been introduced.

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## 2.7 STRATEGIC POINTS

(Paragraphs 6, 46, 47, 77, and 116)

### 2.7.1 Background And Issues

The concept of strategic points, i.e., concentrating Agency verification activities, and, in particular, inspections, at selected points where diversion might take place, and/or where measurement was particularly convenient and useful, was proposed by the Fed. Rep. of Germany during negotiation of the NPT and was viewed by the Fed. Rep. of Germany as a high priority objective for incorporation in the Treaty and, ultimately, in the Agency's safeguards system. The principle, as enunciated by the Fed. Rep. of Germany, also called for the use of instruments and other techniques at the strategic points, with the intent to further reduce the need for access by inspectors.

The United States position was that the principle was not only a sound one, but was, in fact (38 Doc 2, page 40), "a logical evolution of concepts already found in the Agency's Statute and document INFCIRC/66." Thus, the United States support for strategic points was closely related to and based on similar grounds as its support for greater emphasis on the safeguarding of material in contrast with facilities; that is, that the approach was logical and, rather than representing a novel and untested departure, reflected the direction already taken by the Agency in the development of safeguards. The United States support for strategic points was, however, qualified -- as was its support for materials focussed safeguards -- by the view that these principles should be applied only to the extent that technology permits, and not to the exclusion of other safeguards measures.

The strategic points concept is first referred to in INFCIRC/153 in Paragraph 6, which provides, inter alia, for "the application of the principle [of strategic points]...to the extent that present or future technology permits" (emphasis added). The adoption of this qualification fully met U.S. objectives. It also succeeded in securing agreement to the mention of strategic points from the Soviet Union, who had initially objected to any mention. As a guiding principle in Part I of INFCIRC/153, this provision, however, had no direct operational impact, and the main issue with respect to adoption of the strategic points principle arose during consideration of the detailed procedures; in particular, the inspection provisions, in Part II of the INFCIRC/153.

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In its first detailed draft of Part II (Doc 62), the Secretariat proposed that design information should be reviewed for the purpose, inter alia, of "...select[ing] locations where inspections shall normally be made," a reference, without the use of the term, to strategic points. This proposed provision was further reflected in the proposed inspection provision, Paragraph 44(c), that, in connection with routine inspections, Agency inspectors would "normally require access only to the inspection locations selected in the examination of design information..." and "if access to the locations selected...is not adequate,...inspectors shall also have access...to locations in the facility not so selected..."

While this formulation was entirely acceptable from the viewpoint of the United States, it was apparent that the provision for unqualified additional access vitiated the concept of "selected locations" or strategic points, and would not enjoy general support in the Committee. Thus, it was foreseeable that the Secretariat approach would have to be modified, both to make the reference to "strategic points" explicit, and to limit normal access more strictly to such points.

The approach, which provided the basis for the provisions relating to strategic points which were finally adopted, first appeared in the Secretariat's revised draft of Part II, Doc 62/Rev.1. This revision was developed following a Safeguards Technical Working Group meeting which was held in September 1970, between the second and third sessions of the Safeguards Committee, for the specific purpose of discussing, in a smaller and more technical forum, the basic issues in regard to verification by the Agency. The approach which emerged had the following basic elements:

- Strategic points may be of two kinds reflecting the two classes of safeguards measures; those where key measurements are made, and those where containment and surveillance measures are executed.
- Routine inspection access should normally be limited to the strategic points selected during the review of design information.
- The strategic points should be selected in such a way that through access to these points in combination, under normal conditions "the information necessary and sufficient for the implementation of safeguards is obtained and verified" (21 Doc 65).
- An appropriate mechanism should exist for obtaining additional access, if necessary.

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The key point of this approach was the concept (somewhat unconventionally incorporated in the proposed definition for INFCIRC/153, and retained there as Paragraph 116) that the strategic points were those which, by definition, allow access to all the information needed for effective safeguards. This approach met the objective of according strategic points a prominent place in the document, while ensuring that their selection and inspection access to them would allow effective safeguards. However, an important consideration was to ensure that, in the process developed for selecting the strategic points, the Agency would possess sufficient authority or bargaining power to achieve the objective of selecting those points, access to which, in the aggregate, would provide all necessary information.

Much of the extensive discussion of Paragraph 46 dealt with the question of whether the Agency had the independent discretion to decide on the strategic points; or whether this would take place in some consultative manner with the state, with the state having an effective veto power. The original formulation of Paragraph 46 appeared to give the Agency the discretion to select strategic points "taking into account its consultations with the state," but this apparent authority was ephemeral, since the proposed provision also called for the incorporation of these results in the "Subsidiary Arrangements" a document which would have to be agreed upon between the Agency and the state.

Extensive discussion ensued (10-97 OR 41; 1-12 OR 43) as to whether the Agency would use design information "in consultation with the state," or "in cooperation with the state," as proposed by the Fed. Rep. of Germany (Doc 86), and whether the latter formulation did or did not deprive the Agency of its discretion in selecting strategic points. This debate was resolved by an Australian proposal (Doc 9/Rev.1) which avoided the issue by eliminating both "consultation" and "cooperation" and stating simply that "the design information made available shall be used..."

The clear implication of this formulation, taking into account the language and purpose of Paragraph 46 as a whole, is that it is the Agency which will use the information to select strategic points. This is especially clear since Paragraph 46(b) provides that, in so doing, "the Agency shall, inter alia, use the following criteria" (emphasis added).

An explicit mechanism for broadening the original selection of strategic points was provided by Paragraph 47, which allows re-examination of design information not only when designs or operation are modified, but on the basis of "developments in safeguards technology or experience in the application of verification..." (emphasis added). Reopening the selection of strategic points on the basis of experience represents an additional

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grounds beyond those originally proposed by the Secretariat (15 Doc 62/Rev.1). It is also noteworthy that Paragraph 47 states that the design information shall be reexamined with a view to modifying the action the Agency has taken... in the original examination (emphasis added), thus confirming not only that it is the Agency which initially selects strategic points, but that the Agency may modify this selection.

Given the clear overall intent that strategic points are to be selected by the Agency, the United States supported the Australian compromise approach, having concluded that the most important requirement was to ensure the Agency's ability to secure acceptance of the appropriate and adequate strategic points in the development of subsidiary arrangements.

This objective was accomplished through the development of the arrangements for ad hoc inspections (Paragraphs 71 and 76(a)) under which "...until such time as the strategic points have been specified in the Subsidiary Arrangements,...inspectors shall have access to any location where the initial report or inspections carried out in connection with it... indicate that material is present" (emphasis added). Thus, the state has a positive incentive to agree to the conclusion of subsidiary arrangements incorporating the Agency's selection of strategic points in order to limit access to which the Agency is otherwise entitled.

In the view of the United States, this approach constituted a more effective means of ensuring the selection of adequate strategic points than any form of words. The approach also provides a good example of the interrelationship of provisions in INFCIRC/153, and the importance of viewing issues from the perspective of the document as a whole.

Having resolved the issue of initial selection of strategic points, the remaining issues were:

- The extent to which access would be limited to the selected points; and
- The means for securing additional access if needed.

As noted previously, the original Secretariat proposal (44(c) Doc 62) was for the Agency to have access to additional locations if it deemed the original access inadequate. The proposal which followed the Technical Working Group meeting (44(c) Doc 62/Rev.1) provided that if necessary, the Agency "should seek further access and justify...by explaining its requirements." Refusal of the

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request would be submitted to the Board for action under Paragraphs 18 and 19 (urgent action and findings of non-verification) of Part I.

In the approach finally adopted at initiative of the United States (Doc 134, 138), access for routine inspections was limited to strategic points, and the provisions for special inspections were relied upon to deal with situations where additional access was required. While this approach differs in form from that proposed by the Secretariat in Doc 62/Rev.1, it is substantively similar. Under (Doc 138), which was the result of extensive consultation (70 OR 61), special inspections could be made "whenever the Agency considers that information made available by the state...is not adequate for the Agency to fulfill its responsibilities." This basis for special inspections, which appears as Paragraph 73(b) of INFCIRC/153 represents a major broadening of the grounds proposed by the Secretariat in 46 Doc 62/Rev.1, which were limited to "a report [which] indicates that [special] inspection is desirable" or "any unforeseen circumstance [requiring] immediate action." In effect, the provision of 73(b) returns the situation to that originally suggested by the Agency in 44(c) Doc 62; that is, simple "inadequacy" of the Agency's access constitutes sufficient grounds for additional access, provided the Agency is prepared to designate the needed additional access as a "special inspection," and invoke the relevant procedure.

The balance of the solution to the issue of access in addition to strategic points is contained in 2 Doc 138, which is found in INFCIRC/153 as Paragraph 77. This paragraph provides that if the Agency and the state are unable, after consultation, to agree on additional access, the Agency may invoke either the dispute procedures of Paragraphs 21 and 22, or, if action "is essential and urgent," the procedure of Paragraph 18, which authorizes the Board to call for action without delay, regardless of whether the dispute procedure is invoked. The debate on this paragraph (26-38 OR 62), further establishes that consultation should not be so extended as to make the special inspection of no use.

### 2.7.2 Analysis

The background described above indicates that it was well recognized that while the strategic points concept was acceptable in principle, it had the potential in practice of limiting the effectiveness of safeguards by restricting inspection access; and that extensive and generally successful efforts were made to avoid this result. The approach adopted, which involves the inter-action of a number of provisions of INFCIRC/153, was:



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- Strategic points are, by definition, those points which, in combination, are adequate for effective verification (Paragraph 116).
- The selection of strategic points is the primary responsibility of the Agency, based on review of design information (Paragraph 46), although as noted below, they must be specified in a subsidiary arrangement to which the state must agree.
- The initial selection is not fixed, but may be modified by the Agency on the basis of experience (Paragraph 47).
- The results of the Agency's initial selection of strategic points are to be incorporated into the subsidiary arrangements (Paragraph 46).
- Pending agreement on the subsidiary arrangements, the Agency has virtually unlimited access, thus providing an incentive to states to accept strategic points (Paragraph 76(a)) deemed necessary by the Agency.
- Even without invoking its authority to supplement the designation of strategic points, the Agency may request additional access if it considers that the information made available from routine inspections is not adequate for the Agency to fulfill its obligations (Paragraph 73(b)).
- In the event of failure by the state to agree to additional access, the Board may invoke the disputes procedure, or avail itself of its authority to call for "action without delay" (Paragraph 18).
- Failing state acquiescence to such a call, the Board would be in a position to make the finding that "it is not able to verify that there has been no diversion" (Paragraph 19).

It is clear that the above mechanism affords the Agency an orderly, stepwise mechanism to secure any access necessary for effective verification, without limitation by the principle of "strategic points" or its implementation. It is also clear that the Agency possesses ample authority to invoke this mechanism at each key stage, if it is disposed to do so. However, the mechanism is not automatic. It must be invoked by the Agency when necessary, if it is to be meaningful and effective.

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It is equally clear from this mechanism and the related discussions that the Committee contemplated a much more dynamic and flexible approach to safeguards implementation than has, apparently, emerged in practice. This was not an expectation held by the United States alone, but one which was shared and, indeed, favored by others who visualized a system of "action levels." This is referred to in the report of the Technical Working Group (10 Doc 65), which states "the Group reached the consensus that the verification process will give rise to inspection access requirements at successive levels. The first access requirement... is to predetermined strategic points.... Further inspection may be required when a significant MUF has been determined...." In its deliberations, the Committee concluded that MUF alone was an inadequate basis for triggering broader access, but it generally adopted the "successive levels" approach of the experts.

### 2.7.3 Interpretation

Strategic points are to be selected without limitation as to number or location, so as to ensure the adequacy of safeguards implementation. The Agency may modify this selection on the basis of experience, and, may also, if it concludes that it is unable to fulfill its responsibilities through access only to strategic points, call for additional access, invoking the dispute or emergency powers of the agreement in the event the state withholds its agreement to the broader access requested. Similarly, the Agency could invoke these powers if the State withholds its consent to subsidiary arrangements which specify the strategic points deemed necessary by the Agency.

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## 2.8 CONFIDENTIALITY OF SAFEGUARDS INFORMATION

(Paragraph 5)

2.8.1 Background And Issues

The requirement for confidentiality of safeguards information originates in the Agency's Statute itself, Article VII.F which states, in part, that the Director General and the staff "shall not disclose any industrial secret or other confidential information coming to their knowledge by reason of their official duties..." The requirement was also given effect in successive Agency safeguards documents, including INFCIRC/26, Paragraph 4, and INFCIRC/66, Paragraph 13 which states "...the Agency shall take every precaution to protect commercial and industrial secrets. No member of the...staff shall disclose, except [on for need to know], any commercial or industrial secret or any other confidential information coming to his knowledge by reason of the implementation of safeguards..." (emphasis added). Similar language appears in Paragraph 5 of INFCIRC/153.

Both INFCIRC/66 and INFCIRC/153 provide for the transmission of safeguards information to the Board when they "require such knowledge by reason of their official duties in connection with safeguards, but only to the extent necessary for the Agency to fulfill its responsibilities..." Additionally, INFCIRC/66 contains a provision (Paragraphs 14(b) and (c)) allowing publication of "summarized lists of items being safeguarded" on decision of the Board and the publication of additional information "if all the states directly concerned agree."

The final formulation of Paragraph 5 of INFCIRC/153 was based upon a proposal of the Fed. Rep. of Germany (Doc 11). However, this proposal omitted any authorization by the Agency to publish information, and this authorization, essentially the same as that which appears in INFCIRC/66, was proposed by Hungary (Doc 30). The language originally proposed by the Fed. Rep. of Germany evoked essentially no discussion, and most of the discussion on the matter (23-36 OR 9) was devoted to the Hungarian amendment. This was adopted with the significant restriction that any publication could be made only "if the states directly concerned agree," and the information so published was to consist of "summarized information on nuclear materials subject to safeguards," rather than "summarized lists of items," as in INFCIRC/66, on the grounds put forth by the United Kingdom that the NPT required the application of safeguards only to materials.

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While the overall discussion was limited, and the changes made were not viewed as major, the tenor of the discussion clearly reflected the strong concerns in favor of preserving confidentiality and opposition to extensive disclosure or publication.

As the provisions of INFCIRC/153 and earlier safeguards documents reflect, concerns with the protection of proprietary information has been a major preoccupation of states throughout the development and implementation of safeguards by the Agency. Nevertheless, this preoccupation, and the provisions adopted in reflection of it, clearly refer to information belonging to states and obtained by the Agency in the implementation of safeguards. There is nothing in the Agency Statute nor in the safeguards document which appears to require the Agency to control Agency information regarding the implementation of safeguards, to the extent (which would seem to be considerable) that such information can be separated from proprietary information of the state. A detailed paper on the responsibility of the Agency in relation to safeguards (Doc 27), prepared for the Committee by the Secretariat discusses the protection of information at some length. This discussion is confined to state information, further strengthening the conclusion that the protection of Agency information was not intended by the provisions in question. This paper states (18 Doc 27) "within the framework of the limited information requested by the Agency, the Agency has established a system of classification of safeguards information..." (emphasis added). Thus, the Agency's "classification system" for safeguards information was, by the Agency's own statement, established to protect state information and not Agency information.

This same paper cites the relationship agreement between the Agency and the United Nations (5 Annex, Doc 27), which provides that "the United Nations or the Agency may find it necessary to apply certain limitations for the safeguarding of confidential material furnished to them by their members or others..." Once again, this citation confirms that the normal purpose for which the Agency controls information is that it has been provided by others.

On the other hand, there is no doubt that the Agency asserts (and probably possesses) the authority to restrict dissemination or disclosure by its staff even of information originated in the Agency and not provided by or the property of a state. This is made clear in the Agency's staff regulations (Section 1.06) which provides that "members of the Secretariat shall exercise the utmost discretion in regard to all matters of official business.

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They shall not communicate...any information known to them by reason of their official position...except...by authorization of the Director General.... These obligations shall not cease upon separation from the Secretariat."

The question of whether the Agency can limit disclosure of Agency safeguards information by staff members acting on their own initiative is, of course, a different one than whether the Agency itself is required or authorized not to disclose such information officially. The first question involves the principles of staff discipline and loyalty to the Agency; the second involves such issues as the Agency's own responsibility and authority, as well as what is required as a matter of good safeguards policy.

In one important area, the Safeguards Committee addressed itself to the issue of whether at least some safeguards proprietary information should be disseminated. This was in relation to subsidiary arrangements. At the initiative of the United States (10 OR 25), it was suggested that "it would be undesirable for information relating to subsidiary arrangements to be circulated to members states." This suggestion was made on the grounds of protection of state information, further confirming that this was the general and appropriate grounds for withholding safeguards information from members and the public.

It was clearly recognized, however, that information other than that of a proprietary character would be included in these arrangements; namely, information on how safeguards were to be applied, and concern was expressed that non-publication should not lead to non-uniformity in the application of safeguards (11 OR 25). Notwithstanding these concerns, there was a consensus that subsidiaries should not be published, as was already the practice of the Agency, although the Inspector General indicated (22 OR 25) that "a certain amount of general information contained in the opening paragraphs of the subsidiary arrangements could be made known to all member states." Despite this concern, which was later explicitly reiterated, without objection, by the United States (96 OR 38), the decision not to publish subsidiary arrangements is not found in the provisions of INFCIRC/153 (Paragraphs 39 and 40) relating to subsidiary arrangements.

### 2.8.2 Analysis

Both on the basis of the language of the provision itself and its negotiating history, it is clear that Paragraph 5 of INFCIRC/153, in common with corresponding provisions of INFCIRC/66, requires the Agency to protect information belonging to a state, and coming to the Agency's knowledge through the application of safeguards, but it does not require the Agency to withhold information on its own implementation activities.

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The prohibition of publication of state information is strong and explicit, although some agreements pursuant to INFCIRC/66 do identify facilities under safeguards and lists of facilities under safeguards are published in annual reports of the Agency. This limitation, if interpreted rigidly, could restrict the Agency's ability to provide meaningful information on its own safeguards activities, even if it wished to do so. For example, the Agency presumably is free to disclose the inspection frequencies, dates, and levels of effort which it has applied in a given state, but it may not be free to relate these to specific facilities, unless it can demonstrate that (as is usually the case) the existence of these facilities is already in the public domain.

On the other hand, the fact that the Agency is not required by INFCIRC/153 to withhold its own information does not mean that the Agency has no right to do so. There seems little doubt that the Agency is competent to adopt reasonable rules and regulations limiting the information on its own activities and decision making process which it provides to the public or even to the Board, although the Board (which under Article VI.F has the "authority to carry out the functions of the Agency in accordance with [the] Statute," would appear to have the final authority with respect to any such rules adopted by the Director General, so long as the Board does not act in conflict with the statutory requirement to protect state's information.

While not explicit in the record, there was concern that the Agency should not lose the flexibility, through the disclosure of detailed information on safeguards implementation, to apply reasonable distinctions in such implementation on the basis of the circumstances specific to particular states or groups of states.

The question of Agency publication or disclosure to the Board of information indicating possible or actual non-compliance raises special questions. While such information involves in substantial measure the Agency's own information, it is difficult to visualize situations where at least some state information would not also be included in even the minimum information required for the Board, to decide whether any action should be taken. However, several provisions of INFCIRC/153 make it clear that the Board is entitled to such information, and Paragraph 5 explicitly authorizes communication of such information to the Board, to the same degree as its communication to members of the staff is authorized.

It is, therefore, clearly within the purview of the Board to require the communication to it of even state information which is necessary for the fulfillment of the Board's responsibilities

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with respect to safeguards, and there is no restriction on the Board's right to require the transmission to it of Agency information on safeguards implementation. It should also be noted that the Board's responsibilities with respect to safeguards are not limited to consideration of questions of possible non-compliance or non-verification but in fact encompass, by virtue of Article VI.F, every aspect of safeguards implementation.

### 2.8.3 Interpretation

Paragraph 5 of INFCIRC/153 requires the Agency to protect only proprietary information of states, and does not extend this requirement to the Agency's own information with respect to the implementation of safeguards. However, there is a clear negotiating record that subsidiary arrangements, including, of course, facility attachments, are not to be published by the Agency, on the grounds that much of the information which is in these documents is of a proprietary nature. Thus, this understanding would not stand in the way of Agency publication of information on safeguards implementation which might be present in subsidiary arrangements, provided it is appropriately separated from information of a proprietary nature.

On the other hand, there is no prohibition in INFCIRC/153 against Agency protection of information on safeguards implementation, nor is there any requirement that any or all such information be published. The Agency would appear to have ample authority to disseminate or to restrict the publication of such information, although final authority for any such restrictions rests with the Board and not with the Director General.

The Board, moreover, is entitled to and may require the communication to it of all Agency information on implementation of safeguards and any proprietary information which it requires to fulfill its responsibilities with respect to the administration of safeguards or the consideration of questions of non-compliance or non-verification.

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## 2.9 NATIONAL SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIALS AND THE MEANING OF "VERIFICATION"

(Paragraph 7)

2.9.1 Background And Issues

The negotiation of Paragraph 7 actually began long before the Safeguards Committee was convened in June 1970. In late 1967, an impasse had been reached in the negotiation of the NPT on the question of including provisions for mandatory IAEA safeguards in all non-nuclear-weapon states (NNWS's) party to the Treaty. In its efforts to persuade the NNWS's who were then members of the European Atomic Energy Community (Euratom) to accept a treaty containing such provisions, the United States, in consultation with those states, developed three "principles" which were subsequently placed on record at the meeting of the Eighteen-Nation Disarmament Committee, together with a compromise text of what was to become Article III of the NPT. Those three principles, while intended in the first instance to reassure the Euratom member states that their acceptance of IAEA safeguards would not require the dismantling of the system of safeguards which Euratom had developed and had been applying in its member states for some ten years, were couched in general terms, to be applicable to all NNWS's party to the NPT. The elements of the three principles relevant to Paragraph 7 are:

- Safeguards under the NPT for all NNWS's should be such that all parties to the NPT can have confidence in their effectiveness;
- Those safeguards, to be established by an agreement with the IAEA in accordance with the Statute of the IAEA and its safeguards system, must enable the IAEA to carry out its responsibility of providing assurance that no diversion is taking place; and
- In order to avoid unnecessary duplication, the IAEA should make appropriate use of existing records and safeguards, provided that under mutually agreed arrangements the IAEA can satisfy itself that nuclear material is not diverted to nuclear weapons or other nuclear explosive devices.

It is of particular significance that the third of those principles referred not to "national" safeguards but to "existing" safeguards. This principle coupled with the provision in the NPT that the required safeguards agreements could be entered into either individually or by groups of states, assured recognition of the Euratom system. Thus, even before the Safeguards Committee was

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convened, it was clear that both national and regional (i.e., Euratom) safeguards systems would have a role in the NPT safeguards regime. The references by the Committee and in INFCIRC/153 to "national" or "state" systems of accounting and control should accordingly be understood to include the regional system of Euratom as well.

In their preliminary views (Doc 2), several states took the position that the use of national systems of accounting and control was a new departure in safeguards. In reality, as is evident from Article XII of the Statute of the IAEA, as well as many provisions of INFCIRC/66/Rev.2, it was recognized from the earliest days of safeguards development that it was impractical for the IAEA itself to operate a self-sufficient accountability system and that it was necessary to make use of records and reports from the state.

When the Safeguards Committee began its work, the first order of business was to advise the Board of Governors concerning the structure and content of agreements to be concluded by individual NNWS's which had already ratified the NPT prior to March 5, 1970 (when it came into force) and therefore were under an obligation to begin negotiating their respective safeguards agreements with the IAEA by September 1970. None of the NNWS's who were then members of Euratom had ratified the NPT, nor had the Euratom staff been given a "mandate" by their Commission to enter into negotiations with the IAEA. (In fact, that mandate was only given months after the IAEA Board of Governors had promulgated INFCIRC/153.)

Japan took the initial position, in both its written (5 Doc 2, page 17) and early oral comments (6 OR 3), that the purpose of IAEA safeguards was to verify the implementation by a state or group of states of its own system for control of nuclear materials. Such verification might include independent inspections or measurements at previously agreed places, in Japan's view.

Japan also made it clear (5 OR 3) that the principles in Part I and Part II of the agreement under discussion would be applicable in general to all states, whether concluding such agreements individually or in a group.

The specific issues raised in the consideration of Paragraph 7 were:

- The respective roles of the IAEA and the national (or regional) systems in applying safeguards;
- How to provide for differences in the quality of national systems, in defining those roles; and
- The meaning of "verification".

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The second of those issues was not addressed in detail until the Committee's consideration of Paragraphs 31 and 81(b).

### 2.9.2 Analysis

Japan's first written proposal (Doc 15) for what was to become Paragraph 7 made explicit its intention that the state would ascertain that there had been no diversion and that the IAEA would merely "verify" that the state had done so, by means of independent measures conducted by IAEA inspectors.

That version obviously did not gain wide support, and Japan's revised proposal (Doc 15/Rev.1) introduced the concept that the IAEA would "verify the findings" of the state's system. Who would do the "ascertaining" was still not clear in the revised version.

The final version (Doc 15/Rev.2), proposed by Canada and Japan, made it unmistakable that the IAEA would do the ascertaining. Moreover, Japan and Canada explicitly confirmed, at the request of the Philippines (14 OR 10), that they, as sponsors of the final wording, agreed with the interpretation of that wording by the United States which had participated in the negotiation of the final text and which had made the following points (3-4 OR 10) regarding the meaning of Paragraph 7:

- The IAEA is entitled to undertake independent verification;
- Verification of findings of the state's system constituted one, but not the only one, of the means available to the IAEA for ascertaining whether there had been any diversion;
- The absence of the definite article before the word "findings" made it clear that the IAEA would verify such findings as were available but that in the absence of any findings would adopt other means to ascertain whether there had been any diversion;
- The first sentence expressly conferred certain powers on the IAEA but did not thereby exclude the exercise of other powers;
- Pains had been taken to insure that the second sentence could not be interpreted as limiting in any way the means which the IAEA could employ for its verification; and
- The third sentence reiterates the principle of independent verification.

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Canada confirmed (17 OR 10) that the wording in no wise restricted the Agency's function to that of verifying the results of the State's system and that, on the contrary, the IAEA would be able to undertake independent operations of verification. No delegation challenged either that statement or any part of the interpretation by the United States.

The question of the meaning of "verification" in the context of INFCIRC/153 arose in later sessions of the Committee, following issuance of a summary of the results of the Safeguards Technical Working Group which had met in September 1970. The summary (Doc 65) included in Paragraph 5, a definition of "verification" which limited that process to establishing the validity of information provided by the state's system. The Director General proposed that definition to the Committee (94 Doc 62). The United States (Doc 81), and subsequently Hungary and Poland jointly (Doc 99), made proposals to the Committee for definitions which did not limit the process to information provided by the state's system.

By the time in early 1971 that the question of including a definition of "verification" was addressed by the Committee, it had already been decided to eliminate a number of proposed definitions. Apparently, consultations outside the meeting led Poland to state that no definition of "verification" need be included, provided that it was clearly understood that "verification" referred to the process, as reflected in approved procedures, of ascertaining by the Agency that there had been no diversion.

Aside from Hungary, which endorsed Poland's statement (55 OR 75), no other delegation spoke.

### 2.9.3 Interpretation

Paragraph 7 and other provisions of INFCIRC/153, particularly those which address records and reports, accord an important but limited role to state systems of accounting and control. In summary, that role is to provide the IAEA with data which can be employed in and can simplify the overall process of independent verification by the IAEA that there has been no diversion. In ascertaining that there has been no diversion, however, the IAEA is not confined to the use of results of the state's system. The IAEA may supplement such results by other more direct and independent forms of observation, as provided for in principle in Paragraph 7 and in detail in the provisions of INFCIRC/153 dealing with inspections (Paragraphs 70-89).

While no definition of "verification" was formally adopted, it is clear from the record that the definition formulated by the Safeguards Technical Working Group, under which the Agency would

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merely establish the validity of information supplied by the state's system, was not accepted by the Committee.

It is also clear that all of the elements of the interpretation of Paragraph 7 placed on the record by the United States in 3-4 OR 10 were accepted by the Committee.

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2.10 RELATIVE ROLES OF MATERIALS ACCOUNTANCY AND CONTAINMENT AND SURVEILLANCE

(Paragraph 29)

2.10.1 Background And Issues

Although INFCIRC/66 made no explicit mention of containment and surveillance, the application of such measures had been introduced into Agency safeguards at a relatively early date; for example, in the form of seals placed on operating reactors, and some difficulty was being encountered in securing the agreement of some states to the use of these measures. It was, then, inevitable that reference to these measures would be sought for inclusion in INFCIRC/153, and these appeared in the Secretariat's earliest draft.

Specifically, paragraph B of the Explanatory Notes to Part II of Doc 3, observed that "Safeguards techniques are chiefly based on:

- (i) Material balance accountancy...
- (ii) Containment...
- (iii) Surveillance...

No distinction was made, other than what might be implicit in the order of this listing, in their relative importance. Paragraph 18 of Part II Doc 3 identified possible functions of inspections, including:

- c) The verification of inventory and flow of nuclear material by direct observation;
- d) The verification of recorded inventory and flow by independent measurements of nuclear material (at selected points) or other independent and objective methods; and
- e) The application of other surveillance methods by the use of the instruments, seals, or other devices.

Similarly, the views of the United States communicated to the Committee observed (17 Doc 2) that "inspections include two features, namely:

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- a) Steps involved in verifying the physical inventory and flow; and
- b) Other observation measures...

These views went on to observe that "These two functions are complementary in nature. The first approach basically is statistical....The objective is to measure quantities...and to strike a material balance....While material accounting is a powerful and efficient safeguards technique, every system of measurement involves an unavoidable inaccuracy....Accordingly, additional observational techniques are required....An example...is the installation of simple seals...." Here again no explicit distinctions were drawn as to the relative weight or importance of these two classes of measures.

In the first comprehensive Secretariat draft of Part II, Doc 62, the section stated that "...use shall be made of three categories of safeguards measures:

- (i) Material balance accountancy...
- (ii) Containment...
- (iii) Surveillance...

No distinctions were made as to the relative roles or importance of these categories. This section also appeared, essentially unchanged, in Section I of Doc 62/Rev.1, issued following the meeting of the Technical Working Group. A proposal (Doc 67) by Japan also identified these three categories without distinction.

It was not until a later proposal (Doc 82), submitted by Canada, the Fed. Rep. of Germany, Japan, and the United Kingdom, that a formulation emerged in which a distinction was made as to the role of the three measures. In this proposal (the main thrust of which was to establish the objective of safeguards, and not to identify its techniques), Paragraph I.b provided for "...the use of material accounting as a measure of fundamental importance, coupled with containment and surveillance as important complementary measures." Discussion of the overall proposal, which contained four paragraphs, focused on the other provisions. No explanation was offered for the change from the earlier coequal formulation to the new one, which placed containment and surveillance in a complementary role, and no discussion of Paragraph I.b occurred until the paragraph-by-paragraph review of the proposal was initiated. At this point, the Swiss delegate stated (48 OR

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37) that "it was probably unwise to attribute relative weights to the three measures." The United States delegation agreed (50 OR 37) stating that "the word 'coupled'...was misleading. It implied that...containment and surveillance were of only secondary importance, when in fact they deserved equal weight." It was therefore proposed that the word "coupled" be dropped.

This proposal was adopted. While the result clearly did not return the provision to its earlier coequal form, the record establishes that the point was made and accepted by the Committee that through omission of the word "coupled," the two kinds of measures are independent.

A related development was the rejection by the Committee of the Secretariat draft provision (7 Doc 62/Rev.1) which identified as the technical objective of safeguards as enabling the Agency "to infer...that over a certain period, no more than a stated amount of material is unaccounted for." Consistent with its earlier comments (Doc 2) on the equal importance of containment and surveillance, the United States objected to this narrow definition of the objective of safeguards, stating "...the concept of detection of diversion should be included among the technical objectives of safeguards...while MUF is an important aspect, too great an emphasis could be put on it. There was no reason why the Agency should not adopt procedures for detecting diversion; if unauthorized removal...was detected directly, then clearly the material balance...would be immaterial...The technical objective was to prevent diversion, and the provision dealing with it must include detection procedures and not merely...material accountancy." The United States (56 OR 36) also took this occasion to take exception to a normal or acceptable MUF (57 OR 36), observing that "If the amount were fixed, plant operators could accumulate material below the established limit..." and that there was no "normal" MUF in nuclear operations.

#### 2.10.2 Analysis

Although the final formulation of Paragraph 29 of INFCIRC/153 identifies "material accountancy as...of fundamental importance, with containment and surveillance as important complementary measures," this provision should be viewed from the overall perspective of providing explicit recognition for the first time in an Agency safeguards document of containment and surveillance and their importance. Moreover, the negotiating history of the provision provides no explicit disposition on the part of the Committee to relegate containment and surveillance to secondary importance; rather, the weight of the record is that their importance is equal.

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It should also be noted that Paragraph 29, although it appears in Part II of INFCIRC/153, is in the nature of a principle, and not an operative safeguards procedure. The inspection provisions speak for themselves, and identify containment and surveillance as an explicit procedure to be employed by the Agency (Paragraph 74(d)). Moreover, INFCIRC/153 provides no basis for determining the allocation of safeguards resources or effort between materials accountancy and containment and surveillance, and it is apparent that the allocation will be governed by the specific circumstances of each facility. In general, the conclusion that must be drawn from Paragraph 29, and other relevant provisions, as well as their negotiating history is that INFCIRC/153 represents a major upgrading in the importance of containment and surveillance, and that INFCIRC/153 clearly contemplates a safeguards system from which neither materials accountancy nor containment and surveillance can be omitted.

It is also worth noting that the line of demarcation between materials accountancy and containment and surveillance is not as sharp as is sometimes assumed. Containment and surveillance measures can, in particular applications, provide information which is in the nature of a flow measurement, and this fact has been explicitly recognized in Agency safeguards implementation. For example, a seal installed on a reactor vessel or a fuel storage area indicates, while it is intact, that no flow has passed through paths on which the seal has been placed.

### 2.10.3 Interpretation

Paragraph 29 and other relevant paragraphs of INFCIRC/153 provide for a system in which both materials accountancy and containment and surveillance play important and indispensable roles, with the allocation of effort dependent on the circumstances of each specific situation.

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2.11 DESIGNATION OF AGENCY INSPECTORS

(Paragraph 9)

2.11.1 Background And Issues

The Statute of the IAEA, in Article XII.A.6., provides that the IAEA shall have the right, in connection with the application of safeguards, "...to send into the territory of the recipient State or States inspectors, designated by the Agency after consultation with the State or States concerned...."

The IAEA's Inspectors Document, issued in 1961, also states, in Paragraph I.1, that when it is proposed to designate an inspector for a state, the Director General shall inform the state in writing of the name, etc. and "shall enter into such other consultations as the State may request." Only after the state informs the Director General whether it accepts the designation, (a 30-day deadline is specified for the response by the state) may the inspector be designated.

The document also provides, in Paragraph I.2, that if a state informs the Director General of its objection to the proposed designation (or to the continued service of an inspector in the state), the Director General shall propose one or more alternative designations and "The Director General may refer to the Board, for its appropriate action, the repeated refusal of a State to accept the designation of an Agency inspector if, in his opinion, this refusal would impede the inspections provided for in the relevant project or safeguards agreement." The other provision in the Inspector's Document relevant to Paragraph 9 (Paragraph II.7) reads: "The visits and activities of the Agency's inspectors shall be so arranged as to insure on the one hand the effective discharge of their functions and on the other hand the minimum possible inconvenience to the State and disturbance to the facilities inspected."

Some NNWS's had indicated, at the time of their signatures to the NPT, that they would only accept the designation of inspectors who were nationals of a state in which the IAEA had the right to apply safeguards. Since the United States and the United Kingdom had each already offered to permit the IAEA to apply its safeguards in all of their respective nuclear activities, except for those of national security significance, that policy applied primarily to nationals of the Soviet Union. Accordingly, those NNWS's obviously wished to assure the right to refuse designations, without any need to state a reason or to justify such refusals.

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That right is established in INFCIRC/153, with the qualification, noted above, that repeated refusals which would impede inspections are to be brought to the attention of the Board.

In addition to allowing states to reject the designation of inspectors of particular nationality, for example, the provisions might be invoked in an attempt to limit the number of inspectors available to serve in the state to a number less than that reasonably necessary to carry out the inspection activities required in the state. Such use of the provisions, would, of course, be clearly contrary to the requirement that the refusal of designations is not to impede inspections.

Since the provisions allow a state to reject designations of inspectors of particular nationalities, without explanation, there is a possibility that a state might reject designations of inspectors of nearly all other nationalities, thereby leaving itself to be inspected only by nationals of states with which it enjoys special relationships. That possibility was not discussed by the Committee nor is it addressed specifically in INFCIRC/153, which generally deals with the principles and procedures by which safeguards may be effectively applied, rather than with "scenarios" by which they may be weakened. Nevertheless, such action by a state would clearly fall within the general area of behavior which the Director General may conclude impedes the conduct of inspections.

2.11.2 Analysis

The Director General's initial outline under the heading of Agency Inspectors, (Part I 5(c) Doc 3), contained only one sentence, the substance of which is found in the first sentence of Paragraph 9, but which also referred to designation procedures to be spelled out in Part II. The comment to that item suggested that those procedures should consist of the relevant parts of the Inspectors Document.

The United States accordingly proposed an amendment (Doc 24) which stated that the procedures for designation and visits of inspectors were to be set forth in Part II. That amendment also made reference to the inclusion in such procedures of the mechanism for objecting to a designation and the proposing of alternates.

The Fed. Rep. of Germany argued (29 OR 10) that inspection was among the most important safeguards activities and one which caused state most concern in relation to its national sovereignty; the guiding principles should therefore be carefully spelled out in Part I and should not merely refer to an internal document of

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the IAEA. Accordingly, the Fed. Rep. of Germany proposed a formulation (Doc 29) which follows rather closely the relevant parts of the Inspectors Document. It appeared, however, to limit the right of a state to request the withdrawal of an inspector, after his formal designation, to cases where "there is evidence that he does not carry out his functions in accordance with the Agreement."

The Soviet Union asked (41 OR 10) that attention be given to the measures the IAEA might take if a state refused an inspector without good reason.

Japan (Doc 33) wanted to add (to any formulation) a provision requiring, in each inspector's contract, non-disclosure of industrial secrets or other confidential information, even after leaving the IAEA, and liability of the inspector for damages resulting from any breach of such obligation.

A further amendment by the Fed. Rep. of Germany and the United States jointly (Doc 35) was proposed to take into account comments on their earlier respective formulations. The test called for "repeated and unjustified refusal" of a state to accept designations such that inspections would be impeded to be considered by the "Agency" for "appropriate action".

A key issue was discussed and dealt with when the United Kingdom (29 OR 12) objected to singling out the repeated refusal of a state to accept a designation as an event calling for "appropriate action," as called for in the joint proposal by the Fed. Rep. of Germany and the United States. The United Kingdom argued that a state could equally refuse to provide necessary information or to accept safeguards on all nuclear material in all peaceful activities and therefore proposed deleting the sentence referring to repeated and unjustified refusal to accept designations.

The United States (32 OR 12) took strong objection to the proposed deletion, pointing out that states were nowhere accorded the right to withhold information, for example, but they did have a right, under the Inspectors Document, to object to a designation and, thus, there had to be some limit on that right. The fact that the Committee rejected the proposal by the United Kingdom and included the sentence in the final formulation makes it clear that the right of refusal of the designation of inspectors is a qualified right.

Canada and Italy (30 OR 12), supported by Hungary (34 OR 12), expressed reservations about the inclusion of the concept of "unjustified" refusal in the joint proposal by the Fed. Rep. of

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Germany and the United States. The United States observed that, in considering what action to take in the case of repeated refusals, the Board would have to decide whether or not such refusal was justified (31 OR 12).

India (39 OR 12) also believed the reference to "unjustified" was unnecessary; if the Director General thought a refusal was justified, he would presumably propose an alternate, and if he did not, he would refer the matter to the Board. Japan (40 OR 12) also favored deletion of "unjustified," pointing out that states were not required to give reasons for refusing a designation and therefore the Director General would not be able to judge whether or not such refusal was justified. The effect of that discussion and the omission of the word "unjustified" in the final wording of the sentence in Paragraph 9 was to establish that a state cannot evade appropriate action by the Board in the event of excessive rejection of designations by claiming that the rejections were "justified". At the same time, it makes it unnecessary for the Director General to establish that the rejections are "unjustified". The only issue for the Director General to determine is whether the state's repeated refusal impedes inspections, in which case it is for the Board to determine how that situation should be dealt with.

The Fed. Rep. of Germany and the United States submitted jointly a revision of their proposal (Doc 35/Rev.1) the wording of which is very close to that of Paragraph 9, the major difference being a reference, in the first sentence, to the granting of privileges and immunities. After some tinkering with some of the other wording, the Committee approved the formulation.

In a much later session (48-72 OR 75), the Committee discussed the matter of privileges and immunities (in formulating what was to become Paragraph 10) and, in the process, decided to omit the reference to that matter in the first sentence of Paragraph 9.

The net result is that, aside from the first sentence, Paragraph 9 does not change significantly the provisions of the Inspectors Document except for the addition of the reference, in the last sentence, to ensuring the protection of industrial secrets and confidential information.

### 2.11.3 Interpretation

Paragraph 9 of INFCIRC/153 establishes the right of a state to reject designations without having to explain or justify its rejection, subject to the limitation that it may not, through the abuse of that right by repeated rejections, impede the conduct of inspections. That limitation, in turn, is not subject to the

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qualification that such repeated rejections are permissible, provided that they are justified. Therefore, the Director General is not required to establish that the repeated rejections which he concludes are impeding the conduct of inspections are "unjustified." The Director General possesses broad discretion in determining whether repeated rejections of his proposed designations impede the conduct of inspections, including the situation in which a state rejects designations of nationals from all but those countries with which it enjoys special relationships.

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2.12 UNANNOUNCED INSPECTIONS

(Paragraph 84)

2.12.1 Background And Issues

The Inspectors Document provides, in Paragraph II.4, that the state is to be given at least one week's notice of each inspection, except in the case of "any inspection to investigate any incident requiring a 'special inspection'" (as provided for in Paragraphs 53 and 54 of INFCIRC/66/Rev.2) in which case notice need not exceed 24 hours.

INFCIRC/66/Rev.2, in Paragraph 50 states:

Whenever the Agency has the right of access to a principal nuclear facility at all times (in accordance with paragraph 57 of that document), it may perform inspections of which notice as required...by the Inspectors Document need not be given, in so far as this is necessary for the effective application of safeguards. The actual procedures to implement these provisions shall be agreed upon between the parties concerned in the safeguards agreement.

The Soviet Union stated during the Committee's deliberations (50 OR 64) that inspections without advance notice were encompassed by the concept of "right of access at all times." The United States, too, stated (68 OR 66) that the concept of surprise inspections was not new in the IAEA's safeguards system and that the IAEA has such right under INFCIRC/66/Rev.2 and had exercised it, albeit sparingly, in the past. The Inspector General confirmed (14 OR 31) that no prior notice was required under INFCIRC/66/Rev.2 in cases where the IAEA had a right of access at all times, but observed (20 OR 65) that only a few unannounced inspections had been carried out.

The United States had consistently maintained, in the consideration by the Committee of various provisions dealing with inspectors and inspections, that it was very important to preserve the IAEA's ability to perform unannounced inspections, in appropriate cases.

The Soviet Union also supported the idea of unannounced inspections, particularly for certain types of facilities in which the IAEA would not be carrying out continuous inspections, such as reactors with on-stream refueling (52-53 OR 64).

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After the initial views noted above were expressed (32-65 OR 64), the Director General issued Doc 143 which contained suggested reformulations of a number of provisions dealing with inspections and inspectors. In the suggested provision headed Notice of Inspections, after the minimum notice periods for various types of inspections were specified, a further paragraph addressed the content of the notices. The last sentence of that paragraph stated that when the IAEA has been informed of an "operational programme," the IAEA shall give the states a "general programme of the inspection and shall indicate any periods during which random visits are planned".

When the Inspector General introduced Doc 143 for discussion by the Committee, he referred to the suggestions concerning notice of inspections and noted that some aspects had already given rise to different interpretations and that they would require rewording for the sake of clarity (2 OR 65). He gave an example of the application of an "inspection programme" for a fuel reprocessing plant for which the IAEA had received an "operational programme." (80 OR 65). In the course of his explanation he referred to the period when the plant would be shut down and noted that, since the nuclear materials would remain in the storage areas during that period, there would be random inspections (90 OR 65).

The United States was not entirely satisfied with the proposed wording of certain paragraphs and believed that, in particular, the IAEA's rights in respect of unannounced inspections had been unduly limited by the formulation (14-15 OR 65).

Egypt believed that the possibility of "surprise visits" should be retained (65 OR 64). Hungary felt that the IAEA should give the state advance notice whenever it was able to do so without risk of prejudicing results (62 OR 64). India thought that a minimum of 24 hours notice should be given (75 OR 64) and Japan adamantly opposed unannounced inspections (62 OR 65).

The United Kingdom felt that it would not be reasonable to give notice as short as one or two hours; if a state was to be able to have its official accompany the inspector, there had to be sufficient time for the state to make those arrangements (60 OR 64).

The issue thus was clear, but the division among the delegations, with few exceptions, did not follow a pattern predictable from the discussions of other provisions.

#### 2.12.2 Analysis

The Director General's suggestions for Part II in Doc 62/Rev.1 mentioned unannounced inspections, but only in connection with situations in which the inventory or annual throughput of a fa-

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cility was either (a) more than 20 effective kilograms of material having a critical time of up to one month, or (b) more than 60 effective kilograms of material having a critical time of more than one month. In such cases the IAEA would have the right of access at all times and, even in those cases, it suggested that actual procedures to implement such inspections would be set out in the subsidiary arrangements (42 Doc 62/Rev.1).

Belgium agreed with the United States that the IAEA should have the right to carry out unscheduled inspections, but care should be taken that the wording adopted did not transform that right into an obligation and a routine practice (17 OR 65).

The United States subsequently put forward an amendment (Doc 151) which, among other changes, provided for the IAEA to advise the state of its "inspection programme" only if the state had informed the IAEA of its "operational programme" covering a period of at least three months. In such cases, the IAEA would specify the facilities and materials for which extended inspections were foreseen and "those to which random visits may be paid during the period." In explaining its amendment, the United States said that it interpreted "random visits" to mean unannounced visits (53 OR 66).

Japan opposed the concept of unannounced visits, in detail and at some length (61-62 OR 66), taking the position that the function of inspections had never been considered as a means of catching someone in the act of diverting material. Inspections without advance notice would be of doubtful utility and, moreover, would raise all kinds of practical difficulties, such as the unavailability of appropriate officials, delay in gaining entry to plant areas due to health and safety regulations, etc. Advance notice of 24 hours would be in order and in no way detract from the intended purpose of a random visit.

India felt that, as Japan had argued, a surprise inspection would fail in its objective unless the visit was announced a reasonable time in advance, such as one week. New terms such as "random visits" were unclear and suitable procedures would need to be worked out. No need was seen for such random visits as contemplated in the formulation by the United States and India hoped the concept would be dropped (65-66 OR 66).

Hungary disagreed with India and thought the surprise element in random visits might be useful in some cases. At the same time, from a practical standpoint and efficiency, bearing in mind the right of the state to have an official accompany the inspector, it would be necessary to provide for some notification in advance, as long as no undue delay resulted (67 OR 66).

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The United States vigorously defended the concept of unannounced inspections, noting their psychological deterrent value and, in light of various restraints on inspections incorporated in other provisions, their importance as a supplement to the IAEA's surveillance activities. The IAEA's rights to carry out unannounced inspections had been exercised sparingly in the past and would be expected to be used only selectively in the future. The practical difficulties alluded to by Japan could easily be resolved by prior administrative arrangements, particularly under the concept of the IAEA indicating the period during which random visits were foreseen to a facility (68-71 OR 66).

The Netherlands did not object to random visits, as an exception to the general rule, if it were made plain that such visits formed part of the whole inspection program (73 OR 66).

Canada argued in favor of the amendment by the United States and defended the value of unannounced inspections, notwithstanding practical difficulties. It was assumed that it would be left to the IAEA to decide whether or not advance notice would be given for random visits. Some would doubtless be announced beforehand, but the IAEA would retain the prerogative to make such visits entirely unannounced, at its own risk (75 OR 66).

Sweden referred to difficulties of small countries having available at all sites and at all times appropriate officials. With few exceptions, it felt that at least 24 hours notice should be given (76 OR 66).

At the next meeting of the Committee, the United States introduced a revised formulation (Doc 151/Rev.1) noting that it was the result of lengthy consultations (Italy, Japan, France, Denmark, and the Inspector General were mentioned) and that it represented a compromise (42 OR 67).

The relevant paragraph of the revised United States amendment is virtually identical to the final wording set forth in Paragraph 84, except for the last sentence which was added by Australia (45 OR 67) during the brief discussion which followed its introduction.

Egypt was completely in favor of unannounced inspections, especially in the form provided for in the amendment proposed by the United States (46 OR 47).

Portugal, on the other hand, stated its opposition to the principle of unannounced inspections contending, among other reasons, that they were contrary to the spirit of the NPT (49 OR 67).

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Japan greatly regretted that the new text did not reflect Japan's reservations regarding unannounced inspections, the practical difficulties of which were pointed out. Operators could not be held responsible for any difficulties which might arise and could not be accused of creating difficulties in a deliberate effort to hide their activities from inspectors. It would be preferable that the IAEA should announce proposed inspections by some means or another. The sentence proposed to be added by Australia, was considered unnecessary in light of other provisions. Moreover, the state might not be able to cooperate if inspectors arrive unannounced (50-51 OR 67).

The United Kingdom accepted the amendment of the United States as a reasonable compromise. The Inspector General, based on his previous statement, would certainly be expected to see that the great majority of inspections were carried out after advance notification (52-53 OR 67).

The Soviet Union also accepted the amendment as modified by Australia and referred to the earlier discussion concerning the frequency of inspection of reactors in which the Soviet Union considered the number of inspections provided for to be insufficient. The Soviet Union said it had only agreed to those provisions on the understanding that the IAEA had the right to carry out unannounced inspections and was very pleased that the principle had been maintained in the formulation by the United States (55 OR 67).

On that note, the formulation was adopted.

### 2.12.3 Interpretation

The negotiations and the final wording of Paragraph 84 make it clear that some number of the allowable routine inspections of facilities containing more than 5 effective kilograms, or having an annual throughput exceeding that amount, may be made by the IAEA on an unannounced basis. The expectation was that such inspections would be made infrequently and on a selective basis.

The IAEA is called upon to advise the state, whenever it can as a practical matter, of the general periods when such inspections will be carried out, as well as its other routine inspections. In doing so, the IAEA is to take into account any operational program provided by the state.

In carrying out unannounced inspections, the IAEA is also called upon to try to avoid prejudicing the right of the state to have its officials accompany the inspectors (without impeding or delaying the inspection) and the obligation of the inspectors to comply

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with health and safety procedures at the facility. At the same time, the state (which is also presumed to have some control over the operator) is supposed to take steps to ease the task of unannounced inspectors, or at least not to make their job more difficult.

When the IAEA has given the state a general program of inspections which includes a period in which unannounced inspections are foreseen, the state should have little excuse for not having officials reasonably available or for not having made arrangements with the operator regarding health and safety procedures which will facilitate the unannounced inspection.

The situation in which no general inspection program is provided (presumably in those cases when no operational program has been received) is less clear. In those cases the IAEA may have to incur the risk that the unannounced inspection may not go as smoothly as it would have liked. The IAEA could volunteer to inform the state that unannounced inspections may be carried out during a specified period, even though the IAEA had not received an operational program, in which case the state would be on notice to have officials available and to make any other arrangements required.

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2.13 THE IDENTIFICATION OF UNDECLARED ACTIVITIES AND FACILITIES

(Paragraphs 1 and 2)

2.13.1 Background And Issues

This issue is closely comparable to that of safeguards on undeclared material, particularly when these are present in undeclared facilities or activities, and much of the record reviewed in relation to the earlier problem is applicable to this issue as well.

In some respects, the record in relation to the status of undeclared facilities and activities is less explicit than in the case of materials, simply because INFCIRC/153 is based on the principle of application of safeguards to materials. Nevertheless, to the extent that INFCIRC/153 and its negotiating history establish that safeguards are to be applied to all materials, whether or not "declared", the activities and facilities in which such materials are located will also be encompassed by the safeguards.

In this regard, the same explicit proposal and rejection of limiting safeguards to declared material is clearly applicable to facilities and activities as well. In rejecting the South African proposal of Doc 8, Hungary stated (22 OR 6) that "In fact, the state was obliged to declare in its reports all nuclear material used in all its peaceful nuclear activities" (emphasis added). Clearly, therefore, the Hungarian representative was not addressing only the question of undeclared material in declared facilities or activities.

As in the case of undeclared material, Paragraph 19 is particularly relevant and helpful: inability of the Agency to verify that there has been no diversion of material "required to be safeguarded" leaves no uncertainty that even material in an undeclared facility or activity is encompassed.

Similarly, the information to be examined by the Board is limited only by "relevance" and could include information that there are reasonable grounds for suspecting that a state possesses undeclared nuclear facilities or is undertaking undeclared nuclear activities.

Just as there are two categories of "undeclared material" -- that which is present at declared facilities and that which is present in undeclared facilities or activities -- so may there be analogous classes of "undeclared facilities or activities". In theory, efforts might be made not "to declare" the presence of a particular unit or activity at a declared facility by providing

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incomplete design information. In this case, as in the case of undeclared material at declared facilities, the practical opportunity for Agency discovery is clearly greater than in the case of a wholly unreported facility, since inspections before the introduction of nuclear material should be designed "to verify the design information provided to the Agency," (Paragraph 48) while inspections conducted after the introduction of material should be designed to "verify the location, identity, quantity and composition of all nuclear material subject to safeguards under the Agreement." (emphasis added) (Paragraph 72 (b)).

2.13.2 Analysis

Just as the record is clear that all nuclear material (other than that in declared, non-proscribed military use) is required to be safeguarded, so must the facilities or activities in which all such material is located be disclosed.

While there is no explicit mechanism by which the Agency can extend its safeguards to undeclared facilities or undeclared activities outside of declared facilities and the material they contain, if their existence is suspected, the same approach applicable to material is applicable in this situation: this is that the Agency can and should, pursuant to Paragraph 18, request information concerning access to the suspected facility or activity and that any rejection of this should be taken into account by the Board in considering whether the finding of Paragraph 19 should be made.

As in the case of undeclared material, the background of Paragraph 14 is relevant and helpful. This paragraph demonstrates the intent of INFCIRC/153 to keep exclusions or suspensions from safeguards as narrow as possible, and to require as much information with respect to these as possible.

2.13.3 Interpretation

INFCIRC/153 requires the submission of design information on all facilities engaged in all peaceful nuclear activities except those facilities engaged in non-proscribed military use. In this case, the existence of the use or activity must be made known to the Agency with sufficient information to show that it will not be employed for nuclear weapons or other nuclear explosives. Facilities which produce or process nuclear material employed in such non-prescribed military uses are not covered by this exclusion. Any suspected non-compliance with the requirement to provide design information on all such facilities would enable the Board to consider a finding that the Agency "is not able to verify that there has been no diversion."

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The provision of incomplete design information under circumstances suggesting an attempt to conceal significant portions or units of declared facilities would be tantamount to non-disclosure of a facility and would be treated in a similar manner.

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## 2.14 INSPECTION CRITERIA

(Paragraphs 78 through 82)

2.14.1 Background And Issues

The establishment of reasonable limits on the Agency's inspection frequency or effort has occupied a central position in the development of Agency safeguards systems from the outset. With the adoption of the first document (INFCIRC/26) in 1961, the approach had been to establish a maximum frequency of routine inspections, with the possibility that the number actually conducted could, and probably would, be fewer (Paragraph 57, INFCIRC/26). With the adoption of INFCIRC/66, criteria were identified for determining the actual frequency of routine inspection. These criteria (Paragraph 58) were:

- Whether the state possesses irradiated fuel reprocessing facilities;
- The nature of the reactor; and
- The nature and amount of nuclear material produced or used in the reactor.

In INFCIRC/153, the approach of a maximum routine inspection frequency was replaced by a maximum routine inspection effort, but the concept of criteria for determining the actual inspection regime involving presumably, lesser inspection effort was retained, with a much more detailed set of criteria being adopted. These were (Paragraph 81):

- a) "The form of material"...whether bulk or...separate items; its chemical composition; whether of low or high enrichment;...its accessibility.
- b) The effectiveness of the state's accounting and control system;...promptness of reports' consistency with independent verification...amount and accuracy of the material unaccounted for.
- c) Characteristics of the state's fuel cycle;...number and type of facilities; characteristics of such facilities; ...degree of containment...
- d) International interdependence...
- e) Technical developments....

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While providing this extensive list of criteria, INFCIRC/153 provides no explicit guidance as to the relative weight to be given each, or the maximum quantitative impact which these criteria might exercise, individually or in the aggregate, on the inspection effort.

One criterion, in particular, has been a source of conceptual concern to the United States since it was first introduced in INFCIRC/66. This is the criterion of whether the state possesses fuel reprocessing facilities. While this criterion is absent in explicit form from INFCIRC/153, it can be viewed as being subsumed by criterion 81(c). The difficulty presented by the fuel cycle criterion, particularly when present in the explicit form in which it appears in INFCIRC/66, is that it invites the argument that, in the absence of reprocessing facilities, proliferation cannot occur, and verification activities can be eliminated entirely or reduced to a very low level. This argument, however, overlooks the possibility of undeclared reprocessing facilities (which can also be present in states with declared reprocessing facilities) and is, thus, in conflict with the principle of independent verification. The United States noted this possibility in its opening remarks (67 OR 1) as follows:

"...Some delegations had proposed, in contrast to the express provisions of NPT and the Statute, that safeguards should apply only to highly-enriched uranium and plutonium; but that was tantamount to assuming that all chemical processing facilities and isotope separation plants would be duly reported to the Agency; such an assumption was not warranted" (emphasis added).

In the first detailed Secretarial draft of Part II of INFCIRC/153 (43 Doc 62), only a single criterion was suggested for determining actual inspection effort: this was "the promptness, accuracy, and consistency of reports." The preference of the Secretariat for this abbreviated criterion was not explained, but presumably reflected concerns such as that just indicated with regard to the fuel cycle criterion. The same single criterion was retained in the second draft of Part II, 43 Doc 62/Rev.1.

The lengthy formulation finally adopted in Paragraph 81 was part of the complex and painstakingly negotiated compromise on inspection effort, which was put forward as a "package," each part of which was viewed by the participants as essential to the acceptability of the compromise. Moreover, since the compromise was developed in informal negotiations, the discussion as reflected in

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the official record (3-54 OR 63) is surprisingly sparse, and lacking in detail. Only a few minor editorial changes were made in the compromise package, and the rationale and application of the criteria of Paragraph 81 were not presented or discussed in any detail, other than to stress that these criteria were part of the "package." That is, they could not be tampered with without threatening the compromise as a whole. It was on this basis that the criteria, along with the inspection efforts prescribed by Paragraphs 79 and 80 were adopted.

Additional features of the overall package were Paragraph 78, which calls for keeping inspection effort to the minimum level consistent with effective implementation of safeguards, and Paragraph 82, which provides for consultation between the Agency and the state if the state believes that inspection effort is being unduly concentrated on particular facilities.

Paragraph 78 is analogous to and clearly based upon Paragraph 47 of INFCIRC/66, which also calls for the minimum effort consistent with effective implementation of safeguards. Paragraph 82, on the other hand, is a new concept which must be understood in the context of an important understanding with respect to the maximum inspection efforts specified in Paragraph 80. This understanding was that, while the inspection effort provided for in Paragraph 80 was derived on the basis of a particular effort for each facility, the effort for all facilities in each category of Paragraph 80 could be aggregated, and the Agency could decide how to allocate this effort among individual facilities in each category (36 OR 63). This intent is clear from the language "the maximum total" which appears in each subparagraph of Paragraph 80. Paragraph 82, thus, provides a means for adjustment in the event the Agency applies a disproportionate effort to a particular facility or facilities within a category. The practice of incorporating "actual" or contemplated routine inspection effort in subsidiary arrangements complicates the use of this flexibility by the Agency but it does not necessarily vitiate it.

It is fundamental to the compromise package that it is the Agency which determines the actual level of inspection effort.

The fact that the Agency was given the discretion to apply more than the basic level of inspection effort to certain facilities, by reducing its effort at others in the same category reflects a substantial concern in the Committee as to the adequacy of the maximum levels of effort proposed in the compromise. This concern was reflected in the question of the Hungarian representative (18 OR 63), and the reply of the Inspector General (21-26 OR 63), which conveys a general sense that the approach provided levels of effort that were just about adequate.

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Given the fragile nature of the compromise, the proposal was accepted with only a few amendments, which were largely designed to correct oversights in drafting. The most substantive amendment was that proposed by the Soviet Union (35 OR 63), for removal of the phrase "in the light of developments in safeguards technology," which appeared in the last sentence of Paragraph 80, as a condition which might lead to amendment of the maximum figures. Since developments in safeguards technology could be expected to reduce inspection requirements, the effect of the Soviet amendment was to make it equally possible for the Board to determine, on the basis of experience, that these levels should be increased.

As the discussion of OR 63 suggests, no portion of the document was the subject of more intensive consultation, bargaining, and compromise than these paragraphs relating to inspection effort. The central aspect, as acknowledged by the representative of the United Kingdom in introducing the proposal, was the maximum levels of Paragraph 80 which had, in his words (6 OR 63) "quite naturally, caused the greatest amount of difficulty." In light of the attention given to these maxima, it is apparent that the Committee did not consider that these levels were generous and that actual frequency would fall far below them. At the same time, Paragraph 81, which specifies several criteria to be applied in reducing the actual inspection effort, was also an integral part of this compromise and cannot be overlooked.

#### 2.14.2 Analysis

There is little direct background in the record regarding the criteria for moderating the actual inspection effort found in Paragraph 81. On the contrary, the record indicates that the greatest attention was given to establishing the maximum levels of effort, and that the basic concern was as to their adequacy. Thus, the record strongly supports the conclusion that major reductions below those maxima were not anticipated.

It is also worth noting that while the criteria of Paragraph 81 are numerous, they in fact reflect principles already present in the Agency system, many of which are found elsewhere in INFCIRC/153. In particular, Paragraph 6, which provides for "optimum cost-effectiveness" in the application of safeguards, refers to:

- Containment, which is also emphasized in Paragraph 81(c);
- Statistical techniques and random sampling, also referred to in Paragraph 81(e); and

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- Concentration on material and fuel cycle stages of greatest proliferation sensitivity, which is also the thrust of Paragraph 81(a).

Additionally, Paragraph 7 calls on the Agency to "take due account of the technical effectiveness of the state's system." This is also the thrust of Paragraph 81(b).

In short, the criteria of Paragraph 81, with one important exception discussed below, represent largely a compilation of principles already adopted in INFCIRC/153, and given operative significance in Paragraph 81 as criteria for determining the actual routine inspection effort.

Of particular importance, and often overlooked, is the fact that these criteria are to be employed not merely to determine the actual inspection effort; but "the number, intensity, duration, timing, and mode of routine inspections" (emphasis added). It is, thus, unnecessary and inaccurate to conclude that each of the numerous criteria of Paragraph 81 as intended, even if met in a high degree, would result in some reduction of inspection effort, as defined in Paragraph 80. On the contrary, the criteria are intended to help the Agency determine all of the key inspection parameters: number, intensity, duration, etc. The impact of, for example, promptness in the submission of reports by a state (Criterion 81(b)), might be to affect the timing of routine inspections, but not the aggregate inspection effort.

It is, of course, fundamental to this entire portion of the document to recall that it deals exclusively with routine inspections, and in no way effects the Agency's opportunity to undertake special inspections, if necessary.

Of particular importance is Paragraph 81(c) which refers to "characteristics of the state's nuclear fuel cycle, in particular, the number and types of facilities..." It is the criterion which, more than any of the others, is intended to give effect to the concept that, when all facilities within a state are subject to safeguards, a rationalization of the system is possible which should allow some economy in safeguards effort. Unfortunately, as has been noted already, the record with respect to the adoption of the criteria of Paragraph 81 is very limited, and sheds no light on the specific meaning or manner of application of the criterion of Paragraph 81(c). Indeed, Paragraph 81(c) does not even state explicitly whether "number and types" is a criterion which should normally increase inspection effort or one

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which should reduce it. That is, does a large number of facilities, or a diversity of types lead to reduced relative effort, or increased? Either result appears possible, depending on the circumstances.

Nevertheless, there is a suggestion within the language of the paragraph itself which is helpful in interpreting this criterion. This is the last phrase which states "...the extent to which information from different material balance areas can be correlated." There can be no doubt that this means that when the number and type of fuel cycle facilities, and their relationship to each other and to the consuming facilities, allow a cross-checking, through shipper and receiver measurements, of safeguards information, effort can be reduced. Given the overriding principle, however, of independent verification, such information would have to be subject to the verification by the Agency.

At the same time, it is important to interpret this criterion in the context of the other criteria of Paragraph 81, as well as with important principles found elsewhere in INFCIRC/153. Thus, correlation of:

- Shipper-receiver measurements derived from facilities within a given state, while valuable, may have less safeguards significance than similar measurements derived from facilities in different states (Paragraph 81(d)), provided, of course, that such facilities are safeguarded.
- Shipper-receiver measurements have greater value when there is functional independence of operators measurements from the States accounting and control system.

In order to give weight to the correlation of measurements from different facilities or material balance areas, it is, of course, essential that the Agency be able to verify that the material which leaves one such facility or material balance area is the identical material received at another. In general, this assurance must be obtained from containment and surveillance measures such as effective seals.

The criterion of Paragraph 81 which has no counterpart elsewhere in INFCIRC/153 is that found in Paragraph 81(d), "international interdependence, in particular the extent to which nuclear material is received from or sent to other states for use or processing; any verification activity by the Agency in connection

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therewith; and the extent to which the state's nuclear activities are interrelated with those of other states."

While this criterion has broader application, it was specifically developed to establish a basis for economizing Agency inspection effort in groups of states where there is a high degree of interrelation and materials transfers among states of the group. The group contemplated, and the only one to date to enter into a single safeguards agreement with the Agency, as contemplated by Article III.4 of the NPT, was Euratom. In this regard, while the reference to "the state," in many of the provisions of INFCIRC/153 can be equally applied to a group of states which jointly enter into a single safeguards agreement with the Agency, the references to Paragraph 81(d) are properly interpreted as applying to an individual state, even when it joins with others in concluding a single safeguards agreement with the Agency; that is, transfers among states within a group contribute to "international interdependence."

#### 2.14.3 Interpretation

Paragraph 81 prescribes criteria which are to be used "for determining the actual number, intensity, timing, and mode of routine inspections of any facility." The weight to be given these criteria individually and in the aggregate is a matter for determination by the Agency, and the record provides no specific guidance as to the reduction in the level of effort, or in the other listed aspects of inspection, which should be afforded by reason of these criteria.

While criterion 81(c) deals with characteristics of the state's nuclear fuel cycle, the presence or absence of a declared reprocessing facility is not an explicit criterion, and 81(c) does not require the Agency to assume that no reprocessing facility is present in a state in the absence of a declared facility of this type. The absence of a presumption that there are no reprocessing facilities in a state where none are declared does not mean that the Agency should seek such facilities. It does, however, call for appropriate measures to ensure that spent fuel is not transferred to undeclared activities or locations.

The criterion of 81(c) allows the Agency to "give credit", through a reduction of safeguards effort, when measurements from different facilities can be correlated with each other, even when the facilities are in the same state. However, this credit depends on the extent to which the measurements are verifiable, and the extent to which the operator's data is functionally independent from the state's system. Similar correlation from facilities in

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different states may be entitled to greater safeguards significance, as noted below.

Paragraph 81(d) has particular relevance to the situation of states which join with other states to enter into a single safeguards agreement with the Agency. The transfer of nuclear materials among such states, as well as "the extent to which [their] nuclear activities are interrelated," would justify some reduction in inspection effort.

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2.15 FLEXIBILITY OR "ACTION LEVELS"

(Paragraphs 18, 19, 47, 73, 77, 80, and 81)

2.15.1 Background And Issues

A key feature of INFCIRC/153 is that which allows graduated application of safeguards, as dictated by the results of verification activities or by special occurrences. While this feature is present also in INFCIRC/66, it is much more highly developed in INFCIRC/153, and was the result of careful consideration on the part of the United States and other like-minded delegations.

The basic concept involves dependence on "routine inspections" supplemented by special inspections as necessary. However, the structure is considerably more detailed and sophisticated than suggested by this brief statement. Specifically:

- Paragraph 80 specifies maximum routine levels of inspection effort for various categories of facilities.
- Paragraph 81 establishes criteria by which the "number, intensity, duration, timing, and mode of routine inspections" will be determined, it being clear from Paragraph 78 that these criteria will be applied so as to minimize effort and other indices "consistent with effective implementation" of safeguards.
- Paragraph 47 provides for augmentation by the Agency of strategic points on the basis of "experience in the application of verification procedures." It also, of course, allows a reduction of strategic points, if circumstances warrant.
- Paragraph 73 provides that the Agency may make special inspections "in order to verify the information contained in special reports (i.e., at state initiative) or, and, more importantly," if the Agency considers that information including...information obtained from routine inspections, is not adequate for the Agency to fulfill its responsibilities...."
- As developed in the analysis of Inspection Criteria, the second circumstance for special inspections was significantly broadened in the debate, beyond the original proposal of "any unforeseen circumstance requiring immediate action" (46(b) Doc 62/Rev.1), and beyond the concept of investigating excessive MUF (24 OR 31).

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- Special inspections are of two kinds (Paragraph 77): where they are "in addition to the routine inspection effort," and when they involve "access...to information or locations in addition to the access specified...for ad hoc and routine inspections." In the former case, the Agency may make the additional inspections, after consultation with the state, with or without agreement. In the second case, it is to obtain the additional access "in agreement with the state" unless the Board invokes the emergency procedure of Paragraph 18.
- This represents a substantial strengthening of the Agency's authority beyond proposals (46(b) Doc 129) which would have limited the Agency to "request[ing] further access and justify[ing] the request by explaining its requirements."
- Failing all other remedies, the Board (Paragraph 18) could "decide(s) that an action by the state is essential and urgent in order to ensure verification..." and "call upon the state to take the required action without delay...."
- As a final step, Paragraph 19 provides that "...if the Board...finds that the Agency is not able to verify that there has been no diversion..." it may take the actions specified in Article XII.C of the Statute.

Of particular interest in explaining the "action level" approach is a statement by Japan (53 OR 30). "The frequency of inspection could be agreed in advance on the basis of statistical data and taking account of the nuclear material flow and the technical efficiency of the national control system. If the Agency found any discrepancies...it could carry out more thorough inspections and the inspectors would have access to selected locations. If the first [additional] inspection did not satisfy the Agency, it could increase the number of control points and make a second inspection. If in that case, too, the inspection did not meet the Agency's requirements, it could then exercise its right of access at any time and any place" (emphasis added).

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2.15.2 Analysis

The provisions for graduated actions outlined above provide the Agency with a logical, orderly mechanism for securing all the access, both in amount and location, necessary to ensure verification, or to make a finding of non-verification should the state refuse to grant the necessary access at any point in this progression.

It is recognized, of course, that a safeguards regime characterized by frequent acrimonious disputes and referrals to the Board, or even to arbitration, would be politically unstable and unacceptable. Thus, the system must be based on cooperation and reasonableness by both the Agency and the state. Nevertheless, what was visualized and provided for was a system where the Agency in virtually every conceivable circumstance would have at its disposal rights that accord it adequate bargaining power in any controversy with a state over the need for additional access of either type. An example of such a controversy, and the use of the Agency's reserve authority as a bargaining tool appears in GOV/1910 of August 1978, reporting on the status of facility attachment negotiations between the Agency and Euratom. Paragraph 6 of this document states: "it has not been possible to reach agreement...concerning the action...in the event that the operator were unable to...carry(ing) out an effective and accurate flow control. While this contingency is remote...the Secretariat has pointed out that in the absence of provisions to cover it, the situation referred to in Article 18...might arise and cause problems...which could have been avoided." This dispute was resolved to the satisfaction of the parties, and it can be presumed that the Agency's potential power, given substance by informing the Board of the controversy, was an element in the resolution.

In general, the review of INFCIRC/153 indicates that a considerably more dynamic approach to the implementation of safeguards was intended than appears to have materialized, with changes occurring in facility attachments, designation of strategic points, and related parameters, if not as a matter of routine, than at least not as a rare event. The comment of the United Kingdom in regard to the concept of a dynamic system is particularly relevant (17 OR 50):

"The advantage of the table (of maximum inspection frequencies proposed by the Secretariat in 40 Doc 121) was perhaps that it established general standards applicable

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to all countries. However, it should be more dynamic in concept. The number of inspections should not be settled every year on a routine, almost automatic basis depending solely on the number of effective kilograms. With a system established at national level, movements of material inside the country could often be foreseen and the Agency could thus modify its plan for inspection appropriately if it consulted with the national control system."

Clearly, the dynamic character of INFCIRC/153 also provides for a reduction in inspection intensity if warranted. Since states normally do not object to such reductions, the key point is to establish, as the record does, that increases are also possible.

#### 2.15.3 Interpretation

The relevant provisions of INFCIRC/153 establish a logical, orderly progression of steps which can be invoked by the Agency to secure all access necessary to ensure verification. In the event of state refusal to grant this access, the Board possesses the power to call for immediate action, and, as a final step, to find that it can no longer determine that there has been no diversion. The availability of these reserve powers provide the Agency with adequate bargaining power to assure verification in any dispute concerning access.

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## 2.16 UNIFORMITY OF SAFEGUARDS IMPLEMENTATION

(Paragraphs 7, 39, and 81)

2.16.1 Background And Issues

A major issue in the development of INFCIRC/153 was the question of uniformity in the application of NPT safeguards by the IAEA. The principle context of this issue was the insistence of Euratom and its member states that credit should be given to the verification activities undertaken by Euratom's multinational safeguards system, and that there should, accordingly, be a reduced level of IAEA safeguards implementation in Euratom states. The Euratom argument often took the form of claiming that the combined safeguards activity in the Community should not exceed the level of IAEA safeguards elsewhere, but this was not a formal position.

For its part, the United States did view Euratom safeguards as a legitimate system for "independent verification," and had long accepted Euratom safeguards as an acceptable equivalent of and substitute for those of the IAEA. It had become clear in the course of NPT negotiations, however, that this position was unacceptable internationally, leading to the NPT compromise that Euratom states would have to accept NPT safeguards, but that they could enter into a common agreement with the Agency, in which the Euratom system could be taken appropriately into account.

The NPT compromise is reflected in the NPT itself in several ways:

- Article III.1 states each party undertakes "to accept safeguards, as set forth in an agreement...with the IAEA..." Thus, the obligation is to accept safeguards, not, explicitly, IAEA safeguards. However, these safeguards agreements were to be "in accordance with the Statute...and the Agency's safeguard system...", making it clear that Agency safeguards as such must play a prominent role in the overall arrangements."
- Under Article III.4 the required safeguards agreements could conclude "either individually or together with other states...." The group of states contemplated by this provision was, of course, Euratom.

Another key element of the compromise were the three safeguards principles enumerated by the U.S. co-chairman of the Eighteen Nations Disarmament Commission, and which were identified "as an

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integral part of the negotiating history of Article III (letter transmitting the NPT from the Secretary of State to the President of the United States, July 2, 1968). These principles were:

1. Safeguards under the NPT for all NNWS's should be such that all parties to the NPT can have confidence in their effectiveness.
2. Those safeguards, to be established by an agreement with the IAEA in accordance with the Statute of the IAEA and its safeguards system, must enable the IAEA to carry out its responsibility of providing assurance that no diversion is taking place.
3. In order to avoid unnecessary duplication, the IAEA should make appropriate use of existing records and safeguards, provided that under mutually agreed arrangements the IAEA can satisfy itself that nuclear material is not diverted to nuclear weapons or other nuclear explosive devices.

These principles were clearly designed to reassure both Euratom states and the Soviet Union, and were undoubtedly worked out in advance with the delegations of these countries.

The letter stated that these principles should facilitate "the timely conclusion of safeguards agreements...by all non-nuclear weapon parties, including those which are subject to Euratom safeguards." It is to be noted that the principles reflect the approach taken in the Treaty itself of not explicitly identifying the safeguards required as IAEA safeguards. The key principle from the standpoint of the issue of uniformity and "the Euratom differential" is Principle 3, which, in turn, expresses two relevant concepts which provided the basis of the position of the United States in the INFCIRC/153 deliberations. These were:

- "In order to avoid unnecessary duplication...appropriate use of existing records and safeguards" could be made. In other words, "credit" could be given for Euratom safeguards in the determination of IAEA verification intensity in the community. In this regard, it is worth noting that, at that time, the term "safeguards" was applied only to international systems, and INFCIRC/153 carefully describes national systems as "state systems of accounting and control."
- The IAEA must, however, "satisfy itself" that material is not diverted. In other words, the IAEA was to independently verify non-diversion, not simply the presence of an effective Euratom system.

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Based upon this background, the position of the United States throughout the negotiation of INFCIRC/153 was:

- That the implementation of IAEA safeguards in Euratom states must be based on the principle of independent verification by the IAEA.
- That credit could, nevertheless, be given for Euratom safeguards, i.e., there could be a "Euratom differential," and that the U.S. would support provisions in the document which facilitated such arrangements.

At the same time, it was clear that there would be strong opposition to a "Euratom differential" on the part of individual states, in particular Japan. Thus, a major negotiating problem was how to satisfy both Euratom insistence on a "differential" and Japanese opposition. Japan's position, it should be noted, was not that there should be uniformity for all states, but that Japan should be treated no differently than Euratom. Japan attempted to rationalize this seeming contradiction by placing emphasis on the importance to be given to national systems of accounting and control. Japan, of course, contemplated that it could and would establish a state system at least as effective as that of Euratom.

The question of uniformity of application of safeguards, and, explicitly, the Euratom differential, surfaced on several occasions in the negotiation of INFCIRC/153. These include:

- Paragraph 7 (independent verification and national systems of control). Japan stated (1 OR 8) "if a state instituted an efficient control system, the most rational course would be for the Agency to verify the results of that control. The frequency and intensity of inspections would accordingly depend on the technical effectiveness of the control system applied in each state, and would be subject to different specifications in the subsidiary arrangements" (emphasis added). It was this attempt at a very close linkage which led Canada (3 OR 8) to request a change in the language of Paragraph 7, which was adopted, that would loosen the linkage by providing that the Agency would "take due account" of state systems.

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- Paragraph 39 (subsidiary arrangements). The Committee clearly appreciated the point that subsidiary arrangements provided an opportunity to introduce some flexibility into implementation, without this being overt. The attitude of the United States was not that the states concerned would be unaware of this flexibility or differential, but that they would be more willing to accept it if it were not publicly evident. A number of statements with respect to Paragraph 39 reflect these positions, including:
  - India (5 OR 25) "stressed the need for flexibility in the negotiation of subsidiary arrangements." However, India wished that modifications "should be immediately made known...to member states."
  - The United States (10 OR 25) "pointed out that it would be undesirable for information relating to subsidiary arrangements to be circulated to member states."
  - India, apparently misunderstood in its initial reference to flexibility, states (12 OR 25) "subsidiary arrangement(s)...should be made known to member states to ensure uniformity of implementation. If the view of the United States were to be accepted, then the format of subsidiary arrangements must ensure such uniformity."
  - Italy disagreed (15 OR 25), stating it "was unable to share the concern...with regard to uniformity in the implementation of safeguards, which was a matter for the Agency."
  - The Japanese delegate agreed that subsidiary arrangements should not be circulated, stating (17 OR 25) "while he felt that there was a need for uniformity,... he considered that to be the responsibility of the Director General, who would be guided by the principles and technical procedures agreed upon."
  - In the final discussion of Paragraph 39, Yugoslavia states, without disagreement "...subsidiary arrangement(s) was to deal with two matters...: the content,...and the date of their entry into force. The first had been dealt with very fully during the Committee's meetings in July, when satisfactory conclusions had been reached which made due provision for flexibility..."

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Thus, the situation was that a mechanism had been developed under which the Agency could employ some flexibility in its implementation of safeguards and, importantly, provide a state with some advance assurance that this would be so, without this flexibility or differential being a matter of public record. Japan specifically accepted this arrangement, intending to benefit itself. However, internal United States government records suggest also that Japan understood that the arrangement might lead to a "Euratom differential" and that Japan was prepared to accommodate this, provided that it remained in confidential subsidiary arrangements.

The issue of uniformity vs. flexibility arose again in connection with the consideration of inspection effort criteria (Paragraph 81). Of particular interest is a statement by Hungary (43 OR 30) that "an efficient national control system was no guarantee that the state was not diverting nuclear material." Japan (53 OR 30) continued to state "the frequency of inspections could be agreed in advance...taking account of...the technical efficiency of the national control system" while acknowledging, as previously pointed out in this report that additional inspection, both in terms of number and access, could take place "if the first inspection did not satisfy the Agency."

The Fed. Rep. of Germany proposed in relation to the Secretariat's proposal (43 Doc 121) that inspection frequency should "take account [only] of the promptness...of reports, that this paragraph should be made more comprehensive."

These discussions led to the criteria of Paragraph 81, which formed part of the compromise "package" (Doc 139) on inspection effort (Paragraphs 78-83 of INFCIRC/153). As observed previously in the discussion of these criteria, they relate not only to inspection effort, but to all inspection parameters: number, intensity, duration, timing, and mode. Thus, the ground-work was laid for considerable flexibility on the part of the Agency in determining its inspection activities. In particular, while many of the criteria found in Paragraph 81 are entirely technical and objective, at least two involve a significant element of judgment with respect to circumstances that are, in considerable degree, political or administrative. These are:

- 81(b) which, inter alia, states "...the extent to which the operators of facilities are functionally independent of the state's accounting and control system..." What is meant by this is that "credit" should be given if it can be concluded that the operator's records and data to which the Agency has access are not subject to control by the state.

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- 81(d), concerning "international interdependence," which, as previously observed, was specifically designed to include the Euratom situation. In particular, the last portion of this criterion "the extent to which the state's nuclear activities are interrelated with those of other states" can be viewed as almost exclusively applicable to the Euratom situation.

It is of particular interest, as well as somewhat ironic, that one of the last actions of the Safeguards Committee at its final meeting was addressed to the question of uniformity. Paragraph 5 of Doc 167, the Secretariat proposal for material to be included in the Committee's final report to the Board, which would essentially be the transmittal memorandum for the document as developed and recommended by the Committee, stated: "The Committee considers it important that a complete and widespread understanding of those principles, concepts, and criteria [found in Part II of INFCIRC/153] should be achieved and that they should be applied objectively and uniformly" (emphasis added). In Doc 172, the United Kingdom, Italy, and Japan recommended deletion of the reference to uniformity, as well as a rewording to "the Committee considers it important, that a general, objective, and uniform understanding of those principles, concepts, and criteria should be achieved." Thus, this proposal, which was adopted with only a minor editorial change by the Soviet Union and without substantive dissent, eliminated the proposed Committee recommendation for uniform or even objective application of the procedures of Part II, leaving only the hope that there would be objective and uniform understanding of the principles.

#### 2.16.2 Analysis

Given the practical limit on safeguards resources, the uniformity of safeguards implementation or, viewed from the other side of the coin, differentiation in safeguards implementation may be one of the key considerations in the effective implementation of safeguards. Despite this factor, there was relatively little explicit discussion of uniformity during development of INFCIRC/153, and the weight of the comments was on the need for the Agency to avoid discrimination in safeguards implementation. Nevertheless, as the foregoing background section demonstrates, several delegations sought, with considerable success, to avoid explicit obligations on the Agency to apply safeguards in a completely uniform manner, and, instead, to build into the system a number of provisions which would allow considerable flexibility and "differentiations" in practice.

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To put these provisions, and the overall issue of uniformity, into perspective, it is helpful to distinguish between several potential bases for "differentiation" in safeguards implementation. In this regard, uniformity is taken to mean a system in which comparable facilities are safeguarded and, particularly, inspected in essentially the same degree and manner, regardless of the country in which they are located. Departures from such "uniformity" are conceivable on the following bases:

- Differing characteristics of the nuclear complex within the country in which the specific, comparable facilities are located. These characteristics include the presence or absence of other facilities and the material flows by which these are interrelated.
- Differing characteristics of the state system of accounting and control of the countries under consideration.
- Differing interrelationships between the national nuclear programs and the respective state systems of accounting and control with those of other states; including the presence or absence of a regional control system; and, finally;
- Presumed differences in national objectives, motivations, policies, or programs relating to the possible acquisition of nuclear weapons or other nuclear explosive devices.

It is clear that INFCIRC/153 does not mandate uniform application of safeguards as defined above. On the contrary, it authorizes and anticipates that differences will exist in safeguards implementation on each of the first three bases listed above. This authorization is found predominantly although not exclusively in Paragraph 81, which, as discussed previously, includes an extensive list of criteria to be used for determining the inspection regime, broken down into four categories that are "state specific" (Paragraph 81(a) to (d), and a fifth, technical developments in safeguards, which is basically generic; that is, not dependent on the specific characteristics of the state or its nuclear activities.

A number of these criteria are exclusively of an objective, technical character; the kinds of nuclear material involved; the characteristics of the fuel cycle; facility design, and the like. Others, however, as noted above, call for the application of a considerable measure of judgment by the Agency. These include:

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- The effectiveness of the state system of accounting and control. While the determination of this effectiveness includes elements which are susceptible to objective measurement, subjective considerations are also clearly involved.
- The "functional independence" of facility operators from the state system of accounting and control. The record provides no elaboration of the meaning of this criterion, or how "functional independence" is to be measured. However, the wording of the section leaves no doubt that "functional independence" is to be given positive weight. In a sense, this concept is analogous to that of "international interdependence," referred to in Paragraph 81(d). If the data provided by a particular facility operator can be determined or judged to be independent of dictation by the national authority, it is entitled to greater safeguards weight, just as data provided by another state, in relation to a material flow to or from the safeguarded state in question, is entitled to greater safeguards weight.
- The criterion of "international interdependence" of Paragraph 81(d). This criterion, as noted above, goes beyond material flows between states, and extends to the more subjective consideration of "the extent to which the State's nuclear activities are interrelated with those of other states."

While no indication is provided in Paragraph 81 or elsewhere in INFCIRC/153 of the absolute or relative weight to be given these criteria, it is evident that the number, variety, and complexity of these criteria allow the Agency a large degree of latitude in safeguards implementation. Moreover, the steps which are explicitly taken to protect the confidentiality of subsidiary agreements and which allow the Agency to protect other safeguards information as well, leave little doubt that the Committee intended to leave the Agency free to make reasonable judgments, consistent with the criteria of Paragraph 81, to differentiate in safeguards implementation among comparable facilities in different states. Such facility by facility differentiation would, in the aggregate, of course, also imply differences in total safeguards effort among states, even where, by some measures, their overall nuclear activities might be comparable.

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The results of IAEA verification activities could also lead to graduated application of safeguards as discussed in Section 2.15 of the report "Flexibility or Action Levels." This differentiation is explicitly provided for in Paragraph 81 (b) under which the consistency of state reports are taken into consideration with the IAEA's independent verification.

This conclusion is strengthened by the specific final action of the Committee in deleting from its final report a proposed recommendation for "uniform" application. It is also of interest and significance that this deletion was recommended not only by Euratom states, but by Japan as well, a state not involved in any regional system of control; and was specifically accepted by the Soviet Union, a leading advocate in the Committee of effective safeguards.

At the same time, it is equally clear that the Committee did not discuss and thus did not adopt differentiation on the basis of the potential grounds listed last above; that is, on the basis of judgments or assessments, of a political nature, as to national motivations, objectives, and the like. Given the nature of the Agency and the constitution of its membership, moreover, it must be assumed that this omission was not an oversight, and that any effort to adopt this as an explicit criterion for safeguards implementation would have been rejected. Nevertheless, the omission leaves the Agency some freedom, in making judgments authorized and required by Criteria 81(a) and (d), to take all relevant factors into account.

### 2.16.3 Interpretation

INFCIRC/153, in particular Paragraph 81, authorizes and requires the Agency to take into account several criteria in determining the inspection regime for each facility, including criteria which require the Agency to exercise a considerable degree of discretion and judgment on such matters as the effectiveness of the state system, the independence of facility operator's data from state control, and the international interdependence of the states peaceful nuclear activities. These provisions, give the Agency considerable latitude in allocating its safeguards efforts through implementation of the criteria of Paragraph 81.

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3.0 SECTION-BY-SECTION REVIEW OF THE NEGOTIATING HISTORY OF INFCIRC/153

In this section of the report, each paragraph of INFCIRC/153 is reviewed by the same approach taken in the review of specific key issues: the background of the paragraph and its negotiation, including an identification of the principal issues presented during its development; an analysis of the record, with emphasis on the same principal issues, including citations of important supporting material; and, as a conclusion, a statement of the interpretation which is best supported by the record, as well as by the negotiating history of INFCIRC/153 as a whole.

Since many of the more important issues presented by the individual paragraphs of INFCIRC/153 have already been dealt with in the "key issues" section of this report, the treatment of these issues in this section will be abridged, and reference will be made where appropriate to the relevant "key issues" review. Additionally, since many of the paragraphs of INFCIRC/153 either involve no important issue, or no potential for misinterpretation, the treatment of these paragraphs will be appropriately condensed.

Throughout this section, as in the preceding section, the series GOV/COM 22/OR \_\_\_ will be cited simply as OR \_\_\_, with the paragraph number preceding the designation OR \_\_\_. Similarly, the series GOV/COM 22/\_\_\_ will be designated Doc \_\_\_, with the paragraph number, if required, preceding the designation.

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PART I

BASIC UNDERTAKING

Paragraph 1

Background And Issues

The original draft of this section, as proposed by the Secretariat in 1 Doc 3, Part I, was much different from that finally adopted, calling for "an undertaking that nuclear material... shall not be diverted from peaceful uses to nuclear weapons or other nuclear explosive devices." This formulation was a restatement of the basic undertaking for non-nuclear weapons states found in Article I of the NPT. Its inclusion in the safeguards agreement appeared appropriate to the Secretariat on the grounds that:

- Safeguards agreements should be self-sufficient, and not have to rely on references to other documents, including the NPT itself; and
- Accordingly, since the Agency was not itself a party to the NPT, a restatement of the safeguarded state's basic undertaking not to divert nuclear material should appear in its NPT safeguards agreement.

Much of the extensive discussion which accompanied Paragraph 1 centered on these two issues. While there was a general consensus that the safeguards agreements should be self-contained legal documents, without references to other instruments such as the NPT, an exception was made in this basic provision by way of compromise, with several delegations expressing the hope that it would not be repeated in other paragraphs of the report. In fact, this hope was fulfilled, and the NPT is not elsewhere referenced in INFCIRC/153.

Of more substance, there was a broad consensus (11-32 OR 7) that despite the fact that an NPT party had pledged, through the Treaty, not to divert nuclear materials to nuclear explosive devices, it would be unreasonable and inappropriate for such a state to extend this undertaking to the IAEA itself, many of whose members were not then Treaty parties. The Committee decided instead that the relevant understanding, insofar as the IAEA was concerned, was not the undertaking of Article I of the NPT not to divert, but rather the undertaking of Article III.1 to accept the Agency's safeguards.

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The issues on which much of the discussion of this paragraph centered have, in fact, not remained controversial. In reality, they were primarily drafting points which were without operative significance for the Agency's safeguard system. The United States readily accepted the United Kingdom proposal (Doc 9) for the formulation which was adopted, both because it viewed as unfair the proposed requirement that a state should extend to the Agency as a whole its NPT obligation not to divert.

Nevertheless, the Paragraph 1 discussion introduced and dealt with other issues of major importance. In particular, as already discussed in the "key issues" section, a proposal (2 Doc 8), was introduced by South Africa which explicitly would have limited the concern of Agency safeguards to "the material reported upon by the State -- and material derived therefrom." This proposal was explicitly objected to (22 OR 6, Hungary); received no support; and was not adopted.

It is also relevant that the Committee rejected an Australian proposal (1 Doc 18) to replace the requirement that safeguards be accepted on "all" source or special nuclear material, by one which provided only that safeguards be accepted for the purpose of verifying that "no source or special nuclear material" is diverted. Australia explained that this proposal was designed to ensure that safeguards would not be applied to all source material. Thus, the Australian proposal, too, makes it clear that the word "all" was dealt with explicitly. This proposal also introduced the subject of the "starting point of safeguards" which was dealt with in detail later. The Australian proposal was explicitly rejected by the United Kingdom (20 OR 7), who stressed that safeguards were required by NPT to be applied to "all source and special fissionable material" and by the United States (23 OR 7); received no support; and was not adopted.

Analysis

The fact that NPT parties were not called upon to extend their NPT undertaking not to divert peaceful nuclear material to nuclear explosives, although important as a matter of principle, was not an issue which, in reality, has had any direct bearing upon the manner in which safeguards are applied by the Agency to NPT parties.

The major issue of lasting importance dealt with by Paragraph 1 is whether Agency safeguards are to extend only to "reported;" (that is, "declared" material in the present day nomenclature), or to all material. The action of the Committee in explicitly rejecting a South African proposal which would have limited safeguards to reported material is, therefore, of great significance

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in establishing that this issue was explicitly considered, and that the formulation adopted is not merely an automatic repetition of the NPT language. As reflected in the "key issues" section, there are a number of other provisions which support the conclusion that Agency safeguards extend to all nuclear material, of which Paragraph 1 and its recorded negotiating history constitute perhaps the most important.

Paragraph 1 also extends the safeguards obligation to nuclear activities carried out by a state "under its jurisdiction or... under its control anywhere." The question of how the Agency might apply its safeguards, pursuant to this principle, in a location other than the state with which a relevant safeguards agreement has been concluded is a difficulty which the Committee did not consider, and which, so far as is known, has not arisen.

#### Interpretation

In requiring an undertaking by an NPT party "to accept safeguards...on all source or special fissionable material," Paragraph 1 explicitly deals with the issue of whether safeguards are to be limited to "declared" material, and rejects this interpretation.

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APPLICATION OF SAFEGUARDS

Paragraph 2

Background And Issues

Paragraph 2 is, in large degree, the mirror image of Paragraph 1, providing for the Agency's reciprocal right to apply the safeguards, which must be accepted by the state under Paragraph 1. Paragraph 2, however, reenforces and goes beyond this Agency right, by specifying that the Agency also has an obligation to apply its safeguards to all nuclear material. A Belgian proposal (Doc 10) to express the purpose of safeguards only by reference to Paragraph 1 was rejected by the Committee in favor of a proposal by the United States from the floor to spell out the purpose in precise language by repetition of the detailed formulation of Paragraph 1, further reenforcing the point that this language was deliberately considered and adopted by the Committee.

Analysis

Paragraph 2 significantly adds to the understanding that safeguards are to be applied to all nuclear material by making such application not only a right but an obligation of the Agency. It, thus, forecloses the interpretation that the application of safeguards by the Agency to undeclared material is merely a theoretical right, which the Agency is under no obligation to exercise. At the same time, Paragraph 2 does not address itself to the pragmatic question of how the Agency is to exercise its right to safeguard material of which it has not been informed by the state, or of which it has no knowledge from other sources.

Interpretation

Paragraph 2 strengthens the understanding that safeguards are to be applied to all nuclear material, and not merely to "declared" material, by making such application not only a right but an obligation of the Agency.

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COOPERATION BETWEEN THE AGENCY AND THE STATE

Paragraph 3

Background And Issues

This paragraph, which calls for cooperation between the Agency and the state in the implementation of safeguards, has its origin in Paragraph 5(d) of Doc 3. The only change was adoption of the suggestion by Romania (38 OR 8), that the Agency formulation, calling for cooperation by the state, be made reciprocal and be made a separate paragraph.

While no particular issue was presented by this paragraph or the Committee's action on it, its adoption as a separate paragraph in its own right reflects a recognition of the importance of cooperation.

Analysis

The adoption as a separate section of a provision calling for cooperation by the Agency and the state in the application of safeguards, particularly as an introduction to a series of paragraphs which require the Agency to exercise care and restraint in the exercise of its responsibilities, makes it clear that the Committee intended that there be reciprocity of obligations, and that the state, as well as the Agency, would have to help make safeguards work effectively.

Interpretation

Paragraph 3 is the counterweight to several paragraphs which follow it, all calling for the exercise of appropriate restraint by the Agency. It recognizes that there is a reciprocal obligation on the part of states to make safeguards work effectively.

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IMPLEMENTATION OF SAFEGUARDS

Paragraph 4

Background And Issues

Paragraph 4 of INFCIRC/153 is derived from 3 Doc 3, and in turn from Paragraphs 9, 10, and 11 of INFCIRC/66. The formulation proposed by the Secretariat in Doc 3 was an abridged version of the three related paragraphs of INFCIRC/66, and the final version adopted in INFCIRC/153 is closely comparable to those three paragraphs of the earlier document. In addition, the provision dealing with the protection of proprietary information, which, in 3 Doc 3, had been combined with the "non-interference" provisions, was made a separate provision by the Committee. The final formulation was based, almost verbatim, on a formulation proposed by the Fed. Rep. of Germany, Doc 11.

Since each of the principles enumerated in Paragraph 4 had appeared in INFCIRC/66, no specific issue was presented by their insertion in INFCIRC/153. It is worth noting, however, that the formulation "in a manner designed" was preserved. This formulation had been an important issue of principle in earlier safeguards discussions, and was adopted to avoid any implication that a state had a basis for complaint simply because some safeguards activity by the Agency in fact hampered or interfered with the state's activities.

Analysis

Paragraph 4 is an important but nevertheless hortatory provision calling for restraint by the Agency in the implementation of safeguards. It is significant that it retains the formulation of INFCIRC/66 "designed to avoid," and that it speaks not of avoiding interference absolutely, but of avoiding "undue" interference. In short, these provisions, while undoubtedly important in establishing the overall approach or philosophy of the Agency in implementing safeguards, do not constitute specific prescriptions or prohibitions on how safeguards are to be applied.

The formulation of Paragraph 4(b), which is derived from Paragraph 11 of INFCIRC/66, represents an interesting variation on the earlier language. On the one hand, it is more general in scope than the earlier section, which dealt explicitly with stopping the construction or operation of facilities, at the same time, it is more qualified than the earlier section, containing the word "undue."

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Interpretation

Paragraph 4 constitutes a statement of general approach of the Agency to the implementation of safeguards which is designed to help assure against overzealous actions by the Agency and its inspectors. It does not, however, constitute a specific prescription or prohibition on how safeguards are to be applied.

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## IMPLEMENTATION OF SAFEGUARDS

## Paragraph 5

Background And Issues

Paragraph 5 deals with the protection of proprietary information and the publication of safeguards information. It is derived from similar provisions (Paragraphs 13 and 14) in INFCIRC/66, and in turn from the IAEA Statute itself, Article VII.F of which states: "...the Director General and the Staff...shall not disclose any industrial secret or other confidential information coming to their knowledge by reason of their official duties for the Agency."

The version finally adopted in INFCIRC/153 is considerably lengthier than that which appeared in 3 Doc 3, partly because the INFCIRC/153 provision incorporates the substance of Paragraph 14 of INFCIRC/66, relating to the dissemination of information.

A major issue in the consideration of the information protection provisions of INFCIRC/153 was the liability of the Agency and/or individual inspectors if commercially valuable information were compromised by Agency safeguards inspectors. This was ultimately resolved by a provision (Paragraph 17 of INFCIRC/153) which specifies that any claim by one party of a safeguards agreement against another is to be settled "in accordance with international law."

The expansion of the provision on protection and dissemination of information from its abbreviated form in 3 Doc 3 to its final form in Paragraph 5 came as the result of a proposal by the Fed. Rep. of Germany, Paragraph (b) Doc 11, and a modification by Hungary, Doc 3, adding the last sentence. This latter proposal was amended through discussion to provide for publication of "summarized information on nuclear materials" rather than "summarized lists of items." This change was proposed by the United Kingdom (27 OR 9), on the ground that since NPT safeguards applied to all peaceful nuclear activities within a state, there was no need, as there was under INFCIRC/66, to identify the particular items within a state to which safeguards were applied. In any case, the United Kingdom observed that it was materials which were to be safeguarded under INFCIRC/153, leading to the formulation which was adopted.

There was no explicit discussion of the issue which has since arisen in connection with Paragraph 5 of INFCIRC/153; specifically, what is the scope of the information which must be protected, and, as a corollary, what is the Agency's authority or obligation to restrict the dissemination of Agency safeguards

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information. It is of interest, however, that it was the Fed. Rep. of Germany which proposed the basic change from the original short IAEA approach to the final version which, like Paragraph 4 of INFCIRC/66 allows dissemination to the Board of information "obtained by [the Agency]" to the Board, as required for the fulfillment of its duties.

Analysis

The particular issues relating to the protection and publication of safeguards information which has arisen since adoption of INFCIRC/153 appear to be clearly dealt with by the language of the provisions themselves. These issues are:

- 1) What information is the Agency authorized or required to protect, and, as a corollary;
- 2) What kind of restrictive designation or protection can or must the Agency place upon this information.

Paragraph 5 makes it quite clear that the information to be protected is "information coming to its knowledge in the implementation of safeguards." This is further confirmed and strengthened by the restrictions on publication of "information obtained by it." Information initially belonging to the Agency, such as the frequency and intensity of inspections, can neither be considered information coming to the Agency's knowledge, nor information obtained by it.

As discussed in the "key issues" section, the dissemination by the Agency of safeguards information is also affected by the understandings reached in regard to the confidentiality of subsidiary arrangements. These are dealt with in that section.

It is worth noting that the restrictions on the Agency relate only to that information coming to its knowledge or obtained by it "in the implementation of the agreement." Thus, the Agency does not have to protect generally available information well known to it from means outside of implementation of the agreement.

Interpretation

Paragraph 5 gives the Agency no authority to withhold information on its own safeguards activities; neither, however, does it prohibit such restrictions or require the dissemination of such information. Additionally, the restrictions against disseminating

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information obtained from the state are quite broad. Thus, the Agency appears, for example, to be free to state publicly how many inspections it had conducted in a state, and their timing, without being able to identify the facilities visited unless the existence of these facilities is public knowledge. Paragraph 5 clearly provides that information, regardless of its source or sensitivity, may be provided to the Board to allow it to discharge its oversight and supervisory functions in relation to safeguards.

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IMPLEMENTATION OF SAFEGUARDS

Paragraph 6

Background And Issues

This paragraph represents an extension of the practice, begun in INFCIRC/66, Paragraphs 9-11, of enjoining the Agency to implement its safeguards in a reasonable manner. It was derived from Part I, 4 Doc 3, which in turn was an effort to give effect to the NPT itself, which established the principle of strategic points. Paragraph 6 as finally adopted, however, was the result of extensive discussion and a number of amendments in the Committee. It also introduces explicit language calling for "cost-effectiveness" in safeguards implementation, although this was clearly implicit in safeguards from an early date.

Paragraph 6 evolved from 4 Doc 3 through:

- A proposal by the Fed. Rep. of Germany (Doc 11), to modify the Secretariat's language relating to the use of the "strategic points" principle, and calling for "maximum possible cost-effectiveness."
- A proposal by Japan (Doc 14) calling for the use of containment and random sampling to attain cost-effectiveness.
- A proposal by Australia to concentrate verification on weapons-useable materials.

No significant technical issues were presented by these proposals, since there was, in the final analysis, general agreement, as well as the support of the specific language of the NPT, that safeguards should employ the "strategic points" concept to the extent feasible, and should evolve as technology improved. What was important from the viewpoint of ensuring effective safeguards, and what was clearly achieved, was to avoid tying the Agency's hands by requiring the rigid application of these principles. Thus, each of these principles or approaches was carefully qualified.

Analysis

Each of the approaches or principles recommended for use by the Agency in implementing safeguards has important qualifying language, as indicated below:

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- Technological Developments: "the Agency shall take full account."
- Cost-Effectiveness: the Agency "shall make every effort."
- "Strategic Points" Principle: to be applied "to the extent that present or future technology permits."
- Containment: as a means for defining material balance areas, "use shall be made."
- Statistical Techniques And Random Sampling: "use shall be made."
- Concentration Of Verification: on weapons-useable material, and minimization of verification on other nuclear material: "on condition that this does not hamper the Agency in applying safeguards." The words "concentration" and minimization themselves clearly rule out exclusive application to weapons-useable material.

Paragraph 6, accordingly, illustrates an important general principle followed in the development of INFCIRC/153: this is to reassure states that safeguards will be implemented and will evolve in a rational manner, without restricting the Agency to a degree or mode of implementation which would make safeguards ineffective.

Interpretation

Paragraph 6 establishes important guidelines for implementation of safeguards without imposing constraints that would interfere with effective application.

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NATIONAL SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIAL

Paragraph 7

Background And Issues

This section reflects one of the most crucial issues dealt with in the development of INFCIRC/153: independent verification, and the relationship between Agency verification and national systems of accounting and controls. As such, the issue is also covered in the "key issues" section of this report. The question took on particular importance in light of the known antipathy of several key countries, including the Fed. Rep. of Germany and Japan, to "independent verification," and their preference for the concept that Agency safeguards should only provide assurance that national or regional systems were in place and functioning effectively. Because of the importance of this issue, the United States not only was determined to secure agreement on a provision which incorporated the principle of independent verification, but took the precaution of placing on record a carefully developed statement of interpretation.

The need for independent verification was highlighted in the views of the United States communicated to the Director General in advance of the Safeguards Committee meetings (12 Doc 2), which states: "the guiding principle of all nuclear safeguards systems is that there must be adequate independent verification that material is not diverted," (underlining present in original text). Similarly, the Agency stated (5(a) Part I, Doc 3) that "while the Agency will make maximum use of the data available to it, it must maintain the capability of independent verification..." This statement appeared in the comment which followed Paragraph 5(a), the forerunner of Paragraph 7 of INFCIRC/153, which called for maintenance by the state of "a system of materials control." Representative of the opposite view was the Japanese comment (5 Doc 2) that "the Agency's safeguards shall be applied in such a manner as to verify the implementation of the control of nuclear materials by the state or "group of states..." (emphasis added).

This view was reflected in Japan's proposed modification of Paragraph 5(a) Doc 15 which stated "the Agency's safeguards shall be applied in such a manner as to verify that the control of the nuclear material by the State has ascertained that there has been no diversion" -- (emphasis added). Interestingly, however, even this formulation contemplated that the "verification by the Agency shall include, inter alia, independent measures, such as measurements and observations..."

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Even prior to discussion by the Committee, however, this proposal by Japan had been modified as a result of consultation among members, and its revised version (Doc 15, Rev.1) provided that Agency safeguards were to "verify findings of the control of the nuclear material by the State in ascertaining that there has been no diversion..." (emphasis added) This proposal came close to meeting objectives of the United States, since it made it clear that the Agency was to verify findings of the state's system, and not merely the existence and efficiency of such a system. However, this formulation made too direct a link between the intensity of the Agency's verification activities and the technical effectiveness of the state system, by specifying that "the intensity of verification...shall be related to the degree of technical effectiveness." This defect, of particular concern to Canada (3 OR 8), was remedied by a joint Canadian-Japanese proposal (Doc 15, Rev.2) which provided only that the Agency, in its verification, was to take "due account" of the technical effectiveness of the state system.

Following the introduction of this text, which the record reflects was the result of wide consultation (1 OR 10), a lengthy explanatory statement was made for the record by the United States (2-4 OR 10), which repeated that the proposal provided for independent verification and stressed, among other points, that:

- By its reference to "findings," it was clear that the Agency was not simply verifying the existence of a state system.
- That by its reference to "ascertaining" that there had been no diversion, it was clear that the verification of findings was not the only means of verifying non-diversion.
- By omitting "the" before findings, it was clear that in the absence of "findings" by the state system, it was further established that the Agency could adopt other measures of verification.

This statement was followed by an unusual further colloquy, in which the Phillipine delegation requested confirmation of the United States' interpretation (14 OR 10) and was assured by both sponsors, Japan and Canada, that their interpretation coincided with that of the United States.

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The record reflects that one Euratom member state, Italy, explicitly supported the result (6 OR 10), while another, France (8 OR 10), did so implicitly by commenting that his concern as to the meaning of "findings" in the English text had been overcome by use of the word "results" in the French text. The preceding version (Doc 15, Rev.1), which contained the critical elements of "verifying the findings of the state system in ascertaining that there had been no diversion" had already been found acceptable in principle by the United Kingdom (13 OR 8) and the Fed. Rep. of Germany (16 OR 8). The latter suggested wording changes which were adopted in Doc 15 Rev.2, and appear in Paragraph 7 of INFCIRC/153.

It is also worth noting that the specific term "independent verification" appears in Paragraph 81(b) of INFCIRC/153, which provides, inter alia, that the consistency of reports submitted by states "with the Agency's independent verification" is among the criteria to be used for establishing inspection effort.

Analysis

Through no accident, the record of the negotiating history of Paragraph 7 is unique in its completeness and care, establishing beyond any doubt that the principle of independent verification was understood and accepted by the Committee.

Paragraph 7 also reflects another important principle which appears in a number of other places in INFCIRC/153. This is the principle that the Agency may avail itself of other courses of action in the event that a particular approach does not fulfill its intended purpose in assuring effective safeguards. In the particular case of Paragraph 7, this principle is applied to the state's system of accounting and control: the Agency is to make use of it to the extent possible, but to the extent that it does not provide an adequate data base for Agency verification, the Agency can do more.

Another significant feature of Paragraph 7 is the requirement that the Agency shall take "due account" of the technical effectiveness of the state system (emphasis added). By calling for "due account" to be taken, Paragraph 7 provides an incentive for the development of technically effective state systems, but does not limit the Agency's authority and flexibility by a mechanistic linkage between the Agency's verification activities and the state system. The reference to the technical effectiveness of

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the state system is an important reminder that the Agency can make no presumption as to the political validity or integrity of such systems. It can only assess and take into account their technical effectiveness.

Interpretation

Paragraph 7 clearly establishes that the principle of independent verification was understood and adopted by the Committee. It also makes it clear that independent verification may include, but is not limited, to verifying findings of the state's system. Thus, Paragraph 7 also establishes that to the extent a state system provides an inadequate data base for independent verification, the Agency may take additional steps in ascertaining that there has been no diversion.

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PROVISION OF INFORMATION TO THE AGENCY

Paragraph 8

Background And Issues

This paragraph establishes the obligation of states to provide information needed by the Agency for the effective implementation of safeguards, subject to assurances that the Agency will not seek more information than is needed, and to the further proviso, on which the United States took the initiative, that sensitive information can be reviewed in the state's premises and need not be physically transmitted to the Agency. Information of two general kinds is covered: information concerning nuclear material subject to safeguards, and that relating to the design of facilities, to the extent relevant to safeguards. The provision is closely related to, and should be viewed as the corollary of, Paragraph 5, which obliges the Agency to honor and protect the confidentiality of information provided by the state.

Paragraph 8 has no single direct antecedent in INFCIRC/66, although several sections of that document relate to a state's obligation to provide information. In particular, Paragraph 32 provides for the submission of design information, in language similar to that found in Paragraph 8 of INFCIRC/153. The formulation proposed by the Secretariat in 5(b) Doc 3 is considerably shorter than that which finally emerged as Paragraph 8, and lacks the assurances that the information required to be transmitted is only the minimum amount needed, as well as the special arrangement for protecting especially sensitive information. The basic proposal for the addition of these assurances and the special arrangement was put forward by the United States in Doc 16 which provided the basis, with minor modifications of language, for the final formulation of Paragraph 8.

While there was a clear disposition on the part of the Committee to limit the obligation to provide information to the minimum required for safeguards purposes, it is also clear that the Committee sought to ensure that adequate information would be available to the Agency, and a proposal by Japan which would have limited information to that "concerning the flow of nuclear material..." (1 Doc 17) was withdrawn, after a discussion in which several delegations stressed that information concerning both the flow and inventory of materials would be necessary.

While the provision generated considerable discussion, no major issues or sharp differences of opinion were encountered.

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Analysis

Paragraph 8 presented no difficult issues, and in its final formulation is representative of a number of provisions of INFCIRC/153; that is, a careful balance between obligations by the state essential to assuring the effectiveness of safeguards, and limitations designed to guard against overzealous demands or implementation by the Agency. The rejection by the Committee of Japan's effort to narrow the information requirement to that "concerning the flow of nuclear material..." is particularly useful in establishing that the Agency is entitled to all information needed for safeguards purposes.

The proposal by the United States to allow especially sensitive information to be retained and reviewed in premises of the state was put forward both to help protect sensitive proprietary information from the risk of disclosure and to help ensure that needed design information would not be withheld because of concerns by states that transmission to the Agency would entail excessive risks of compromising the information. It should be noted in connection with this special feature that the reference to information of "particular sensitivity" was clearly intended to mean information of commercial value (37 OR 6), although the wording is broad enough to encompass information of security sensitivity as well. Moreover, the judgement as to whether information is sufficiently sensitive to justify this special treatment is exclusively the prerogative of the state.

While allowing the state to exercise a final judgement on safeguards matters is not customary in INFCIRC/153, it should be noted that in this case a conclusion by the state that information is too sensitive to transmit physically to the Agency does not deprive the Agency of needed information, but only introduces some inconvenience to the Agency's review.

Interpretation

Paragraph 8 provides for the communication by the state to the Agency of all information needed "to ensure the effective implementation of safeguards," while providing assurance to the state that only the minimum amount of information (whether of a materials accountancy or design nature) needed to accomplish this objective need be communicated.

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AGENCY INSPECTORS

Paragraph 9

Background And Issues

Paragraph 9 underwent extensive changes from the formulation originally proposed by the Agency (5(c) Doc 3). However, despite extensive discussions and a number of amendments, previously described and discussed in the "key issues" section, none of the issues dealt with were particularly difficult or contentious. Much of the discussion dealt with questions of form, including placement of the provision within the document and whether the Agency's Inspector's Document (GOV/INF/39) should be referred to in the provision, or its relevant provisions incorporated in INFCIRC/153.

The approach adopted in regard to the question of designation was to place the details of designation in Part II, on the basis that these were details of implementation, but to include the provision with regard to a state's repeated refusal of designation in Paragraph 9. The basis for this step, which was urged by the United States (Doc 35) (31-33 OR 12), was that since states have the right under the Inspector's Document to refuse the designation of inspectors and to thus receive "alternative designations" from the Agency, it was essential to place some limit on this right, the abuse of which would constitute non-compliance with the Agreement (29 OR 12). It is also of interest that this provision was amended in the Committee (Doc 35 Rev.1; 25 OR 12) to specify that it was the responsibility of the Board to deal with repeated refusals, as provided for in Paragraph I.2 of GOV/INF/39.

While Paragraph 9 of INFCIRC/153, thus, clearly establishes a limit on the right of a state to refuse designation, the remedy for this abuse is not established in the section and must be found elsewhere in INFCIRC/153.

An interesting aspect of the discussion of this paragraph was the Committee decision to eliminate the word "unjustified" in connection with a state's repeated refusal to accept inspectors. This decision reflected the feeling that there were no standards by which to judge whether repeated rejection is "unjustified" and that it was up to the Board to decide whether or not the state's behavior was acceptable. The elimination of the word "unjustified" clearly strengthens the Board's right to take appropriate action, and reduces the chance of disputes over a state's repeated rejection of inspectors on the grounds that such action was "justified."

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In addition to the question of designation of inspectors and refusal thereof, several other issues, which have not proven to be of lasting significance, were raised. Among these was whether an inspector should be personally liable for damages which he might cause, including damages arising out of the improper disclosure of a state's confidential information. This issue was ultimately consolidated with all issues relating to the Agency's responsibility for damages and dealt with in Paragraph 17.

Analysis

It was apparent at the time, and has been borne out by subsequent developments, that the principal issue dealt with in connection with inspectors is the right of the state to refuse such designations, and the Agency's recourse if it believes that this right is being abused through repeated refusal. The question of refusal of designation and remedy for abuse of this right breaks down, in turn, into several key sub-issues:

- The extent to which a state can reject entire classes of inspectors, such as those from a particular country or countries; or those with or without particular technical or professional backgrounds;
- The extent to which a state can limit the total number of accredited inspectors by wholesale refusal of designations;
- The Agency's right to redress abuses in either of the above areas; and
- The means of redress.

The adoption in Paragraph 9 of INFCIRC/153 of an explicit provision that "the repeated refusal of a state to accept the designation of inspectors which would impede the inspections conducted under the agreement would be considered by the Board...with a view to appropriate action," appears to deal effectively with at least the first three of these issues. Specifically:

- The right of a state to limit inspectors is not subject to prima facie limitation as to the nationality or classes of inspectors which it may reject, or as to total numbers. The standard of abuse of this right, rather is whether its exercise "would impede the inspections" to be conducted under the agreement.

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- The Agency is clearly entitled to take action in the event of such abuse. Moreover, the gravity of the matter is reflected by the specific reference in Paragraph 9 to the Board, as the responsible organ for dealing with this issue. Such specific references to the Board are uncommon in INFCIRC/153 and were reserved for particularly significant issues.
- Paragraph 9, standing alone, does not, however, specify the nature of the "appropriate action" which the Agency may take.

While the provisions of Paragraph 9, thus, provide a clear limit on the right of rejection of inspectors and a general procedure for dealing with abuse of this right, it is apparent that several questions are not dealt with specifically; in particular, how far must the Agency go -- both in terms of numbers and nationalities -- in proposing "alternative designations" before a state's refusal becomes unreasonable and actionable. Thus, the question of whether a state may, for example, reject all inspectors except those from closely related or sympathetic states is an issue -- along with many others -- left to be worked out in the course of actual implementation, in light of the general provisions of INFCIRC/153 for consultation and cooperation between the Agency and states.

In the final analysis, however, Paragraph 9 clearly gives the Agency, in the person of the Director General, the initiative and responsibility to conclude that the right of refusal is being abused, and the Board the right to take action. While this action is not specified in Paragraph 9, it is apparent that the ultimate remedies lie in the "Measures in Relation to Verification of Non-Diversion," established in Paragraphs 18 and 19.

Interpretation

Paragraph 9 establishes that states may reject the designation of inspectors without cause, but that the exercise of this right in a degree or manner which would impede inspections is not acceptable, and is subject to appropriate action by the Board. While the Agency is called upon to propose alternate designations when the state refuses a designation, it is the Agency's responsibility to judge when it has fulfilled this responsibility, and when the state's further refusals are inappropriate and actionable.

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PRIVILEGES AND IMMUNITIES

Paragraph 10

Background And Issues

The provision for privileges and immunities, Paragraph 10, closely follows the relevant provision of the Inspector's Document, and presents no unique or major issues of importance to INFCIRC/153. Like Paragraph 9, Paragraph 10 has its origins primarily in the Inspector's Document and not in INFCIRC/66. The major questions dealt with in development of this paragraph were its separation from Paragraph 9, and a means for accommodating those states which are not parties to the Agreement on the Privileges and Immunities of the Agency.

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TERMINATION OF SAFEGUARDS

Consumption or Depletion of Material.

Paragraph 11

Background And Issues

This paragraph has its origin in Paragraph 26(c) of INFCIRC/06, the wording of which is identical to that of Paragraph 11. The earlier version was adopted without discussion by the Committee (3 OR 11) in preference to a shorter and more general version proposed by the Secretariat (6(a) Doc 3).

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TRANSFER OF NUCLEAR MATERIAL OUT OF THE STATE

Paragraph 12

Background And Issues

This paragraph specifies the arrangements applicable to the transfer of nuclear materials from an NPT state. Unlike the corresponding provision of INFCIRC/66 (paragraph 28), which had a complex series of conditions basically calling for the continuation of safeguards in the recipient state, Paragraph 12 provides for the termination of safeguards within the transferring state upon completion of a transfer and makes it clear that the Agency has no responsibility for verification that the transferred material will be subject to safeguards in the transferee state. This result was reached because the NPT itself does not call for Agency verification of the obligation of Article III.2 that a Treaty party may export nuclear material only on the condition that it will be subject to safeguards in the recipient state.

The proposed Secretariat provision (6(b) Doc 3), which was consistent with the NPT, attracted considerable criticism and a substitute proposal by Egypt (Doc 21), as well as considerable support (4-33 OR 11), leading to a compromise proposal by the United States (Doc 36) under which the Agency would receive advance notification of transfers, allowing it to satisfy itself that a transfer had in fact been made, but avoiding any Agency verification of the obligation to require that the transferred material would be subject to safeguards in the recipient state.

This compromise as well attracted considerable discussion (44-72 OR 12), during which a number of subsidiary issues were identified and discussed, including the question of responsibility for material while in transit, the desirability of free transferability of material (subject, of course, to the requirements of Article III.2 of the NPT), and the need to protect proprietary information relating to export sales. The latter concern led to an Australian objection (69 OR 12) to the proposed requirement of Doc 36 that notification to the Agency be in advance of export, but this issue was ultimately resolved in favor of advance notification by the adoption of Paragraph 92, which provides for notification to the Agency after a contract has been concluded, but normally two weeks in advance of shipment, thus allowing the Agency to verify the amounts being shipped, and affix seals if appropriate.

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Despite the extensive discussion, this paragraph presented no fundamental or central issue, once the basic determination was reached that the Agency had no responsibility for the verification of compliance with Article III.2 of the NPT.

In its final version, however, Paragraph 12 contains the interesting requirement that the exporting state shall not be relieved of its safeguards obligations with respect to transferred material until the recipient state assumes responsibility for it, even when this state is not an NPT party.

Analysis

Although Paragraph 12 dealt with several issues of considerable sensitivity at the time INFCIRC/153 was developed, these have not proven to be of major significance in practice. In particular, the issue of whether the Agency was or was not responsible for verification of compliance with Article III.2 of the NPT was largely an issue of the transition period, during which a number of states were still negotiating safeguards agreements with the Agency. With the conclusion of these agreements, the issue has largely vanished. Similarly, the concern that proprietary information on export sales might be compromised by advance notification of transfers has not, apparently, been an issue in practice.

While it does not have verification responsibility for Article III.2, the Agency is in a position to monitor compliance with it, and under Article 12 is required to keep records of the "reapplication" of safeguards. However, it is not explicitly authorized by this paragraph to disclose any non-compliance of which it becomes aware, and how it would treat such a case, if it should arise, would presumably depend on the status of the parties to the transfer and the specific circumstances to the transfer.

Interpretation

Under Paragraph 12, and the implementing procedures of Paragraphs 92-94, the IAEA is entitled to advance notification of international transfers, and has the right through Paragraphs 94 and 95 to satisfy itself that a transfer has in fact been consummated, but the Agency is not responsible for verification of compliance with Article III.2 of the NPT, nor does it have any authority to approve or disapprove international transfers.

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PROVISION RELATING TO NUCLEAR MATERIAL TO BE USED IN NON-NUCLEAR  
ACTIVITIES

Paragraph 13

Background And Issues

Although the Secretariat proposed no specific provision or text to deal with the circumstance of non-nuclear use of nuclear material (6(c) Doc 3), the Committee decided (4-5 OR 13) to adopt essentially the same provision that appears as Paragraph 27 of INFCIRC/66. This decision involved no issue or debate.

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NON-APPLICATION OF SAFEGUARDS TO NUCLEAR MATERIAL TO BE USED IN  
NON-PEACEFUL ACTIVITIES

Paragraph 14

Background And Issues

While the fact that non-explosive military uses of nuclear energy, such as naval propulsion, were not proscribed by the NPT and thus not subject to safeguards by reason of the Treaty was not subject to debate, how to deal with this omission was the subject of extensive debate and discussion in the Safeguards Committee. The initial issue, raised even before the Committee convened, was whether it was even permissible for the Agency to apply its safeguards to material which might be withdrawn for military use, in view of the provision of the Agency statute that the Agency is to ensure that safeguarded items "will not be used in such a way as to further any military purpose." This issue was, accordingly, the subject of a special analysis submitted to the Committee by the Director General (Doc 4), which concluded that "the Statute ...does provide the legal authority to apply safeguards to achieve the objective foreseen in...NPT, namely, to verify that there is no diversion...to nuclear weapons or other explosive devices, and to conclude...agreements to that effect."

With this issue of legal authority resolved, the discussion of Paragraph 14 (Part I, 7 Doc 3) turned to a number of more detailed issues. In particular, there was an obvious desire on the part of the Committee, as well as the Secretariat, to avoid a situation where withdrawals of nuclear material from safeguards for non-proscribed military use could become a loophole allowing use for nuclear explosive purposes, beyond the reach of Agency verification activities (e.g., the comments of Yugoslavia, 25 OR 13). At the same time, there was concern that the Agency not be placed in the position of passing judgement on the acceptability of non-proscribed military uses, or coming into the possession of any classified military information with respect to them.

The approach taken by the Committee to this issue, and incorporated in Paragraph 14, was to narrow the suspension or "non-application" of safeguards to material in non-proscribed military use insofar as possible; to call for the provision of as much information concerning the withdrawal as possible without compromising classified information; and to call for specific arrangements between the state and the Agency defining and circumscribing the arrangement as carefully as possible. Of particular importance was the understanding that facilities which merely produce or process material to be used in non-proscribed military uses are not themselves exempt from safeguards. In this regard,

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a definition of "peaceful nuclear activity" initially proposed by the United Kingdom (Doc 53/Mod.1) that peaceful uses include "processes which merely change the chemical or isotopic composition of bulk nuclear material; regardless of the past or contemplated use...", was discussed at some length (47-52 OR 75; 23-52 OR 76).

Hungary (32-37 OR 76) made a strong defense of the need for such a definition, observing "it had always been assured that states were not free to build up complete fuel cycles for purposes unknown or unstated..." In the final analysis, the Committee agreed to omit the definition, from INFCIRC/153, on the basis of making it a matter of record (47-53 OR (56) that "peaceful nuclear activity would in any case include processes which merely changed the chemical or isotopic composition... regardless of the past or future use of the nuclear material in question" (emphasis added).

Analysis

The fact that Paragraph 14 was the subject of extensive discussion, despite the realization of the Committee that few if any actual cases of allocation of safeguarded material for non-proscribed military use would arise, was a reflection of the concern that there should be as few exceptions as possible to the requirement that safeguards be applied to all nuclear material in a NPT non-weapons state. Thus, the lasting significance of Paragraph 14 (particularly since it has never been invoked) is the light which it casts on the significance, in Paragraph 1, of the undertaking that safeguards be applied on all nuclear material in all peaceful nuclear activities. It is clear that the limitation of this safeguards requirement to peaceful nuclear activities was a necessary exception to accommodate the possibility, allowed by the NPT, of non-explosive military uses, and that it in no sense was intended or could be construed as an opportunity to allow states to escape verification by engaging in the very activity the Treaty prohibits -- nuclear explosive uses.

Of particular importance, the discussion of this paragraph, which in turn led to the discussion of a definition of "peaceful nuclear activity," establishes categorically that activities such as enrichment or reprocessing, even if they are undertaken to produce or process material for non-proscribed military use are not intrinsically military and are, therefore, not entitled to the exception from safeguards of Paragraph 14. It follows, even more so, that such activities, if conducted in support of nuclear weapons or nuclear explosive activities, would not be entitled to exclusion from safeguards.

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Interpretation

Paragraph 14 provides for the narrowest possible circumstances under which safeguards would not be applied with respect to activities and materials employed in "non-proscribed military uses." While the Agency has no right to approve such uses, or to request classified information concerning them, states may exercise this discretion only after entering into arrangements with the Agency which delimit the exemption insofar as possible. Of particular significance, activities, such as enrichment or reprocessing, which simply produce or process nuclear materials employed in non-proscribed military uses are not themselves military non-proscribed uses, and must be safeguarded.

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FINANCE

Paragraph 15

Background And Issues

The financing of safeguards was one of the most difficult and contentious issues dealt with in the development of INFCIRC/153, and was the last to be resolved. It was the subject of extensive discussion at eight sessions of the Committee (ORs 14, 17, 18, 19, 21, 22, 81, and 82) and a number of proposals, as well as a special Secretariat study (Doc 39).

In reality, two separate but interrelated issues were under consideration and debate:

- How the costs of safeguards activities incurred by the states and the Agency should be divided between the two parties; and
- How the costs borne by the Agency as a result of the solution adopted to the preceding question should be financed by the Agency.

Only the former issue is, in reality, a matter for inclusion in INFCIRC/153. To a large extent, the extended debate involved holding the first issue hostage to the resolution of the second. The provisions finally adopted in Paragraph 15 of INFCIRC/153 essentially continued in effect the established practice of the Agency: that is, that each party would pay the costs of implementing its own responsibilities, with the exception that the Agency would bear extraordinary expenses incurred by the state at the Agency's request, if the Agency agreed in advance to such a procedure. A further exception dealt with safeguards in a state which was not a member, which would be required to reimburse the Agency for all expenses, except extraordinary expenses incurred at the Agency's expense with its advance agreement to pay for. At the time, it was anticipated that this exception would be applicable to the German Democratic Republic, which was an NPT party, but not then an Agency member.

Agreement on these provisions (Doc 170) was obtained as a result of an initiative of the United States, which formed the basis of a "working paper" (Appendix OR 81), that established a special scale of contributions applicable to the financing of Agency safeguards costs, which reduced and placed a ceiling on the contributions of developing countries.

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France, which had taken a strong position against Agency payment of safeguards costs throughout the debate, proposed an amendment to this approach (Doc 171) which would provide for reimbursement by states in the event the Agency later decided as a matter of general application to require reimbursement from states of all or part of the Agency's costs. This proposal was not accepted by the Committee. However, it was agreed to include in the Committee's report to the Board a statement that states should be advised of the need to enter into renegotiations in the event of a future change in financing approach.

In addition to the French proposal, which implied that the method of safeguards financing might be modified in the future, the working paper itself (Appendix OR 81, Paragraph 5) provided that the Board would review the arrangements proposed at an appropriate time after 1975. The provision has, in fact, been reviewed and generally reaffirmed, as provided.

This account constitutes only a few highlights of what was, in fact, an extended discussion. This is not intended to diminish the importance of the financing issue, but only, as indicated earlier, because the emphasis in this review was on the Agency's safeguards rights and obligations and not on collateral issues such as finance.

#### Analysis

Despite the sharp discussions in the Committee, the financing provisions of Paragraph 15 are clear cut and unambiguous, as was the financing formula proposed in the working paper, which was adopted. The record, however, establishes that the Committee recognized that an alternative to the working paper formula might be required at a later date, and this possibility was provided for in the Committee's report.

It should be recognized that the issue of financing safeguards and safeguards resources are closely linked but separate. The development of a financing formula by the Committee did not ensure the adequacy of safeguards resources, but dealt only with how a given, agreed resource level would be financed. The question of the adequacy of safeguards resources is still a vexing and key one. It is, however, outside the scope of this review of the negotiating history for the simple reason that it was not covered by the negotiation.

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Interpretation

Paragraph 15(a) provides that each party is to pay for the safeguards expenses it occurs, except that the Agency is to reimburse the state for extraordinary expenses incurred by the state at Agency request, if the Agency has agreed in advance to such reimbursement. The Agency is also to pay for the costs of additional measuring and sampling which it requests.

Paragraph 15(b) applies to the exceptional case where the Agency applies safeguards in a non-member state, in which case the state will ordinarily reimburse the Agency for its expenses.

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THIRD PARTY LIABILITY FOR NUCLEAR DAMAGE

Paragraph 16

Background And Issues

Although this paragraph is one facet of the broader issue of responsibility for nuclear damage arising out of the implementation of safeguards, this particular aspect was not controversial. Accordingly, Part I 9(a) Doc 3 was adopted with only minor drafting changes.

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INTERNATIONAL RESPONSIBILITY

Paragraph 17

Background And Issues

This brief paragraph obscures the extensive discussion which precedes its adoption (8-12 OR 15; 6-14 OR 23; and 1-46 OR 26), and which included an entire session (Session 26, July 15, 1970) as well as portions of other sessions devoted to it; a special Agency study (Doc 27); and a Swiss reservation with respect to the text adopted.

The basic issue involved in the debate on this paragraph was the extent of the Agency's liability, and that of individual inspectors, for damages arising out of the implementation of safeguards. While the possible origins of such liability are, in theory, numerous, it was clear that two possibilities were uppermost in the minds of the Committee: nuclear incidents which might be attributable to actions or requests of inspectors; and the violation of commercial secrecy. As noted, the issue extended not only to the liability of the Agency itself, but to that of individual inspectors.

A number of different and often conflicting attitudes were expressed during the debate, including:

- The desire to make the Agency responsible for damages caused by it, both as a matter of fairness and to improve the acceptability of safeguards to states and their governments;
- The desire to avoid placing any unrealistic burdens on the Agency or on individual inspectors; and
- The desire to deal with nuclear incidents in a manner consistent with the specific international conventions and national legislation relevant to such incidents. In general, these nuclear liability regimes make the operator of nuclear facilities responsible and liable for all damage arising out of nuclear incidents, subject to limits of liability established by the convention or legislation, and with state indemnification for any such damages in excess of available insurance.

The brief formulation finally adopted, that claims would be settled "in accordance with international law," codifies an important principle; namely, that public international law applies and not domestic law. This would not be clear without such a statement,

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and its absence could lead to exposure of the Agency to claim in national courts, to be adjudicated pursuant to national law. Additionally, Paragraph 17 excludes claims for damage arising out of nuclear incidents, on the grounds that these would be dealt with in accordance with the particular nuclear liability regime in effect in any specific state. The Swiss reservation, made part of the record (Annex OR 26), takes exception to this exclusion, on the ground that specific international convention or legislation relating to nuclear liability might not be in effect and "the Agency should be held responsible" when it caused damage.

#### Analysis

Despite the extensive debate, the issue being dealt with was an academic and largely hypothetical one. Nevertheless, the result was a satisfactory and widely acceptable, as well as, probably, an inevitable one. From the standpoint of the United States, the main objective was to avoid allowing this issue to damage the prospects for adherence to the NPT and the acceptance of Agency safeguards thereunder. This result was achieved.

#### Interpretation

By providing for the settlement of claims "in accordance with international law," Paragraph 17 merely preserves the situation which would prevail in the absence of any specific provision dealing with responsibility. The exclusion for nuclear incidents serves to ensure that the Agency will be in the same situation as any other party under national liability legislation of international conventions, as anticipated by Paragraph 16. The Swiss reservation relating to damage arising out of a nuclear incident is moot unless and until such damage, involving Switzerland, should occur.

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MEASURES IN RELATION TO VERIFICATION OF NON-DIVERSION

Paragraph 18

Background And Issues

Paragraph 18 is one of two provisions of INFCIRC/153 dealing with the important issue of states which are, or might be, in non-compliance with their obligations under the agreement. Paragraph 18, while important, is the less fundamental of the two, since it provides for measures that can be invoked by the Agency in order to ensure verification, rather than the circumstance when these measures fail and verification is no longer possible, which is the situation dealt with in Paragraph 19.

Paragraph 18 generally follows the Secretariat's proposal (Part I 10(c) Doc 3), which in turn reflects provisions found in then existing safeguards agreements. The key issue was whether the Agency (specifically the Board) should be able to call for urgent measures in advance of and without regard to the time consuming procedure for arbitration of disputes (Paragraph 22). The decision reached by the Committee, with little discussion, in adopting Paragraph 18, was that the Board may act without regard to the arbitration procedures when the issue at stake is: "essential and urgent to ensure verification that nuclear material...is not diverted..." There is no explicit reference in Paragraph 18 to the kinds of actions which the Agency might take. The United States suggested (24 OR 15) that these were of the kind indicated in Article XII A.6 of the Statute; i.e., the return of safeguarded material.

Analysis

This is a straightforward and important provision which both helps ensure that the Agency can verify compliance, or non-diversion, where this is the case; and serves as a logical, final attempt to do so before reaching a finding that this is no longer possible.

Perhaps the most significant open question is what kinds of actions the Board might take, or request be taken. Reference to other paragraphs of INFCIRC/153, and even INFCIRC/66, suggests some of these. For example, although not explicitly cited in the negotiating record, the Board acting under other provisions of INFCIRC/153, might:

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- Call for a plant shut-down and physical inventory (Paragraph 11 INFCIRC/66);
- Call for special inspections (Paragraphs 73 and 77, INFCIRC/153), when these cannot be arranged through consultation between the state and the Agency Secretariat;
- In particular, the Board may call for additional access (Paragraph 77, which specifically refers to Paragraph 18); and
- Call for acceptance by the state of inspectors needed to ensure adequate inspection (Paragraph 9, INFCIRC/153).

Interpretation

Paragraph 18 authorizes the Board to call for needed action by the state, without delay, when this is "essential and urgent" to ensure verification of non-diversion. Examples of the actions which can be called for can be found in a number of the provisions of INFCIRC/153, while others will suggest themselves by the applicable circumstances. Compliance by states with such requests for essential and urgent action is not subject to delay by referral to an arbitral tribunal.

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MEASURES IN RELATION TO VERIFICATION OF NON-DIVERSION

Paragraph 19

Background And Issues

Paragraph 19 was derived from the Secretariat's proposal (Part I 10(d) Doc 3), but with a major and fundamental change in concept which, as observed in the record (17 OR 20), was the result of "intensive consultation."

The Secretariat proposal dealt with the case where the Board could "determine that the state has not complied..." It also provided for a determination of non-compliance when the state "does not comply with a request by the Board to take "an action without delay."

The basic issue dealt with in the consultation, however, and resolved by the adoption of Paragraph 19, was the circumstance where the Agency could not reach a determination of non-compliance, but could also not verify compliance.

Since the formulation of Paragraph 19 was developed in intensive informal consultations, the official record (17-21 OR 20) contains only the explanatory introduction by the sponsoring delegation, the United Kingdom, without record of any interventions which might further illuminate the provision.

Analysis

While the basic purpose and intent of Paragraph 19 are clear -- to enable the Board to take the actions allowed by the Agency's Statute even when it cannot reach a definitive finding of non-compliance -- there are a number of potentially important subsidiary questions which are not explicitly dealt with by the language of the paragraph itself. These include:

- Whether the Board can act in the absence of a report or referral by the Director General;
- What is the permissible scope or nature of the "relevant information" to be provided to the Board by the Director General, and can it consider information in addition to that provided by the Director General; and
- Is there any limitation to the grounds on which the Board can conclude that the "the Agency is not able to verify that there has been no diversion..."

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On the basis of the language of the provision and the explanatory statement of the United Kingdom, reasonable answers can be drawn to these and related questions. Of particular importance is the explanation (19 OR 20) that "it would not be realistic to expect such a clear cut finding [of non-compliance with the undertaking against diversion]... In the first place, it was unlikely that the Agency would be able to prove diversion...and secondly the definition was not broad enough to cover all eventualities..." In cases where no proof was possible, but a suspicion nevertheless remained, it was important to achieve a balanced solution. The Agency on the one hand should have its rights under Article XII.C preserved, and ...the state required a measure of protection [against "trivial" issues]; "i.e., where it did not go to the heart of the matter, namely diversion..."] This explanation makes it clear that while the provision deals only with the issue of verification or non-verification of diversion, and not other possible forms of dispute, it is intended to allow the Board to deal with this key issue very broadly, and with few if any constraints as to grounds for reaching a finding.

It is also clear that while there was a desire to build procedural safeguards into the process, these were of a quite general nature. In particular, as explained by the United Kingdom (20 OR 20), the "proposal provided for a formal report by the Director General, to the Board, which would arrive at a finding..." (emphasis added). In other words, while a report by the Director General is called for, it is the Board which makes the finding, and there is no requirement that the Director General must have reached his own conclusion or finding of non-compliance or non-verification, as a precondition of the Board doing so. The Board, thus, is not simply an appellate body but the forum of initial jurisdiction.. Neither is there any obstacle to the Board's taking the initiative in the matter by requesting a report from the Director General, and there is no doubt of the Board's general authority under the Statute to do so.

Finally, both the language of the provision and the logic of the issue confirm that the Board is not limited to information provided by the Director General. It reaches its finding "upon examination" of relevant information provided by the Director General, but there is nothing in the provision which limits the Board to acting exclusively on the basis of this information. The reference in the explanatory statement to the need for the Agency to be able to act because "a suspicion nevertheless remained" attests both to the broad scope which the inquiry may take and to the broad grounds for action by the Board.

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The requirement to "afford the state every reasonable opportunity to furnish any...necessary reassurance" (emphasis added) is of particular interest, since it provides not only procedural protection to the state, but an important additive ground for action by the Board, should the state fail to avail itself of this opportunity. Coincidentally, this requirement, together with the right afforded the state to be present at any Board meeting at which a finding of non-verification is under consideration, regardless of whether the state is a member of the Board, further confirms that the Board is not confined to considering the information contained in the Director General's report, before reaching its finding.

Interpretation

Paragraph 19 is a key provision of INFCIRC/153 which authorizes the Board to take the statutory actions related to non-compliance upon a finding by the Board that the Agency cannot verify non-diversion. While this finding requires consideration by the Board of relevant information from the Director General, it does not require a prior finding of non-verification by the Director General, nor is there any obstacle to the Board taking the initiative in a particular case, by requesting the necessary report from the Director General; or considering additional relevant information.

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INTERPRETATION AND APPLICATION OF THE AGREEMENT AND SETTLEMENT OF  
DISPUTES

Paragraph 20

Background And Issues

Paragraph 20, which provides for consultation on any question at the request of either party, was included in general terms in the Secretariat draft (10(a) Doc 3), and is analogous to Paragraph 12 of INFCIRC/66. It was adopted (16-17 OR 23) with only editorial changes (Doc 42) without debate.

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INTERPRETATION AND APPLICATION OF THE AGREEMENT AND SETTLEMENT OF  
DISPUTES

Paragraph 21

Background And Issues

This paragraph gives states the right to secure consideration by the Board of any questions arising out of implementation of the agreement, and to participate in the Board discussion of any such question, regardless of whether the state concerned is then a member of the Board. The paragraph, with minor editorial changes from the Secretariat version (10(b) Doc 3), was adopted without dissent. The right of participation by non-Board members was the key point which members wished to ensure through the adoption of Paragraph 21.

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## INTERPRETATION AND APPLICATION OF THE AGREEMENT AND SETTLEMENT OF DISPUTES

## Paragraph 22

Background And Issues

This paragraph prescribes a procedure for arbitration based on the then existing provisions of Agency safeguards agreements, and is very similar to the provision proposed by the Secretariat (11 Doc 3). The arbitral procedure is a standard one, with two arbitrators; one to be appointed by each party, selecting a third, who would be chosen by the President of the World Court should the two be unable to agree.

No major disagreement arose with respect to the arbitration procedure. However, before adoption of the provision, a significant debate concerning the scope of the disputes which should be subject to arbitration occurred. This difference related to whether arbitration should extend to disputes concerning non-compliance with the fundamental undertaking; i.e., with disputes concerning possible diversion. A proposal by the Fed. Rep. of Germany and the United Kingdom (5 Doc 49) would have eliminated the Secretariat exclusion of "a dispute with regard to a determination of non-compliance by the Board..." on the grounds, as explained by the United Kingdom that "such disputes might need impartial settlement and were thus a matter for an arbitration tribunal..." (28 OR 23). However, the applicability of the proposal of 5 Doc 49 was rendered uncertain by a further proposal (6 Doc 49) that the arbitration provision should "not be interpreted so as...to detract" from the Agency's powers of adjudication of non-compliance.

Although there was some support for the United Kingdom position of extending the arbitration procedure even to disputes regarding diversion, the United States along with a number of other delegations (38 OR 23, et. seq.) took strong exception to allowing an arbitral tribunal to review decisions which had been reserved by the Agency's Statute for a representative Board of Member States. Additionally, it was pointed out (49 OR 23) that constituting the arbitral tribunal as the court of last resort would be inconsistent with the difficult decision already reached with respect to Paragraphs 18 and 19, which gave the Board the important, and presumably final, power to require remedial action and make findings in cases of possible diversion.

The final decision was to retain the Secretariat's proposal, in substance, which would exclude disputes concerning diversion from the scope of arbitration.

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Another issue which arose in consideration of this paragraph was whether a permanent arbitration body should be established. Several delegations advocated this, on the ground that without the continuity provided by a permanent body, the ad hoc machinery would not function consistently and effectively. Extensive discussion also took place on who should appoint the third arbitrator in case of failure to agree by the first two, with some delegations favoring the Secretary General of the United Nations, instead of the President of the International Court of Justice. The Committee finally adopted essentially the Secretariat version, with the understanding that the parties to the dispute could agree on selection of the third arbitrator by the Secretary General, a procedure which clearly would fall within the original Secretariat provision allowing the parties to agree on any procedure they wished, in preference to the procedure specified in Paragraph 22.

#### Analysis

The decision, after extensive and explicit debate, not to make a decision of the Board regarding non-verification of diversion subject to review by an arbitral tribunal serves to further confirm the special and important status of the procedures of Paragraph 19 with respect to findings of non-verification.

It should be noted that while the exception to the arbitration procedure specified in Paragraph 22 extends only to findings by the Board under Paragraph 19, decisions by the Board under Paragraph 18 for "essential and urgent" action "to ensure verification" are exempt from prior arbitration by the terms of Paragraph 18 itself. Thus, there was no need to exempt Paragraph 18 decisions from the arbitration provisions of Paragraph 22. The effect of these provisions is that the Board's decisions under Paragraph 18 are not subject to delay in execution by arbitration, but they are subject to subsequent arbitration. On the other hand, the Board's findings under Paragraph 19 are not subject to review by the arbitral tribunal.

The extensive debate on this paragraph, as well as on other related paragraphs concerning disputes and non-compliance, stands in contrast to the fact that no disputes have been referred to the Board or to an arbitral tribunal, and that no findings of non-compliance have been made by the Board (although the Board was informed by the Director General in 1981 of one instance, not arising under an NPT safeguards agreement, of inability to verify non-diversion). The fact that these issues were discussed extensively and in detail suggests that the Committee did not consider

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them academic, and foresaw greater recourse to the disputes machinery than has in fact occurred. Of particular relevance in this regard was the view held by a number of delegations that a permanent arbitral tribunal should be established to ensure consistency and continuity of decision-making.

Interpretation

In establishing a relatively conventional arbitration procedure for the settlement of disputes, Paragraph 22 carefully excludes disputes relating to findings of diversion, under Paragraph 19.

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## FINAL CLAUSES

Paragraphs 23 Through 26

Background And Issues

Although several drafting changes were made in these provisions, which are derived from Part I, 12-15 Doc 3, no major issues of principle were presented. Perhaps the most significant point related to Paragraph 24, derived from 13 Doc 3, in regard to which the United States and several other delegations had pointed out that safeguards under other Agreements (for example, trilateral safeguards agreements, involving the Agency, a recipient state, and a supplier state) could not be suspended without the agreement of all parties. Paragraph 13, Doc 3 was, accordingly, amended by a proposal of the United States (Doc 48) by the adoption of the words "where applicable". This term was understood to mean (35-37 OR 20) that suspension could not take place in any case where the agreement of other parties was needed, without the agreement of these parties.

Another point of significance relates to Paragraph 25 (14 Doc 3). In introducing an editorial change to this section (Doc 47), and elsewhere during the debate, the United States took the occasion to stress that the "implementation of the agreement must begin immediately after it had come into force" (39 OR 20), and that as soon as the agreement has entered into force, the two parties would have all the rights and obligation foreseen therein; i.e., the state would have the obligation to accept safeguards and the Agency would have the right and obligation to apply them (54 OR 15).

A final point relates to Paragraph 23 (12 Doc 3), which provides for the possibility of Amendment of Part II "by recourse to a simplified procedure." As made clear by the discussion and by the more explicit language of 12 Doc 3, the simplified procedure envisioned was approval by the Director General, with member states being subsequently informed. Any simplification in terms of national procedure would, of course, be dependent on each state's statutory and constitutional requirements.

Analysis

The strong reminder of the United States that implementation should begin upon entry into force of the agreement was a reflection of concerns with delays which had occurred in the implementation of Agency safeguards agreements in the past, and the

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concern that these delays might arise in connection with INFCIRC/153 agreements as well. Thus, the statements of the United States anticipate and reenforce the later specific provision giving the Agency the right to undertake ad hoc inspections pending completion of subsidiary arrangements.

Interpretation

The final clauses, Paragraphs 23-26, are generally straightforward. In light of past delays in the implementation of safeguards agreements, special significance should, however, be attached to Paragraph 25, which provides that the agreement is to enter into force on the date of mutual notification. On entry into force, the state is under an obligation to accept safeguards; the Agency has the right and obligation to apply them; and such implementation is intended to begin promptly.

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PART II

INTRODUCTION

Paragraph 27

Background And Issues

The original wording of the Introduction as proposed by the Director General in Doc 62 consisted of two paragraphs and was much more extensive than was considered to be necessary (30-31 OR 35). It contained references to the three safeguards measures; i.e., material balance accountancy, containment and surveillance, as well as to the general procedures that should be applied in accordance with the Agency's safeguards system; i.e., examination of design information, maintenance of records, provision of reports, and inspections.

Both Japan and the United Kingdom submitted simplified versions of an introductory paragraph (Docs 67 and 68 respectively) and that of the United Kingdom was accepted without discussion.

Analysis

The formulation of the Introduction to Part II was not controversial and a concise paragraph emerged without objection.

Interpretation

The Introduction to Part II sets forth the general premise that Part II is to translate into procedural terms the principles contained in Part I.

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## OBJECTIVE OF SAFEGUARDS

Paragraphs 28 Through 30

Background And Issues

The initial formulation of Paragraph 28, as proposed by the Director General (7 Doc 62), described the kind of technical objective desired rather than actually stating the objective. Moreover, the comments following the initially proposed formulation described what is entailed in safeguards and the importance of a technical objective.

Japan (Doc 67) and the United Kingdom and Fed. Rep. of Germany jointly (Doc 72) put forward proposals, each of which contained phrases concerning material unaccounted for but made no reference to detecting diversion. Japan emphasized (2-3 OR 36) that the Agency should verify the findings of national control systems and identified the three categories of safeguards measures without distinction. In support of the proposal in Doc 72, the United Kingdom introduced the requirement of judgment on the part of the Agency following its verification activities; because it was exceedingly difficult to assess the quantities of material unaccounted for, the possibility of diversion could appear only through elimination of all other possible explanations. (54 OR 36).

A proposal by the United States (Doc 75) suggested that "...safeguards procedures are to enable the Agency to detect diversion or to determine whether there is material unaccounted for, in such amounts as to give reasonable cause to suspect diversion." That characterization of "amounts" is in contrast to the previous formulations, including that of the Director General which, in referring to "stated" or "agreed" amounts overemphasized the importance of material unaccounted for. In the view of the United States (56-57 OR 36), the concept of detection of diversion was the primary technical objective which should not be limited to procedures related to material accountancy. Moreover, the United States argued that it would be undesirable to include any specified or fixed amount of material unaccounted for in agreements.

The Inspector General, the Fed. Rep. of Germany, and the United Kingdom all indicated (61, 68, 70 OR 36) amounts of material unaccounted for were not to be predetermined or fixed in advance, but determined based on experience with each particular facility. Canada believed that the objective could be achieved by application of the three safeguards measures -- material balance accountancy, containment, and surveillance -- and that although material accountancy was a primary indicator of possible diversion, it was not the only one (63 OR 36).

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Canada, the Fed. Rep. of Germany, Japan, and the United Kingdom introduced a subsequent proposal (Doc 82) which set forth the objective of safeguards as "... the timely detection of diversion...and deterrence of such diversion by risk of early detection". In addition, a distinction between the three safeguards measures was made in the phrase "...the use of material accounting as a measure of fundamental importance, coupled with containment and surveillance as important complementary measures." The United States, agreeing with a remark made by the representative of Switzerland, indicated that measures of containment and surveillance deserved equal weight with material accountancy and therefore proposed that the word "coupled" be dropped. That suggestion was accepted and the first two paragraphs in Doc 82 became Paragraphs 28 and 29 in INFCIRC/153.

The text in Doc 82 corresponding to Paragraph 30 aroused more discussion. Egypt and South Africa had difficulty with the wording "given amount", with Egypt (15 OR 37) wanting a figure or range of figures to be given and South Africa (6 OR 36) wanting detailed procedures by which the IAEA would evaluate the amount of material unaccounted for. India, on the other hand, felt that the wording presented problems because it did not indicate clearly that the amount referred to was the result of IAEA's work and not a predetermined figure (16 OR 37).

France provided a revised text (Doc 84/Rev.1) eliminating the term "given amount", thereby avoiding the problems that would be associated with predetermining amounts of material unaccounted for. Although Japan foresaw problems for the IAEA in determining the limits of accuracy, (38 OR 37) further explanation by France and the Inspector General (39-42 OR 37) resulted in acceptance of the French proposal.

#### Analysis

The objective of safeguards as set forth in Paragraphs 28 and 29 emerged as the timely detection of diversion instead of the more limited earlier version of measurement of material unaccounted for. In addition, as already noted in the key issues portion of this report, the importance of containment and surveillance was officially recognized and significantly upgraded from earlier safeguards documents. Although containment and surveillance were accepted as "...important complementary measures", the United States clearly expressed its view that they were of equal weight with material accountancy. In any event, there is no explicit provision for allocation of effort between material accountancy and containment and surveillance, leaving it to the discretion of the Agency to apply the measures as it sees fit.

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The discussion leading to the formulation of Paragraph 30 makes it clear that "normal" amounts of material unaccounted for will not be predetermined, but that such amounts would be determined by the IAEA for each material balance area on the basis of actual expenses.

Interpretation

In Paragraphs 28 through 30 the objective of safeguards is decidedly the timely detection of diversion. The position of the United States (32 OR 41) is that the application of safeguards is a generic term for all the measures to be taken by the IAEA and the state to ensure that the terms of the agreement are carried out. Verification means more specifically the measures to be taken by the IAEA to accomplish that objective. INFCIRC/153 clearly calls for material accountancy, containment and surveillance to be utilized by the IAEA, leaving the allocation of effort between these measures to the discretion of the Agency.

Materials accountancy is an indispensable measure, but containment and surveillance are also expected to be employed whenever materials accountancy alone is inadequate to furnish assurance that significant diversion has not taken place.

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## NATIONAL SYSTEM OF ACCOUNTING FOR AND CONTROL OF NUCLEAR MATERIAL

## Paragraphs 31 And 32

Background And Issues

The Director General's suggestions for Part II in Doc 62 did not include any elaboration of Paragraph 7 in Part I, which requires the state to establish and maintain a national system. The first proposal corresponding to Paragraphs 31 and 32 came from Japan (2.B and 2.C Doc 67). In Japan's proposed text corresponding to Paragraph 31, the state was called upon to verify the findings of its own national system. Japan reiterated its belief (3 OR 36) that the Agency should take account of the technical efficacy of the state's control system. In the text corresponding to Paragraph 32, the requirements to be met by the national system were defined in general terms; i.e., compatibility with the technical objective and procedure, facilitation of IAEA verification activities and provision of physical protection of material.

Subsequently (as a result of outside consultations), Canada, the Fed. Rep. of Germany, Japan, and the United Kingdom submitted a proposal (Doc 82) which included texts corresponding to Paragraphs 31 and 32. In the latter text, a list of measures for national systems was included. Such a list of measures and whether they should be obligatory or only guidelines for national systems became the focus of the discussion.

Denmark felt that the state should not be required to include all of the listed items because they would not all be relevant to countries which had only one small reactor (2 OR 37). Canada agreed that the wording as proposed seemed to suggest that each state was obliged to employ all of the listed items and suggested the words "as appropriate" be inserted in the introduction to the list of items (3 OR 37). Canada pointed out that, according to Paragraph 7, states were required to establish certain regulatory functions which might or might not include inspections; Canada did not consider that inspections under the national system should have any effect on the duration, content, or frequency of inspections by the IAEA (4 OR 37). This interpretation, however, would appear to conflict, at least in some circumstances, with the principle that the Agency should make maximum use of the findings of the state's system, while maintaining independent verification.

France favored wording in the introduction which would provide flexibility for states having less than a full range of activities and suggested deletion of the proposed item dealing with physical security.

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Egypt suggested (14 OR 37) that detailed requirements for national systems be included in the subsidiary arrangements, rather than in the agreement, and that the IAEA would make use of national systems where they exist or supplement them if necessary. The Fed. Rep. of Germany and Hungary favored retaining the list in the agreement as a guideline and the Fed. Rep. of Germany proposed wording that the state and the IAEA would agree in the subsidiary arrangements (20 OR 37) concerning which of the items were required.

While agreement was ultimately reached that the list of provisions should not be considered mandatory, there was some additional discussion of the proposed inclusion of an item concerning the physical security of nuclear material. France felt that physical security was entirely up to the state and beyond the scope of the Agency (81 OR 37). Hungary (83 OR 37) suggested that the reference to physical security did not belong in the paragraph under discussion, but disagreed with France, arguing that the Agency must take physical security into account during inspections. Finally, the United States, Canada, and Japan each agreed that no such item should be included in the list, provided that physical security was dealt with elsewhere in Part II.

The text proposed in Doc 82 corresponding to Paragraph 31 was adopted by the Committee with only minor changes of the wording (54 OR 37).

#### Interpretation

Paragraph 31 is essentially repetitive of Paragraph 7, with the addition of the requirement that the IAEA avoid unnecessary duplication of the state's accounting and control activities. That provision was not debated, probably because it was established in the negotiation of the NPT itself. It is fair to conclude that the IAEA will, in the first instance, at least, determine whether any "duplication" is necessary, with the state having recourse to the procedures in Paragraphs 20 through 22 if it disagrees.

The deliberations of the Committee make it clear that the list of items in Paragraph 32 (a) through (h), as a whole, is not mandatory. At the same time, however, it was recognized that some of the items were fundamental to any national system worthy of the name, although it was left to the IAEA, presumably, to identify those in negotiating subsidiary arrangements. Contrary to Egypt's idea that a state need not establish a national system, all others seemed to recognize that Paragraph 7 imposed such an obligation upon the state.

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STARTING POINT OF SAFEGUARDS

Paragraphs 33 And 34

See Section 2.4

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## TERMINATION OF SAFEGUARDS

## Paragraph 35

Background And Issues

A formulation for a provision, in Part II for termination first appeared in the Director General's suggestions (4 Doc 62). That formulation, however, reserved to the IAEA the discretion to determine that safeguards should continue to be applied to nuclear material contained in residues, notwithstanding that the state considered its recovery to be impracticable or undesirable. It also called upon the parties to cooperate in making arrangements for the application of safeguards in such event, as well as in disposing of residues when both parties agree on non-recoverability.

During the discussion (principally in 1-44 OR 38), the Inspector General explained that the termination provision earlier adopted for Part I addressed only the case in which nuclear material was practically irrecoverable. The proposed formulation addressed the case in which material in residues would be technically recoverable, but it would not be economic to do so at that time and therefore the residues would be stored for possible future recovery. While rigorous safeguards might not be justified, according to the Inspector General, some limited measures would be needed to assure that the material had not been recovered; if residues were to be disposed of, it was not intended that the IAEA would make the decision but simply would arrange with the state to apply limited safeguards.

The only additional substantive suggestion was made by Japan (DOC 77), which resulted in the reference to Paragraph 13 and the phrase which follows it in Paragraph 35.

The final wording was drafted by the Chairman (DOC 93) and was adopted after a brief discussion in which the United Kingdom, supported by France and Australia, suggested that "residues" includes scrap from fuel fabrication (1-9 OR 41).

Analysis

There were no serious disagreements with the concepts to be included in the provision; the prolonged discussion was rather concerned with the drafting. The major point was that the state and the Agency agree on what safeguards measures should be applied to nuclear material contained in residues.

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Interpretation

Paragraph 35 as adopted is straightforward and consistent with Paragraph 13 in Part I. It allows the state and the Agency to agree that certain nuclear material is practicably irrecoverable. It also allows the state, in the event that the IAEA does not make the determination pursuant to Paragraph 11 that nuclear material in residues is unrecoverable, to defer recovery and to agree with the Agency concerning the safeguards measures to be applied in the interim. For purposes of Paragraph 35, "residues" includes scrap from fuel fabrication.

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## EXEMPTIONS FROM SAFEGUARDS

Paragraphs 36 Through 38

Background And Issues

The Director General's suggested formulation for Paragraph 36 came under the heading "Exemptions related to use", and for Paragraph 37 under "Exemptions related to quantity". The formulation for Paragraph 38 was a comment to these formulations (5-6 Doc 62). The Director General's formulation for Paragraph 36 referred to the three categories of uses (as a source for thermoelectric power, as sensing components in instruments, and in other specified non-nuclear activities) but omitted any specific quantity limitations or, in the case of plutonium-238, any minimum concentration.

In Doc 71, the United Kingdom proposed changing the heading to "non-application of safeguards" and deleting the reference to plutonium-238 by providing for its exemption from the definition of special fissionable material. While the United States found the United Kingdom proposals acceptable, it proposed wording in Doc 74 for the introduction of Paragraph 36 which used the phrase "exclude from the application of safeguards", in order to conform with the heading suggested by the United Kingdom. The United States also proposed the more flexible wording that the IAEA "may exclude,..." rather than "shall" but the United Kingdom disagreed and it was not adopted. Finally, the United States suggested that a reference to "gram quantities" in subparagraph (a) of Paragraph 36 was necessary in order to avoid exemption of substantial quantities of material; the addition of the words "or less" after the reference to gram quantities, was also suggested.

There was considerable discussion of the definitions of termination, non-application, and exemption (19-36 OR 36) in the development of these paragraphs. Hungary indicated (26 OR 36) that its understanding that the procedure in Paragraph 37 constituted "exemption" and that the procedure in Paragraph 36 was "non-application," in the sense that material was disregarded and for the purposes of safeguards did not exist. Hungary's position was that material used in sensing components, required processing and at some point before being used in a component, would have been subject to safeguards; accordingly, such material might be better considered under termination. Paragraph 36, in Hungary's view, should make clear that the material referred to would not be subject to safeguards only as long as it was used in the ways specified.

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As the discussion began to focus on which terms should be defined within INFCIRC/153, the Inspector General intervened (33 OR 36), suggesting that such procedural terms should not be defined in agreements, but that it would be enough if they were understood within the Committee. He further called attention to the usage of the term "non-application" in Part I, in which the term had been used only with reference to permitted military uses and it was his belief that the use of non-application should be restricted to that context.

Japan noted that relationship between "termination" of safeguards and "exemption" from safeguards and suggested in Doc 78 the addition of the phrase "if such nuclear material is unrecoverable" at the end of subparagraph (b). This seemed to resolve the discussion of the difference between termination, non-application, and exemption and the original title "Exemptions from Safeguards" was accepted (39 OR 38).

The Chairman undertook to redraft what was to become Paragraph 36 on the basis of the various proposals. That formulation appeared in 10-12 Doc 92/Rev.1, and is virtually identical to the final wording, except that it does not include subparagraph (c), or any other reference to plutonium-238.

The question of exemption of plutonium-238 was addressed during the later discussion of the definition of "nuclear material" (1-14 OR 69), in which the United Kingdom proposed (Doc 153) to exclude plutonium-238 in concentrations exceeding 80 percent. In presenting its proposal, the United Kingdom explained the complex process by which plutonium-238 was produced, the small quantities yielded and the essential uses of the material in medicine. Balancing its humanitarian uses and the unlikely possibility of its posing a military threat, exclusion from safeguards seemed right to the United Kingdom; the alternative of exemption could be acceptable, but would place an unnecessary burden on the IAEA.

Switzerland appreciated the interest in humanitarian uses and the cost and complexity of producing plutonium-238, but expressed fear that it might be produced in quantities of several tons by 1980, including that for applications in space. The United Kingdom thought production would be measured in kilograms rather than tons and thus its exclusion from safeguards would not provide a serious loophole in the control of plutonium.

When the discussion of the definition of "nuclear material" resumed (3-12 OR 75), the United States proposed a definition (Doc 160) which deleted the "exception" for plutonium-238 and instead proposed adding a text corresponding to subparagraph (c) to Paragraph 36. The United States explained that the word "except" had

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raised a legal problem and that several delegations had suggested the term "exemption". Without further discussion of that aspect of the proposal, the Committee adopted the text proposed for Paragraph 36(c).

What is now Paragraph 37 was adopted, as proposed by the Director General in Doc 62, without discussion, no doubt because that formulation appears verbatim (including the phrase "that would otherwise be subject to safeguards") as paragraph 21 in INFCIRC/66/Rev.2.

The precise wording for Paragraph 38 appears to have been drafted by the Secretariat on the basis of the proposal by the Fed. Rep. of Germany (Doc 69) to add that provision. No objection had been made to that proposal and it was adopted without discussion.

#### Analysis

The issues raised in developing Paragraphs 36, 37, and 38 were largely related to the intended uses and definitions of the terms "termination", "non-application", and "exemption" in connection with safeguards. There was also discussion of addressing the exemption of plutonium-238 in the definition of nuclear material. As a result of the discussion, the decision was made to limit definitions to the technical terms rather than including all procedural terms as well. Once this decision was made and the Committee reached agreement on the interpretation of the procedural terms, Paragraphs 36, 37, and 38 were adopted.

#### Interpretation

In the final analysis, it was understood that non-application of safeguards applied only to military uses as discussed in Paragraph 14 of Part I. Safeguards were terminated if material formerly under safeguards is no longer considered usable or has become practicably irrecoverable as indicated in Paragraph 11 or is to be used in non-nuclear activities in accordance with Paragraph 13. Only the material as specified in Paragraphs 36 and 37 would be regularly "exempted" from safeguards at the request of the state and would remain "exempt" only as long as the material continued to be used as specified in subparagraphs (a) and (b) or, in the case of plutonium-238, if it continued to be present in a concentration greater than 80 percent.

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## SUBSIDIARY ARRANGEMENTS

Paragraphs 39 And 40

Background And Issues

The Director General's first outline presented at the beginning of the Committee's deliberations (Doc 3) noted the desirability of standardization in the IAEA's administration of safeguards, while taking into account the diversity among states in the extent of their nuclear activities. In discussing how some flexibility might be provided, an agreement structure was proposed, consisting of what became Parts I and II and subsidiary arrangements. While Part II would set forth technical principles and safeguards procedures and the principal guidelines to be followed in subsidiary arrangements, the subsidiary arrangements would contain detailed provisions concerning, for example, information required for design review, timing and format of records and reports, and safeguards arrangements for each facility. It was suggested that the subsidiary arrangements should, if possible, take effect simultaneously with the agreement and it would be essential that the IAEA be provided with the information required for completion of subsidiary arrangements while the agreement was being negotiated. The subsidiary arrangements should be amenable to changes by agreement between the parties without the need to amend the agreement.

In the discussion of those suggestions (OR 24 and 25), South Africa considered the subsidiary arrangements to be of crucial importance and that they should be submitted to the Board of Governors concurrently with the agreement.

That suggestion raised two issues: whether the subsidiary arrangements should ever be submitted to the Board and, if so, when. Both issues were recognized to involve the sensitive matter of confidentiality of information provided to the IAEA, as well as the issue of uniformity in the application of safeguards by the IAEA.

If the subsidiary arrangements were to take effect at the same time as the agreement, information would need to be provided to the IAEA before the agreement came into force and thus before specific obligations had been assumed by the IAEA regarding confidentiality. If, on the other hand, the subsidiary arrangements were to be negotiated only after the agreement came into effect, the practical implementation of the agreement could be delayed for some time, particularly for those countries with substantial nuclear activities.

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The Inspector General suggested that some general provisions might be included in the agreement (the United Kingdom had proposed including those governing establishment of material balance areas and accountancy) but that details of facilities could only be drawn up after design review, which would follow the entry into force of the agreement. Thus, simultaneous entry into force would be difficult unless the necessary information was provided in advance, in which case industrial secrets would need to be protected. He suggested that 90 days might be reasonably required for completion of the subsidiary arrangements.

India was in favor of simultaneous entry into force. Japan, referring to its experience, noted the difficulty in doing so, except in the case of countries with few facilities. The practical effect might merely result in delaying entry into force of the agreement. Canada, on the other hand, favored simultaneous entry into force, but with interim arrangements made by an exchange of letters to assure confidentiality of information, if the state wished. The Inspector General endorsed Canada's suggestion. The Soviet Union favored simultaneous entry into force and thought a 90-day interval after entry into force too long. Yugoslavia thought it impracticable to complete the subsidiary arrangements until the agreement had been negotiated. Japan did not want to see excessive delay in completion of the subsidiary arrangements and doubted that interim arrangements would expedite completion but was not opposed to them, if it was voluntary.

With regard to submission to the Board of the subsidiary arrangements, India was strongly in favor, in order to assure maximum uniformity in application of safeguards. The United Kingdom thought that objective would be achieved by including all of the important provisions in the agreement itself. The United States opposed making available to members of the IAEA information relating to subsidiary arrangements, except with the prior agreement of the state concerned. Australia agreed with the United States. India said that, if the proposal of the United States was accepted, the detailed framework within which the Agency would implement safeguards should be made known to member states, to ensure uniformity of implementation. Italy did not share the concern regarding uniformity and was not convinced that every state had the right to keep under review how the IAEA implemented safeguards in other states. South Africa did not wish any confidential information in subsidiary arrangements to be passed to the Board. Japan agreed with the view of the United States; uniformity was needed, but that was the responsibility of the Director General, who would be guided by agreed principles and technical procedures. The Fed. Rep. of Germany agreed with the United States. The Inspector General noted that it had been the

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practice not to make known the content of subsidiary arrangements and that it would not be possible to circulate detailed information concerning facilities, but that a limited amount of general information in the opening paragraphs of the document could be made known to member states.

When the Committee next addressed the subject (OR 38), it had before it the Director General's suggestions in Doc 62, which contained revised formulations for what were to be Paragraphs 39 and 40. The proposal for Paragraph 39 consisted of one sentence, in which the function of subsidiary arrangements was confined to the specification of the procedures by which the IAEA would fulfill its "safeguards responsibilities" in each facility containing or to contain nuclear material subject to safeguards under the agreement.

The United Kingdom had proposed an amendment to the wording for Paragraph 39 (Doc 79) which "clarified" the Director General's proposal by deleting the references to facilities and referring only to the practical application of the procedures laid down in the agreement. Japan had proposed an amendment (Doc 87) which deleted the reference to "safeguards responsibilities" of the IAEA, retained the references to facilities, and called for inclusion in the subsidiary arrangements of "the details of normal verification activities of the Agency" in particular facilities.

Japan elaborated on its proposal (48 OR 38) by calling upon the IAEA to have prepared, by a panel of experts, a manual which would set the basis for negotiation of subsidiary arrangements, in which the details of the procedures would be included. Hungary (49 OR 38) opposed the addition of the phrase "normal verification activities," as did the Fed. Rep. of Germany which preferred the proposal of the United Kingdom, but proposed deleting "safeguards" so that it referred only to "responsibilities" of the IAEA under the agreement (50 OR 38). Finland and the United States supported the proposal of the United Kingdom, without further comment (52 OR 38). Belgium also supported that proposal, but agreed with the Fed. Rep. of Germany that "safeguards" be deleted (54 OR 38). Australia and India appear to have agreed with the United Kingdom proposal. They thought the inclusion of "safeguards" was redundant but that it made no difference whether it was retained or deleted.

Canada, on the other hand, preferred Japan's proposal because of its references to facilities, each of which would need to be addressed (59 OR 38). The Soviet Union also favored including references to information pertaining to each facility (60-61 OR 38). Italy noted that such information would be required in the provision dealing with design review and therefore need not be

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mentioned in the paragraph under discussion (63 OR 38). India agreed with Italy (65 OR 38). The Soviet Union withdrew its proposal and the proposal of the United Kingdom, with the deletion of "safeguards," was accepted for the first sentence of Paragraph 39. (That sentence does not differ in substance from that in Paragraph 39, but the wording is slightly different.)

Italy had proposed (Doc 73) the addition of wording which differs only insignificantly from the second sentence which appears in Paragraph 39. The proposed sentence had appeared in the text suggested by the Director General in Doc 62 for what was to become Paragraph 40. The Committee adopted Italy's proposal without further discussion. The final language, edited by the Secretariat, appeared in Doc 92/Rev.2.

The Director General's suggested text in Doc 62 for what was to become Paragraph 40 contained most of the elements appearing in the final version of that paragraph.

Italy proposed (Doc 73) that a sentence be added (taken from the comment in Doc 60 to the Director General's proposed text) calling for an exchange of letters between the IAEA and the state, if so requested by the state, by which precautions would be specified for the protection of confidential information provided before the agreement entered into force. The United States thought the exchange should be initiated by the IAEA and suggested deletion of the reference to the state's request (72 OR 38). Italy agreed (74 OR 38) but the Fed. Rep. of Germany did not, because the IAEA would not be obliged legally to take the initiative prior to the agreement coming into force (75 OR 38). The Inspector General also felt that the phrase should be retained (76 OR 38). Hungary thought its retention would not create a legal obligation for the IAEA and suggested that a report be made to the Board, setting out the IAEA's obligations prior to entry into force of the agreement (77-78 OR 38). The United States agreed to that suggestion (79 OR 38). After several other delegations supported either deletion or retention of the phrase referring to the state's request, the Chairman asked the delegate of Italy if he would agree to the whole question of protection of confidential information being dealt with in the Committee's report to the Board. Italy agreed and, six months later, Doc 167 appeared containing, among several paragraphs to be included in the final report to the Board, a paragraph which addressed the matter. The wording suggests an exchange of letters but does not indicate which party should initiate it. The paragraph was adopted for inclusion in the Committee's report (OR 82).

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Analysis

The last sentence of Paragraph 40 is most important, in light of the delay of 90 days, or longer if the IAEA agrees, between the entry into force of the agreement and that of the subsidiary arrangements.

The first suggestions by the Director General (Doc 3) made no reference to the IAEA's right to apply procedures, etc. pending the coming into force of subsidiary arrangements. In the general discussion (OR 25) of those suggestions, the United Kingdom had mentioned the desirability of the state submitting its initial inventory of nuclear material immediately upon concluding its agreement; the state could be required to keep the inventory up to date and to maintain records until the subsidiary arrangements took effect.

While no further discussion of the concept suggested by the United Kingdom took place at that time, the next set of suggestions by the Director General pertaining to Part II (Doc 62) included a sentence in the text (9 Doc 62) corresponding to Paragraph 40, stating that the IAEA shall be entitled to apply the procedures laid down in the agreement in respect of the items listed in the initial inventory submitted by the state. (A later paragraph in Doc 62 called for the initial inventory to be submitted within two weeks after the end of the month in which the agreement entered into force.)

During the discussion of the paragraph in 9 Doc 62, France asked the Inspector General (70 OR 39) what the IAEA could do during the interval between the entry into force of the agreement and the conclusion of the subsidiary arrangements. The Inspector General replied (80 OR 39) that the IAEA would become responsible for applying safeguards the moment an agreement came into force, even if the subsidiary arrangements had not been concluded, the IAEA would discharge its responsibilities at least by surveillance. France asked for clarification that the IAEA's inspectors could begin work as soon as the agreement came into force (9 OR 39). The Inspector General repeated that such was his understanding of the legal position (10 OR 39).

India stated its understanding (12 OR 39) that, once the agreement had come into force, the IAEA would have both responsibilities and powers to apply safeguards and that the state would be obliged to accept them, whether subsidiary arrangements had been concluded or not; it was imperative to incorporate that point in the paragraph to make it clear beyond all doubt.

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In response to a question by the Fed. Rep. of Germany (13 OR 39) regarding any technical reasons for allowing a delay in the conclusion of the subsidiary arrangements, rather than calling for simultaneous entry into force, the Inspector General (15-17 OR 39) referred to the suggestion by the United Kingdom concerning the timing of the initial inventory report. He stated that the reason for delay in submission of that report was technical and that the reason for any delay (beyond two weeks after the end of the month in which the agreement entered into force) could not be other than political.

India proposed (18 OR 39) that the paragraph include a sentence (which had appeared in the comment to the Director General's suggestion in 9 Doc 62) which referred not only to the IAEA's obligation to apply safeguards as soon as the agreement entered into force, but also to the state's obligation to accept such safeguards.

The Fed. Rep. of Germany felt that the relevant sentence in the text suggested by the Director General (which referred only to the IAEA being entitled to apply safeguards, etc., without mentioning the state being obligated to accept them) covered the point made by India. India, however, disagreed and reiterated its proposal (29 OR 39).

No other speaker addressed the point and when the Chairman read out the formulation of the entire paragraph resulting from the discussion, he referred to the relevant sentence in the Director General's suggested formulation in 9 Doc 62. That sentence, with minor editing, appears as the last sentence in Paragraph 40.

#### Interpretation

Although not explicitly stated in Paragraphs 39-40, it was the consensus of the Committee that subsidiary arrangements should not be published and circulated to member states so that any proprietary information contained therein would not be disseminated. A concern that non-publication could lead to non-uniformity in the application of safeguards, however, could be resolved by the Inspector General's suggestion (22 OR 25) that a certain amount of general information contained in the opening paragraphs of the subsidiary arrangements could be made known to all member states.

The final formulation of Paragraphs 39 and 40 clearly provides that the subsidiary arrangements shall enter into force concurrently or as soon as possible after the entry into force of the agreement. Although a period of 90 days between entry into force

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of the agreement and the subsidiary arrangements is specified (with a possible extension if both parties agree), the possibility of an interim period during which safeguards would not apply was eliminated by the last sentence of Paragraph 40. Thus, as indicated by the Inspector General in 8 OR 39, it was the intent of the Committee that the Agency would become responsible for applying safeguards the moment the agreement with a state came into force even if the subsidiary arrangements had not yet entered into force. While the character of safeguards, and, in particular, inspections, might well differ when subsidiary arrangements are not yet in force, it is clear that such inspections are possible and were foreseen by the Committee.

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## INVENTORY

## Paragraph 41

Background And Issues

The elements of Paragraph 41 appeared first in the Director General's suggestions in Doc 3, which referred, however, to "one inventory of all safeguarded nuclear material in the state."

During the initial discussion of the provision, Canada referred to the difficulties associated with maintaining separate inventories of materials supplied to each state under various supply or project agreements. Canada thought that agreements under the NPT presented an ideal opportunity for optimizing the accounting procedure by adopting the recommendation of the IAEA's consultants that a single inventory be maintained, irrespective of the origin of the materials. In light of Paragraph 14, however, Canada felt that provisions would need to be made to cover the additional undertaking, required by certain suppliers, that material would be used exclusively for peaceful purposes.

Japan agreed with the Canadian concept of a single inventory as did the United States, which also agreed to the need for applying the provisions of Paragraph 14. The United States said that a state should be obliged to show that material used for military purposes not prohibited by the NPT had not been received under an agreement stipulating that it be used for peaceful purposes. The United States later elaborated its views, pointing out that materials need not be labeled according to their origin nor be separated physically on that basis; the IAEA would be required only to know at all times that, of the total inventory in a state, so many kilograms could be imputed to imports from country A and so many from country B.

Analysis

The Director General's later formulation in 10 Doc 62, was similar to the first sentence in the final version of Paragraph 41, the differences being the use of the word "single" and the omission of the phrases "under the Agreement" and "irrespective of its origin".

During the discussion, the replacement of "single" by "unified" and the addition of "irrespective of its origin" were suggested by Canada (55 OR 39). The last sentence of the paragraph was added at the initiative of Belgium (Doc 66) with minor editing by the Fed. Rep. of Germany (86 OR 39).

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Much of the discussion, however, dealt with the question of whether nuclear material already in use in a state in non-explosive military activities or material in exempted peaceful uses should be included in the initial inventory.

In response to a question by Austria (39 OR 39) concerning material which would be exempted because of its use (per Paragraph 36), the Inspector General gave his provisional opinion, subject to further study, that it would be best if all nuclear material in the state was included in the initial inventory, with exemptions granted later by agreement between the IAEA and the state (40 OR 39).

Switzerland called attention (44 OR 39) to the provision in Part I (Paragraph 14) concerning the non-application of safeguards to nuclear material in non-prohibited military activities and observed that if such material was not included in the initial inventory, a loophole might be created.

Canada pointed out (56 OR 39) that states were already obligated to provide the IAEA with information concerning nuclear material in nonexplosive military uses (per Paragraph 13(b)) and that such information, as well as that regarding material in exempted uses, might be provided along with the initial inventory.

The United Kingdom (60 OR 39) had misgivings about the state declaring nuclear material in non-peaceful activities and saw difficulties in the state obtaining information retrospectively on nuclear material already being used in a variety of non-nuclear uses. The United Kingdom's view was that the exemption and non-applicability provisions should apply only from the date of entry into force of the agreement and should not be retroactive.

India agreed with the United Kingdom's position (63 OR 39), but Hungary thought that if the United Kingdom approach was adopted, it would give rise to suspicions and a general undermining of confidence; while it might be difficult, it would serve the interests of both the state and the IAEA for the state to provide information on a retroactive basis (66 OR 39).

Canada did not dispute the difficulty in providing information retrospectively, but pointed out that permitting the state to be able to take unilateral decisions before entry into force of the agreement would be contrary to the objective of the NPT and of the agreement (72 OR 39).

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Finland argued (73 OR 39) that the subject matter of nuclear material in non-prohibited military uses (Paragraph 14) must be addressed in the initial inventory in some way; to make that clear, the words "under the agreement" could be inserted after "subject to safeguards" in the first sentence of the paragraph under discussion.

India thought it might be stipulated that states must also initially report on material in uses not subject to safeguards, noting that Paragraph 14 applied only after entry into force of the agreement (76 OR 39).

#### Interpretation

It is clear from the discussions and particularly from the Inspector General's statement (81 OR 39) that the IAEA should be informed about material in non-explosive military uses under the minimum reporting requirements of Paragraph 14. The Inspector General also saw no difficulty in the state obtaining information concerning material already in use in exempt peaceful activities, noting that operators of such processes were careful in keeping such records.

The phrase "subject to safeguards under the Agreement" must be read in the context of Paragraphs 1 and 2, as well as Paragraph 14 and Paragraphs 36 and 37. The procedure called for in Paragraph 14 (a) should be followed at the time of the submission of the initial report, if any nuclear material is then being used in a non-proscribed military activity. Similarly, the requests by the state for exemption of material already in the use or form specified in Paragraph 36 should be made at the time of submission of the initial report.

With respect to how the "unified" inventory is to be established and maintained, the early suggestion by the United States was not opposed. Under that procedure, there need not be physical separation or identification of material imported from different states, but only that so much of the total inventory is to be imputed to imports from each state.

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## DESIGN INFORMATION; GENERAL

Paragraphs 42 Through 45

Background And Issues

The portions of INFCIRC/153 dealing with the examination of design information rest in part on Article XII.A.1 of the Statute, which states in part:

"1. To examine the design of specialized equipment and facilities...and to approve it only from the viewpoint of assuring that it will not further any military purpose...and...will permit effective application of the safeguards..."

This statutory provision is reflected in Paragraph 30 of INFCIRC/66/Rev.2 which provides that the Agency "shall review the design of principal nuclear facilities, for the sole purpose of satisfying itself that a facility will permit the effective application of safeguards." It is interesting to note that, even at this earlier stage in safeguards development, the explicit reference of the Statute to the "approval of design" had been omitted, and the Agency's ability to influence design was thus gained indirectly, through its opportunity to conclude that the design of a particular facility offered for safeguards would not permit effective application.

The Secretariat's original proposal for INFCIRC/153 (Part II, Doc 3, Explanatory Note C) took a further step away from the explicit right to approve design, observing that "the main purpose of the design review is to obtain sufficient information about the facility to make possible the application of safeguards..." Paragraph 7, Part II, Doc 3, developed this theme in greater detail, suggesting that the design information "would enable the Agency...:

- (a) Define material balance areas...
- (b) Establish procedures...for taking a physical inventory
- (c) Establish the recording and reporting requirements...
- (d) Select appropriate containment and surveillance methods...
- (e) Establish inspection requirements...."

Thus, the concept, as suggested by the Secretariat, had become not whether the Agency could effectively apply safeguards, but how the Agency would do so.

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Even this diluted view of the Agency's review rights was challenged during the initial discussions, when the United Kingdom (23 OR 25) objected to the use of the word "review" because it implied that the IAEA could reject a proposed design. Paragraph 30 of INFCIRC/66/Rev.2 was pointed to by the United Kingdom as tending to support that interpretation; the word "examination" was therefore proposed to be substituted for "review." The Fed. Rep. of Germany (33 OR 25) and the United States (26 OR 25) supported that proposal, and subsequent drafts of the design information sections no longer employed the term "design review." The significance of this change for the Agency's right of approval of design information is discussed in the analysis section of this topic.

As a basis for the detailed discussion of the design information paragraphs of Part II of INFCIRC/153, the Committee had before it the Secretariat's proposals of 11-13 Doc 62, which also appeared in 11-13 Doc 62/Rev.1. Paragraph 11 was a general statement of the obligation to provide design information, including information on the state's system of accounting and control, and a consensus was reached that this paragraph was unnecessary in view of provisions already adopted, such as Paragraph 8 of Part I.

The remainder of the discussion on these paragraphs involved no fundamental issues, since these paragraphs are, in fact, largely concerned with the scope, content, and timing of the design information to be provided to the Agency, rather than the more controversial question of how this information was to be dealt with. The question which perhaps generated the greatest amount of discussion was when design information was to be submitted for a new facility, and whether any deadline should be established (31-33 OR 25). The Secretariat's original proposal in Doc 3, which was retained in 12 Doc 62, was that the relevant design information should be submitted not later than six months before the introduction of nuclear material in a new facility.

The Fed. Rep. of Germany proposed that this deadline be eliminated (Doc 83), and that the requirement be simply that design information should be provided "as early as possible." There was a general consensus that the explicit six month deadline was unnecessary, but the Committee adopted the suggestion of the United States that the paragraph states explicitly that design information was to be submitted "as early as possible before nuclear material is introduced into a new facility." Thus, the Committee found the specification of a quantitative time limit to be unnecessary, but chose to leave no uncertainty that design information for a new facility must be provided before nuclear material is introduced into that facility. It should be noted that by eliminating the proposed six month deadline, and adopting

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instead a requirement for the provision of design information "as early as possible" the appropriate time for providing such information may well be earlier than six months before the introduction of nuclear material.

Another interesting result of the discussion of Paragraph 42 was the deletion of any reference to the reasons for the provision of design information. The Secretariat's draft had indicated that the information would be provided to enable the Agency and the state "to agree on records and reports and other safeguards matters...." By adopting the suggestion of the United States (108 OR 39) to eliminate any reference to the reasons for providing design information, the design information is, thus, available "to ensure the effective implementation of safeguards," as provided by Paragraph 8 of Part I.

While a number of other wording changes were adopted in these paragraphs, no other significant issues were presented.

Analysis

Perhaps the most significant policy issue presented by the discussion of these paragraphs, even though relatively little discussion took place, was whether the design information is to be reviewed with a view toward its approval, or at least with a view toward a determination by the Agency as to whether the design is such as to allow the effective application of safeguards.

While the discussion, as reflected in the record, is brief, there is no doubt that the Committee recognized that the fact that these safeguards were to apply to NPT parties created a significantly different situation than that which prevailed when a state offered to place only specific facilities under safeguards, whether as a result of its bilateral understandings or otherwise. Under the NPT, a Treaty party was obliged to place all of its peaceful facilities under safeguards, and might conceivably be viewed as in violation of the Treaty if it did not allow the Agency to apply at all such facilities the procedures which were determined to be appropriate for the purpose. Moreover, it was apparent that many existing facilities, the design of which was already frozen, would, by virtue of the Treaty, have to come under safeguards. Thus, although not explicitly stated, the view was that even facilities which might not be well designed from the standpoint of facilitating safeguards, could be effectively safeguarded, provided the Agency was permitted to apply adequate verification procedures, including inspection. This interpretation is entirely consistent with the general approach of INFCIRC/153 of providing increasing levels of safeguards activity, as

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necessary to enable the Agency to meet its responsibilities under relevant safeguards. Thus, while the agreements do not provide the Agency with an explicit opportunity to approve design, the Agency can take steps in the implementation of safeguards which would provide a strong incentive to states to design facilities so as to facilitate the effective application of safeguards.

Interpretation

Paragraphs 42-45 specify the scope and timing of design information to be provided to the Agency, pursuant to the general principle of Paragraph 8 of INFCIRC/153 that "only the minimum amount of information consistent with carrying out its responsibilities" shall be required. These paragraphs do not specify the reasons for the provision of design information, but the record is consistent with the interpretation that the Agency does not have an explicit right of approval of design from the standpoint of effective implementation of safeguards, but that it can and must take the design into account in determining the scope and level of its verification activities.

Paragraph 42 requires the provision of design information "as early as possible before" the introduction of nuclear material. Since no specific time deadline is specified in this paragraph, the time could be earlier or later than the six month period called for in an earlier draft, with the appropriate time being determined by all relevant circumstances, including the undertaking of the state to cooperate with the Agency.

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PURPOSES OF EXAMINATION OF DESIGN INFORMATION

Paragraph 46

Background And Issues

Following the initial discussion of the Secretariat's general proposals relating to design information which appeared in 7-9 Doc 3, the Secretariat's next draft reflected the separation of the paragraphs which define scope and timing of providing design information from the specification of the purpose of the design review. This purpose was covered by 14 Doc 62, which became, with certain changes, Paragraph 46 of INFCIRC/153.

Although a number of changes in the detailed specification of the purposes of examination of design information were made, the most extensive discussion related to the introductory sentence, which, in 14 Doc 62 states:

"The agreement should provide that the Agency shall use the design information for the following purposes, taking into account its consultations with the State:" (emphasis added) This latter phrase had replaced the phrase found in 9 Doc 3, Part II, "after consultation with the state," pursuant to a discussion on that occasion in which the Fed. Rep. of Germany suggested (35 OR 25) "in agreement with the State," while the United States pointed out that the IAEA should have the right to take independent decisions (39 OR 25), such decisions would be based upon a spirit of cooperation, suggested the wording "after taking into account in consultation with the State."

The discussion of this issue resumed when the Committee considered the detailed proposals of Doc 62 for Part II. Several formulations, ranging from "agreement" to "cooperation" to "consultation" were considered during this discussion, with the Fed. Rep. of Germany proposing the intermediate formulation of "cooperation" (1 Doc 86) which it acknowledged (12, 63 OR 41) would give the Agency the final decision in making the determination called for by Paragraph 46. This formulation was acceptable to a number of delegations, including the United States (61 OR 41), as a reasonable compromise between "agreement" and "consultation." However, the issue was finally resolved by an Australian proposal (Doc 97, Rev.1) which avoided all of these words by providing that "the design information shall be used for the following purposes," without reference to who is to use the information, or

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the character of the interaction between the user and the state. In introducing the proposal, Australia (1 OR 43) made it clear that it was the Agency who was to use the information. This was the language which appears in Paragraph 46.

Several other issues arose during the discussion of the detailed provisions of Paragraph 46. These included:

- Whether design information was intended to facilitate "safeguards" (as originally proposed in the Secretariat's text) or "verification," as proposed by the Fed. Rep. of Germany (Doc 86).

The German amendment was accepted, following an explanation by the United States (32 OR 41), that "safeguards" was a generic term for all measures to be taken by the IAEA and the state while "verification" meant more specifically the measures taken by the IAEA.

- Whether the criteria for the determination of material balance areas which appeared only in the commentary to the Secretariat's proposed text (14 Doc 62/Rev.1) for Paragraph 46(b) should be included in the text of the subparagraph. The Committee adopted the suggestion of the Fed. Rep. of Germany that these criteria be included in the text. The most significant of these criteria is (iv), which enables a state to request a "special" material balance area around a process step involving commercially sensitive information.
- Whether the reference to the "operator," which appeared at several places in the Secretariat's text as the party to be consulted or dealt with by the Agency should be replaced by references to "the State." The Committee agreed with India's suggestion (82 OR 41) that only the state should be mentioned in this paragraph.
- Whether the final sentence of Paragraph 46, (which provides that the results of the examination of the design information are to be included in the subsidiary arrangements) should be retained, and, if so, whether these results should be described as "the basis of" the subsidiary arrangements, as proposed by the Secretariat (14 Doc 62/Rev.1). After considerable discussion, the Committee decided to retain this sentence, but to delete the reference to the results forming the basis for the subsidiary arrangements. This deletion reflects only the evident fact that subsidiary arrangements cover many areas other than the results of the design review.

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Analysis

The final wording for the introductory sentence of Paragraph 46 tends to obscure the rather extensive debate over whether the Agency can reach its determinations of such matters as material balance areas, strategic points, and the like in "consultation" with the state, in "cooperation," or in "agreement." Indeed, on first reading of this sentence, it is not immediately clear who is to take these actions. The record clearly establishes, however, that it is the Agency which "uses" the design information to make these determinations, and that it is to do so in cooperation with the state, making a determined effort to reach agreement if possible. Moreover, a substantial majority of the delegates who spoke acknowledged that it was the Agency which was to have the final say in the event of inability to reach agreement. The conclusion that this was the understanding and intent of the Committee is strongly supported by the language of Paragraph 47 (adopted after Paragraph 46), which deals with the re-examination of design information, and which states in part that "...design information shall be re-examined in the light of changes...with a view to modifying the action the Agency has taken pursuant to Paragraph 46 above" (emphasis added).

While it is the Agency which makes the determinations called for by Paragraph 46 is thus conclusively established, it is, of course, necessary to review this paragraph in the context of the agreement as a whole. If the Agency should reach conclusions pursuant to Paragraph 46 to which the state objects strenuously, it is open to the state to seek resolution through the dispute procedures of Paragraphs 20-22. In that event, the Agency may take the actions provided for by Paragraphs 18 or 19, if it deems that the state's invocation of the dispute procedures is unacceptable. Thus, in this case as in many others, INFCIRC/153 provides an orderly progression of measures to ensure that the Agency can fulfill its verification obligation.

The only other issue of significance is that relating to establishment of a special material balance area to deal with commercially sensitive information. This provision was discussed separately in the key issues section of this report.

Interpretation

Under Paragraph 46, the Agency is expected to consult and cooperate closely with the state in the examination of the design information, making every effort to reach agreement on the determinations called for by this paragraph. In the event of inability to do so, however, it is the Agency's responsibility to make the final determination.

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## RE-EXAMINATION OF DESIGN INFORMATION

## Paragraph 47

Background And Issues

The Director General's proposals in Doc 62 did not include any provision comparable to Paragraph 47. A text corresponding to Paragraph 47 first appeared in 5 Doc 62/Mod.1. That text addressed modifications to a facility and the development of new safeguards methods and techniques, but also referred to the IAEA changing its actions pursuant to Paragraph 46, after consultation with the state.

Analysis

France and the Netherlands jointly proposed a much shorter text (Doc 94) which referred to changes in operating conditions or developments in safeguards technology, but limited the action to be taken to redetermining strategic points and material balance areas. (A companion proposal addressed modifications to the facility and was adopted in substance as Paragraph 45.)

Canada, in parallel with the proposal by France and the Netherlands, proposed (Doc 98) a paragraph addressing modifications to the facility and a separate paragraph addressing changes in operating conditions, developments in technology, or experience. The latter text is virtually identical to that appearing in Paragraph 47.

France announced (17 OR 42) that it could accept the Canadian proposal corresponding to Paragraph 7 if it was favored by others. The United States (18 OR 42) preferred the Canadian text because it included a reference to "experience". Hungary (20 OR 42), Poland (22 OR 42), Australia (24 OR 42), as well as the Fed. Rep. of Germany, India, and Sweden (27 OR 42), supported Canada's proposal. Only the United Kingdom spoke in favor of the proposal by France and the Netherlands.

It is clear that the addition of the word "experience" was an important change, and was so recognized, since it provided a mechanism for a change in material balance areas, strategic points, and the like, on the basis of safeguards experience alone, even without any change in facility design. Thus, this paragraph, particularly as amended, is an important element in the total structure designed to ensure that the safeguards applied under INFCIRC/153 would be dynamic in nature, changing as required to meet new conditions, including any evidence that safeguards were

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not effectively accomplishing their objective. Another important feature of Paragraph 47 is its confirmation, (through the use of the phrase "the action the Agency has taken pursuant to Paragraph 46") that it is the Agency which carries out the purposes of Paragraph 46, and makes the necessary determinations thereunder.

With only a minor change in the wording, suggested by India (35 OR 42), the Committee adopted the text of 2 Doc 98 for Paragraph 47.

Interpretation

Paragraph 47 is an important provision which ensures that the actions taken pursuant to Paragraph 46 may be reconsidered and changed if necessary, in light of changes in operating conditions, new developments in safeguards technology, or because of the experience by the Agency in carrying out its responsibilities.

Paragraph 47, together with Paragraph 45 (information concerning modifications to the facility), are important in assuring that the Agency's safeguards activities will be able to be adapted as required by the dynamic nature of the nuclear industry and its technology, including safeguards techniques. Most importantly, Paragraph 47 also permits the Agency to evaluate its experience and, on that basis, to have changes made in its actions for the facility.

## VERIFICATION OF DESIGN INFORMATION

## Paragraph 48

Background And Issues

The principle that facilities should be inspected, preferably before the introduction of nuclear material, in order to verify that they are constructed in accordance with the design information is incorporated in Paragraphs 51 and 52 of INFCIRC/66/Rev.2. The principle was a controversial one at the time, as reflected in the fact that the Agency's right to conduct such inspections is qualified by the term "if so provided in a safeguards agreement."

The Director General's suggestions in 38 Doc 62 for the list of functions of inspection included, as the first function, "the verification in connection with the examination of design information that the facility will permit and continues to permit the effective application of safeguards."

When the list of functions of inspection was first discussed (OR 48), Japan proposed amendments (Doc 117) to the Director General's list which reworded the first item to read: "To verify that the facility will permit effective application of safeguards in accordance with the examination of design information."

Italy (25 OR 48) took exception to the use of the word "verify" generally in the list of functions and specifically, in connection with the first item, pointing out that Part I provided for the state to supply information with respect to facilities, but did not provide for IAEA inspectors to verify the accuracy of such information on the spot. Italy suggested that such a function should be addressed separately and then inserted at the end of the section dealing with examination of design information.

The Fed. Rep. of Germany (31 OR 48), Canada (39 OR 48), and the United States (44 OR 48) encouraged Italy to elaborate its suggestion. Only the Soviet Union (55 OR 48) expressed a preference for retaining the item in question in the list of functions of inspections.

As this background indicates, three issues were involved:

- Whether the Agency should have the right and opportunity to conduct inspections before the application of safeguards; including even, and, if circumstances permit, before the introduction of nuclear material into a facility.

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- If so, how this right should be described. In this regard, it should be noted that the Secretariat's original formulation expressed the right in terms of verifying "that the facility will permit effective application of safeguards," rather than to verify that construction is in accordance with design," as provided for in 51 INFCIRC/66/REV.2 .
- Whether such a provision should appear in the design examination section of INFCIRC/153 or in the inspection section. While this latter question is one of form, it is indicative of the continuing sensitivity toward the inspection of facilities which may not yet contain nuclear material.

With regard to the first issue, while there was no suggestion that the Agency should be banned from the inspection of facilities not yet in operation, a proposal by Italy (Doc 125) would have made inspection subject to future, specific, case-by-case agreement by the state and the Agency. The same proposal by Italy called for the placement of any provision on this subject in the design examination section of INFCIRC/153.

It should be noted that the discussion of the question of inspection prior to operation took place as part of the discussion of the purposes of inspections, and not of the examination of design information. By this time, the Committee had already decided that design information was to be submitted in order to enable the Agency to establish its safeguards procedures, and not to determine whether design permitted the effective application of safeguards. Thus, the formulation originally proposed by the Secretariat in 38 Doc 62 was no longer consistent with the outcome of the discussion on the examination of design information. The same inconsistency was present in the Italian proposal (Doc 125) and in a proposal by Japan (38(a) Doc 117). However, Japan orally amended its proposal (2 OR 49) to include within the purposes of inspection "(a) To verify design information submitted to the Agency." At the same time, Japan noted (4 OR 49) that the placement of this provision in INFCIRC/153 was unimportant, but that it must appear somewhere. The Fed. Rep. of Germany also made it clear (31 OR 49) that the purpose of these activities was to verify that construction was in accordance with the design information provided to the Agency, but favored the placement of the provision as part of the section on design examination.

The final decision on design verification came at a later stage of the discussion, acting on a proposal by the Secretariat (2 Doc 129) that the provision calling for verification of design information be placed in the design information section of INFCIRC/153. This proposal provided for sending "officials to facilities...to

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verify the information provided..." and "to confirm that the actions to be taken by the Agency...will permit the effective application of safeguards." The Secretariat proposal also posed the issue, through bracketed language, of whether the verification of design information should extend "to locations of nuclear material outside of facilities." A similar proposal was submitted by Italy (Doc 130), in language virtually identical to that which became Paragraph 47. One feature of the Agency text was the reference to "officials" of the Agency, rather than "inspectors."

The Inspector General explained (35 OR 56) that this choice of language was designed to avoid a situation where inspectors could not be designated quickly enough to carry out the design verification promptly. The Committee objected to this, and favored the term "inspectors," as included in the Italian text, thus clarifying that the verification activities would have the character of inspections. The Committee also concluded that the extension of this verification activity to locations where nuclear material was to be employed outside of facilities was unnecessary. It was recognized that the impact of this omission would be dependent on whether a restrictive or expansive definition were adopted for facilities. In any case, it was pointed out, since design information would be submitted only for facilities, the Agency could not verify information which it did not receive. The final change made by the Committee was the adoption of the reference to Paragraph 46, stating the purpose for which design information was to be provided to the Agency.

#### Analysis

The placement of Paragraph 48 in the design information section of INFCIRC/153, coupled with the decision not to designate this verification activity as "inspections," suggests a continuing sensitivity to the inspection of facilities which are not yet in operation, and in which nuclear materials are not yet present. Despite this, there is no ambiguity in the provision calling for such verification, and the qualification of the corresponding provision of INFCIRC/66/Rev.2 -- that such visits are to take place only if explicitly provided for in agreements -- was eliminated. This provision illustrates an important principle: this is that while under INFCIRC/153 only nuclear materials are "subject" to safeguards, there are important instances (including that covered by Paragraph 48), where verification activities are extended to facilities. Thus, the character of the safeguards provided for by INFCIRC/153 must be judged by the document as a whole; in particular; its detailed, operative provisions, and cannot be ascertained simply from the general principles stated in Part I.

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Given the expansive definition adopted for "facilities," which includes "any location where nuclear material in amounts greater than one effective kilogram is customarily used," the omission from Paragraph 48 of the opportunity to verify design information at locations other than facilities is of little significance. This is particularly so since design information is not required to be submitted for locations other than facilities.

#### Interpretation

Paragraph 48 provides for the verification by Agency inspectors of facility design information provided to the Agency. No quantitative limit, and no explicit access limitations are placed on these verification activities.

IAEA personnel assigned to verify design information must be inspectors and therefore must be designated in accordance with the procedure specified in Paragraph 85, which provides for expedited completion of the procedures and designation of temporary inspectors for the purpose of implementing Paragraph 48.

Paragraph 87, which addresses the conduct of inspectors, also applies explicitly to inspectors engaged in implementing Paragraph 48. While Paragraph 48 is not mentioned in Paragraphs 88 and 89, which refer only to "inspections," it would be fair to conclude that their provisions also apply to such inspectors, as well. That conclusion is supported by the phrase "in cooperation with the State" in Paragraph 48.

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## INFORMATION IN RESPECT OF NUCLEAR MATERIAL OUTSIDE FACILITIES

Paragraphs 49 And 50

Background And Issues

The paragraphs dealing with design information (Paragraphs 42 through 48) refer throughout to "facilities" and their operative provisions apply only to "facilities." It was recognized during the discussions that, depending upon the definition adopted for "facility," some provision would have to be made for the submission to IAEA of information concerning nuclear material located elsewhere than in a "facility." Accordingly, the texts of Paragraphs 49 and 50 were developed in conjunction with the discussion of the definition of "facility."

Analysis

The first formulations for Paragraphs 49 and 50 appear as a proposal by the United States in Doc 127. Those texts contain the concepts which appear in the final versions, without some of the qualifying phrases, such as "customarily used" and "as applicable," in the introduction. The proposal also called for the submission of "other information relevant to the application of safeguards" and contained more detailed procedures and consequences, in connection with changes in information previously submitted, than appear in the final versions.

In the discussion of its proposal, the United States made several changes in the text orally, the most significant of which would have excluded nuclear material in actual transit from the requirements of the section (3 OR 56).

The United Kingdom (5 OR 56) suggested the use of the phrase "customarily used" in the introduction and Paragraph 50 and also suggested deletion of the sentence dealing with changes in the information previously submitted. The United States (10 OR 56) agreed to the insertion of the word "customarily." The Fed. Rep. of Germany (12 OR 56) agreed with the deletion of the sentence from its proposed position, as suggested by the United Kingdom, but suggested its contents be included in a sentence to appear at the end of Paragraph 49, to which the United States agreed (16 OR 56).

The Fed. Rep. of Germany (13 OR 56) also suggested changing the phrase "shall be used" in now Paragraph 50 to "may be used," to which the United States also agreed (23 OR 56).

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Following that discussion, the United States revised its proposed text (Doc 127/Mod.1). That text is the same and consists entirely of what is now Paragraph 49, omitting what is now Paragraph 50, the text of which had appeared verbatim in the earlier version proposed by the United States.

When the revised proposal was presented, the Fed. Rep. of Germany, the United Kingdom, South Africa, France, the Soviet Union, Australia, and Italy announced their respective acceptances of the proposal without further discussion (30 OR 58).

Austria (31 OR 58) asked whether Paragraph 49 applied to nuclear material in amounts less than one effective kilogram. The United States (32 OR 58) replied that, in practice, the locations referred to would probably use quantities less than one effective kilogram, but the paragraph was not directed exclusively at locations handling such amounts.

The Chairman said (33 OR 58) that he understood that the Committee was prepared to accept the formulations in Doc 127/Mod.1, as well as the second paragraph (now Paragraph 50) which had appeared in Doc 127. The Committee agreed.

#### Interpretation

The provisions of the two paragraphs apply to any quantity of nuclear material customarily used in any location other than one included in the definition of "facility" (Paragraph 106). The provisions do not apply to such material while it is in transit or in temporary storage at a casual location elsewhere than in a "facility." The Committee does not appear to have addressed specifically the measures to be taken with respect to nuclear material in transit or in the temporary storage, but those provisions, such as Paragraphs 59, 62, 68, and 72(b), which apply to all nuclear material subject to safeguards under the agreement would, by their own terms, apply to material in transit as well as material in fixed locations. ||

Changes in information previously provided are to be reported "timely," which is understood to mean as soon as possible and, if possible, in advance, in order for the safeguards procedures to be adjusted when necessary.

Since changes in information reported pursuant to Paragraph 49 constitute information as referred to in Paragraph 50, such reported changes may be also used for the purposes set out in subparagraphs (b) through (f) of Paragraph 46.

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## RECORDS SYSTEMS; GENERAL

Paragraphs 51 Through 55

Background And Issues

The initial suggestions by the Director General (Doc 3) included a brief paragraph which addressed records. That paragraph included the statements that the records need only provide the minimum information required by the IAEA and that the records required by prudent management practices were expected to be sufficient to satisfy safeguards requirements.

Analysis

The Director General's later more detailed suggestions for Part II (16-19 Doc 62) included all of the concepts (in much the same wording) as the final texts of Paragraphs 51 through 55. The text which corresponds to Paragraph 51 referred, however, to the state arranging for the operator to maintain the records.

When the Committee addressed this topic (38-59 OR 42) it considered an amendment by Norway (Doc 96) which deleted the reference to "operators" in the text for Paragraph 51 and called for the state to arrange that records are maintained.

The United Kingdom (39 OR 42) requested elucidation from the Secretariat concerning how the IAEA intended to use the usual accounting system for safeguards. In reply, the Acting Inspector General (45 OR 42) stated that it was intended to use the records of a facility to determine the book inventory and also to make use of the documents on inventory changes and the accounting records.

The United States (41 OR 42) accepted the amendment proposed by Norway, as did the Fed. Rep. of Germany (42 OR 42), which also suggested deleting the reference to material balance areas, since the records would concern them in any case.

Canada (43 OR 42) preferred to retain the reference to "operators," as did the United Kingdom (44 OR 42).

India (46 OR 42) supported Norway's amendment, since the important point was that records should exist, and thought it was not necessary to specify the "operator," particularly since that word had not been defined.

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The Netherlands also supported Norway's amendment (47 OR 42), as did Sweden (48 OR 42) which disagreed with the suggestion by the Fed. Rep. of Germany to delete the reference to material balance areas.

The Chairman then read out the text as it appears in Paragraph 51 and the Committee adopted that formulation.

In the discussion of the text in Doc 62 corresponding to Paragraph 52, the United Kingdom suggested (51 OR 42) that "arrangements" be qualified by the word "special" to indicate clearly that the arrangements concerned were ones which would be applied when records were not kept in one of the specified languages; otherwise, the wording would be ambiguous.

Japan was concerned (53 OR 42) that "special arrangements" might be somewhat vague and read out a formulation which is the same as the final text of Paragraph 52 (see OR 42/Corr.1) which the Committee accepted.

The text in Doc 62 corresponding to Paragraph 53 was accepted by the Committee without discussion (55 OR 42).

The text in Doc 62 corresponding to Paragraph 54 was amended by Egypt (57 OR 42) to insert in subparagraph (a) the phrase "subject to safeguards under the Agreement" and by Belgium (58 OR 42) to insert in subparagraph (b), the word "such." Thus amended, the Committee accepted the text without further discussion (59 OR 42).

The text (23 Doc 62) corresponding to Paragraph 55, however, did provoke discussion (67-78 OR 43). That text referred to "the system of measurements on which the records are based shall conform to generally recognized and up-to-date standards of quality." It omitted reference to "equivalent in quality to such standards."

Japan proposed an amendment (Doc 102) which was similar to the final text of Paragraph 55, except that it referred to "records of critical operational parameters for safeguards purposes" rather than "records used for the preparation of reports." Also, Japan's text did not include the phrase "latest international standards" but used the phrase "internationally accepted standards."

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In advocating its proposal, Japan pointed out (67 OR 43) the ambiguity of the phrase "generally recognized and up-to-date standards," as proposed in Doc 62. Japan said that the process by which laboratories compared the results of analyses and exchanged information on techniques ensured that their procedures were harmonious; the effect was to elevate those procedures to the status of internationally accepted standards. Japan's proposed formulation was also said to accommodate more easily the situation resulting from a future international convention which would formally establish standards. The phrase which would limit the types of records was advocated by Japan, in order to limit the measurements concerned to those which were important and to exclude those of less importance (68 OR 43).

Canada (69 OR 43) endorsed the part of the amendment proposed by Japan, beginning with "internationally accepted, etc.," but preferred that the "system of measurements" not be further defined. Turkey, Poland, the Fed. Rep. of Germany, the Soviet Union, and Finland supported Canada's position (70 OR 43).

Japan again argued (71 OR 43) for some limitation which would distinguish between those measurements in which high standards of accuracy had a direct bearing on safeguards and those ordinary measurements used for ordinary records; if the high standards were to be used for ordinary measurements, more elaborate and expensive instruments would be required.

Belgium felt (72 OR 43) it was not the business of the IAEA to impose any standards, but merely to inform states of what was internationally accepted.

India observed (73 OR 43) that what was internationally accepted was not, as a rule, the most up-to-date and therefore proposed the phrase "conform, etc." as it appears in the final text, except that the word "equal" was used rather than "equivalent."

The United States (74 OR 43) thought that Japan's argument merited careful attention and referred to the Inspector General's earlier indication that records could contain results of the operator's measurements which were of no interest to the IAEA. The substitution of "reports" for "records" was suggested by the United States as a possible means for identifying the measurements for which high quality was required.

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The Inspector General (75 OR 43) felt it unwise to substitute "reports" for "records" and suggested the formulation "records used for the preparation of reports." India, the Fed. Rep. of Germany, the United States, and Sweden endorsed that suggestion (76 OR 43).

The Chairman then read out a text as it appears in Paragraph 55 and the Committee accepted it (77-78 OR 43).

Interpretation

Paragraphs 51-55 are straightforward and non-controversial.

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## ACCOUNTING RECORDS

Paragraphs 56 And 57

Background And Issues

The initial suggestions by the Director General (Doc 3) do not specify the records (either accounting or operating) to be kept. The Director General's later suggestions (20-21 Doc 62/Rev.1) contained a section headed "Accounting Records," consisting of two paragraphs, whose wording was very close to that of Paragraph 56 and the first two sentences Paragraph 57.

Analysis

When the item was addressed by the Committee, the United Kingdom proposed (60 OR 42) two insignificant changes in the text of subparagraph (a) of the text for Paragraph 56, whereupon the entire paragraph was accepted (61 OR 42).

The Director General's proposed text for Paragraph 57 introduced the concept of "batch" and "source data," neither of which had yet been defined. Accordingly, the Committee deferred consideration of the text of the paragraph until those terms were defined. When the Committee next addressed the text, it considered a revised formulation by the Director General (in Doc 62/Rev.1) which was identical with the final text of Paragraph 57, except that the phrase "and that each batch of nuclear material shall be individually identified" appeared at the end of the second sentence. The United Kingdom suggested deleting that phrase and replacing it with the words "in each batch of nuclear material," and the Committee accepted the paragraph in the amended form.

The suggestion by the United Kingdom followed from its observation, during the preceding discussion of the definition of "batch," that frequently a batch would lose its identity once it entered a material balance area.

Interpretation

The final formulations of Paragraphs 56 and 57 are straightforward and required little discussion once definitions for "batch" (Paragraph 100) and "source data" (Paragraph 115) were adopted.

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## OPERATING RECORDS

## Paragraph 58

Background And Issues

The first proposed formulation for Paragraph 58 appeared in the Director General's suggestions for Part II (22 Doc 62). That text contained all of the elements, in much the same wording, as are found in the final text. The comment to the text in Doc 62 noted that the records specified would be particularly useful for the evaluation of significant amounts of material unaccounted for.

When the text was addressed by the Committee, it also had before it a proposed amendment by the United Kingdom (Doc 95) and one by Japan (Doc 100).

In presenting its amendment (Doc 95), the United Kingdom (13-14 OR 43) noted that only in the case of subparagraph (d) was a change of substance involved. The formulation in Doc 62 referred to ascertaining "the source and magnitude of unmeasured losses," while the formulation in Doc 95 referred to "the cause and magnitude of an accidental and unmeasured loss, if it should occur." The United Kingdom attributed great importance to its substitution of the word "cause" stating that its purpose was to ensure that "losses," and particularly accidental losses, were not used to introduce the outmoded concept of normal operating losses. It said that its amendment to the subparagraph was intended to stress the cause of a loss, whether the loss was accidental, unmeasured, or both.

The United States (15 OR 43) agreed with the intent of the amendment proposed by the United Kingdom and suggested changing the phrase in subparagraph (d) to "accidental or unmeasured." The United Kingdom agreed to that change (16 OR 43).

Italy (17 OR 43) found the entire amendment of the United Kingdom, as modified by the United States acceptable, but asked whether the United Kingdom would agree to including the comment in 22 Doc 62 (referring to the utility of such records for evaluation of material unaccounted for) in the introductory part of the paragraph.

Japan (18 OR 43) endorsed Italy's suggestion because it wished to be made clear that the sole purpose of the operating records, as far as the IAEA was concerned, was to enable its inspectors to

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evaluate significant amounts of material unaccounted for. (Japan's amendment in Doc 100, in fact, called for a sentence to that very effect to be added at the end of the paragraph.) Japan said that limitation should apply to the four categories of operating records listed in the subparagraphs.

With regard to Italy's proposal, the United States said (20 OR 43) there were broader reasons for the maintenance of the records specified other than solely for evaluating significant quantities of material unaccounted for, such as to determine the cause of a sudden change in the amounts of process losses in an industrial plant or the cause of an unexplained change in isotopic composition of a material (21 OR 43).

Hungary (22 OR 43) accepted the amendment of the United Kingdom, as modified by the United States and agreed with the United States on Italy's and Japan's suggestion. Hungary said (23 OR 43) that the impression should not be given that checking of operating records would be an exceptional event requiring excessive quantities of material unaccounted for as a justification; random checks for other purposes would also be useful.

The issue was thus posed: What was the purpose to be served by the operating records required to be maintained? Or, to put the question in the way it appeared to be debated, under what circumstances would the IAEA have access to the operating records?

#### Analysis

Canada (26 OR 43) said that, while operating records would be particularly useful for evaluating significant quantities of material unaccounted for, that was certainly not the only purpose for which they would be useful.

The United Kingdom (27 OR 43) thought that Italy's and Japan's suggestion regarding the utility of the records was important but it could be more suitably taken account of in Part I.

The Fed. Rep. of Germany (31-32 OR 43) thought Italy's and Japan's suggestion could be embodied elsewhere and noted that the operating records would need to be examined to determine whether, in fact, there was a significant amount of material unaccounted for.

India (33 OR 43) said that Italy's proposal was significant, but thought it should be omitted from the main provision because it would severely constrain the IAEA's access to the records.

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Sweden (36 OR 43) shared the concern of Japan and suggested that operators would probably oppose IAEA access to the full operating records.

In reply to a question by France, the Inspector General (38 OR 43) noted that operators would normally keep many records, other than the four categories specified, which would not need to be made available to the IAEA; the four specified categories were those of value for inspection purposes.

Finland (43 OR 43) thought that the limitation on the use of operating records, proposed by Italy and Japan, was unnecessary in light of Paragraph 8 and that it might emerge that the records would be useful for other safeguards activities unrelated to the determination of material unaccounted for.

The Fed. Rep. of Germany (51 OR 43), however, argued against the concept of routine examination of the four categories of operating records, to establish whether there was any material unaccounted for; that purpose should be served by accounting records and should be addressed in Paragraphs 56 and 57. On that basis, the Fed. Rep. of Germany supported the proposal of Italy and Japan concerning the limitation on the use by the IAEA of operating records.

Japan (53 OR 43) argued that there should be a clear distinction between information in operating records required for routine operating reports and that required only in special circumstances; both types of information should be defined precisely.

The Soviet Union (54 OR 43) opposed the limitation proposed by Italy and Japan, in light of the phrase "as appropriate" in the introduction of the text, which already imposed some limitation. Poland (24 OR 43) shared that view.

Hungary (55-57 OR 43) argued that the IAEA could not be expected to discharge its responsibilities completely unless it obtained all the information it required; to do so required access to all four categories of records.

The Fed. Rep. of Germany (58 OR 43) then suggested that the question raised by Japan on the purpose of examination by IAEA of operating records might be more appropriately addressed in the context of inspections; if that were agreeable, the United Kingdom's amendment, as modified, could be approved on the understanding that the comment appearing in Doc 62 (referring to the specified records being particularly useful, etc.) would be retained and understood in its literal sense.

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The United Kingdom (59 OR 43) observed that the paragraph under discussion intended merely to categorize the operating records required, without addressing the use to be made of them; the latter question should properly be addressed later.

The United States (60 OR 43) also thought that the question of the use of the records and the extent of their availability to IAEA could be postponed; any decision on the paragraph, which appeared to include a list of categories regarded by the Committee as complete, might be reviewed in light of the later discussion.

France (61 OR 43) agreed that the question of the use of the records should be deferred.

The Inspector General (62 OR 43) stressed that the comment appearing in Doc 62 meant exactly what it said: operating records would be useful for purposes other than for evaluating material unaccounted for. He referred to other provisions in Doc 62 which addressed the question of the use of records and reports.

Japan (63 OR 43) was willing to accept the United Kingdom's amendment, as modified, provided the Committee explicitly reserved the right to revert to the paragraph should the need to do so become apparent after the question of the use to be made of records had been discussed.

The Committee thereupon adopted the text proposed by the United Kingdom, as modified by the United States (with minor editorial changes, with the understanding suggested by Japan).

#### Interpretation

Paragraph 58 specifies the records which States are required to keep for safeguards purposes, and does not address the question of the Agency's access to these or other records.

The operating records specified in Paragraph 58 are, therefore, those which are required to be maintained for safeguards purposes, since they are the minimum necessary in support of safeguards. Operators may also maintain other operating records for their own purposes which can have importance for safeguards, to which the IAEA may obtain access under circumstances such as those addressed in Paragraph 69 and 77. Presumably, the state may, pursuant to Paragraph 76(d), seek arrangements under which the IAEA would not have access routinely to some of the operating records specified in Paragraph 58.

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## REPORTS SYSTEM; GENERAL

Paragraphs 59 Through 61

Background And Issues

The only issue which arose in the discussion of the general requirements of the reports system was the listing in Paragraph 61 of the categories of reports. The Director General's suggestions in Doc 3 and Doc 52 referred to three categories of reports: accounting, operating, and special. The final text omits reference to operating reports.

Analysis

In the earliest discussion (OR 28 and 29) the United Kingdom (61 OR 28) questioned the value of regular operating reports, except for reactors; it considered that accounting reports would be sufficient for reprocessing and fabrication plants. The Fed. Rep. of Germany (16 OR 29) suggested that operating reports should be submitted only upon specific request by IAEA, rather than routinely. Several other delegations agreed with the Fed. Rep. of Germany. Canada thought (26 OR 29) that the importance of routine operating reports had been over-estimated in the past and that such reports might be limited to those for specified facilities. The Inspector General acknowledged (39 OR 29) that the need for such reports varied among the types of facilities; they were essential for reactors and for other types of facilities and they would be a valuable supplement to routine accounting reports. Sweden (47 OR 29) agreed with the United Kingdom that routine operating reports should be required only for reactors.

When the Committee next addressed the subject of the reports system (OR 44) it had before it the Director General's suggested texts in 24 Doc 62/Rev.1 for Paragraphs 59, 60, and 61. The latter text corresponding to Paragraph 61 included operating reports among the categories; otherwise the texts of the paragraphs differed only slightly from the final texts. The texts of Paragraphs 59 and 60 were accepted by the Committee with some editing, the only significant one being that suggested by Denmark (2 OR 44) to replace the phrase, "within or outside of facilities" at the end of Paragraph 59, with "subject to safeguards thereunder." That suggestion was endorsed by several delegations without opposition.

Belgium introduced an amendment (Doc 104) to the text for Paragraph 61, which deleted the reference to operating reports. Its view (13 OR 44) was that the inventory change reports (Paragraph 64) should be accompanied by explanatory notes, based on operating records, together with forecasts of inventory changes; the latter could not be included in an operating report.

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The United States (15 OR 44) endorsed the amendment by Belgium and the Committee agreed to defer further consideration of the text until after discussion of the paragraph dealing with the details of the various reports required. After that discussion, particularly the adoption of the text for Paragraph 64, the Committee approved the text of Paragraph 61, without the reference to operating reports.

Although not mentioned explicitly in the debates, it is clear that the opposition to a requirement for operating reports (and the use of operating records) was based upon concern for the protection of sensitive and proprietary information.

#### Interpretation

Paragraph 59 applies to all nuclear material subject to safeguards, including that located outside of facilities. As a practical matter, however, many of the requirements in Paragraphs 60-69 apply only to material located in material balance areas.

While such areas may be in or outside a facility (as specified in Paragraph 110), the areas in which material is in temporary storage or in transit may not meet the requirements of Paragraph 110 for a material balance area. In that case, only the special reports called for in Paragraph 68 might be applicable.

The omission of operating reports and their substitution by inventory change reports as specified in Paragraph 64, appears to have satisfied the concern regarding sensitive information while, at the same time, providing the IAEA with the information it requires.

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## ACCOUNTING REPORTS

Paragraphs 62 Through 67

Background And Issues

The Director General's initial suggestions (13-15 Doc 3, Part II) included four short paragraphs, addressing in a general way the initial report, routine accounting reports, routine operating reports, and special reports.

The Secretariat's proposal for accounting reports (13 Doc 3) envisioned three types of such reports: inventory change reports; book inventory reports; and physical inventory reports.

In the first discussions (58-64 OR 28), the United Kingdom spoke in favor of reports covering the whole fuel cycle to permit correlation of material flows between several material balance areas (MBA).

The United Kingdom also questioned the value of routine operating reports, except for reactors; accounting reports would suffice for other types of plants.

In a subsequent discussion (1-62 OR 29), several issues were identified and discussed for the guidance of the Secretariat in developing more detailed proposals. These issues included:

- The timing of report submission;
- The definition of a "defined change" in inventory;
- The need to summarize reporting effort; and
- Whether there should be an exemption from the inventory change reporting requirement for normal operating losses.

A new and much more detailed text for the paragraphs dealing with accounting reports was put forward by the Secretariat in 27-33 Doc 62/Rev.1. In general, this text contained most of the elements incorporated into Paragraphs 62-67 of INFCIRC/153.

The text corresponding to Paragraph 62 was very similar to the final text. The first sentence included the phrase "which is to be subject to safeguards" under the agreement. The second sentence called for the initial report to "be provided to the Agency within two weeks..." This two week period was modified as a result of discussion in the Committee to 30 days.

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The text of Paragraph 63 represents a consolidation of Paragraphs 28 and 33 of Doc 62/Rev.1. As in the case of the preceding paragraph, the principal change involved a relaxation of the reporting deadline; in the case of Paragraph 63, the two week deadline for inventory change reports was extended to 30 days. However, language was added "to require submission as soon as possible" within this deadline. An additional sentence was also adopted at Japanese initiative to provide that reports would be based on data available at the time of submission, and that these could be corrected later as necessary.

Paragraph 64 of INFCIRC/153 is derived from 29 Doc 62/Rev.1. Paragraph 64, however, contains a requirement that inventory change reports are to be accompanied by "concise notes" explaining (a) the inventory changes on the basis of the operating data, and (b) describing the anticipated operating program, particularly the taking of a physical inventory.

The inclusion of reference to "concise notes" was the result of Belgium's initiative, the intent of which was to substitute that concept for the category of routine operating reports with which many delegations had misgivings. Belgium proposed a text for now Paragraph 64 in Doc 104. That text was quite similar to the final text, except that the "as appropriate" phrase applied to the date of the change as well as the MBAs. Also, the provision for forecasts did not refer to subsidiary arrangements.

The U.S. had supported the concept of deleting operating reports in favor of explanatory notes when it had first been suggested by Belgium (13 OR 44). In studying the text in Doc 104, the United States said that, contrary to its original impression, the text proposed by Belgium did not clearly call for the explanatory notes to describe operations in facilities, but seemed to confine the explanations only to inventory changes. Moreover, the reference to forecasts spoke only of changes and did not seem to include such items as physical inventories, campaigns, and reactor shut-downs for refueling which were imperative to be included.

A number of variations on the Belgium proposal were proposed and discussed at some length, with the general purpose of ensuring that the Agency would receive adequate information on anticipated operations to allow it to plan its safeguards activities. The wording of Paragraph 64 was adopted after a final modification which called for the content of the "concise notes" describing the anticipated operational program to be "as specified in the Subsidiary Arrangements."

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Paragraph 65 is based on the Secretariat's proposal in 30 Doc 62/Rev.1. The final text represents an expansion from the Agency's brief version, proposed by the Fed. Rep. of Germany in Doc 105, designed to allow the consolidation of small changes, such as those resulting from analytic samples, into a single entry. Despite considerable discussion, no basic issues were raised and the text proposed by the Fed. Rep. of Germany was adopted after an addition, similar to that in Paragraph 64, which provided that the consolidation of small changes would be accomplished "as specified in the Subsidiary Arrangements."

Paragraph 66, based on 31 Doc 62/Rev.1, represents an interesting innovation which calls on the Agency to submit a semi-annual statement to the state of the book inventory of nuclear material which the Agency is carrying as subject to safeguards, on the basis of the inventory change reports submitted by the state. It should be noted that the statements contemplated by this section do not constitute safeguards findings or judgments by the Agency as to whether nuclear material subject to safeguards has been appropriately accounted for. Rather, these are bookkeeping reports, designed to ensure conformity in record keeping on the part of the state and the Agency. The Agency's obligation to provide the state with its safeguards conclusion is set forth in Paragraph 90 of INFCIRC/153. The text of Paragraph 66 is essentially the same as that proposed by the Secretariat, except that the statements are to be provided by the Agency semi-annually, rather than simply periodically.

The text corresponding to Paragraph 67 proposed by the Director General in 32 Doc 62/Rev.1 is very close to the final text omitting only the phrase in the introduction "unless otherwise agreed by the Agency and the State". Also, that text refers to entries to be "in consolidated form."

#### Analysis

Despite considerable discussion, no important issues of principle arose in the development of the provisions for accounting reports. Even the omission for the requirement of operating reports was essentially a question of form rather than substance, since the "concise notes" called for by Paragraph 64 are in effect operating reports with a different name.

#### Interpretation

The provisions for accounting reports of Paragraphs 62-67 are straightforward and prescribe the general outlines of a system of accounting reports which are to be specified in further detail in subsidiary arrangements.

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## SPECIAL REPORTS

## Paragraph 68

Background And Issues

The text corresponding to Paragraph 68 proposed by the Director General in 35 Doc 62/Rev.1 contains the basic concepts, in less elaborate form, which appear in the final text. It refers, in subparagraph (a) to "damage"-to nuclear material, as well as to its loss.

When the topic was discussed by the Committee (51-62 OR 46), it had before it an amendment proposed by Japan (Doc 108) and one by Norway (Doc 112).

Japan's amendment for subparagraph (a) omitted reference to "an unusual incident" and replaced it with "if [the state] has reason to believe that there is actual or potential loss." No reference was made to damage to nuclear material. Losses to be reported were limited to an amount beyond that to be specified in the subsidiary arrangements. The text proposed by Japan for subparagraph (b) is very close to the final text, the principal difference being that the final text retained the concept of an "unusual incident or circumstances" as a trigger for a special report.

Norway's amendment differed from the Director General's text much less than did Japan's, consisting primarily of a rearrangement of that text. Norway's text, for example, referred to material having "escaped from its containment," as did the Director General's text. In the discussion, Norway observed that the reasons behind that wording were not fully understood.

Much of the discussion of the Secretariat's original proposal and the amendments proposed by Japan and Norway centered around the question of whether, and what kind, of quantitative threshold should be adopted for losses above which a special report would be triggered. It was recalled by Egypt (54 OR 46) that the Committee had previously been unable to agree that specified limits of material unaccounted for (MUF) should be established, beyond which safeguards questions would arise. The Inspector General explained, however (59 OR 46), that the adoption of a loss quantity above which a special report would be triggered was different from the specification of a MUF which would be acceptable to the Agency. In the former case, the Agency would still be concerned with, and would seek to clarify, MUFs below the level of those which would trigger a special report.

When discussion resumed (1-52 OR 47), the Committee had before it an amendment proposed jointly by Japan and Norway (Doc 115). The text for the introduction and subparagraph (a) was very close to

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the final text. The word "unexpectedly," however, did not appear in subparagraph (b) and the last phrase in that text had been changed to read "to the extent that such change can significantly affect the functions of the containment." Subparagraph (b) also referred to certain earlier provisions relating to design information, as criteria for changes in containment to be specially reported.

This proposal was modified in the course of discussion to the form in which it appears in INFCIRC/153. As in the case of the earlier discussion, the most significant issue dealt with was that of specifying the threshold above which a special report would be required. Several attempts were made by the Inspector General to explain how these threshold quantities might be established (5 OR 47; 16 OR 47; 26 OR 47), the thrust of which was that the limits would depend on the kind of material and the nature of the facilities or activities involved, but that, in general, these limits would represent "extraordinary losses that were not part of the processes of a plant."

#### Analysis

Despite considerable redrafting, no basic issues were presented in the development of Paragraph 68. The discussion makes it clear that the limits, to be specified in subsidiary arrangements, above which any actual or potential losses are to occasion a special report are not limits of acceptable MUF, and that the Agency will endeavor to explain MUF below this limit. This approach is consistent with that taken in INFCIRC/153 as a whole, in which "acceptable" limits of MUF, "normal" operating losses, or similar concepts were avoided.

This is in contrast to INFCIRC/66/Rev.2, in which several provisions, including Paragraph 42(b), which provides for special reports, contain concepts such as normal operating and handling losses that have been accepted by the Agency as characteristic of the facility. This concept was rejected in INFCIRC/153, since it could allow the accumulation, over a period of time, of sizeable amounts of material which, as a practical matter, would be free of any inquiry on the part of the Agency.

#### Interpretation

Paragraph 68 obligates the State to make special reports to the Agency in the event of any unusual incident or circumstances involving a possible loss of nuclear material exceeding the limits specified in subsidiary arrangements or an unexpected change in containment such that unauthorized removal of nuclear material

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has become possible. Such reports would be in addition to the routine accounting reports and would be provided to the Agency without delay. The limits above which special reports are to be provided do not represent "characteristic" or "normal" losses which would be acceptable to the Agency, and the Agency remains free to satisfy itself as to the reason for losses or MUF below these limits, even though they may occasion no special report.

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AMPLIFICATION AND CLARIFICATION OF REPORTS

Paragraph 69

Background And Issues

The Director General's initial suggestions (Doc 3) did not contain any reference to the subject matter of Paragraph 69. When the general topic of the Director General's suggestions concerning reporting requirements were discussed, the Fed. Rep. of Germany (18 OR 29) proposed adding a paragraph along the lines of Paragraph 44 in INFCIRC/66/Rev.2 to read "at the Agency's request," etc., similar to the wording as it appears in Paragraph 69. There was no discussion of that proposal at that time.

When the Director General's detailed suggestions for Part II, Doc 62 appeared, a paragraph as proposed by the Fed. Rep. of Germany was included (26 Doc 62/Rev.1). The record does not show that the Committee addressed that paragraph at any time thereafter. Nevertheless, the paragraph appears in Doc 92/Rev.1, which was the Director General's compilation of material which the Committee had formulated by November 6, 1970.

Interpretation

Paragraph 69 is straightforward and applies to any and all reports submitted by the state.

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## INSPECTIONS; GENERAL

## Paragraph 70

Background And Issues

The Director General's first suggestions (Doc 3) did not include any general paragraph relating to inspections and the first discussions of the subject (OR 30 and OR 31) did not specifically address the question of the general rights of the IAEA to carry out inspections. Neither the Director General's formulations in Doc 3 nor an amendment proposed by the Fed. Rep. of Germany (25 OR 30) made it clear who was to carry out the inspections. Canada (37 OR 30) suggested that the wording should make it clear that the IAEA would carry them out.

The Director General's detailed suggestions for Part II (Doc 62) included a paragraph corresponding to Paragraph 70 (Paragraph 37), which referred to the IAEA having the "right to inspect nuclear material and facilities containing or to contain nuclear material..."

Japan introduced an amendment (Doc 116) to that wording which omitted any reference to "facilities." The amendment referred only to the IAEA's right to inspect nuclear material and its flow. The amendment also limited the carrying out of such inspections "to the extent specified" in the referenced paragraphs and "other relevant paragraphs" of the agreement.

South Africa also introduced an amendment (Doc 122) to Japan's amendment, proposing to add two sentences which (a) made the right of access for inspections subject to specific limitations for health, safety, and security "or such other matters as may have been prescribed by the law of the State" and (b) permit the State to suspend such access temporarily, for such reasons, if access had already been "granted."

There was, of course, never any serious issue as to whether or not the Agency had the right to conduct inspections, and the primary purpose of Paragraph 70 is simply to serve as an introduction for the detailed provisions relating to inspections which follow. Nevertheless, the discussion of Paragraph 70 was of significance in that it included a proposal (Doc 116) which would have restricted the Agency's right of inspection to "nuclear material and its flow," omitting the right of inspection of facilities. This proposed restriction was withdrawn by its sponsor, Japan, even before any discussion. The final wording refers only to "the right to make inspections as provided for in Paragraphs 71-82." Thus, the nature of the inspections which the Agency is authorized to make can be determined only from the detailed provisions which

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define inspection access and purpose. These provisions clearly allow the inspection of facilities in appropriate circumstances. The Inspector General confirmed this fact (15 OR 48), noting that the right "to conduct inspections would solve the problem, provided that paragraphs...listed in full the purpose of conducting inspections, and thus enable the Agency to discharge its functions."

Analysis

Paragraph 70 is simply an introduction to the operative provisions dealing with the purposes, scope, and access of inspections which follow. The most significant issue dealt with in its development is whether the Agency's right to conduct inspections was to be limited to "nuclear materials" or extended to facilities. The withdrawal of a proposal to limit inspection to materials establishes that no such limit was intended or adopted, and the Agency's rights to inspect facilities can be found in subsequent paragraphs, as well as in Paragraph 48, which provides for the verification of design information.

Interpretation

The IAEA has the right to carry out inspections for the purposes, within the scope, and with access, as set forth in the succeeding specified paragraphs. The Agency's right of inspection is not limited to the inspection of nuclear materials, and extends to facilities, to the extent provided for in the subsequent paragraphs.

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## PURPOSE OF INSPECTIONS

Paragraphs 71 Through 73

Background And Issues

INFCIRC 66/Rev.2 contained only a simple provision (Paragraph 46) with respect to the purpose of safeguards, stating that this was: "to verify compliance with safeguards agreements and to assist States in such compliance and in resolving any questions arising out of implementation of safeguards."

The Director General's initial suggestions for Part II, in paragraph 18 of Doc 3, point out the desirability of listing the principal "functions" of inspections and goes on to list six such functions. This list was expanded on in the Secretariat's proposals (Doc 62 and Doc 62/Rev.1) which provided the basis of the extensive Board discussion (OR's 30, 31, 47, 48, 49, 52, 57, 58) of what were to become Paragraphs 71 to 73. Extensive changes were made in the Secretariat's list in Doc 62, some of which were primarily matters of form and arrangement, while others were substantive. In the first category, for example, the function of verifying that construction was in accordance with design was omitted, since the treatment of inspections during construction was moved from the inspection section of INFCIRC/153 to the design review section, becoming Paragraph 48. Also in the category of rearrangement, but of greater substance, was the ultimate decision to separate what the Secretariat had identified (38 Doc 62/Rev.1) as "functions" into two categories: "purposes" and "scope". Those items which were retained as "purposes," or objectives, appear in Paragraphs 71 to 73, while those which were, in fact, only inspection functions or activities designed to accomplish these purposes or objectives appear in Paragraphs 74 and 75.

A further important rearrangement was the further breakdown of the list of purposes into those applicable specifically to ad hoc inspections, routine inspections, and special inspections, designated as Paragraphs 71, 72, and 73, respectively. In the discussion of these Paragraphs which follows, these rearrangements will not be dealt with in detail, in order to concentrate attention on the substantive issues which were dealt with in the sections which finally became Paragraphs 71 to 73.

Two of the issues of substantive significance arose in the discussion of the original Secretariat proposal (18 Doc 3). These were:

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- The use of the term "audit," which appeared in the original Secretariat proposal and was omitted thereafter on the basis of the discussion. This issue is of some significance in view of the occasional tendency to use the word "audit" to characterize the nature of inspection activities. Such use was objected to by several delegations, in particular the United Kingdom (23 OR 30) and the United States (31 OR 30) as being too narrow, or implying too cursory an activity to be properly applied to the broader concept of control which characterizes safeguards inspections, and it was thereafter omitted.
- Of particular importance, the removal of the limitation which appeared in Doc 3 that only those records "on which reports are based" were subject to inspection. This was objected to by the Soviet Union (36 OR 30) and not thereafter introduced.

The remainder of the discussion was based upon the revised Secretariat proposal in 38 Doc 62/Rev.1, and included the following issues:

- The substantial broadening of the initial proposal (38(b) Doc 62/Rev.1) of "verification of the initial inventory" to the form which emerged in Paragraph 71 which calls for (a) verifying "the information" contained in the initial inventory report, and (b) identifying and verifying "changes in the situation" which occur thereafter (until ad hoc inspections are replaced by routine ones). The need for subparagraph 71(b) was first raised by the United States (9, 11 OR 57), who pointed out that the proposal of Paragraph 40(a) Doc 113, introduced by Belgium, Japan, and the Netherlands, failed to accomplish a fundamental purpose of what later came to be termed ad hoc inspections, which was "to bridge the gap" in time between the entry into force of the agreement and the conclusion of subsidiary arrangements. Thus, the Agency had to be able to verify changes in the situation since the original report. After some discussion of an appropriate wording, this point was supported by the United Kingdom, France, Belgium, Australia, the Fed. Rep. of Germany, Canada, Japan and the Soviet Union, and was accepted by the Committee. It is worth noting that in the course of this discussion, the original Australian suggestion (15 OR 57) for the wording that led to Paragraph 71(b) stated the purpose was to "identify and if possible verify changes..." The qualifying phrase "if possible" was omitted on the suggestion of Canada, which was accepted by Australia and others.

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- The transfer to Paragraph 71 from Paragraph 72 of subparagraph (c) (41 Doc 132). This subparagraph calls for inspections of materials to be transferred out of or into a state. By transferring this subparagraph to Paragraph 71, such inspections were made part of ad hoc inspections, rather than of routine inspections, whose purpose is defined by Paragraph 72. The reason for this change, as proposed and explained by the United States (24 OR 57) was to avoid having such shipment-related inspections charged against the inspection frequency (later inspection effort) allowed for routine inspections. Thus, ad hoc inspections include not only those conducted before a facility attachment comes into being, but those undertaken at any time for the purpose of verifying outgoing or incoming shipments. Accordingly, such inspections are not chargeable against or limited by routine inspection effort.

Of perhaps the greatest significance in the development of these paragraphs was the evolution of Paragraph 73, which establishes the purposes of special inspections. In its original form (38(f) Doc 62/Rev.1), this provision was confined to verifying reports on abnormal losses or the investigation of an incident that has given rise to a special report. This purpose was significantly broadened by the Secretariat's proposal, 42(d) Doc 129, reflecting the Committee's discussion of the earlier draft (38 Doc 62/Rev.1), and a Japanese amendment, Doc 117, which called for special inspections "to obtain additional information if the information obtained by means of routine inspections is insufficient to explain changes in the quantity and composition" of material subject to safeguards. This provision occasioned extensive discussion, leading to a proposed amendment by the United States (Doc 133) which treated the need for additional information, both when losses were in excess of normal limits and when they were within normal limits but could not be satisfactorily explained on the basis of information available from routine inspections. In addition, the Committee had before it a proposed Polish amendment (Doc 131) which specified special inspections to obtain additional information if the Agency is unable to obtain sufficient information to accomplish the purposes of routine inspections.

In the course of further extensive discussion of this proposal, it was recognized that the question of the purpose of special inspections was closely tied to that of access of such inspections and the procedures for instituting such inspections. Accordingly, the Committee first considered and agreed upon the provision for access for special inspections (76 INFCIRC/153),

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then returned to the question of purpose, having before it a proposal (Doc 138) developed jointly by Belgium, the Fed. Rep. of Germany, the United Kingdom, and the United States. This is the proposal which, with minor changes, became Paragraph 73. This proposal also included an additional paragraph which was to become Paragraph 77, which establishes the procedures to be followed in initiating special inspections.

The formulation in paragraph 42(b) of Doc 138 (ultimately Paragraph 73(b)) represents the broadest formulation that had been proposed as a purpose for special inspections; even broader than that of the Polish proposal, Doc 131, on which it was apparently largely modeled. In particular, this final formulation goes beyond Doc 131 in specifying explicitly that it is the Agency that is to judge the sufficiency of information obtained from routine inspections, and to authorize special inspections whenever the information otherwise available "is not adequate for the Agency to fulfill its responsibilities under the Agreement."

An important feature of the new provision, as explained by the United States in introducing it (10 OR 61), was the explicit linkage between the purpose set forth for special inspections and the procedure for instituting them. Clearly, Paragraph 73 represents a trade-off between a very broadly expressed purpose for special inspections, against a careful procedure for their initiation. This procedure (Paragraph 77) is dealt with later in this report.

Another interesting and important feature of the special inspection provision, which also ties in directly with Paragraph 77, is its delineation of two possible types of special inspections: those in which the inspection effort is to be additional to that of routine inspections, without any enlargement of inspection access; and those in which access, either to information or locations, is enlarged beyond that available in routine inspections. Clearly, it is the latter category of special inspections which are of the greater sensitivity, and which, accordingly attract the more restrictive initiating procedures, under Paragraph 77. As Paragraph 73 recognizes, of course, some special inspections may entail both increased effort and enlarged access.

In addition to the numerous changes in the identification of purposes outlined above, a significant change took place in the language by which these purposes are introduced. In the Secretariat's original proposal (38 Doc 62/Rev.1), it was indicated that inspections would be carried out "for the following main [functions]." By the use of the word "main," additional purposes, not specified in INFCIRC/153 could presumably have been cited by the Agency, and the list would, in effect, have become

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open-ended. The concept of "main" was dropped on the suggestion of Japan (Doc 117), with support from the United States (43 OR 48), despite reservation by some delegations. Thus, the inspection purposes enumerated in Paragraphs 71 to 73 are complete and definitive. No other purposes are authorized.

### Analysis

The evolution of Paragraphs 71 to 73 evidences a steady progression toward broader and more encompassing purposes or objectives for inspections, arrived at in most cases after extensive discussion and, frequently, the rejection of proposals for narrower interpretations. Of particular significance in this regard are:

- The explicit extension of ad hoc inspections to identify and verify changes after the initial report, and up to the time routine inspections commence. This extension was an essential element in establishing the principle, described earlier in this report, that ad hoc inspection authority should serve as an incentive for states to conclude acceptable subsidiary arrangements, and to give the Agency ample inspection authority should they fail to do so.
- The explicit broadening of reports verification to establish consistency not only with the records on which they are based, but with any records.
- The exceptionally broad purpose established for special inspections; not simply to deal with "special reports" which, of necessity, are submitted upon initiative of the state, but whenever the Agency considers it has inadequate information from routine inspections to fulfill its responsibilities. These responsibilities, of course, include, first and foremost, that of "verifying that...material is not diverted to nuclear explosives or other nuclear explosive devices".
- The explicit recognition, developed further in Paragraph 77, that special inspections may include enlarged access, as well as greater effort, than available under routine inspections.

### Interpretation

Paragraph 71, dealing with ad hoc inspections, provides for the right of the IAEA, at its sole discretion, to carry out inspections for the three purposes specified. Subparagraph (c) refers to Paragraph 93 which, in turn, provides for the state to request

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the IAEA to affix seals, in addition to the IAEA deciding to do so on its own. Subparagraphs (a) and (b) are applicable only during the interim period prior to the completion of subsidiary arrangements. Accordingly, access for inspections pursuant to those subparagraphs, as set forth in Paragraph 76, is not limited to strategic points. While ad hoc inspections for the purposes specified in Paragraph 71(a) and (b) are those conducted before the conclusion of the subsidiary arrangements, including the relevant facility attachment, ad hoc inspections conducted under Paragraph 71(c) may and customarily would be conducted after the conclusion of the relevant subsidiary arrangements, as ad hoc inspections then would not be charged against the maximum routine inspection effort. In this case, access is limited to the locations of shipment or receipt, identified pursuant to Paragraphs 92(c) and 95(c).

The records referred to are not limited to those upon which reports are based; this is confirmed by Paragraph 74(a). Subparagraph (b) explicitly applies to "all nuclear material subject to safeguards". Thus, failure by the state to provide design or other information needed to establish the existence and whereabouts of any nuclear material required to be safeguarded under the agreement would frustrate this provision. The use of the phrase "verify information" in Paragraph 72(c) should not be interpreted to be limited to only that information provided to the IAEA by the state. The discussion makes it clear that the IAEA can decide that one of the three specified situations might possibly exist and take any of the actions specified in Paragraph 74 (but only at strategic points or by use of records) to resolve the IAEA's concern, whether or not the state has shared that concern.

Paragraph 73 establishes that special inspections may take place for either or both of two purposes: the relatively narrow one, which can be triggered only by state action, of verifying the information in a special report or the other, an extremely broad one, based on the Agency's own determination, that information available from routine inspections is inadequate to enable the Agency to fulfill its responsibilities under the Agreement. Such inspections, however, must be initiated in accordance with the procedures laid down in Paragraph 77.

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## SCOPE OF INSPECTIONS

Paragraphs 74 And 75

Background And Issues

As explained in the preceding discussion of Paragraphs 71 to 73, the Secretariat's original enumeration of the "functions" of inspections, was separated, in the course of the Committee's discussions, into "purposes" of inspections and the means for accomplishing those purposes. Although the purposes of inspections were further divided into separate categories for ad hoc, routine, and special inspections, the inspection functions or activities themselves (which are captioned "scope of inspections" in INFCIRC/153, although this designation does not, in fact, appear in Paragraphs 74 and 75 themselves) are not categorized in this way. Thus, all of the inspection functions found in Paragraphs 74 and 75 may, in principle, be used in any of the three classes of inspections. This point was specifically and extensively considered in the Committee's discussions (35 OR 58, et seq), and a British proposal made therein to limit the coverage to routine inspection was ultimately rejected.

The Inspectors Document, in paragraph III.10, calls for inspectors to be permitted to carry out inspections in accordance with the pertinent agreements, which may include provisions for (a) examination of facilities and materials, (b) audit of reports and records, (c) verification of amounts of materials by physical inspection, measurement and sampling, and (d) examination and testing of measurement instruments.

INFCIRC/66/Rev.2, in paragraph 49, lists four activities which routine inspections may include. Those activities are similar to those noted above, except that the examination of facilities and a "check" of measuring instruments are limited to principal nuclear facilities; a "check of the operations carried out" at such facilities and at research and development facilities is also included.

The Director General's initial suggestions include (Part II 18 Doc 3) a list of activities of which several are similar to those in the Inspectors Document, and also a reference to the verification of inventory and flow of nuclear material, by independent measurements or other independent and objective methods, and the application of other surveillance methods such as instruments and seals or other devices.

The Inspector General (63 OR 48) explained that the term "other independent and objective methods" referred to methods not intended to measure exactly the quantity of material but rather to

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evaluate the physical inventory with some precision; in particular, they involved the so-called "finger-print method" based upon isotopic composition.

The Director General's detailed suggestions for Part II included (38 Doc 62/Rev.1) a list of "main functions" of inspections which made reference, among others, to the application of containment and surveillance methods and the verification of inventory and flow by direct observations, independent measurements or other independent and objective methods. As explained earlier, this list contained elements which later became part of Paragraphs 71-73, as well as of Paragraphs 74 and 75. In addition, paragraph 39 of Doc 62/Rev.1 covered the taking of samples and the installation of Agency safeguards instrumentation, which were later dealt with in Paragraph 75.

Following the initial discussions of Doc 62/Rev.1, the Director General submitted a revised proposal, Doc 129, paragraphs 43 and 44 of which were the direct basis for Paragraphs 74 and 75.

As in the case of Paragraphs 71 to 73, the development of Paragraphs 74 and 75 involved both changes in form and arrangement, and substantive changes. In regard to form and arrangement, Paragraph 74 generally includes more basic safeguards activities, almost at the level of general principles, while Paragraph 75 provides for relatively detailed activities which fall within one or more of the categories of activities found in Paragraph 74.

Among the more important substantive issues considered in the development of these paragraphs were the following:

- Subparagraph 74(d) clearly establishes that the Agency may install its own containment and surveillance equipment, but only as specified in subsidiary arrangements, as provided in Paragraph 75(d) and (e). Such direct application of Agency devices, as contrasted with observation of a state's devices, was clearly called for in 38(e) Doc 62/Rev.1, but a proposed Japanese amendment, Doc 117 raised doubt on this issue by providing only for verification of "the effectiveness of containment by direct observation of instruments, seals and other devices". Poland (25 OR 49) suggested the reference be reworded to read: "To verify the effectiveness of containment by the application and direct observation of instruments, seals and other devices." South Africa (45 OR 49) supported Poland's suggestion, particularly the reference to seals, but also proposed to insert the word "agreed" before "surveillance methods".

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- Subparagraph 74(a) reaffirms the important point that the Agency is entitled to examine all of the records which the state is required to keep, and not simply those on which reports were based. This issue was dealt with explicitly in the debate, with the United Kingdom suggesting (36 OR 58) that subparagraph (a) be worded: "Examine the records on which reports are based." The Fed. Rep. of Germany (39 OR 58) supported this proposal by the United Kingdom, but the United States (43 OR 58) saw no reason to exclude any records mentioned in the Paragraphs (51 through 58) which already specified the records to be kept, because if the IAEA was to place maximum reliance on the state's system, it must have access to the data used in that system. Austria (58 OR 58) and India (66 OR 58) favored leaving the formulation unchanged. The view that all records were to be open for Agency examination was accepted (77 OR 58).
- Subparagraph 74(e), which authorizes the Agency to "use other objective methods which have been demonstrated to be technically feasible", is of particular interest, since its origin makes it clear that it was intended to go beyond activities which constitute strictly the measurement or control of material, by including additional activities which may be of value to such measurement or control. The Agency's original formulation (43(e) Doc 129) made this clear by providing for "other objective methods, such as the making of correlations involving the isotopic and power production data." (Emphasis added) This example was deleted on the grounds noted by the United States (60 OR 58) that such correlations would, in fact, not be made during inspections, but in Agency headquarters, using data obtained during inspections. As a consequence of the Inspector General's explanation (61-62 OR 58) that the intent was to allow the provision to be broad enough to encompass future developments, such as "dynamic inventory taking in reprocessing plants", the example was deleted, on the understanding, proposed by several delegations, that the "other objective methods" would have to be technically proven.

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The first text in the format of Paragraph 75 was that proposed by the Director General in 44 Doc 129. That text contained elements of Paragraph 75, in somewhat different wording, the principal difference being references to the operator, rather than to the state. Also, subparagraphs (d) and (e) did not include references to the actions being subject to agreement and specification in subsidiary arrangements. Among the principal questions considered were:

- The omission of references to "operators" on the well-understood grounds cited by Spain (1-2 OR 59) that the Agreements were between the Agency and states, and could not impose obligations on operators who, under many economic systems, were legal entities independent of the state and the obligations of the agreement could only fall on the operator if the state decided to make him subject to them. The Fed. Rep. of Germany (4 OR 59) agreed with Spain and proposed an amendment to the Director General's text (Doc 136) incorporating Spain's proposal and other changes in wording, as well. Regarding the role of the operator, the Fed. Rep. of Germany noted that when an inspector accompanied by a representative of the state visited a facility, the inspector would, of course, deal with the operator, but that the agreement text should mention only the parties to it.
- Subparagraph 75(a) explicitly confirms the Agency's right to observe the treatment and analysis of samples. A Fed. Rep. of Germany proposal (44(a) Doc 136) to eliminate this function on the ground (26 OR 59) that it was implicitly part of the sampling procedure was considered and rejected.
- Subparagraph 75(e) establishes the Agency's right to make its instruments and devices tamper-indicating. However, the Agency's more explicit formulation in 44(d) Doc 129, that "equipment so installed may be tamper-resistant or tamper-indicating", was deleted, primarily on the basis of its being unnecessary, since the Agency could in any case incorporate these features in its own equipment (Belgium, 67 OR 59).
- Subparagraph 75(c) clearly establishes the Agency's right to secure additional measurements, samples, and calibrations, and to have its own standard samples analyzed,

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after considerable discussion and proposals for deletion. The discussion and the Chairman's announcement of the consensus (65 OR 59) also made it clear that 75(c) does not exclude arranging for analyses by an impartial referee or arbitrator.

Analysis

The issues dealt with in Paragraphs 74 and 75 were of a relatively detailed nature, in comparison with those of Paragraphs 71 to 73, and in general did not involve sharp differences. Of perhaps greatest significance was the establishment of the Agency's right to use its own equipment for measurement, containment or surveillance. It is of interest to note that the Agency's right to use its own equipment is not subject to agreement by the state, although appropriate arrangements must, of course, be made; but if the equipment is to be installed, this must be agreed and specified in the subsidiary arrangements. The final formulation replaced that proposed by the Fed. Rep. of Germany (44(d) Doc 136) that would have made both use and installation subject to agreement in the subsidiary arrangements.

Another point of particular significance, in view of the current interest in the use of techniques such as operational measurements for the safeguarding of reprocessing plants, is the authorization under Paragraph 74(e) to use "other objective methods", meaning methods other than those listed in Paragraph 74, which encompass the accountancy, containment, and surveillance activities normally associated with inspections. The extensive discussion of Paragraph 74(e), including the examples cited, makes it clear that it is intended to include activities which are not directly connected to materials. For example, the United Kingdom observed (75 OR 58) that noise level could be used at some reactors as an indication of operation, while the Inspector General, who confirmed that this was under consideration (76 OR 58), specifically cited "dynamic inventory taking in reprocessing plants" as a possible future method (62 OR 58). Also of interest, as indicative of the Committee's approach, was the strong support for Paragraph 75(e) and the objection to its elimination or narrowing, because of its promise in simplifying inspections and reducing the burden on operators. (United Kingdom, 52 OR 58).

Also of significance, particularly in relation to the key issue of undeclared material, is the suggestion of India (67 OR 58) that the word "all" which appears before "nuclear material subject to safeguards" be deleted from subparagraph 74(b), and the rejection of this suggestion, after it received no support.

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Interpretation

The introduction to Paragraph 74 makes it clear that the activities listed may be carried out by the IAEA in connection with either ad hoc, routine, or special inspections by the IAEA, as determined solely by the IAEA to be required.

Subparagraph (a) clearly applies to all records maintained pursuant to the agreement by either the state or the operator.

Subparagraph (b) clearly applies to all nuclear material subject to safeguards; the rejection of a suggestion to delete "all" reinforces that meaning. The text should be read in conjunction with Paragraph 6(b), which refers to statistical techniques and random sampling; the IAEA is thus expected to use such techniques in making measurements.

Subparagraph (c) applies to instruments and equipment installed by either the IAEA, the state, or the operator, as was made clear in the discussion. The installation of IAEA's own instruments and equipment is subject to agreement with the state, pursuant to Paragraph 75(d). The discussion does not make clear how the IAEA is to carry out the verification with respect to instruments and equipment other than its own. Nor were the words "measuring and control" defined. Since the prerogative to verify is the IAEA's, however, the IAEA can take the initiative with respect to both of those questions in the case of instruments and equipment other than its own.

Subparagraph (d) must be interpreted in light of Paragraph 75(d) and (e), which call for agreement with the state and specification in subsidiary arrangements.

In subparagraph (e), the kinds of methods intended, on the basis of the discussion, are those which have been demonstrated to be efficient, accurate, cost-effective and do not interfere with the operator's activities. Such methods are not limited to those already demonstrated, but include future developments.

In the introduction to Paragraph 75, it is implicit that the state (and through it, the operator) is obligated to permit the IAEA to carry out the activities described in subparagraphs (a) and (b) and to act in good faith in making the arrangements or in reaching the agreements called for in the other subparagraphs.

In subparagraph (a) of Paragraph 75, the procedures referred to, as a practical matter, are those designed to produce representative samples. Presumably, if it is found that a particular

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procedure does not, in fact, produce representative samples, the parties will consult and institute different procedures. The IAEA is not limited to a specific number of duplicate samples, but should obtain a sufficient number to provide those which may be needed for referee analysis.

In subparagraph (b), the IAEA inspectors, in observing the measurements, may find that they are not representative, in which case consultations would presumably be undertaken toward correction. Similarly, in the case of calibrations, the parties would consult concerning the results and resolve any uncertainties.

Each of the items in subparagraph (c) is qualified by the phrase "as necessary", but the IAEA is to make that determination and to take the initiative in making the arrangements. Item (i) provides a supplement to subparagraphs (a) and (b) and permits the IAEA to arrange for the state or the operator to take samples and measurements for IAEA's use, other than those which the state or the operator would take for their own uses.

Paragraph 75(c)(ii) and (iii) are straightforward. Paragraph 75(c)(iv) addresses calibrations, such as the volume of a vessel, in which materials such as water are used, rather than analytical standards.

Paragraph 75(c) and (d) permit the IAEA, with the concurrence of the state in subsidiary arrangements, to have its own instruments and equipment installed and to apply items such as seals. Since the place where the IAEA may apply or have such items installed must, in any case, be specified in the subsidiary arrangements, the question of whether such applications or installations are limited by Paragraph 76(c) to previously specified strategic points should not arise. It should also be noted, however, that while the Agency clearly requires the consent of the state to install any equipment in a safeguarded facility, it does not require consent to conduct the same surveillance activity through direct observation by inspections, provided this is done within the inspection effort criteria and at established strategic points.

Paragraph 75(f) permits flexibility in the shipping of IAEA samples. If the regulations of the state are such that the IAEA inspectors may conveniently ship the samples, they could do so. Otherwise, the IAEA can make arrangements with the state or the operator to make the shipment.

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## ACCESS FOR INSPECTIONS

Paragraphs 76 And 77

Background And Issues

The Statute of the IAEA, in Article XII.A.6, provides that IAEA inspectors shall have access in the territory of the state "at all times to all places and data and to any person...as necessary" to account for nuclear materials and to determine compliance with the agreement between the IAEA and the state.

The Inspectors Document provides in Paragraph III.9 that IAEA inspectors shall have access, for safeguards purposes, "to all materials, equipment and facilities to which Agency safeguards against diversion are applied" under the IAEA's Safeguards System and that the inspectors shall have access at all times to all places and data and to any person, to the extent provided for in Article XII.A.6 of the Statute.

INFCIRC/66/Rev.2, apart from the general obligations in Paragraphs 9 and 10 to avoid hampering a state's development and to implement safeguards in a manner designed to be consistent with prudent management practices, imposes limitations on access by inspectors only in the case of reprocessing plants. Even in those cases, the limitations apply only in the situation where both safeguarded and unsafeguarded materials are present in the facility (Annex I, Paragraph 6(a) and Annex II, Paragraph 9(a)).

As noted in the discussion of the subject of "strategic points" in Chapter 2.7 of this report, the broad question of access by IAEA inspectors arose during the negotiation of the NPT. The Treaty itself, in its preamble and in Article II.3, endorses the principle of safeguarding effectively the flow of nuclear materials by the use of instruments and other techniques at "certain strategic points".

That principle was promoted vigorously by the Fed. Rep. of Germany, in particular, during the negotiations of both the NPT and INFCIRC/153 and was prompted by an apparent concern that IAEA inspectors would otherwise have unnecessarily broad access to commercial plants, thereby possibly disturbing the efficient operation of the plants and conceivably compromising commercially sensitive information.

Other delegations shared that concern. South Africa, India, and the United Kingdom, along with the Fed. Rep. of Germany, were active in the successful effort to provide, in Paragraph 46(b)(iv), for "special" material balance areas in order to protect proprietary information, as discussed in Chapter 2.2.

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It is also noteworthy that the Committee postponed its final formulation of Paragraph 73, which addresses the circumstances under which special inspections may be carried out, until it had formulated the provisions addressing the overall question of access. (See the discussion of Purposes of Inspection: Paragraphs 71-73.)

The principal issues which emerged in connection with Paragraph 76 were:

- the circumstances under which access should be permitted other than to strategic points; and
- whether provision should be made for extraordinary situations in which access, even to strategic points, could be limited.

The Director General's initial suggestions (Part II 21 Doc 3) contained only brief references to the question of access, stating that "inspectors should normally require access only to the inspection locations selected in the design review", but that access to additional locations might be required for verification of inventory and flow of material and in connection with abnormal losses, or for other purposes as agreed.

The Fed. Rep. of Germany (26 OR 30) proposed changes in the Director General's wording which would have limited access by inspectors to strategic (rather than "selected") points, except in the case of a report of abnormal losses and, in that case, the IAEA would be required to justify additional access. South Africa (28 OR 30) supported the proposal of the Fed. Rep. of Germany, because it thought it was very important for the question of access to be settled in advance, such as during negotiation of subsidiary arrangements.

The Inspector General (19 OR 31) stressed the importance of access to additional locations and the urgency, under certain circumstances, of such access.

The United States (24 OR 31) took exception to the suggestion by the Fed. Rep. of Germany to limit broader access to the verification of reports on abnormal losses, because such a loss might never appear in a report. The United States favored provisions which would ensure that the IAEA had the right to make special inspections (special in terms of frequency and/or locations) whenever there was an indication, from any source, of abnormal losses or unusual circumstances.

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India (26 OR 31) stressed the importance of specifying strategic points to be used for normal inspections, but agreed that provisions for special inspections should include the right of access by IAEA inspectors to places other than those covered by normal inspections.

The first version of the Director General's detailed suggestions for Part II, which appeared subsequently, included an extended paragraph (44 Doc 62) on the subject of access for inspections. That formulation provided for access "normally" only to locations selected during design examination for verification that reports are consistent with records, verification of flow and inventory, and application of surveillance devices. But it also provided that, if such access is insufficient for the IAEA to fulfill its safeguards responsibilities, its inspectors would also have access to other locations, in particular, to any location where a physical inventory is taken. Moreover, the formulation provided for the parties to consult on the inclusion of such other locations among those to which inspectors would normally have access thereafter. In the case of reports of abnormal losses or potential accumulations of unmeasured inventory or losses, access would be to any location in the facility, but the IAEA would advise the state of the reasons for such access.

Shortly after Doc 62 appeared, a summary of the results of the Safeguards Technical Working Group was issued (Doc 65). The summary stated, in paragraph 10, that the Group reached the consensus that the verification process will give rise to inspection access requirements at successive levels. The first access requirement was to predetermined points and further access might be required when a significant MUF had been determined. According to the summary, the Group did not discuss in detail how such further access would be defined.

After the summary in Doc 65 appeared, a revision of the Director General's suggestions (Doc 62/Rev.1) was issued. Paragraph 44 in the revised document was worded differently from the first version. It referred to access normally to "strategic points" for the purposes noted in the earlier version, but made it explicit that the IAEA could determine that such access was not adequate, in which case the IAEA "shall seek further access and justify its request by explaining its requirements". If such a request was refused, the Board was to be informed pursuant to Paragraphs 18 and 19. Both the first and the revised version also provided for the parties to agree on other purposes, in addition to those specified, for which access may be required to locations other than the strategic points.

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By the time that the Committee next addressed the subject of access, it had before it the Director General's reformulation of sections dealing with inspections (Doc 129), in which only minor changes had been made in the provisions concerning access.

The United States proposed an amendment (Doc 134) which reformulated that section and South Africa proposed (Doc 135) an additional paragraph which was the forerunner of Paragraph 76(d).

The amendment by the United States for Paragraph 76(a) added a reference to any location where the IAEA's inspections (as well as the initial report) indicate that nuclear material is present. The United States explained (2 OR 61) that the addition was proposed because transfers might have been made between the time of the initial report and the conclusion of the subsidiary arrangements.

The United Kingdom (30 OR 61) questioned whether there was any legal basis for the reference to the IAEA's inspections; the initial report would show the locations where nuclear material was present and the IAEA would have access to those particular locations, but the United Kingdom questioned whether the IAEA would also be justified in requiring access to any other location where, by chance, the presence of nuclear material was brought to light. Hungary (36 OR 61), however, agreed with the proposal of the United States and the reason given for it. The United States (37 OR 61), responding to the question raised by the United Kingdom, said that the notion of chance discovery of the presence of nuclear material in an unannounced location seemed very far-fetched. However, ~~there was no suggestion in the responses by the United States that the Agency should be denied access to such an undisclosed location.~~ Following discussion of minor wording issues, the United Kingdom (49 OR 61) then suggested the wording as it appears in Paragraph 76(a) and the Committee adopted that wording.

The wording proposed by the United States in Doc 134 for Paragraph 76(b) was the same as that proposed by the Director General and (except for the numbering of the referenced paragraphs) is that which appears in the final version. The Committee adopted the wording without discussion.

The wording in Doc 134 proposed for Paragraph 76(c) was the same as the first sentence of the Director General's formulation in Doc 129, but the second sentence of the Director General's wording, referring to access to additional locations, was omitted. The United States explained (4-5 OR 61) that the paragraph dealt only with routine or normal inspections, access for which would be limited to the strategic points specified in the subsidiary

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arrangements. The stated view of the United States was that a special inspection was called for if access had to extend beyond such strategic points. (This need was dealt with later in Paragraph 77.) The United States said that if, as a result of technical developments or in light of operating experience, the IAEA would find it necessary to review the selection of strategic points, it could do so under the provision for their re-examination (Paragraph 47); such re-examination would not lead to a special inspection, but simply to selection of a different set of strategic points. Following this explanation, Paragraph 76(c) as proposed by the United States in Doc 134 was adopted.

The second policy issue, that of limiting access below that normally provided for routine inspections, was the subject of extensive discussion. The discussion centered on a proposal by South Africa in Doc 135, which provided for limitations on access when essential for health and safety reasons or to protect "highly sensitive" information. South Africa proposed that the state, in such event, would advise the IAEA and explain the reasons for the limitation; the parties would then consult with a view to providing the state with "requisite protections" while providing the IAEA with the information necessary for it to discharge its responsibilities, and any such arrangement would be subject to the approval of the Board.

The extensive discussion of this issue focussed on three points:

- Whether the provision was necessary at all, in view of other provisions that had already been agreed upon; in particular, Paragraph 44, which called on the Agency to observe the state's health and safety regulations, and Paragraph 46(b)(iv), which provides for establishment of "special" material balance areas to protect commercially sensitive information. (In this regard, while the South African proposal cited both health and safety reasons and protection of sensitive information as possible reasons for the proposed special arrangements, the discussion in OR 61 suggests a general presumption that the latter reasons would be the most likely to arise.) In endorsing the South African proposal in principle, the United States put forward the justification (20 OR 61) which led to acceptance of the proposal over the initial reservations of a number of delegations. This was that the South African amendment proposed a trade-off: if a state felt that it required the "special arrangements" proposed, it would have to work out with the Agency other means for satisfying the Agency's needs for safeguards information.

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- Whether the special arrangements should be approved by the Board or only brought to its attention. Although South Africa itself proposed that the Board approve such arrangements (on an ex post facto basis), the final version states only that "The Director General shall report each such arrangement to the Board." This change, which neither requires the Board's approval, nor forecloses its disapproval, followed a lengthy discussion in which it was pointed out by the Fed. Rep. of Germany, among others, (35 OR 61) that in the event of dissatisfaction by either side with the arrangements, the Board had ample authority to deal with the issue.
- Whether the limitations requested by the state should be honored pending notification of any such arrangement to the Board. In this regard, it was recognized that, as pointed out by the United States (9 OR 61), access pending Board action would defeat the purpose of the concept.

The proposal was adopted following the discussion summarized above, with several wording changes from the original South African proposal to accommodate the points discussed above.

The first policy issue identified above; that is, the circumstances under which access should be permitted other than to strategic points, was recognized as of major significance and was the subject of extensive consideration, much of which took place outside of the formal Committee meetings. As noted earlier, this discussion and consultation, which led to the adoption of Paragraph 77, took place before the action of the Committee on Paragraph 73, which establishes the purposes of special inspections.

Paragraph 77 describes the access available for special inspections only as "access in agreement with the state to information or locations in addition to the access specified...for ad hoc and routine inspections." While this statement, standing alone would appear to give the state a veto over the access for special inspections, Paragraph 77 goes on to provide that any disagreement between the Agency and the state may be resolved in accordance with the procedures of Paragraphs 21, 22, or 18. The reference to Paragraph 18 is of particular importance, since it authorizes the Board to call for action which is "essential and urgent" without reference to the dispute procedures. Thus, in the final analysis, Paragraph 77 provides the Agency with access for special inspections which is limited only by the provisions of Article XII of the Statute.

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Analysis

Paragraphs 76 and 77, which establish the access available to the Agency for ad hoc, routine, and special inspections, reflect a carefully tailored series of compromises and trade-offs, specifically:

- Section 76(a), which establishes the access for ad hoc inspections, allows access to "any location" where the initial report or subsequent ad hoc inspections indicate that nuclear material is located. By providing for such broad access, Paragraph 76(a), in combination with other paragraphs governing ad hoc inspections, creates a positive incentive for states to come to agreement with the Agency promptly on acceptable and adequate numbers and kinds of strategic points to permit effective safeguards.

Another significant point is that the reference in Paragraph 76(a) is to "nuclear material"; not to "nuclear material subject to safeguards under the agreement". Thus, the burden of proof is on the state to demonstrate, if nuclear material is indicated as present, that it is not subject to safeguards under the agreement.

It is also of significance that the requirement for access under Paragraph 76(a) is not that nuclear material is in fact present, but only that such presence is indicated. This, of course, is logically essential, since the Agency could not be certain of the presence or absence of nuclear material at a particular location until an inspection is carried out. Nevertheless, the apparent care with which this paragraph is drafted in covering this point further establishes that ad hoc inspections are intended to be not only an effective inspection means in their own right, but an important tool for ensuring the adequacy of access for routine inspections as well.

- Paragraph 76(b) is of narrow application, dealing only with the ad hoc inspections designed to verify transfer of nuclear material.
- Paragraph 76(c) represents one part of one of the most important compromises of INFCIRC/153. Under this paragraph, access for routine inspections is limited to strategic points, but Paragraph 77 provides complete statutory access for special inspections, coupled with the explicit right of the Board to call for such access without resort to time-consuming arbitration procedures.

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Moreover, as noted above, Paragraph 76(a) and other provisions are designed to ensure that the strategic points identified in subsidiary arrangements will permit the effective application of safeguards.

- Paragraph 76(d) represents another trade-off or compromise. It implicitly recognizes that states have the power to restrict previously agreed upon access, even if, in doing so, they are acting contrary to a safeguards agreement. However, under 76(d), such restriction may be accepted by the Agency provided that an arrangement has been made which provides the Agency with the necessary safeguards information through another means. This means could, for example, be the removal of material from the excluded area at reasonable intervals to enable the Agency to account for it.

One point which deserves mention is that of the type of inspection -- ad hoc, routine, or special -- to which Paragraph 76(d) applies. Its position in the text as well as in the Committee's discussion and the logic of the situation make it clear that it is intended to apply primarily to those circumstances -- i.e., routine inspections -- where the state and the Agency have agreed on access which the state feels it is no longer able to accept. It is, of course, possible that a state could object to the access asserted by the Agency for ad hoc inspections or even special inspections, offering some form of alternative means of satisfying the Agency's needs for information. If such arrangements were acceptable to the Agency, they would presumably be implemented, thus avoiding dispute. The distinction between these cases and those provided for by Paragraph 76(d) lies in the more affirmative obligation of the Agency, under 76(d), to attempt to accommodate a state's desire to modify routine inspection access. To apply this obligation to ad hoc or special inspections, the very purpose of which is to ensure effective safeguards in the absence or inadequacy of agreed arrangements, would clearly be illogical.

- Paragraph 77 represents the other part of the fundamental compromise on inspection access. It allows the Agency, following consultation with the state, to make special inspections which are in addition to the routine inspection effort, and to make special inspections involving additional access, after agreement with the state, or upon a finding by the Board under Paragraph 18 that such

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action is essential and urgent. As noted earlier, neither Paragraph 77 nor any other provision of INFCIRC/153 places any limitation on the extent of this additional access. Therefore, such access may, as authorized by Article XII.A.6 of the Statute, extend to "all places and data and to any person...as necessary to account for nuclear materials and to determine compliance...".

#### Interpretation

Paragraph 76(a) permits access by IAEA inspectors to any location where nuclear material is indicated to be present by any inspection made between the time that the initial report is submitted and the time that the applicable subsidiary arrangements are concluded. There is no limit on the number of such inspections of a facility or location, or on access, other than that established by the Agency's Statute and the required "indication" of the presence of nuclear material. The Agency need not, moreover, establish that the nuclear material is subject to safeguards.

Paragraph 76(b) is straightforward. The locations specified are those at which nuclear material is to be prepared for shipping, in the case of an export, or at which nuclear material is to be delivered, in the case of an import.

Paragraph 76(c) clearly limits access during routine inspections to only the specified strategic points and to the records required by the agreement. Further access can be gained by the IAEA by invoking either the procedures for a special inspection in Paragraphs 73 and 77 or that for re-examination of design information in Paragraph 47. Once further access is achieved by means of a special inspection, and if the IAEA considers it necessary to continue to have such additional access for its routine inspections, it may invoke the procedures for re-examination of design information in Paragraph 47, in order to change the selection of strategic points.

The interpretation of Paragraph 76(d), on the basis of its extensive discussion, is as follows:

- "Unusual circumstances" are those not foreseen at the time subsidiary arrangements are concluded, but which, for example, arise unexpectedly. The circumstances in connection with either ad hoc or routine inspections may be related to health and safety, such as an accident, or to the protection of proprietary information, or to any other situation considered by the state to warrant limitations on access by IAEA inspectors.

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- "Extended limitations" are those of a temporary, but not transitory, nature; i.e., limitations lasting only for a matter of hours are not considered "extended", but those lasting for some days should be so considered. The minimum time for a limitation to be considered "extended" is not fixed, nor is the time fixed at which an "extended" limitation becomes a permanent one. Certainly, if as a result of the arrangements made, the limitation is incorporated into the subsidiary arrangements by, for example, invoking Paragraph 46(b)(iv), it should be considered as permanent.
- The primary purpose for promptly making the arrangements is to enable the IAEA to discharge its responsibilities. If the IAEA has any doubt that the limitations will permit it to discharge its responsibilities, the Director General may immediately invoke Paragraph 18 or Paragraph 19, as appropriate, depending upon the urgency of the situation.
- If arrangements are made which the IAEA considers adequate to permit it to discharge its responsibilities, the arrangements can be put into effect immediately and the Board so informed by report of the Director General.
- All such arrangements, including those which become incorporated into subsidiary arrangements in the process, must be reported to the Board by the Director General. (Note that if a special material balance area is established pursuant to Paragraph 46(b)(iv) in the original subsidiary arrangements, the Board is not required to be informed.) Such reports are to be made promptly.
- It is up to the Board to decide, in accordance with its procedures, whether it should take any action with respect to any such report by the Director General. Any member of the Board could propose that the Board discuss the report (and thus the arrangement) as an item on the agenda of a regular meeting or as the subject of a special meeting. If the Board, as a result of such discussion, concluded that the arrangement did not, in fact, permit the IAEA to discharge its responsibilities, it could invoke either Paragraph 18 or Paragraph 19, as appropriate.
- Paragraph 76(d) applies primarily to limitations on access for routine inspections.

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The limitations on access imposed by Paragraph 76 for routine inspections may be lifted if the IAEA wishes to carry out a special inspection as provided for in Paragraph 73. In order to do so, however, the procedure specified in Paragraph 77 must be followed. Once the consultations called for in Paragraph 77 have been carried out, the IAEA has the sole discretion to carry out a special inspection, but the state must agree to IAEA's access to any information beyond that in the reports called for in the Agreement or to any location other than the strategic points specified in the subsidiary arrangements, if the subsidiary arrangements are in effect. If the state does not agree to the expanded access, then the procedures of Paragraphs 21 and 22 or Paragraph 18 can be brought into play. The consultations pursuant to Paragraph 77 are not intended to be prolonged beyond the time when the special inspection sought by the IAEA would be useful. If the Director General believes that further prolongation of the consultations would exceed that limit, action under Paragraph 18 could be initiated.

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## FREQUENCY AND INTENSITY OF ROUTINE INSPECTIONS

Paragraphs 78 Through 82

Background And Issues

Article XII.A.6 of the IAEA's Statute gives the IAEA the right, in applying safeguards, to send its inspectors into the state "who shall have access at all times to all places" as necessary to account for relevant nuclear material and to determine compliance with the relevant agreement.

The Inspector's Document refers to Article XII.A.6 of the Statute and repeats its key phrase.

INFCIRC/66/Rev.2, however, contains provisions which impose some restraints on the IAEA's broad statutory rights. Paragraph 47 calls for the number, duration, and intensity of inspections to be kept to the minimum consistent with effective implementation of safeguards and that, if the IAEA considers that not all of the inspections authorized are required, fewer shall be carried out. This provision is, of course, entirely consistent with the statutory requirement that inspections be conducted "as necessary," a term which implies both an authorization to do what is needed, and a restriction on doing more than what is needed.

Paragraph 57 of INFCIRC/66/Rev.2 gives the maximum frequency of routine inspections of a reactor, which varies from zero (where the largest of the inventory, annual throughput, or maximum annual production is not more than one effective kilogram) to 12 per year (where any of the foregoing items is more than 55 but not more than 60 effective kilograms). In cases where the amount exceeds 60 effective kilograms, the IAEA has the "right of access at all times." Paragraph 58 gives three factors to be taken into account in determining the actual frequency: (a) possession by the state of reprocessing facilities, (b) the nature of the reactor, and (c) the nature and amount of nuclear material produced or used in the reactor. The vast majority of facilities engaged in commercial nuclear power activities are, of course, of a scale which would involve the "right of access at all times".

Paragraph 60 of INFCIRC/66/Rev.2 calls for the maximum frequency of inspections of nuclear material in research and development facilities to be determined by the table in paragraph 57. Paragraph 64 states that the IAEA may perform one routine inspection annually of each sealed storage facility (under the conditions of such storage specified in paragraphs 61 and 62). Paragraph 68 calls for a maximum of one routine inspection per year of nuclear

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material in "other locations" (i.e., outside of a "principal nuclear facility" or of a sealed storage facility) if the amount does not exceed five effective kilograms; if the amount is greater than five effective kilograms, the table in paragraph 57 applies.

Annex I of INFCIRC/66/Rev.2 addresses reprocessing plants and paragraph 3 states that if the annual throughput of such a plant is not more than five effective kilograms, it "may be routinely inspected twice a year". If the annual throughput is greater than five effective kilograms, it "may be inspected at all times". A footnote to that paragraph states that it is understood that where the annual throughput exceeds 60 effective kilograms the right of access at all times would normally be implemented by means of "continuous inspection".

Annex II of INFCIRC/66/Rev.2 addresses conversion plants and fabrication plants. Paragraph 3 of Annex II applies the same five effective kilogram threshold, below which routine inspections shall not exceed two per year and above which the plant "may be inspected at all times". The amount of nuclear material in question is that either in the plant inventory at any time or the annual "input". A footnote to the paragraph contains the same understanding as in the case of reprocessing plants, but also includes a second sentence stating that where neither the inventory at any time nor the annual input exceeds one effective kilogram, the plant would "not normally be subject to routine inspection".

Agreement on the provisions in INFCIRC/66/Rev.2 dealing with the frequency of inspections had been difficult to achieve and it was expected that the subject would be reopened in the Safeguards Committee. Thus, the United States, in its written comments to the Director General prior to the convening of the Committee (20 Doc 2, page 35), states: "Much of the discussion concerning the possible intrusiveness of safeguards has focused on the frequency of inspection, and especially on continuous inspection." The United States' comments go on to argue that intrusiveness of inspections depends more on the intensity of access than on frequency and that periodic inspections could require more detailed access than would continuous inspections. The United States argued that the latter would also facilitate other simplifications in safeguards. The overall comments of the United States reflect the strong conviction that INFCIRC/66/Rev.2 was appropriate and sufficiently flexible to accommodate the situation under the NPT.

In the written comments of other governments, only Australia mentioned continuous inspection explicitly (4(c) Doc 2, page 4), in the context of advocating that a minimum of safeguards should be applied to reactors but that intensive safeguards and continuous inspection should be applied to fuel reprocessing and enrichment plants.

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The Fed. Rep. of Germany (13 Doc 2/Add. 1, page 9) and Italy (7 Doc 2/Add. 1, page 13) pointed out in their written comments that the IAEA's existing safeguards system had been designed for individual facilities and that it should be adapted and simplified for state-wide application under NPT. Italy (16(d) Doc 2/Add. 1) specifically included among the elements of the existing system which it regarded as inapplicable to the NPT situation: "Certain provisions under Article XII.A.6 of the Statute, and in particular the unlimited power of access of the inspectors."

Japan (6 Doc 2) advocated that the mode and intensity of verification should depend upon such factors as the degree of effectiveness of the national or regional system. Belgium (4(g) Doc 2/Add. 1) called for the number, duration, and thoroughness of inspections to be determined with due regard for the extent and efficiency of national or regional systems.

The United Kingdom (1 Doc 2) thought that the state-wide application of safeguards under the NPT should enable some rationalization and simplification in adapting the existing system to that situation.

The Soviet Union (11 Doc 2) and Czechoslovakia (3 Doc 2), on the other hand, argued in their written comments that safeguards for the NPT situation must be based upon the existing system.

The Director General's initial suggestions in Doc 3, for the content of agreements, made only brief specific references to the question of inspection frequency. Paragraph 19 of Part II called for the IAEA, in determining the number, intensity, and duration of inspections, to take into account the promptness, accuracy, and consistency of reports. Paragraph 20 of Part II noted that, at the existing state of technology, continuous inspection would be required for some processes; in other circumstances, "intermittent inspections", with or without notice, would suffice and the choice of method would depend upon the type and amount of material and the nature of the process. Those brief references were in the context of the introduction to Doc 3, in which the Director General made clear that the relevant provisions of the existing system were intended to provide the basis for agreements under the NPT, with appropriate adaptation and simplification.

The discussion of the Director General's suggestions in Doc 3 shed more light on the different views of the participants. The United Kingdom (23 OR 30) thought it would be necessary to specify the frequency of inspections in the agreement and to take account of the type of material. The Fed. Rep. of Germany (26 OR 30) suggested changes in the Director General's text which would have had the effect of (a) the IAEA and the state agreeing upon the timing and frequency of inspections and (b) the effectiveness of

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the national system, as well as the promptness, etc. of reports, being considered in determining the mode, number, etc. of inspections within the agreed maximum. The Fed. Rep. of Germany (27 OR 30) also questioned whether only continuous inspection would suffice in some processes, arguing that a frequency of inspections sufficient to provide a constant supply of information on the facility should be employed in the extreme case and that maximum flexibility should be adopted in other cases, taking account of the individual characteristics.

Japan (53 OR 30) proposed that the frequency of inspections be agreed in advance on the basis of statistical data and taking account of material flow and the effectiveness of the national system. Japan outlined a scheme (a variety of that which had become known as "action levels") under which the IAEA would first check the results of the national system and that, if any discrepancy was found, the IAEA would carry out an inspection, with access to selected locations. If the IAEA was not yet satisfied it could carry out a second inspection, at additional points. If the IAEA still was not satisfied, it could then exercise its right of access at any time and any place. Japan also questioned (56 OR 30) whether some processes required continuous inspection and thought the matter should be studied by a panel of experts.

The United States (2 OR 31) thought that the Director General's reference only to records being taken into account in determining the number, etc. of inspections was insufficient and that the statement should be brought into line with Paragraph 47 of INFCIRC/66/Rev.2. The Agreement should include an indication of normal maximum frequency, keeping in mind that abnormal circumstances might require higher intensity. The United States could not agree that the rate of inspections should be the subject of agreement with the state on a facility-by-facility basis. The United States (3 OR 31) also took issue with the Director General's formulations concerning continuous and intermittent inspections, preferring the formulations in INFCIRC/66/Rev.2, and advocating a simple statement of where continuous inspections were required, such as in plants where nuclear material was processed at a high rate, as in reprocessing plants, where exact determination of quantities introduced could only be carried out in the accountability vessel.

The United Kingdom (4 OR 31) proposed that a table of maximum inspection frequencies similar to that in paragraph 57 of INFCIRC/66/Rev.2, should be incorporated in the Agreement. Japan (6 OR 31), however, said that great technological progress had been made since the compilation of the table and that it might not be applicable to current reactor designs; the table should be reviewed by a panel of experts and then be given further consideration by the Committee.

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Hungary (10 OR 31) pointed out that, in connection with continuous (versus intermittent) inspections, IAEA's consultants had recommended the term "continual" inspection to indicate that an inspector would not be present continuously but that information would continually be available to the IAEA.

The Inspector General (16 OR 31) stressed that the provisions concerning frequency and intensity of inspections should be considered in conjunction with both INFCIRC/66/Rev.2 and the Statute. It was intended that the maximum frequency should be that shown in the table in paragraph 57 of INFCIRC/66/Rev.2. In practice, the maximum number was never carried out, but only that which achieved the required results, taking into account the effectiveness of the national system; the maximum frequency had in practice been eight per year (18 OR 31). In reply to a question by Japan, regarding Hungary's comment concerning "continual" inspection, he said (22 OR 31) that the difference in terms was so slight that there would be no effect in practice. He understood "continual" inspection to mean continuous inspection with interruptions as, for example, during the suspension of operation of a reprocessing plant for one or two months, during which continuous presence was not required.

The United States (23 OR 31) considered that the Annexes to INFCIRC/66/Rev.2 recognized that continuous inspection constituted the limiting form of access at all times, which might be applicable in cases where there was a continuous high rate of flow of material in relation to the inventory of a facility. India (25 OR 31) agreed that continuous inspection was a limiting form of access at all times. The United Kingdom (27 OR 31) observed that the concept of continuous access would require that the IAEA have continuous knowledge of the situation in any given material balance area so that it could accurately assess the significance of a report on that material balance area.

It was evident from the early discussion that a consensus on the subject of frequency of inspections would be difficult to achieve.

When the Director General's detailed suggestions for Part II subsequently appeared, they contained (40-43 Doc 62/Rev.1) a table of maximum frequency of routine inspections which differed from the table in paragraph 57 of INFCIRC/66/Rev.2 in that it used the concept of "critical time" as the measure of "accessibility" of different nuclear materials for the manufacture of nuclear weapons. As explained by the Director General (Doc 121) that concept had been introduced by a group of consultants. The table

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made no distinction between the type of facility in which the material was located; thus, the same maximum frequency would apply to the same amount of a given material, regardless of the type of facility involved. For facilities whose inventories of materials with short critical times exceeded 20 effective kilograms, access at all times would be permitted. In cases where the annual throughput or inventory exceeded 60 effective kilograms of any nuclear material, "the right of access at all times could be implemented by means of continuous inspection" (42 Doc 62/Rev.1).

The Director General's suggestions for criteria for determining the actual number of inspections (43 Doc 62/Rev.1) continued to refer only to the promptness, etc. of reports.

As anticipated, the Secretariat's proposals engendered extensive discussion, the flavor of which is reflected in the following citations.

The United States (2-9 OR 50) stressed once again the need to provide for continuous inspection, in those relatively few cases where it was necessary for independent verification by the IAEA. The Soviet Union (44 OR 50) explicitly supported that view.

The United States also noted (10 OR 50), with respect to the maximum frequencies proposed by the Director General, that experience had shown that a number of inspections actually carried out by the IAEA came to about 40 percent of those figures.

The United Kingdom regretted (15 OR 50) that the Director General's proposals had been drafted in the same spirit of the provisions in INFCIRC/66/Rev.2, in that they were based on the concept of individual facilities. Accordingly, the United Kingdom preferred (16 OR 50) that the table refer to country-wide groups or categories of facilities, rather than what it said was the artificial procedure of classifying each facility according to its inventory or throughput. Moreover, while the United Kingdom (17 OR 50) welcomed the establishment of general standards applicable to all countries, it called for a more dynamic system rather than one in which the number of inspections was settled automatically every year, depending solely on the number of effective kilograms.

The Fed. Rep. of Germany (23 OR 50) said that inspections were more important in the case of safeguarding individual plants than in cases where all of a state's activities were safeguarded. The approach based solely on maximum frequencies would not always give satisfactory results; provisions needed to be made for the

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number, intensity, and duration, as well (24 OR 50), and the question of the extent that access at all times was necessary should be debated (25 OR 50). Frequency was less important to the Fed. Rep. of Germany as long as inspections were confined to certain strategic points, but it thought that continuous inspection might become a burden on the operator (26 OR 50). The Fed. Rep. of Germany suggested that, in addition to the promptness, etc. of reports, the provision dealing with the determination of the actual number, etc. of inspections should be expanded and should include, in particular, reference to the national system.

Japan (34 OR 50) said that inspections were necessary and as important as (but not more than) other safeguards measures. Continuous inspection was understood by Japan to mean the evaluation of information from a facility and checking whether that information differed from one inspection to the next; the possibility of doing so by other means, such as statistical methods, should be ascertained (35 OR 50). Japan suggested that the maximum annual frequency should be fixed on the basis of objective criteria relating to the fuel cycle and that a mechanism should be provided permitting the determination of the normal frequency, which should always be less than the maximum (36 OR 50).

The Netherlands (37 OR 50) thought that the provisions should mention national systems and that the matters of duration and intensity should be studied in detail. Italy's views (49-50 OR 50) were similar.

Canada (47 OR 50) agreed with the United Kingdom that the facilities of a state should be considered as a whole, but advocated that the IAEA should be allowed access at any time and to any place.

The Soviet Union (40 OR 50) considered inspections to be the most important method available to the IAEA; the frequency should not be the subject of case-by-case negotiation, but should be indicated precisely, by figures, on a uniform basis (41-42 OR 50). The table proposed by the Director General was favored by the Soviet Union (43-44 OR 50) since it made possible continuous inspections; it was up to the IAEA to lay down its own statistical methods.

Hungary (45-46 OR 50) found the provisions proposed by the Director General acceptable but conceded that they might be improved with respect to national systems. The suggestions by the United Kingdom were characterized by Hungary as saying that, for routine inspections, the national fuel cycle should be considered rather than the national system of accounting and control.

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The discussion reflected above was inconclusive. The Director General informed the Committee (4 Doc 129) that the Secretariat had concluded that the Committee's discussions of frequency and intensity of inspection had not proceeded far enough to enable the Secretariat to formulate the relevant provisions, although it was evident that such provisions were required. Thus, when the Committee next addressed the subject, it had before it a proposal (Doc 139), co-sponsored by Australia, Greece, Switzerland, and the United Kingdom. The new document was the result of "many long hours of discussions and consultations" outside the formal Committee meetings and was presented to the Committee as a compromise, each part of which was essential to the acceptability of the document as a whole (9 OR 63).

The "package" proposed in Doc 139 contained two main features:

- A specification (Paragraphs 79 and 80) for the "maximum routine inspection effort" in various classes of facilities. This specification of effort supplanted the table of inspection frequencies contained in paragraph 57 of INFCIRC/66/Rev.2, and reflects the consensus of the Committee that inspection frequency alone was not an adequate measure of inspections.
- An enumeration (Paragraph 81) of the criteria which would govern the actual "number, intensity, duration, timing, and mode of routine inspections." This enumeration is much more extensive than that which appears in paragraph 58 of INFCIRC/66/Rev.2, which identifies only three factors: the presence of reprocessing facilities; the nature of the reactor; and the nature and amount of the nuclear material involved. Additionally, the criteria of Paragraph 81 INFCIRC/153 are explicitly related not only to the inspection effort, but to all other major inspection parameters, including the "mode;" that is, whether continuous or intermittent.

Another key feature of the compromise was the understanding, included in Paragraph 79, that in the maximum or limiting case, inspections should be "necessary and sufficient to maintain continuity of knowledge of the flow and inventory of nuclear material". This provision was responsive to the long-standing concern of the United States that in certain cases, such as reprocessing plants of substantial size, continuous inspection would be necessary.

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Given the importance and earlier controversy concerning the subject matter, the discussion was a relatively brief and non-controversial one, reflecting the fact that the proposal was a compromise package which was the result of lengthy consultation and that the compromise would probably dissolve if major changes were pressed. Nevertheless, several issues were dealt with in the discussion and some significant, although not major, changes were made. These issues and changes include:

- Perhaps most important was the question, posed by Hungary (18 OR 63), whether the inspection effort formula would allow the Agency to meet its responsibilities. The Inspector General's reply (21-24 OR 63), as reported, seems primarily addressed to the question of what mode of inspection (intermittent or continuous) would be required in various situations. Nevertheless, the overall thrust of the response, as suggested both by the Inspector General's language and the questioner's acceptance of it (28 OR 63) was that the inspection effort provided was generally adequate although not excessive. One exception, where the Inspector General expressed doubts as to adequacy, was in regard to enrichment plants. This exception is discussed below.
- Whether the formula would permit continuous inspection. As noted previously, this was answered in the affirmative (23 OR 63, 25 OR 63, and 53 OR 63).
- Whether the inspection efforts could be aggregated for each of the types of facilities, with the Agency determining the allocation of effort for each facility within the category. This issue was of particular importance to the Soviet Union (36 OR 63), who proposed an amendment to make it clear. However, this proposal was not acted on, on the basis of assurances by two sponsors that such aggregation was intended and permitted (40 OR 63, 42 OR 63). Note, however, that aggregation of all inspection effort in a country, regardless of category of facilities, was not mentioned, and is presumably not authorized.
- Whether the inspection effort allowed is adequate for enrichment plants. This issue arises because, for an enrichment plant producing only 5% U-235 or less, the formula allows relatively little effort which is inadequate, in most cases, to accommodate continuous inspection. If such a facility were capable of being operated to produce greater than 5% enrichment, the inspection effort could become inadequate, as pointed out by the Inspector General (26 OR 63). No corrective action was taken on this issue.

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- Permanence of the "maximum figures". It is of some significance that the record established that the Committee did not regard the inspection effort figures as unchangeable, either generally or in specific cases. For example, Australia suggested (15 OR 63) that the figures might be reviewed after some five years of experience. Of particular significance was the Soviet suggestion for omission of the words "in the light of developments in safeguards technology", which appeared in the proposed text of Paragraph 80. These words implied that any changes agreed upon would be likely to be reductions, as safeguards technology could be expected to improve. Through their omission, as proposed by the Soviet Union and accepted by the Committee, the possibility of changes in either direction was established.
- Also of significance was the clarifying statement of Canada (45 OR 63), which was unchallenged, that it is the Agency which makes the determination of actual inspection effort and other parameters by applying the criteria of Paragraph 81.

### Analysis

As was anticipated from the outset of the discussions, inspection frequency (or effort, as finally determined) was among the most difficult and contentious ones dealt with by the Committee, although little of this is reflected in the record, and the final result enjoyed broad support. The prevailing tone of the discussion of Doc 139 was one of "walking on eggs". The few suggestions offered were made almost apologetically, accompanied by generous expressions of appreciation and congratulations to the co-sponsors for their product. The ease with which the texts were adopted should not be attributed to indifference or weakening of positions of the participants, but rather to the long hours of informal negotiations, culminating in a late evening meeting of many of the delegations involved, in which the formulations were finally produced. The process of accommodating the divergent positions had been tedious and difficult, and it was recognized by all concerned that no other solution could be achieved at that time, given the meager experience of the IAEA in safeguarding commercially-oriented plants and the political sensitivities in many of the key countries which had not yet ratified NPT.

The issue that has emerged as one of the most important arising out of these provisions was the subject of almost no discussion or elucidation insofar as the record reflects; this issue is the

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approach to be taken by the Agency to the application of the criteria of Paragraph 81, under which inspection efforts were expected to be reduced below the maximum levels prescribed by Paragraph 79. As noted in the key issues section of this report, INFCIRC/153 itself provides no guidance as to the relative weight to be given to each, or the maximum quantitative impact of the criteria, either individually or in the aggregate, on the inspection effort. What is clear is that these criteria were designed to and do provide the Agency with a wide range of flexibility to deal with differing situations and to lower routine inspection efforts well below the maximum. Agency practices to date suggest that this is being done.

Another question which has not been resolved is that of the maximum routine inspection effort to be applied to enrichment plants. As pointed out by the Inspector General (26 OR 63), the inspection level allowed for plants which produce (or are assumed to produce) material of less than 5% enrichment might be inadequate if such a plant in fact produces material of higher enrichment, or can be readily adapted to such production. The Inspector General's remarks establish that it is a plant's actual production level which should be taken into account, rather than some assumed lower figure, but this approach does not appear to deal adequately with the issue of unannounced conversion to higher enrichment.

As enrichment plant safeguards have evolved, it appears that a consensus has developed that the most important safeguards objective is to ascertain any change, whether through plant rearrangement or operating procedures, from low to high enrichment output. Where the nature of the enrichment process allows such change to be made easily and quickly, it is evident that continuity of knowledge should be achieved to monitor whether such a change is taking place.

#### Interpretation

Paragraph 78 elaborates the general approach, similar to that in the Statute and INFCIRC/66/Rev.2: that the IAEA should carry out inspections only to the extent necessary for it to carry out its responsibilities. The last part of the paragraph, referring to optimum and economical use of inspection resources, reiterates the exhortation found in Paragraph 6, which applies to all of the elements of IAEA safeguards.

The first sentence of Paragraph 79, dealing with annual throughputs of not more than five effective kilograms, is straightforward, requiring reference only to the definition in Paragraph 99 of "annual throughput," except that (as India pointed out in two

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separate interventions) the intensity and duration of the single annual inspection are not limited. Thus, the only limitations are the general ones stated in Paragraphs 6 and 78.

The second sentence of Paragraph 79 clearly permits continuous inspection, as is shown by the unchallenged comments of Canada (45 OR 63) and the Inspector General (53 OR 63) and the consequent addition of the word "mode". It is also clear from Canada's unchallenged understanding that the IAEA is to make the determination, called for in the paragraph, of the number, intensity, etc. of inspections. Additionally, Paragraph 80 permits the Agency to aggregate the inspection effort within each category of facilities identified in Paragraph 80. If the IAEA determines that continuous inspection is necessary to achieve continuity of knowledge and the aggregate amount of effort within that category is adequate, the IAEA may employ that mode. If the aggregate amount of effort in the category is inadequate, recourse can be had to the amendment procedure provided for in the last sentence of Paragraph 80.

The level of enrichment to ascribe to a uranium enrichment plant and thus whether the plant would fall under Paragraph 80(b) or (c), is to be determined by the level of enrichment actually produced, and not simply by design information or operating plans.

The last sentence of Paragraph 80 leaves open the basis for amendment of the maximum figures in either the upward or downward direction. Thus, if the IAEA finds that the maximum effort calculated for any category is not sufficient on the basis of its experience, for example, it can invoke the procedure in order to seek an increase. Conversely, the state could seek a decrease. In either case, not only must the other party agree, but the Board of Governors must determine that the increase or decrease sought is reasonable. That requirement is more stringent than the general amendment procedure set forth in Paragraph 23, which calls for the Board merely to be informed.

Paragraph 81 does require negotiation by the IAEA with the state of the actual inspection effort to be applied to each facility. The introductory phrase, making the provision subject to the preceding three paragraphs, carries into Paragraph 81 the clear understanding that the IAEA, in determining the actual effort employed in a facility pursuant to the second sentence of Paragraph 79, should take into account the criteria listed in Paragraph 81. The weight to be given to each criterion is not specified. While the expressed philosophy behind Paragraph 81 was to provide a mechanism for the IAEA to determine how much less than the maximum routine effort it could employ, the maxima finally provided for in Paragraph 80 were generally just adequate. Substantial

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reductions, even in situations in which all of the criteria can be invoked, were therefore not assured. In particular, the presence or absence of a declared fuel reprocessing plant (because of the possibility of the existence of an undeclared plant) cannot be given great weight. (See Chapter 2.14 of this report for a more extensive discussion of the criteria.)

Paragraph 82 applies only to the actual inspection effort deployed among the facilities in each of the three categories specified in Paragraph 80, as well as that employed in the facilities referred to in the first sentence of Paragraph 79 whose annual throughput is not more than five effective kilograms. The effort available to be deployed under Paragraph 81 is limited by the specified maximum, while there is no specified limit on the effort to be employed in the facilities addressed by the first sentence of Paragraph 79. It therefore appears that Paragraph 82 would be more likely to be invoked in the latter case, although Paragraph 82 does not rule out consultation and adjustment for facilities governed by Paragraph 80.

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## NOTICE OF INSPECTIONS

Paragraphs 83 And 84

Background And Issues

The Inspector's Document provides, in Paragraph II.4, that the state is to be given at least one week's notice of each inspection, except in the case of any inspection to investigate an incident requiring a "special inspection" (as provided for in Paragraphs 53 and 54 INFCIRC/66/Rev.2), in which case notice need not exceed 24 hours.

INFCIRC/66/Rev.2, in Paragraph 50, states that whenever the Agency has the right of access to a principal nuclear facility at all times (in accordance with Paragraph 57 of that document, "...it may perform inspections of which notice as required...by the Inspector's Document need not be given, in so far as this is necessary for the effective application of safeguards. The actual procedures to implement these provisions shall be agreed upon between the parties concerned in the safeguards agreement."

The Director General's initial suggestions referred (Part II, 25 Doc 3) to Paragraph 50 of INFCIRC/66/Rev.2 and reiterated the right of the IAEA to carry out inspections without advance notice when it has the right of access at all times.

The Director General's detailed suggestions for Part II rephrased the provisions of the Inspector's Document and INFCIRC/66/Rev.2 dealing with notice of inspections, without changing the basic arrangement (53 Doc 62/Rev.1):

- No advance notice would be required when the IAEA had the right of access at all times;
- Not more than 24-hours' notice would be given for a special inspection or one in connection with nuclear material to be exported; and
- Notice of at least one week should be given for other inspections.

The suggested provisions in 53 Doc 62/Rev.1 also called for the notice to include the names of the inspectors, the place and approximate times of arrival and departure, and the material balance areas to be inspected.

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By the time the Committee addressed the Director General's suggestions, Paragraphs 78 through 82, dealing with the frequency and intensity of inspections, had been formulated. Thus, when 53 Doc 62/Rev.1 was discussed (25-67 OR 64), the Committee requested that the suggestions concerning notice of inspections be re-drafted by the Secretariat to take account of the Committee's action concerning Paragraphs 78 through 82. Most of the limited discussion at that time focused on the issue of unannounced inspections (see Chapter 2.12 of this report). The United Kingdom (33 OR 64) suggested, in that context, that one week's notice should be given only for inspections of reactors and that 24-hours' notice would suffice for all other inspections. No other delegation responded to that suggestion.

Aside from the principal issue of whether the IAEA should have the right to carry out unannounced inspections and, if so, under what arrangements, no other issue emerged.

#### Analysis

When the Committee next addressed the subject, it had before it Doc 143, prepared by the Secretariat, which included, in Paragraphs 57.A and 57.B, suggested reformulations concerning notice of inspections. The proposed arrangement called for notice for ad hoc inspections "as promptly as possible" after the IAEA had been notified of an impending transfer into or out of the state. Similarly, for special inspections, notice would be given "as promptly as possible" after the consultations with the state called for in Paragraph 77. For routine inspections of the facilities comprehended by Paragraphs 80(b) and (c), at least 24-hours' notice would be given. In all other cases (e.g., reactors and sealed stores) at least one week's notice would be given. Those periods (and the notices themselves) would relate to the time of arrival of inspectors in the state, rather than at the site of the inspection. The subject of unannounced inspections was not mentioned explicitly, but Paragraph 57.B referred to the notice by the IAEA, if the inspection is related to an operational program received from the state pursuant to Paragraph 64(b), to include a general program of inspections, indicating any period during which "random visits" were planned.

The Inspector General explained (2 OR 65) that the idea of the latter feature was an exchange of programs: the operational program of the state and the inspection program of the IAEA. He admitted, however, that the concept had already been given rise to different interpretations and would need to be reworded.

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The Fed. Rep. of Germany (6 OR 65) foresaw difficulties in notice being given before the arrival of inspectors in the state, giving as examples (a) the case where an inspector is already in the state and is to carry out an inspection on 24-hours' notice, and (b) the case where an inspector in a state is suddenly instructed to proceed to a neighboring state to verify nuclear material about to be exported. The Inspector General agreed (11-12 OR 65) that it would perhaps be better if notice were given before the inspection took place. The Fed. Rep. of Germany (16 OR 65) proposed that the text be so amended.

The United Kingdom (7 OR 65) saw another type of problem in the case of five or six inspectors in one state having to conform their activities to a time-table established a long time in advance. In his reply (8-10 OR 65), the Inspector General gave an example of how the operational program for a reprocessing plant would be used in scheduling an inspection program, such that the state would be informed that, during reprocessing operations and physical inventories, routine inspections would involve virtually continuous presence of several inspectors on the premises, and that random inspections would be carried out during shut-down. He characterized such a program as preserving the unscheduled character of certain inspections.

The United States (14 OR 65), while approving in broad outline Doc 143, nevertheless was not satisfied with some of the wording and planned to submit amendments. In particular, the United States considered that the IAEA's rights regarding unannounced inspections had been unduly limited (15 OR 65).

Belgium (17 OR 65) agreed that the IAEA should have the right to carry out unscheduled inspections, but that care should be taken that the wording not transform that right to an obligation and a routine practice.

In reply to a question by the United Kingdom (19 OR 65), the Inspector General said (20 OR 65) that only a few unannounced inspections had ever been carried out by the IAEA, although it always had the right to do so.

The Committee resumed its discussion on the basis of an amended text (Doc 151) proposed by the United States. In that text, it was not clear whether the notice period was to be related to the time of arrival of inspectors in the state or at the site. The "promptly as possible" formula was retained for ad hoc and special inspections. Notice of one week was provided for inspections of facilities or material balance areas with a content or annual throughput not exceeding five effective kilograms.

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The major change from Doc 143 was the addition of a minimum period of three months for an operational program in response to which the IAEA would provide an inspection program. The amended text referred to "extended inspections" and "random visits" to be addressed in the IAEA's inspection program.

In opening the discussion of Doc 151, the United States (53 OR 66) interpreted "random visits" to mean unannounced inspections. "Extended inspections" was interpreted by the United States (54 OR 66) to be those cases in which the IAEA expected to maintain inspectors at a facility or a material balance area for an extended period of time.

Only Canada (75 OR 66) supported the amendment of the United States in its entirety. Australia generally supported it but suggested changes in wording, such as the deletion of "extended" from the phrase "extended inspections" (55-59 OR 66). Hungary agreed (60 OR 66) with Australia but suggested a further change in wording which would have eliminated any distinction between "extended inspections" and "random visits."

Japan (61-62 OR 66) expressed difficulty with the wording and questioned the utility and practicality of unannounced inspections.

France (63 OR 66) found the amendment of the United States inconsistent, since no period of advance notice was specified for ad hoc or special inspections, and suggested that a minimum period be specified in those cases. India (65 OR 66) agreed with France. The United States (70 OR 66) responded that it was impossible to foresee the length of notice to be provided for in the cases of ad hoc and special inspections. In the latter case, the urgent consultations provided for (in Paragraph 77) were seen by the United States to be the vehicle for the IAEA to give notice. In view of the urgency of special inspections, the United States said that one week's notice would hardly be acceptable.

Most of the discussion was devoted to the question of unannounced inspections, with India (65-66 OR 66) and Sweden (76 OR 66) joining Japan in opposing them and Canada (75 OR 66) joining the United States (68-69 OR 66) in favoring them. France (64 OR 66) suggested that agreement in principle be reached first on the question of how much advance notice would be required and then to consider whether exceptions should be made. India (65 OR 66), the Netherlands (73 OR 66) and Italy (74 OR 66) agreed with that approach.

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The United States redrafted its amendment (Doc 151/Rev.1). In introducing it, the United States said (42 OR 67) it was a compromise and the result of long negotiations with other delegations (Italy, Japan, France, and Denmark) and consultations with the Inspector General. Moreover, as a result of further discussions since Doc 151/Rev.1 had been circulated, the United States made further changes in the text orally (43 OR 67) so that the text became virtually identical to that of Paragraphs 83 and 84, except for the omission of the last sentence of Paragraph 84. That sentence was added at the suggestion of Australia (45 OR 67). Italy (48 OR 67) and the United Kingdom (52 OR 67) also suggested minor changes in wording.

Egypt (46 OR 67) and the Soviet Union (55 OR 67) expressed satisfaction that the text provided for unannounced inspections explicitly, with the Soviet Union reminding the Committee that it had agreed to a frequency of inspection of reactors which it considered to be insufficient, only on its understanding that the IAEA had the right to carry out unannounced inspections.

Portugal (49 OR 67) and Japan (50 OR 67) spoke against the principle of unannounced inspections, with Japan disclaiming responsibility for any difficulties which might be encountered in their implementation in its facilities.

France (47 OR 67) and the United Kingdom (52 OR 67), however, accepted the formulation of the United States as a reasonable compromise and Canada (54 OR 67) supported it. The United Kingdom (53 OR 67) said that the Inspector General would certainly see that advance notice would be given for the great majority of inspections and urged Portugal not to oppose adoption of the amendment of the United States. Portugal did not speak again and the amendment was adopted.

#### Interpretation

Paragraph 83(a) and (b) are straightforward. Paragraph 83(c) must be read in conjunction with Paragraph 84, since both address routine inspections only.

Paragraph 84, however, addresses only facilities (not material balance areas outside of facilities) with a content or annual throughput exceeding five effective kilograms and permits some portion of the routine inspections of such facilities to be unannounced. The expectation was that such inspections would be made infrequently and on a selective basis.

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The IAEA is called upon by Paragraph 84 to advise the state, whenever it can as a practical matter, of the general periods when such inspections will be carried out, as well as its other routine inspections. In doing so, the IAEA is to take into account any operational program provided by the state.

In carrying out unannounced inspections, the IAEA is also called upon to try to avoid prejudicing the right of the state to have its officials accompany the inspectors (without impeding or delaying the inspection) and the obligation of the inspectors to comply with health and safety procedures at the facility. At the same time, the state (which is also presumed to have control over the operator) is supposed to take steps to ease the task of unannounced inspectors, or at least not to make their job more difficult.

When the IAEA has given the state a general program of inspections which includes a period in which unannounced inspections are foreseen, the state should have little excuse for not having officials reasonably available or for not having made arrangements with the operator regarding health and safety procedures which will permit the unannounced inspection.

The situation in which no general inspection program is provided (presumably in those cases when no operational program has been received) is less clear. In those cases, the IAEA may have to incur the risk that the unannounced inspection may not go as smoothly as it would have liked. The IAEA could volunteer to inform the state that unannounced inspections may be carried out during a specified period, even though the IAEA has not received an operational program, in which case the state would be on notice to have officials available.

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## DESIGNATION OF INSPECTORS

Paragraphs 85 and 86

Background And Issues

Paragraphs 85 and 86 provide for the administrative procedures by which Paragraph 9 is to be implemented. The only new issues which arose in the discussions which led to the formulation and adoption of Paragraphs 85 and 86 were those of the stationing by the IAEA of resident inspectors in a state and the time limit for designation of inspectors, particularly those for the verification of design information and for ad hoc inspections.

The Director General, in his initial suggestions (Part II 25 Doc 3), raised the issue of resident inspectors, by a formulation in which the IAEA would have the right to station resident inspectors in the state when the IAEA had the right of access at all times to nuclear material or to principal nuclear facilities.

In the initial discussions, Romania (46 OR 31), and the Fed. Rep. of Germany (48 OR 31) wanted the subject of resident inspectors treated only in a special agreement or in subsidiary arrangements.

The United States (49 OR 31) related the need for resident inspectors to continuous inspection and agreed with the Fed. Rep. of Germany that the details for such stationing should be worked out in subsidiary arrangements. Canada said (50 OR 31) that the IAEA should have the right to establish regional offices and to station resident inspectors in the state, for effective continual inspection.

India did not oppose the concept of resident inspectors, but thought (51 OR 31) that the decision should not depend solely on whether continuous inspection was required; other factors, such as travel costs and amount of safeguards work, should be considered and the whole subject should be addressed in a separate paragraph.

Japan questioned (47 OR 31) whether the IAEA had the right, under paragraph 50 of INFCIRC/66/Rev.2, to station resident inspectors in a state and said that the concept raised a number of legal issues (52 OR 31). Japan said that if a state wanted resident inspectors or a regional office, there could be no objection. But it stressed that the IAEA did not have a prior right to insist on such procedures and that the question of whether there should be resident inspectors or regional offices should be con-

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sidered only if experts conclude that continuous inspection was indispensable for certain types of facilities, such as reprocessing or fuel fabrication plants.

The United States pointed out (2 OR 32) that continuous inspection would hardly be possible without resident inspectors and agreed that the question of the IAEA's right to station resident inspectors should be left open until after the question of continuous inspection had been considered. The United States did note (3 OR 32) that resident inspectors might be desirable for economic reasons, irrespective of whether continuous inspection was to be performed.

The Fed. Rep. of Germany thought (5 OR 32) that the distance from Vienna might make continuous inspection cost-effective. India thought (6 OR 32) that the volume and type of work were the important criteria with respect to continuous inspection.

The Director General's detailed suggestions for Part II (Doc 62/Rev.1) included in Paragraphs 50 and 52 much of the substance of Paragraph 85, except that the deadline for initial designations was specified to be two weeks after entry into force and no mention was made of temporary designations. Paragraph 51 in that document contained the substance of Paragraph 86 of INFCIRC/153.

Paragraph 53 of Doc 62/Rev.1 addressed the subject of advance notice but also included a statement that, at the request of the IAEA, the state and the IAEA shall consult about arrangements for stationing inspectors in the state and that the IAEA shall be permitted to station such inspectors whenever it had the right of access at all times.

When the Committee discussed those paragraphs, it also had before it an amendment (Doc 141) proposed by Canada. That formulation included wording very close to that of Paragraphs 85(a), (b), and (c). It also contained the substance of the next-to-last sentence in that Paragraph, except that the deadline was specified as 30 days after the last day of the month in which the agreement enters into force. The wording of Paragraph 86 appeared verbatim in Canada's amendment.

The subject of resident inspectors was not addressed in Canada's amendment. In the discussion during the immediately preceding meeting which led to the adoption of Paragraphs 78 through 82, dealing with the frequency and intensity of inspections, Canada (45 OR 63) had taken care that the word "mode" was added in the

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second sentence of Paragraph 79, in order to permit continuous as well as intermittent inspection. The Inspector General (53 OR 63) had confirmed that both modes were comprehended in the scheme of Paragraphs 78 through 82 and that each mode would be applied as appropriate.

In the Committee's discussion of paragraphs 50 through 53 of Doc 62/Rev.1, the need to extend the deadline for initial designations from two weeks to 30 days was expressed by the Fed. Rep. of Germany (27 OR 64) and supported by the United Kingdom (30 OR 64). Hungary (36 OR 64) thought the deadline in Canada's amendment (30 days after the last day of the month in which the agreement entered into force) to be too long and that inspectors should be designated as soon as possible after entry into force.

The United States pointed out (41 OR 64) that neither the Director General's suggestions nor the Canadian amendment addressed the subject of repeated refusals by the state of proposed designations.

The United Kingdom objected (31 OR 64) to the references in 53 Doc 62/Rev.1 to "the right of access at all times" and proposed that such references be deleted. (No explicit reference to that concept had been made in the formulation of Paragraphs 78 through 82.) Since that paragraph related the right of the IAEA to station resident inspectors to the right of access at all times, the effect of the deletion proposed by the United Kingdom would be to delete the right to station resident inspectors. No other delegation commented on the proposal by the United Kingdom.

Two issues thus became clear:

- How soon after the proposed designation of an inspector must the state give its response; particularly, how soon after initial designation should such responses be required?
- Should the Agency have the right to station resident inspectors in a state under certain circumstances, or should such stationing be a matter for voluntary agreement by states?

#### Analysis

When the Committee next addressed the subject, it had before it the Director General's revised proposed texts (Doc 143) corresponding to Paragraphs 85 and 86. The texts corresponding to subparagraphs (a), (b) and (c) were virtually the same as they appear in Paragraph 85, but subparagraph (d) did not appear. The

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next-to-last sentence in the text corresponding to Paragraph 85 referred to the designation procedures (for verification of design information and certain ad hoc inspections) to be completed as soon as possible and in any event within 30 days after entry into force.

The text in Doc 143 corresponding to Paragraph 86 was in the final form. An additional paragraph was included (57.E Doc 143), stating that, to ensure optimum cost effectiveness, the state shall consult with the IAEA, at the latter's request, on arrangements for the stationing of inspectors in the state. No mention was made explicitly in Doc 143 of the right of the IAEA to station inspectors in the state.

The United States proposed an amendment (Doc 152) to the proposed additional paragraph, in which the reference to ensuring cost effectiveness was replaced with a reference to facilitating the implementation of safeguards. In introducing that amendment, the United States pointed out (4 OR 68) that in some situations, the stationing of an inspector may be desirable even though it might not be the least costly way of carrying out the IAEA's responsibilities. Thus, the criterion of cost effectiveness was too restrictive, in the view of the United States.

The United States also noted (5 OR 68) that the proposed text was not intended to add or detract from the rights and obligations of either the state or the IAEA, as laid down elsewhere in the provisions already agreed upon. The provisions in Paragraph 80 would determine the frequency and duration of inspector assignments; "stationing" in the proposed text meant the formal posting of an individual to a location and did not necessarily imply continuous presence and arrangements for such stationing would be made in consultation with the state (8 OR 68).

This proposal was discussed extensively, leading to the conclusion that while Paragraphs 79 and 80 established the nature of inspections, they did not define how the Agency should arrange administratively to carry these out, even when continuous inspections were called for. It is clear from the discussion that the Committee drew a distinction between the mere "extended stay" of an inspector, such as might be necessary to give practical effect to continuous inspection and "stationing" inspectors in a state, which implied actual residence (23 OR 68). Thus, the Committee, in discussing the proposal, reaffirmed the right of inspectors to stay in countries for extended periods if the inspection program so required, but it was unwilling to decide that the Agency could, as a matter of right actually have such inspectors as "residents" in the state. At the same time, several

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members of the Committee were careful to note that such residency was not excluded (e.g., France, 29 OR 68), but the arrangements would depend on agreement between the Agency and the state. Several members also observed that a provision which was merely permissive with respect to resident inspectors served no useful purpose. Thus, the United States' proposal was not adopted, and INFCIRC/153 is silent on "resident" inspectors.

Another secondary issue that was dealt with was whether a notification period of thirty days should be allowed before a state's request to withdraw a designation would become effective.

South Africa, supported by a number of other delegations, (17 OR 66) said that such a requirement for notice would be a dilution of a state's sovereign right to declare persona non grata an inspector, who enjoys privileges and immunities similar to those of diplomatic officers and the proposal was withdrawn, resulting in the language of Paragraph 85 (d).

With respect to the first issue: how promptly a state must give its response to designations of inspectors, the Committee decided after extensive discussion that a response would, in the general case, be required within thirty days. However, recognizing that inspectors could well be required for ad hoc inspections and review of construction within a short time after an Agreement goes into effect, the Committee adopted, with modifications, the Secretariat's proposal of Doc 143 that designations of inspectors for this purpose should be acted on within thirty days. The final language of the last paragraph of Paragraph 85, covering this issue, was derived from Doc 149, introduced by the Fed. Rep. of Germany. There was extensive discussion of whether the state's obligation to respond to designations of this type should be conditioned, as proposed in Doc 149, by the term "if possible". Although a number of delegations favored the omission of this qualification, it was finally retained, on the basis of a compromise, proposed by Poland (21 OR 66) and Hungary (32 OR 65), that inspectors for these purposes be designated on a temporary basis "if such designation appears impossible".

Although the exact meaning and means of implementing "temporary" designations was not spelled out in detail, the intent of the Committee in adopting this approach was clearly that, in cases where a state was experiencing difficulties in agreeing to the Director General's proposed permanent designation, temporary designations would raise fewer difficulties, and would ensure that inspectors would be available for early inspections under an Agreement. The record clearly establishes (50 OR 66) that such

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temporary designations could be made either before the 30-day period ended (if it was clear that the state could not meet this time limit), or later. It is also clear that the initiative for resorting to temporary designations could come from either the state or the Agency. It is less clear what is to be done in case the state objects to the proposed temporary designations as well. An important element in the development and adoption of the compromise language was the deletion of the phrase in Doc 149, as originally proposed by the Fed. Rep. of Germany that the temporary designations would be made "in accordance with the procedures set forth in subparagraphs (a)-(c) above". Following these procedures would require acceptance of the temporary designations by the state, and there is no doubt that the deletion of this language, as proposed by Hungary, was intended to eliminate the requirement for state acceptance. In its final intervention, however, to which there was no objection, the Fed. Rep. of Germany stated (50 OR 66) that "it should be understood that even if an inspector were designated on a temporary basis,...subparagraphs (a), (b) and (c) were applicable". Given this record, the applicability of these subparagraphs to temporary designations is subject to some doubt.

In the final analysis, of course, a state has the power, if not the right, to exclude an Agency-designated inspector. Nevertheless, the clear intent and spirit of the last portion of Paragraph 85 is that a state should be forthcoming in its acceptance of temporary inspectors if it is unprepared to accept permanent designations within 30 days after the entry into force of an Agreement. Thus, the best interpretation appears to be that while a state has the right to reject specific temporary designations, it is under a strong obligation to facilitate the initiation of inspections by accepting an appropriate temporary designation.

Another significant aspect of this lengthy discussion, over what might be viewed as a relatively small issue, is that it underscores the importance attached by the Committee to the prompt initiation of inspections once an Agreement has come into force, employing the ad hoc mode if necessary.

Paragraph 86, requiring a state to issue appropriate visas as quickly as possible, was adopted from Doc 143 without debate. Its position makes it clear that it is applicable to both permanent and temporary designations.

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It is worth noting that the question of how far a state could go in rejecting designations was not discussed further in connection with the adoption of Paragraphs 85 and 86. Thus, the treatment of this issue in Paragraph 9 remains unaffected by Paragraphs 85 and 86 and their negotiating history.

When the Chairman announced (48 OR 66) that the Committee appeared to be ready to accept the first sentence of the amendment of the Fed. Rep. of Germany unchanged and the changes proposed by Poland and by Hungary in the second sentence, the Fed. Rep. of Germany (50 OR 66) said it could accept Poland's wording, provided it was not interpreted as meaning that a temporary designation could not be made until thirty days had elapsed; if it were clear from the outset that the time limit could not be met, temporary designations could then, at the request of the state, be made. It was also understood by the Fed. Rep. of Germany that, even for temporary designations, the provisions of subparagraphs (a) through (c) were applicable.

The Committee thereupon agreed to the wording.

#### Interpretation

Paragraph 85, through subparagraph (c), is straightforward in its application to permanent or regular designations. The applicability of these subparagraphs to temporary designations is in some doubt. However, whether applicable or not, the last paragraph of Paragraph 85 clearly establishes that a state is under a special obligation to facilitate the initiation of inspections, by accepting the designation of an adequate number of either regular or temporary inspectors within 30 days after an agreement comes into force.

Paragraph 86 is straightforward. The term "appropriate visa", taken in conjunction with the general obligation of the state and the Agency to cooperate in the application of safeguards, clearly requires the state not to use the visa process to impede inspections; and to make use of mechanisms such as multiple entry visas to facilitate the inspection process.

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## CONDUCT AND VISITS OF INSPECTORS

Paragraphs 87 Through 89

Background And Issues

The Inspectors Document, in Paragraphs II.5 through II.7, makes reference to most of the substance of Paragraphs 87 through 89, the notable exception being that no explicit reference is made to inspectors not operating facilities or not directing the staff of a facility to carry out any operation.

INFCIRC/66/Rev.2, in Paragraph 48, added those explicit references. Moreover, Paragraph 4(b) and the last sentence of Paragraph 9, in Part I of INFCIRC/153, address in a general way the matter of how visits and inspections are to be conducted.

Thus, no real issues were involved in the formulation of Paragraphs 87 through 89, but rather only a drafting exercise.

Analysis

The Director General's suggestions for Part II contained provisions (54-56 Doc 62/Rev.1) along the lines of Paragraphs 87 through 89. With respect to the subject matter of Paragraph 88, a comment to Paragraph 56 discussed the meaning of "equipment", which was intended to include items available at the site, such as a furnished office, calculator, space in a hot cell or glove box, protective clothing, etc. The comment also called for prior consultations to take place, including the cost involved, concerning the furnishing of such "equipment".

Later formulations by the Director General in paragraphs 57.G and 57.H of Doc 143 were identical to Paragraphs 88 and 89. Paragraph 57.F of Doc 143 called for inspectors not to "intervene" in operations, but to make a request for particular operations to be carried out. The Fed. Rep. of Germany proposed an amendment, along the lines of the first and third sentences of Paragraph 87, except that the first sentence called for inspectors not to hamper or delay.

In the discussion of the amendment of the Fed. Rep. of Germany, the United States (62 OR 65) revised the wording of the first sentence of Paragraph 87 using the formula "in a manner designed to avoid hampering". This was consistent with the long standing approach of Agency safeguards documents, reflected in similar

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wording in Paragraph 4 of INFCIRC/153, that guidance as to Agency conduct in the implementation of safeguards should not be expressed in absolute terms which could adversely affect the effectiveness of safeguards.

Egypt (63 OR 65) had misgivings concerning the amendment of the Fed. Rep. of Germany because a state might use the suggested provision to prevent inspectors from performing their duties. Poland (64 OR 65), however, pointed out that the amendment merely presented the principle of Paragraph 4 in more concrete form.

Japan (65 OR 65) proposed the addition to the Fed. Rep. of Germany's amendment of the second sentence which appears in Paragraph 87, saying that the subject was regarded as of paramount importance. India (71 OR 65) and Italy (73 OR 65) supported Japan's proposal and the Fed. Rep. of Germany (74 OR 65) had no objection. The Fed. Rep. of Germany explained (69 OR 65) that its amendment related only to technical aspects of inspections (and not political aspects) and was intended to provide guidelines for inspectors, whose activities, as defined in Paragraphs 74 and 75, might indeed hamper or delay operations of facilities.

The Fed. Rep. of Germany revised its formulation (Doc 147/Rev.1) which, after minor word changes, was adopted by the Committee for Paragraph 87 (11 OR 67). During the discussion, Belgium (9 OR 67) proposed adding to the wording of the third sentence to indicate that the request would be made to the state. The Fed. Rep. of Germany (10 OR 67) thought such detail unnecessary; the inspector would address his request to the operator at the facility but the state should be duly informed.

Japan proposed an additional paragraph be added, to follow Paragraph 87. Japan's formulation (Doc 150) called for inspectors to carry out their duties in conformity with the state's laws and regulations, in particular those dealing with health and safety, with consultations to be held if such requirements create difficulty.

Hungary (14 OR 67), supported by Poland (15 OR 67), found much of Japan's proposal to repeat earlier provisions, such as Paragraph 44. The United Kingdom (17 OR 67) agreed with Hungary and Poland and pointed out (16 OR 67) that the remainder of the proposal was unnecessary, since it was obvious that everyone was supposed to respect the laws and regulations of the state. At the urging of the United Kingdom (18 OR 67), the Committee did not adopt Japan's proposal.

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The Committee adopted the wording of Paragraphs 88 and 89 as they had appeared in Paragraphs 57.G and 57.H of Doc 143. Norway put on record (21 OR 67) its understanding that the state could have inspectors accompanied by representatives which the state had designated specifically for that purpose and that the Committee agreed with that interpretation.

#### Interpretation

Paragraph 87 calls for IAEA inspectors to conduct their activities in a manner which is designed to avoid hampering or delaying construction, operations, and the like, but there is no absolute requirement that such activities are not to be hampered or delayed in any degree. They may request the operator (directly or through the representative of the state) to carry out necessary operations.

Paragraph 88 refers to services and equipment available in the state and includes housing and transportation as well as offices, calculators, laboratory space, protective clothing, etc. Prior consultation concerning the furnishing of such services and equipment, including their cost, was foreseen.

Paragraph 89 reflects the statutory requirement that states' representatives may accompany inspectors, so long as this does not impede inspections. This requirement is not superseded or conditioned by the Norwegian understanding that state representatives would have to be designated for this purpose by the state.

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## STATEMENTS ON THE AGENCY'S VERIFICATION ACTIVITIES

## Paragraph 90

Background And Issues

Paragraph 12 of the Inspectors Document calls for the IAEA to inform the state of the results of "an inspection" after it had been carried out. The initial suggestions by the Director General (Part II 24 Doc 3) included a reference to that paragraph.

During the early discussions, Switzerland (21 OR 29) stated that where a state had a national system, it should have the right to receive a report from the IAEA on the results of its verification activities.

The Inspector General (40 OR 29) responded that the IAEA already followed a procedure, pursuant to Paragraph 12 of the Inspectors Document, of providing a statement of the results and that such provision could be included in the Agreement.

Japan (43 OR 29) thought that, in addition to the existing procedure which addressed only whether the agreement had been complied with, the IAEA should also make available the results of its examination of reports, which would be valuable to the national system.

India, however, thought (44 OR 29) that the procedures suggested by Switzerland and Japan would involve excessive work and costs. Any state could obtain the results of the examination of reports at IAEA headquarters, if the state needed such information.

The United Kingdom (53 OR 31) also thought that the large number of reports to be submitted would impose a considerable burden on the IAEA and that it would be a mistake to present states with a "clean bill of health"; the value of the results provided to the state could be enhanced if recommendations concerning the national system were included.

The United States said (1 OR 32) that it had become clear that Paragraph 12 of the Inspectors Document did not adequately cover the complicated question of the information to be provided to the state by the IAEA concerning the results of its activities.

Thus, while the principle was generally accepted that the IAEA should inform the state of the results of the activities of the IAEA, the timing and scope of such information were unresolved.

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Analysis

The Director General's detailed suggestions for Part II included (58 Doc 62/Rev.1) reference to the IAEA informing the state of the conclusions it has inferred from its verification activities, by means of statements in respect of each material balance area, to be made as soon as possible after a material balance had been struck. The comment to that paragraph made the point that a meaningful statement could only be made after completion of verification of a material balance by means of the taking of a physical inventory and its verification.

By the time the Committee addressed the subject, Paragraph 30 (calling for a technical conclusion, in the form of a statement in respect of each material balance area) had been adopted, as well as Paragraph 41, the last sentence of which calls for copies of the inventory to be made available to the state at agreed intervals.

The revised formulations by the Director General in Doc 143 repeated, in Paragraph 57.I, the formulation previously included in 58 Doc 62/Rev.1. A footnote stated that, if the provision was included, there would be no need for the last sentence of Paragraph 41.

The Fed. Rep. of Germany proposed an amendment (Doc 148) along the lines of Paragraph 90, except that subparagraph (a) called for results of each inspection. In presenting its amendment (23 OR 67) the Fed. Rep. of Germany stated that the position of the phrase "in particular" in the final wording of subparagraph (b) made it clear that the statements prepared for each material balance area did not constitute the only information to be provided by the IAEA.

The Fed. Rep. of Germany did not agree (25 OR 67) that the last sentence of Paragraph 41 could be dropped, as suggested in Doc 143. Copies of inventories were to be provided at agreed intervals and not as soon as possible after an inventory had been taken.

The United Kingdom (27 OR 67) supported the proposal of the Fed. Rep. of Germany, specifically the reporting after each inspection, without prejudice, however, to later conclusions which would also be communicated to the state.

The Inspector General (29 OR 67) thought it undesirable for the IAEA to report after each inspection; Euratom, contrary to the understanding of the Fed. Rep. of Germany, reported at intervals of several months, rather than after each inspection.

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The Fed. Rep. of Germany stated (30 OR 67) that it did not wish the word "inspection" to be used in a narrow sense in its proposal; moreover, the report could be limited to a brief statement of the findings.

Poland (35 OR 67) proposed that the words "of each inspection" be replaced with "inspection activities". India (36 OR 67) said that was acceptable provided, however, that the state would be informed by some means of the results of each inspection. Hungary (37 OR 67) agreed with Poland and India but thought it best to delete "each" and to put "inspection" in the plural.

Finally, the Soviet Union (38 OR 67), noting that a considerable number of inspections would be carried out and that it would be excessive and unnecessary to require a report after each inspection, endorsed Hungary's suggestion. The Fed. Rep. of Germany (39 OR 67) accepted that suggestion and the Committee adopted the wording as it appears in Paragraph 90.

#### Interpretation

Subparagraph 90 (a) does not require that the state be informed of the results of each inspection immediately after it has taken place. There is an expectation, however, that the findings of all inspections carried out within a specified period will be reported to the state in the form of brief statements.

Subparagraph 90 (b) should be read in conjunction with Paragraph 30, which describes the technical conclusion. Subparagraph 90 (b) thus sets forth the timing for the communication of the technical conclusion.

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## INTERNATIONAL TRANSFERS

Paragraphs 91 Through 97

Background And Issues

Under the pre-NPT safeguards system of the IAEA, when safeguarded material was transferred from one state to another state, safeguards would continue to apply in the recipient state, unless the transfer was a specified type; i.e., among those types listed in Paragraph 28 of INFCIRC/66/Rev.2. Moreover, in all cases of substantial amounts of safeguarded nuclear material to be transferred outside the jurisdiction of a state, the IAEA was to be given advance notice for the purpose of a special inspection (54 INFCIRC/66/Rev.2).

Article III.1 of the NPT, however, requires safeguards to be applied only to those peaceful nuclear activities within the territory of a non-nuclear weapon state, under its jurisdiction, or carried out under its control anywhere. While Article III.2, calls upon parties to the NPT to require safeguards in connection with exports to non-nuclear-weapon states of nuclear materials and equipment, the Agency is not called upon by the Treaty to verify compliance with this responsibility. When safeguarded nuclear material is transferred from a party to the NPT to any nuclear-weapon state (whether party to the NPT or not), no safeguards in the recipient state are required by the NPT.

The novel concept introduced by the NPT, concerning the possible non-continuation of safeguards beyond the territory of the state, as well as the lack of Agency responsibility for verifying compliance with Article III.2 of the Treaty, presented the Committee with one of its most difficult and complex tasks.

The IAEA Secretariat contributed further to the complexity by the Director General's proposal (Part II 16 Doc 3) that the advance notice to the IAEA concerning an intended export of a "significant" quantity of nuclear material should indicate the protective measures to be taken during transit and that the IAEA, as part of its special inspection, would "check" those protective measures. That suggestion raised two issues: (1) the responsibility, if any, of the exporting state concerning the physical protection during transit of exported nuclear material; and (2) the authority and responsibility of the IAEA concerning such physical protection. In addition, the amount of material considered to be "significant" had not been defined.

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The Director General's proposal in Part II 16 Doc 3 also included a provision that the exporting state be in a position to provide the IAEA with corroboration from the recipient state that the exported material had been received, before the material could be deleted from the inventory of the exporting state. That suggestion raised the issue of the responsibility of the exporting state to the IAEA for providing such corroboration.

The Director General had pointed out in Part I 6(b) Doc 3 that the IAEA would have the right to satisfy itself that an export had actually taken place, before deleting the material from inventory, but that the provisions of 28 INFCIRC/66/Rev.2 would not be applicable. The position of the Director General concerning the obligations of Article III.2 of the NPT was that the responsibility for ensuring compliance lay with each state and not with the IAEA. That position was adopted by the Committee in the process of its formulation of Paragraph 12. (See the discussion of that Paragraph in this report.)

Other aspects of Paragraph 12 were only resolved in the course of the formulation of Paragraphs 91 through 97. For example, Belgium (Doc 2/Add.1, page 4) wanted advance notice of an intended export to be required only if safeguards would not be applicable in the recipient state. Belgium also stressed that such notice should be required only after completion of the commercial transactions involved, except for the actual transfer.

South Africa (24 OR 1) also questioned the requirement for advance notice, saying that when large quantities were involved a country's commercial interests could suffer.

France and the United Kingdom raised (Doc 111) the question of responsibility for safeguards in states through which (or over which) international transfers of nuclear material pass or whose ships or aircraft are used. Relatedly, Belgium (Doc 2/Add.1, page 4) noted the need for precise definition of the phrases "under its jurisdiction" and "under its control anywhere".

#### Analysis

The initial discussion of the Director General's suggestions in Part II 16 Doc 3 (63-68 OR 29 and 1-21 OR 30) resulted in a request that the IAEA Secretariat prepare a document introducing the various aspects of international transport. That document was issued as Doc 63.

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In addition, the Director General's detailed suggestions for Part II contained provisions dealing with international transfers (47-49 Doc 62/Rev.1). Those provisions took account of some of the comments which had been made in the initial discussions. For example, the requirement for advance notification was limited to transfers in excess of one effective kilogram (47 Doc 62/Rev.1). The period in advance was proposed to be normally two weeks before the date of the transfer (48 Doc 62/Rev.1). The advance notice was to include the protective measures to be taken, as well as the route, means of transport, and dates of export and arrival (48 Doc 62/Rev.1). Corroboration of the receipt was still to be provided by the exporting state, within six months of the date of transfer (49 Doc 62/Rev.1), but a comment to that paragraph made clear the intention that, in the case of the recipient being a non-nuclear-weapon state, the recipient state would advise the IAEA of the receipt; no additional corroboration would be required in order for the material to be removed from the inventory of the exporting state.

When the Committee addressed the subject, it also had before it a joint proposal by France and the United Kingdom (Doc 111) that the questions to be considered first were (a) the extent, if any, of responsibility of states through which material is transported or whose ships or aircraft are used; (b) whether the IAEA should be involved in the physical security of material in the course of international transfer; and (c) in light of the conclusions reached on those items, what provisions should be included in Part II and what recommendations should be made. The Committee adopted that agenda for its deliberations (73-93 OR 47).

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By the time the Committee was to begin those deliberations, it had before it a joint proposal (Doc 119) by Canada, France, Sweden, and the United Kingdom for provisions to replace paragraphs 47 through 49 of Doc 62/Rev.1. The introduction in Doc 119 argued that there was no legal basis for imposing safeguards responsibilities on "intermediate" states (those whose territory was merely crossed or whose ships or aircraft are used), but rather that the exporting and importing states should be charged with such responsibility, as being consistent with the NPT and the proposed safeguards agreements.

The introduction also argued that it would be reasonable for advance notice to be given, except for very small amounts, and that the IAEA be in a position to verify the receipt of the material and to have some assurance (such as by use of seals) that it had not been tampered with during transit.

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The sponsors firmly rejected any operational role for the IAEA in physical security during international transfers. Even the idea of the IAEA acting as a clearinghouse for information about intended movements of nuclear material was rejected, on the basis of the risk of such information being misused, as well as the difficulty in obtaining accurate data.

The proposed provisions in Doc 119 corresponded to Paragraphs 91 through 96 (no provision for special reports, as called for in Paragraph 97, was included), but in somewhat less developed form. As noted by the United Kingdom (5 OR 51) they had been drafted in haste, as a starting point for discussion, and the sponsors had already received many helpful suggestions for redrafting, including that for a provision for informing the IAEA that material had not arrived at its destination (9 OR 51).

The discussion which followed (11-44 OR 51) revealed agreement by many delegations with the negative conclusions reached by the sponsors of Doc 119 regarding the two questions raised in Doc 111. Only Egypt (23 OR 51) argued that the IAEA should play a role in the physical security of material during international transport. The United States (20 OR 51), supported by the United Kingdom (35 OR 51), thought that the IAEA's role should be to take the lead in formulating criteria to be applied by states in formulating regulations for the security of nuclear materials during transport. Hungary (28 OR 51) also thought that the IAEA should at least play an advisory role in that subject. France agreed (39 OR 51) with the view of the United States but considered that the subject was not within the Committee's terms of reference.

The principal comments by Japan were directed at the provision corresponding to Paragraph 91 (17 OR 51) and that corresponding to Paragraph 94 (41 OR 51).

Norway (49-50 OR 51) argued for not requiring advance notification of nuclear material crossing a border between states party to the NPT or if the transfer was otherwise being made directly between two states party to the NPT, without transiting a third state. Italy and Japan (51 OR 51) supported Norway's views.

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Before the Committee adjourned that discussion, a first modification of the proposed provisions was introduced by Canada (45 OR 51) and is found as an Annex to OR 51. By the time the Committee reconvened the next morning, Norway had prepared alternative formulations for the text corresponding to Paragraph 92 to reflect its views; those suggestions are found as an Annex to OR 52.

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Early drafts of the provision corresponding to Paragraph 91 used the term "control", for which the Committee had been unable to reach agreement on a definition (22 OR 52). Only after that term had been replaced by the concept of "responsibility" (1-21 OR 52) was progress made on the agreed wording.

The next-to-last sentence of Paragraph 91 resulted from a suggestion by Japan (24 OR 52).

In the discussion of the text corresponding to Paragraph 92, the Soviet Union (3 OR 52) pointed out that a threshold quantity (one effective kilogram) only for a single shipment, as had been proposed in the early drafts, would leave open the possibility of multiple shipments being made, each of which would contain slightly less than the threshold quantity. The Soviet Union proposed an annual limit, such as five kilograms, be set for shipments for which advance notification would not be given.

Extensive discussion took place of Norway's proposal for dispensing with a requirement for advance notification in the case of direct transfers between parties to the NPT (41-44 OR 52) on the basis of the alternative texts for the first sentence of Paragraph 92, as shown in the Annex to OR 52.

One of Norway's alternative texts in the Annex to OR 52 (as well as Canada's) called for notification to the IAEA after the conclusion of the contractual arrangements and normally at least two weeks before preparation for shipping, unless the state and the IAEA agree otherwise. Italy (48 OR 52) found that formulation valuable in facilitating international trade and in inducing the IAEA and the state to agree on a more rapid system of notification.

Thus, the issue was twofold:

- Whether advance notifications should be required at all between neighboring states both of which are NPT parties; and
- // • Whether flexibility should be provided to allow the Agency to waive the requirement for advance notification.

A number of states supported both of these liberalizations, while others opposed both.

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As the discussion proceeded, it became obvious that some means of providing flexibility should be provided (8-18 OR 53). The Soviet Union (19 OR 53), supported by the United States (20 OR 53), suggested that the "unless" clause could be inserted if there was no doubt that the possibility of exceptions related only to the time limit of two weeks and not to the quantitative limit of one effective kilogram. The United Kingdom (26 OR 53) warned against any formulation that would deprive the IAEA of the right to waive advance notification if it wished; otherwise, the IAEA would be flooded with documentation. At the same time, it was important to the United Kingdom that the IAEA have the right to insist on advance notification. The Soviet Union (27 OR 53) felt that advanced notification was always necessary, following which the IAEA could exercise discretion regarding the period within which it required details of the shipment.

The language ultimately adopted covering these two issues appeared in 2 Doc 119/Mod.2, introduced by Canada, France, Sweden and the United Kingdom. This language now constitutes the second sentence of Paragraph 92 and allows some flexibility in the procedures for "advance notification." Thus, it would allow, for example, some reduction in the normal two-week advance notice period or the consolidation of notices, but it would not allow waiver of the advance notice requirement, even for transfers between neighboring NPT parties. Neither would it allow raising the quantitative limits above which advance notice is required.

The balance of the proposal of Doc 119/Mod.2 for Paragraph 91 was also adopted with minor changes.

The wording of Paragraph 93 evolved during a brief non-controversial discussion (53-59 OR 53). When the final wording was under consideration, the United States suggested replacing the phrase "if necessary" in the first sentence with "as appropriate" (9 OR 54) to conform to the similar wording proposed for Paragraph 96. The Netherlands (15 OR 54) suggested a different formulation for bringing the texts into conformity, as did Belgium (19 OR 54). France (24 OR 54) preferred that "if necessary" be used in both Paragraphs. The United Kingdom (30 OR 54) attempted a formulation incorporating the suggestions by both the United States and the Netherlands, but France (45 OR 54) reiterated its preference for "if necessary" in both Paragraphs. When the Chairman announced the consensus, the wording of both Paragraphs was that preferred by France.

With respect to the last sentence of Paragraph 93, Australia (21 OR 54) assumed that it (as well as the last sentence of Paragraph 96) also covered the case of no action being taken by the IAEA. France (25 OR 54) agreed with that assumption. The United King-

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dom (31 OR 54) understood that the failure by the IAEA to act would not be a reason to delay shipments; the United Kingdom was willing to include specific wording to that effect, if desired. India (51 OR 54), referring to Australia's remarks, suggested adding the words "or contemplated by" after the word "taken". The Chairman's summary, immediately thereafter, included India's suggested wording for the last sentence of Paragraph 93.

Early drafts of the text for Paragraph 94 (see Doc 119, for example) called for the exporting state, if so requested by the IAEA, to provide corroboration from the recipient state, within six months of the date of transfer, that the material had been received. In the discussion, the Netherlands (12 OR 51) wondered whether the requirement for corroboration should be made automatic (and not only in response to a request by the IAEA) and be subject to a time limit. Hungary (29 OR 51) noted that the Paragraph addressed the case where the recipient state was a nuclear-weapon state and that, since such states would not be obliged to provide corroboration, it might be useful to include special provisions to that effect in the relevant contracts so that the exporting non-nuclear-weapon state could meet its obligations to the IAEA. The United Kingdom (36 OR 51) agreed that the Paragraph was concerned with transfers from non-nuclear-weapon states to nuclear-weapon states and said that without such a provision those recipient states might not be under any obligation to certify receipts; it would not be sufficient for the exporting state merely to inform the IAEA that it had dispatched material to a nuclear-weapon state. Japan (41 OR 51) thought it would be better if the procedure called for the IAEA itself to request corroboration from the recipient nuclear-weapon state. The United Kingdom (43 OR 51) responded that the intent had been to ensure that the exporting state would be aware that it might be approached by the IAEA for corroboration and that the exporting state would not wish to make a transfer unless it knew it would be able to comply.

The texts for Paragraphs 95 and 96 were the subject of brief non-controversial discussion (71-78 OR 53), with a consensus quickly reached that the texts be conformed to those already adopted for Paragraphs 92 and 93.

The first draft of a text corresponding to Paragraph 97 appeared in Canada's proposals shown in the Annex to OR 51. That version called for the state to notify the IAEA immediately of any theft or loss en route or significant delay. The notification was to include information concerning shipping arrangements, including carriers, routing, protective measures and steps being taken to recover the material. In the discussion of that text, the United Kingdom (85 OR 53) thought it should be made clear that the

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state called upon to notify the IAEA was the one which, at the time in question, was responsible for the material.

Italy (86 OR 53) saw no reason why the loss or theft of material during international transport should be treated any differently from those occurring within the territory of the state, for which special reports under Paragraph 68 were required. Italy, moreover, objected to a requirement that the state inform the IAEA of all the details concerning actions to recover material.

France (87 OR 53) sympathized with Italy. The United States (89 OR 53) suggested that the inclusion of a reference to the provisions of Paragraph 68 might meet the concerns of Italy and France. The Soviet Union (90 OR 53) pointed out that the reports pursuant to Paragraph 68 did not cover "significant delay". France (91 OR 53), supported by India (92 OR 53), thought that such coverage might be achieved by suitable redrafting of the Paragraph under discussion. Romania (88 OR 53) was not convinced of the advisability of prompt notification to the IAEA of theft or loss, in some circumstances.

The revised text in Doc 119/Mod.2 was identical to that in Paragraph 97 and was adopted after the proposal and rejection of several minor editorial changes.

#### Interpretation

Paragraph 91 provides for the assumption of responsibility with respect to safeguards only by the exporting state or the recipient state. It does not permit or require a third state (or an international entity) to assume responsibility during transport. The last sentence assures that such an assumption cannot be made by default; i.e., by failure of the exporting state and recipient state to agree on the point of transfer of responsibility. The requirement for fixing the point of transfer of responsibility applies to any quantity of nuclear material, whether or not the quantity is such that advance notification to the IAEA is required under Paragraph 92 or Paragraph 95.

Under Paragraph 92, if the exporting state knows that a series of shipments, each of less than one effective kilogram, is planned within a period of three months after the date of any such shipment, and that the cumulative amount of such shipments during that period will exceed one effective kilogram, the state is required to notify the IAEA in advance of the first shipment in that series. Shipments of less than one effective kilogram, other than those which become subject to the cumulative threshold, do not require advance notification to the IAEA, but are

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subject to inventory change reports and material balance reports pursuant to Paragraphs 63-67, as well as special reports pursuant to Paragraph 97.

The second sentence of Paragraph 93 gives the IAEA the discretion to agree with the state on procedures which (a) allow more or less time for the advance notification, or (b) provide for advance notification of a series of shipments. It does not provide for dispensing with advance notification. In exercising that discretion, however, it would be well for the IAEA to document the basis for any departure from the normal requirements and to exercise its discretion in a uniform manner among states in which similar circumstances exist. The IAEA's discretion does not extend to changing the threshold quantity stated in the first sentence.

In Paragraph 93, the meaning of the term "if necessary" in the first sentence (and in the first sentence of Paragraph 96), although not entirely clear, is that the IAEA will take the steps needed to determine that material transferred out of the state and that transferred into the recipient state are in fact the same material. In the second sentence of both Paragraphs, the failure of the IAEA to take any action shall not delay the transfer (or the unpacking).

Paragraph 94 should only be applicable in the case of exports to nuclear-weapon states, since the exporting state, pursuant to Article III.2 of the NPT, would be permitted to export nuclear material to a non-nuclear-weapon state only if the material will come under IAEA safeguards. The provision puts the exporting state on notice to make the required procedures for corroboration as part of its arrangements with the recipient nuclear-weapon state. The corroboration may be made by the recipient state directly to the IAEA (such as by examination of seals after arrival of a shipment) or by written confirmation via the exporting state.

The comments above concerning Paragraph 92 are applicable to Paragraph 95, as well, including the extent of the discretion provided to the IAEA by the second sentence. Similarly, the comments on Paragraph 93 apply to Paragraph 96.

Paragraph 97 is straightforward, except for the extent of a delay which would be regarded as "significant". It is clear from the discussion, however, that a significant delay is one which gives reasonable basis for a belief by the state that there may have been a loss. The content of the special reports called for is not specified, but left to the discretion of the state. Note,

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however, that the IAEA, pursuant to Paragraph 69, may request amplification of any report and the state is obligated to respond to such requests. Note also that Paragraph 97, unlike Paragraphs 92 through 96, applies to all international transfers, of any amount.

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## DEFINITIONS

Paragraphs 98 Through 116

Background And Issues

Some of the terms for which definitions appear in INFCIRC/153 were previously defined in INFCIRC/66/Rev.2. In some cases (e.g., "effective kilogram" and "enrichment") the earlier definitions were used as the basis for those in INFCIRC/153. In the case of the definition of "nuclear materials," reference is made to definitions appearing in the Statute of the IAEA.

Other sources of the definitions included in Paragraphs 98 through 116 were Doc 62 and Doc 144, prepared by the IAEA Secretariat, and Doc 65, in which a number of definitions appear as suggested by the Safeguards Technical Working Group, which met in September 1970. Many more terms were proposed to be defined than were finally included by the Committee in INFCIRC/153. Among the terms for which definitions were proposed by the Director General in 59-54 Doc 62, but which were not included in his later list in Part B of Doc 144, were the following: continuous inspection, conversion plant, critical facility, critical time, fabrication plant, inspector, intermittent inspection, isotope separation plant, material balance accountancy, material identification, measurement, reactor, reprocessing plant, residue, scrap, storage facility, surveillance, and verification.

Definitions for still other terms were formally proposed by various delegations, including definitions for "control" (as in "under the jurisdiction or control" of a state), "nuclear activity," and "peaceful nuclear activity." The definitions which had been proposed for terms proposed by delegations were listed in Part A of Doc 144.

In the course of the Committee's consideration of various provisions, delegations also called for certain terms, such as "nuclear damage" and "nuclear incident," to be defined.

As these comments suggest, the issues faced in developing the definitions for INFCIRC/153 were of two kinds: what terms should be defined, and what are the definitions? In a number of cases, the decision not to define certain terms, and the debate leading up to this decision, was as important in establishing meanings as the definitions adopted for various terms. In fact, in some cases, formal understandings were reached and recorded for some terms not defined in INFCIRC/153 itself. Both types of issues are treated in the analysis which follows.

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Analysis

Of the terms for which the Director General had proposed definitions in Doc 62 but which were not included in his later list in Part B of Doc 144, only two -- "surveillance" and "verification" -- were the subject of discussion by the Committee.

The Soviet Union (81 OR 69) commented on the omission of the term "surveillance" from the list in Part B of Doc 144, recalling that the definition which had appeared in 92 Doc 62/Rev.1 had been considered too restrictive because it seemed to exclude the observation by inspectors of certain operations and aspects. The Soviet Union asked (82 OR 69) whether the omission of that definition from the list proposed in Part B of Doc 144 meant that the term "surveillance" should be understood in the wider sense; i.e., to include such observation. The Inspector General (83 OR 69) responded affirmatively and called attention to the provisions in Paragraph 75(a) and (b), under which the IAEA could observe how samples were taken and treated, how measurements were made, and how instruments were calibrated; that list was not to be considered exhaustive and the word "surveillance" was to be understood in the most generally accepted sense, covering both the use of instruments and direct observation. The Soviet Union (85 OR 69) thought that, in light of the explanation by the Inspector General, it was not necessary to include a definition for "surveillance." No other delegation spoke on the matter.

The definition of "verification" proposed by the Director General in 94 Doc 62 referred to the process whereby the validity of all information concerning quantities and location of nuclear material is established. The Safeguards Technical Working Group proposed (5 Doc 65) a definition that limited the information to be validated to only that provided by national systems. That version of the definition was then used in 94 Doc 62/Rev.1, but no definition was recommended in Part B of Doc 144. The United States proposed definitions (Doc 81 and Doc 81/Rev.1) which would not limit the information to be validated to only that provided by national systems. Hungary and Poland jointly proposed (Doc 99) another formulation having the same objective as that of the United States. In the end, however, Poland (54 OR 75), supported by Hungary (55 OR 75), said it was willing to agree to omit any definition, provided it was clearly understood that the term referred to the process, as reflected in approved procedures, of ascertaining by the IAEA that there had been no diversion. The Committee thereupon decided to omit a definition, taking into account the comment by Poland (56-57 OR 75).

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Some of the terms proposed by various delegations to be defined were omitted only after substantial discussion by the Committee and various proposals for definitions; chief among those were "control", "nuclear activity", and "peaceful nuclear activity".

The basic undertaking in Paragraph 1 repeats the phrase appearing in the NPT which refers to safeguards being applied on all nuclear material "in all peaceful nuclear activities within its territory under its jurisdiction or carried out under its control anywhere." The Director General had pointed out (Part I, 2 Doc 3) that it would be particularly desirable to arrive at an agreed interpretation of the term "control." The Director General's view was that the term implied that the state "is in a position to apply its legislation or administrative procedures so as to determine the use and disposition of nuclear material," and that mere financial participation by a state or its nationals in an enterprise outside the territory of the state would not mean that the activity was under the control of the state.

Japan (35 OR 7) proposed that a definition of "control" be included in the agreement and suggested that a paper be prepared by the Secretariat on the subject, including the question of responsibility for material in international transport. Meanwhile, the United Kingdom (Doc 53) and the United States (Doc 58) had proposed definitions for "control." The definition proposed by the United Kingdom differed only slightly from the view of the Director General, but that proposed by the United States made no reference to the application of the laws and regulations of the state and relied solely upon the ability of the state to determine the use or disposition of the nuclear material involved. Those proposals were discussed inconclusively (7-17 OR 28). In the end, the United Kingdom (20 OR 75) said that both its proposal and that of the United States had given rise to legal and practical problems (not further identified) and, moreover, (22 OR 75) that it was not for the IAEA to define terms used in the NPT. At the same time, however, the United Kingdom proposed (27 OR 75) that its proposed definition be accepted, with an indication that, in the case of international transfer, the material should be under the control of the responsible state. Hungary (28 OR 75), the Fed. Rep. of Germany, and Australia (31 OR 75) also preferred that proposal, but the United States (29 OR 75), Italy (30 OR 75), the Netherlands (32 OR 75), the Soviet Union (33 OR 75) and South Africa (34 OR 75) preferred the proposal of the United States.

At the next session of the Committee, the United Kingdom (7 OR 75) reported that informal consultations on the definition had failed to lead to agreement. The United Kingdom's view (8 OR 75)

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was that the effect of the wording of Article III.1 of the NPT was that a state party to the NPT which built or owned a nuclear facility in a non-party state would be in a breach of its obligations if the facility were not placed under IAEA safeguards; at the same time, it was not even remotely possible for the owning state to undertake that safeguards would be applied to such a facility. Accordingly, the United Kingdom (9-10 OR 75) considered that it was unacceptable that "control," as used in Paragraphs 1 and 2, could be held to embrace state ownership of a plant in another country; only if "control" was narrowly defined, in a sense close to "jurisdiction," and such a definition accepted for the strictly limited purposes of the agreement, could serious risk be avoided of the definition being applied to the NPT, particularly Article II (which refers to "control" over nuclear weapons). The United Kingdom (11 OR 75) felt that the definition proposed by the United States would require the application of safeguards to a plant supplied or owned by another state and therefore it preferred its own proposal.

The Soviet Union (12 OR 76) thought that it was not desirable to equate "control" with "jurisdiction," and suggested that the proposal by the United States, which it preferred, might be reworded to cover the point raised by the United Kingdom; if no agreement was reached, a definition should be omitted. Canada (13 OR 76) said it was inclined to dispense with a definition, as did Romania (15 OR 76). The Fed. Rep. of Germany (14 OR 76) was in favor of including a definition along the lines of the proposal by the United Kingdom, but said that any definition should conform to generally accepted principles of international law, including the principle that an obligation undertaken by a state could not be binding on another state; no state could undertake an obligation under the agreement that would apply outside its jurisdiction and that principle would stand in the absence of a definition. Switzerland and Uruguay (17 OR 76) and Spain (18 OR 76) endorsed the views of the Fed. Rep. of Germany. The United Kingdom (20 OR 76) said that if the Committee accepted the proviso suggested by the Fed. Rep. of Germany -- that a state could accept no commitment under the agreement extending beyond its territory or jurisdiction -- the United Kingdom would concur in omitting the definition. On that understanding, the Committee decided (22 OR 76) to omit the definition.

In Part II, Paragraph 1(d) of Doc 3, the Director General suggested it would be desirable to clarify the meaning of "peaceful nuclear activities," as that term was used in the NPT (and would be used in Paragraphs 1 and 2). His view was that processes

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which only change the chemical or isotopic composition of bulk material such as conversion, enrichment, or reprocessing, are not intrinsically military, irrespective of the origin or end-use of the material; activities such as nuclear propulsion, however, may constitute a military activity. The United Kingdom proposed a definition (Doc 53) along the lines of the views set out in Part II 1(d) Doc 3. The United States also suggested (64 OR 23) a definition which differed only slightly from that of the United Kingdom. The proposal of the United Kingdom was subsequently revised (Doc 53/Rev.1) to include a definition of "nuclear activity," the principal effect of which would have been to exclude from the definition any activity before the starting point of safeguards, as specified in the agreement; that defined term was then used in the United Kingdom's proposed definition for "peaceful nuclear activity."

The United Kingdom (18 OR 28), in introducing its proposals in Doc 53/Rev.1, said that there was no agreement on whether "nuclear activity" should include enrichment, concentration, or conversion of ores. It also said (19 OR 28) that it was generally agreed that non-nuclear weapon states should not have a complete fuel cycle free of safeguards; on the other hand, the NPT did not require safeguards to be applied in relation to a state's military activities and any definition of "peaceful nuclear activity" would have to allow the state to preserve its military secrets.

The United States (21 OR 28) welcomed the proposals in Doc 53/Rev.1 and referred to an inconsistency in the Director General's proposal in Doc 3, in that reprocessing had been included by the Director General among the examples of peaceful nuclear activities. In its view (23 OR 28), safeguards should be applied to all activities which provide an opportunity for developing the use of nuclear material for nuclear weapons and explosives, other than those activities which were closely related to the kinds of military activity permitted under the NPT. In reply to some skepticism expressed by India (24-25 OR 28) toward its explanation, the United States said (26 OR 28) that it would be difficult to distinguish rigorously between successive stages of fuel fabrication (as to whether the activity was intrinsically military) but that a perfect text could not be expected; in any event, only three or four countries had military programs and that number was unlikely to increase in the near future so that the text under discussion applied only to isolated cases. Sweden (28 OR 28) gave an example of a nuclear submarine for which the

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operation of the reactor, the fabrication of the fuel and its reprocessing would be regarded as military activities and thus only the uranium enrichment plant would be subject to safeguards. The United Kingdom (30 OR 28) said that the fuel elements from a nuclear submarine, when sent to a reprocessing plant, should not be subject to safeguards as long as they retained their composition, form, and dimension, all of which were military secrets. India (33 OR 28) felt that any attempt toward a precise definition was bound to create confusion, unless it dealt only with those activities which were not intrinsically military.

The Director General did not include "peaceful nuclear activity" among the terms for which definitions were proposed in Doc 62. When the Committee later addressed the list of recommended definitions in Doc 144, the Soviet Union (17 OR 75), Poland (19 OR 75) and the United Kingdom (20 OR 75) suggested that a definition be included for "peaceful nuclear activity." India and Italy (47 OR 75) opposed its inclusion, as well as the related definition for "nuclear activity," on the grounds that it was practically impossible to cover all possible hypotheses. The United States (48 OR 75) and the United Kingdom (51 OR 75) argued that it was essential that the terms be defined. There followed a spirited exchange of views (23-46 OR 76) and a brief suspension of the session, after which Canada (47 OR 75) announced that a common view had been reached that it was not essential to include the definitions, provided that a consensus was recorded that, for purposes of the agreement, "peaceful nuclear activity" would in any case include processes which merely changed the chemical or isotopic composition of bulk nuclear material, regardless of the past or contemplated future use of the nuclear material in question. The Committee agreed to that proposal (53 OR 76), although Australia (48 OR 76) reserved its position, saying that any attempt to define in a safeguards agreement a term not defined in the NPT could present problems to a state contemplating a safeguards agreement. |

Another term which was defined by means of an understanding on the record, rather than by a formal definition, was "nuclear damage", as that term was used in Paragraph 16. The Fed. Rep. of Germany (35 OR 28), while recognizing that the term, "damage arising out of a nuclear activity" had been defined in the Vienna Convention on Civil Liability for Nuclear Damage and the Paris Convention on Third Party Liability in the Field of Nuclear Energy, suggested that a definition be included in order that the agreement be self-contained. The definitions of "nuclear damage" and "nuclear incident," as they appear in the Vienna Convention,

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were reproduced in Doc 162 for the information of the Committee, which agreed (1-6 OR 76) to the Chairman's suggestion that the Committee take note of those definitions and that they not be included in the document under discussion.

Most of those definitions which were included in Paragraphs 98 through 116 evolved from the list suggested by the Director General in 59-94 Doc 62/Rev.1, then to the shorter list (with rewording of some definitions) suggested by the Secretariat in Part B Doc 144, and finally the proposals in Doc 153 for rewording of some of the definitions in Part B Doc 144 (and the addition of a few others), made jointly by Canada, Czechoslovakia, Denmark, the Fed. Rep. of Germany, Hungary, Japan, the Netherlands, Poland, Sweden and the United Kingdom. A few of the final definitions, however, were developed during the discussion of substantive provisions.

The formulation of a definition for "adjustment" which appeared in 59 Doc 62/Rev.1 was carried over to Part B of Doc 144, with only minor change in form to read:

Adjustment means an entry into the accounting records to obtain agreement between the book inventory and the physical inventory; the entry shows shipper/receiver differences and/or material unaccounted for.

The wording which appears in Paragraph 98 was suggested in 2 Doc 153 and was accepted (15-22 OR 69) with little discussion.

The term "annual throughput" was not among those for which definitions were proposed in Doc 62/Rev.1, but the term "throughput" was defined (93 Doc 62/Rev.1) as follows:

Throughput for a given operating period means the sum of inputs to a material balance area plus the difference between the beginning and ending inventories.

That definition was carried over intact to Part B of Doc 144. In the meantime, however, the term "annual throughput" had been employed in the formulation of Paragraphs 79 and 80, dealing with the important subject of routine inspection frequency, duration, etc. Accordingly, it was suggested in 30 Doc 153 that the definition of "throughput" be replaced by a definition of "annual throughput," which read:

Annual throughput for the purposes of paragraphs...means the amount of nuclear material introduced annually into a facility working at nominal capacity.

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That definition was accepted by the Committee, without discussion (77 OR 69). Later, the United Kingdom pointed out (1 OR 75) that the definition would be inappropriate in the case of an isotopic enrichment plant, for which the amount of nuclear material introduced annually was considerably less than the end-product. Accordingly, the sponsors of Doc 153 proposed a revised definition (as it appears in Paragraph 99) in Doc 159. The explanation in Doc 159 stated that it is the amount of product and "waste" from an enrichment plant which is significant for the purposes of the provision in Paragraph 80 (which specifies maximum routine inspection formulas). The revised definition was accepted (2 OR 75) without discussion.

A definition of "batch" was included (60 Doc 62/Rev.1) among the Director General's suggestions and read:

Batch means the smallest portion of nuclear material, whether in bulk form or combined in a number of separate items, of which the composition and quantity are defined by a single set of specifications and/or measurements and which readily lends itself operationally to treatment as a single unit. Thus, for instance:

- a) Ten cubic meters of solution distributed in a number of vessels and determined, through analysis of a sample, representative for the entire volume, to be a single solution of a given composition may be treated as one batch;
- b) One thousand slugs of uranium metal of varying weight, of which the total weight is known and of which the isotopic content is known to be the same, may be treated as a single batch;
- c) Portions of irradiated uranium fuel, with different initial enrichment for use in different zones of the same reactor, must be treated as different batches;
- d) Portions of irradiated fuel differing in enrichment and plutonium content, which are meant to be re-processed together, may be combined in fewer batches or one batch according to their grouping for dissolution and representation by one sample of dissolver solution.

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During the Committee's discussion (62-72 OR 42) of the provision in Paragraph 57, in which the term "batch" was introduced, objections were raised to the proposed definition in 60 Doc 62/Rev.1, and Japan (65 OR 42), supported by the United Kingdom (71 OR 42), suggested that the examples given in the subparagraphs be omitted.

Subsequently, Japan and the United Kingdom proposed a definition (Doc 109) which was the basis for the final wording of Paragraph 100. In explaining that proposal, the United Kingdom (8 OR 46) said that the term "key measurement point" applied to points both within and at the periphery of material balance areas, but that only those at the periphery were important in normal operations; it was possible that a batch lost its identity once it entered a material balance area. The wording, however, had also to allow, according to the United Kingdom, for the taking of physical inventories, in which it might be necessary to group the inventory into batches for measurement. The Fed. Rep. of Germany (10 OR 46) asked whether, in the case of sub-division of a "batch", in which the several parts had different characteristics or were measured at different points, the several parts were to be treated as separate batches. The United Kingdom (11 OR 46) said that, once the material fulfilled all of the conditions of the definition, it mattered little whether it passed through a material balance area in the form of two distinct flows which would later be combined. Hungary (12 OR 46) commented that, if the two flows did not combine after leaving the material balance area, they should be considered to be two separate batches. Apart from a suggestion to change "accountancy" to "accounting" in the text, there was no further discussion and the Committee accepted the definition (16 OR 46).

The term "batch data" was defined in 61 Doc 62/Rev.1 as follows:

Batch data means the total weight of compound, the total weight of element of nuclear material and, where appropriate, the isotopic content.

That same definition had been recommended by the Safeguards Technical Working Group (14 Doc 65). At the time of the initial acceptance of the definition of "batch," France (18 OR 46) wondered whether it was desirable to retain a definition of "batch data." The Inspector General replied that it was one of the terms which needed to be defined in order for other provisions to be understood. The definition later appeared in the list in Part B of Doc 144, but with the reference to "total weight of compound" omitted

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(without explanation). The definition which was proposed in 4 Doc 153 also omitted that reference and added the subparagraphs setting out the units of account, as shown in Paragraph 101.

In explaining the proposed definition, the United Kingdom (34 OR 69) called attention to the importance of the phrase "total weight of each element," noting the provision in Paragraph 57 for accounting separately for uranium, thorium and plutonium in each batch. The purpose of the words "when appropriate" was explained (35 OR 69) on the basis that an operator might not always be able to measure certain materials and the IAEA could not then require that the isotopic composition be measured with a specified degree of accuracy. The reason given (36 OR 69) for the phrase "rounding to the nearest unit" in the last sentence was to avoid imposing an unduly heavy burden on the operator. The definition was accepted without further discussion (39 OR 69).

The definition of "book inventory" which appears in Paragraph 102 was suggested in 62 Doc/Rev.1, repeated in Part B of Doc 144, and accepted by the Committee (79-80 OR 69) without discussion.

A definition of "correction" was included (66 Doc 62/Rev.1) in the Director General's list in wording which was identical to that in Paragraph 103, except that it referred only to accounting records, omitting reference to reports. For reasons which are not apparent from the record, "correction" was not included among the terms for which definitions were suggested by the Secretariat in Part B of Doc 144. The sponsors of Doc 153, however, proposed (3 Doc 153) that the term be defined, with the wording as shown in Paragraph 103. In explaining the proposed inclusion of that definition, the United Kingdom (15 OR 69) noted that there had been confusion between "adjustment" and "correction" and that both were required by the IAEA for accounting purposes. Norway (19 OR 69), however, thought that "correction" should be limited to rectification of a mistaken entry (and not to reflect an improved measurement). The United States (20 OR 69) did not agree and distinguished between the case of shipper/receiver differences and a series of measurements on the same material made by one operator; the first case called for an "adjustment", while the latter should be a "correction". India (21 OR 69) disagreed, saying that the results of a second series of measurements called for an "adjustment"; there was no need to define "correction" since its meaning -- to rectify a mistake exclusively -- was self-evident. The exchange of opinions continued briefly (23-30 OR 69), with only India and Norway opposing the inclusion of a definition for "correction". Japan (27 OR 69) pointed out that

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the definition of "adjustment" which had already been accepted, did not include the idea of "more exact measurements" and if the definition for "correction" were to be omitted, that idea would not be provided for; therefore, Japan thought it better to include the proposed definition. In the end, India withdrew its objection and the Committee accepted the definition (32 OR 69).

The term "effective kilogram" is defined in 72 INFCIRC/66/Rev.2, in the same way (with insignificant differences in incidental wording) as in Paragraph 104. The wording as in 72 INFCIRC/66/Rev.2 was used in 69 Doc 62/Rev.1 and, with stylistic changes only, in Part B of Doc 144. The introductory sentence which appears in Paragraph 104 was proposed in 5 Doc 153 to be added to the text in Part B of Doc 144. The United Kingdom (40 OR 69) noted that some of the sponsors, in the interest of scientific accuracy, had wanted to replace "weight" with "mass," but since the definition was already in use, it did not seem appropriate to make any change. India (41 OR 69) asked why isotopic abundance had not been taken into account in the case of plutonium, such as plutonium-239. The United Kingdom (42 OR 69) and Japan (43 OR 69) admitted that the question was valid. The United Kingdom said, however, that it was not likely that information would be available to the Committee concerning the suitability for nuclear weapons of various isotopes of plutonium, in order for the Committee to form a sound judgement; in any case, the potential gains would be small unless the Committee was prepared to exclude entirely certain grades of plutonium. Japan noted that the discussion of isotopic abundance had been going on for a long time but that no technical conclusion had been reached and that therefore the present definition had been suggested. Without further discussion, the Committee adopted the definition as shown in Paragraph 104.

The definition of "enrichment," as shown in Paragraph 105, was included in the Director General's suggestions (70 Doc 62/Rev.1) but was omitted, without explanation, from the Secretariat's list in Part B of Doc 144. The sponsors of Doc 153, however, proposed that it be included (6 Doc 153), because, according to the United Kingdom (46 OR 69), the term was often used in the provisions formulated by the Committee and the term was not defined in the Statute. In reply to a question by France, the United Kingdom confirmed (47-48 OR 69) that the phrase "combined weight" meant the total weight of uranium-233 and uranium-235. The definition was accepted without further discussion (49 OR 69).

The defined term "facility," as shown in Paragraph 106, was created by the Committee in the process of working out the technical provisions for Part II of the agreement. The Director General's initial outline (Part II 8 Doc 3) assumed that an installation

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would be classified as a principal nuclear facility, research and development facility or storage facility, as those terms are defined or used, in Paragraphs 78 and 81, for example, or in INFCIRC 66/Rev.2. Early in the Committee's discussions of the provisions in Paragraphs 42-45, however, the United Kingdom (27 OR 25) saw no reason for such classification for purposes of the agreement and the Inspector General (41 OR 25) agreed that, with appropriate wording, there would be no need to classify the types of installations and (47 OR 25) to consider only the amount of material contained in the facility. When the Director General's later suggestions for Part II appeared, a definition of "facility" (72 Doc 62/Rev.1) was included, reading:

Facility means a reactor, a critical facility, a conversion plant, a fabrication plant, a reprocessing plant, an isotope separation plant, or a separate storage or other location, containing or to contain nuclear material.

(Definitions were also included in Doc 62/Rev.1 for each of the types of installations mentioned in the foregoing definition.)

During the discussion of that definition (49-63 OR 40), France, the Fed. Rep. of Germany, Australia and the United States expressed dissatisfaction with the phrase "or other location, containing..." etc. In a later discussion of the proposed definition, the United States (2 OR 56) said that it was too broad and might be interpreted to include places such as hospitals, university laboratories, aircraft, trucks and other means of transport where nuclear material subject to safeguards was present from time to time and sometimes in infinitesimal amounts; the definition should be of more limited scope, much as that proposed by the United States in Doc 120, which read:

Facility means an installation, plant or unit for the production or processing of nuclear material, or an area where nuclear material in amounts greater than one effective kilogram is customarily used or stored.

The United Kingdom (4 OR 56) asked what was meant by "unit for production" and the United States (8 OR 56) said it included plants for production or processing and research laboratories which possessed a large research reactor. In reply to a question by France, the United States (9 OR 56) confirmed that the definition included all research laboratories using more than one ef-

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fective kilogram of nuclear material. The Fed. Rep. of Germany (11 OR 56) suggested replacing "area" with "location," to which the United States (16 OR 56) agreed. Poland (14 OR 56) proposed inserting "a reactor" after "means", saying that reactors were, in fact, the most typical facility and should be specifically mentioned. The United States (16 OR 56) agreed, saying it was perhaps wise to take account of borderline cases such as reactors which might use quantities of less than one effective kilogram. Canada (15 OR 56) suggested that insertion of "for the use" after "unit," in order to reflect the concept of utilization of material, but the United States (16 OR 56) expressed concern that the wording would then give the impression that the criterion of one effective kilogram would not apply to utilization. France (17 OR 56) wanted to make sure that the criterion of one effective kilogram applied not only to a "location" but also to an installation, plant or unit. The United States (20 OR 56) said that the wording showed clearly that the criterion of one effective kilogram applied to all of the elements entering into the definition. France was not persuaded by that explanation and made clear (24 OR 56) that it thought that the criterion of one effective kilogram should apply explicitly only to installations or plants and not to pilot plants, research centers and laboratories, so that the latter locations would be excluded from the definition.

The United States redrafted its proposal (Doc 120/Rev.1) to wording the same as that shown in Paragraph 106, except that it was in the form of a single paragraph, with a comma following "installation." In presenting the proposal, the United States said that, under the proposed definition, important nuclear laboratories would be regarded as facilities, but laboratories containing small amounts of nuclear material or locations in which large amounts were not customarily found would not be so regarded. In replying to a question by Austria, the United States (32 OR 58) said that for a location to be a "facility," two criteria had to be met: it had to use more than one effective kilogram and its use of such amounts must be customary. The Committee thereupon accepted the definition (33-34 OR 58).

A definition of "inventory change" was included (75 Doc 62/Rev.1) in the Director General's detailed suggestions for Part II, in the same form and substance as that in Paragraph 107. The wording was refined by Denmark (Doc 101) and the Secretariat (Part B of Doc 144). In the jointly sponsored amendment in Doc 153, further stylistic changes were suggested and, in addition, the words "in a reactor" were proposed to be deleted from subparagraph (a)(iii) which refers to the production of special fissionable material. (The latter term is defined in Article XX.1 of

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the Statute to include "uranium enriched in the isotopes 235 or 233".) Hungary (58-60 OR 69) explained that proposal by pointing out that special fissionable material was produced from source material in isotopic enrichment processes, as well as in reactors; if the words "in a reactor" were retained, the operator of a uranium enrichment plant would not be required to inform the IAEA of any production of enriched uranium as long as the material did not leave the facility. Hungary considered that unsatisfactory from procedural and verification points of view and said that the difficulty could be avoided if special material balance areas were established at the output of such plants, but that appeared impossible in practice.

The United States (56 OR 69) pointed out that the formulation proposed by the Secretariat, including the words "in a reactor," conformed to the practice in common use throughout the world, including the United States, and therefore those words should be retained (64 OR 69). The Inspector General (61 OR 69) also argued that "nuclear production" referred only to transmutation processes and not to isotopic enrichment; the latter case should be dealt with in subsidiary arrangements. He did not think that omitting "in a reactor" would solve the problem. In reply to a question by Norway, he also said that changes in enrichment resulting from blending of source material with special fissionable material would be reportable only if there was a transfer of one of the materials between material balance areas or in the case of a regrouping of material in connection with a physical inventory. Thus, the frequency of inventories and the choice of material balance areas would influence the quality of information. In the end, Hungary (67 OR 69) conceded that the words "in a reactor" could be retained, provided that the IAEA took the necessary steps to obtain all of the information it required, through judicious choices of material balance areas or by sufficiently frequent physical inventories. The United States (68 OR 69) was also willing that the words be retained, in view of the explanation of the Inspector General.

The question was also posed by the United Kingdom (53 OR 69) of the necessity for including subparagraph (b)(v), dealing with retained waste. The United States (55 OR 69) thought that it could be omitted, in view of Paragraph 35, but that, if the Inspector General considered the provision necessary, it could be retained. In response, the Inspector General (69 OR 69) said that its retention was preferable, in that greater flexibility would be provided in the application of agreements. The Committee thereupon accepted the text as it appears in Paragraph 107.

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The initial proposal for a definition of "key measurement point(s)" was made by the United Kingdom (30 OR 32) and read:

Points at the boundary between material balance areas where material balance lends itself to ready, accurate and precise measurement. Such points would include, but are not limited to, the input, output, discard stages and all storage areas.

(Note that the reference to "material balance areas" was in the context of a definition proposed concurrently by the United Kingdom, in which that term is defined to mean an operational material balance area; i.e., one established by the operator in the sole interest of process accounting.)

Subsequently, the Director General proposed a definition, in 75 Doc 62/Rev.1, which differed only in one non-substantive respect from that in Paragraph 108. The jointly sponsored amendment, in 10 Doc 153, proposed the parenthetical phrase "including measured discards" to replace "including waste outputs." The United Kingdom (71 OR 69) explained the proposed change as motivated by the importance of maintaining the distinction between "wastes", which were considered recoverable, and "measured discards". Without further discussion, the text shown in Paragraph 108 was accepted by the Committee (72 OR 69).

The term "man-year of inspection" arose for the first time during the discussion of the provisions for Paragraph 80, which were proposed in the Appendix to Doc 139, jointly by Australia, Greece, Switzerland, and the United Kingdom. The term was defined in a footnote to Paragraph 3(a) of the Appendix to Doc 139 in the same manner, with significantly different wording, as that shown in Paragraph 109. There was no discussion of the definition during the consideration of Doc 139. The final text appeared in Part B of Doc 144 and was accepted by the Committee without discussion (78 OR 69).

In his initial outline in Doc 3, the Director General did not use the term "material balance area," but rather the term "material control area," as the basis for material balance accounting. In the early discussions, the Inspector General (41 OR 24 and 31 OR 32) made it clear that the operator would establish "material balance areas" for process accounting purposes and that the IAEA would define "material control areas" which would be comprised of a number of material balance areas; the material control areas would normally be defined on a functional (rather than geographical) basis in relation to input and output points. In the dis-

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cussion which followed, the term "material safeguards area" was proposed by the Fed. Rep. of Germany (32 OR 32) to be used instead of "material balance area" (as that term had been used by the United Kingdom and the Inspector General). Canada (33 OR 32), on the other hand, said that it was the state's prerogative to select material balance areas and that the IAEA had the right to select material safeguards areas. The Inspector General (43 OR 32) said that the considerations in the designation (by the IAEA) of material control areas were: measurements of input and output must be possible; a physical inventory of material within the area would be necessary; the boundary should be one at which containment and surveillance measures could be applied; and the boundary must be defined on a functional, rather than geographical, basis in order to permit checking of the containment, which might be far inside the geographical boundaries.

In Doc 62, issued before the results of the Safeguards Technical Working Group had been circulated, the term "material control area" was not used and a definition of "material balance area" appeared in Paragraph 79, reading as follows:

Material balance area means an area for accounting for nuclear material, defined in such a way that:

- (a) The inputs and outputs of nuclear material to and from it may be measured (or determined by item-counting and nuclear loss and production calculation); and
- (b) The physical inventory of material in it is measured in accordance with specified procedures.

There are three major types of material balance areas which conform with the above definition. Further definition of these types is required because the causes of unbalance of material in these areas are different and therefore require different verification procedures:

- (i) A material unaccounted for (MUF) material balance area is a process area where nuclear material undergoes chemical or physical changes and wastes may be generated. The book inventory, determined by measured inputs to and outputs from the material balance area, is periodically compared with a measured physical inventory to obtain an estimate of material unaccounted for;

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- (ii) A shipper/receiver difference (SRD) material balance area is a storage area where receipts of nuclear material are recorded on the basis of shipper's data and where removals of nuclear material are recorded on the basis of the operator's measurements. A difference between the book inventory and the physical inventory should therefore be the net shipper/receiver difference; normally there will be no material unaccounted for; and
- (iii) A book inventory material balance area is a storage area or a reactor where nuclear material inputs and outputs are recorded on the basis of the input measurement or shipper's data and the calculated values of nuclear loss and production. The book inventory and physical inventory for such a material balance area should thus be identical and material unaccounted for normally equal to zero.

The foregoing definition, however, was ambiguous as to whose accounting purpose it was to serve -- that of the state or of the IAEA.

The summary of the conclusions of the Safeguards Technical Working Group included (19 Doc 65) a proposed definition which read:

Material balance area (MBA) means an area in or outside of a nuclear facility such that:

- (a) The quantity of nuclear material in each transfer into or out of the area can be determined; and
- (b) The physical inventory of material in each MBA can be determined when necessary, in accordance with specified procedures;

in order that the material balance for safeguards purposes can be established.

That definition was reproduced in 8(g) Doc 62/Mod.1 and the three subparagraphs, discussing the types of material balance areas, which had been appended to the definition in 79 Doc 62, were slightly reworded and introduced as a comment (4(h) Doc 62/Mod.1).

During the discussion of the provisions for Paragraph 46, Turkey (26 OR 41) proposed that the text of that comment be incorporated as a substantive provision, because the establishment and classi-

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fication of material balance areas were important and such a provision would help the IAEA to negotiate subsidiary arrangements. That proposal was repeated (8-9 OR 43) by Turkey, but following the explanation by the Inspector General (10 OR 43) that the text had been presented as a comment, rather than a substantive provision, because it was intended for the use by the IAEA after the material balance areas had been designated, Turkey withdrew its proposal.

The definition of "material balance area" which was included in Part B of Doc 144 was slightly edited from that which had appeared in Doc 62/Mod.1 (and subsequently in 79 Doc 62/Rev.1) and is the same as that shown in Paragraph 110, except that the word "Agency" did not appear in the concluding phrase. The insertion of that word was suggested in the jointly sponsored amendment (11 Doc 153) and the final wording was accepted with that addition (73 OR 69).

The term "material unaccounted for" was defined in 81 Doc 62 with the same wording as shown in Paragraph 111, was not changed or discussed thereafter, and was accepted by the Committee (79-80 OR 69).

Paragraph 77 of INFCIRC/66/Rev.2 defines "nuclear material" in the same wording as the first sentence of Paragraph 112. The initial outline by the Director General, in Part II 1(a) Doc 3, noted that "...the definition of the term 'source material' will determine the starting point for the application of safeguards. Uranium ores and thorium ores are not considered to be nuclear material." The United Kingdom, early in the Committee's deliberations, introduced a proposed definition ((f) Doc 53) for "nuclear material" which consisted of the texts of three paragraphs of Article XX of the Statute (which define special fissionable material, enriched uranium, and source material), followed by a sentence stating that any determination by the Board, pursuant to the statutory definitions of special fissionable material and source material providing for determination by the Board of additional items to be included in those respective categories, shall have effect under the agreement only on acceptance by the state.

When Doc 62 appeared, it included (83 Doc 62) a proposed definition and comment as follows:

Nuclear material means any source or special fissionable material as defined in Article XX of the Agency's Statute and shall include all isotopes of plutonium.

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Comment

The Statute speaks only of 239 Pu, an inconsistency dating possibly from inadequate knowledge at the time of drafting. This definition may eventually need to be included in Part I.

That document also contained a comment to the paragraph which addressed the starting point of safeguards (3 Doc 62) which read:

If only uranium or thorium in a lower concentration (than 95 percent U<sub>3</sub>O<sub>8</sub> or ThO<sub>2</sub>) is present in a mine, in ore or in a concentration plant these will be disregarded for the purposes of this Agreement.

South Africa (35-36 OR 35), in addressing the proposed definition of "nuclear material," said that inasmuch as the definition in Article XX of the Statute included chemical compounds and concentrates as source materials, all mines and ore processing plants would come under safeguards; such application had already been recognized as impractical and not cost effective, and would greatly complicate matters. The United States (43 OR 35) said that ores were not included in the definition of source material in Article III.3 of the Statute; the Board had not determined that a particular concentration of ore should fall within the definition. The United States said that the word "concentrate" (in the statutory definition) was ambiguous but, in its view, it was an impure chemical compound resulting from processing in a mill or concentration plant. The United States (44 OR 35) pointed out that it had not been the intention of the IAEA or the Board that the safeguards system should apply to mines or mills and that INFCIRC/66/Rev.2 clearly excluded them. (The reference was apparently to 78 INFCIRC/66/Rev.2, the definition of "principal nuclear facility," which specifically excludes mines and ore-processing plants; in view of 66-68 INFCIRC/66/Rev.2, however, that document itself does not clearly exclude mines or mills from safeguards.) India (46 OR 35) also said that INFCIRC/66/Rev.2 clearly stated that mines and ore-processing plants were to be excluded from the system. Canada (52 OR 35) said its opinion was that uranium ore did not fall within the definition of source material contained in processing plants. The Soviet Union (55 OR 35) said it was satisfied with the formula in 3 Doc 62 which excluded mines and ore-processing plants.

The list of definitions subsequently recommended by the Secretariat in Part B of Doc 144 did not include "nuclear material" among the terms defined. The jointly sponsored amendment proposed a definition (1 Doc 153) which read:

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Nuclear material means any source or any special fissionable material as defined in Article XX of the Agency's Statute except plutonium containing plutonium-238 in concentrations exceeding 80%.

South Africa proposed (Doc 155) amending that definition by inserting, after "except," the words "source material in the form of ore and." In presenting its amendment, South Africa (3 OR 69) said that a better form would be: "Nuclear material means any source material, except source material in the form of ore, or any special fissionable material..." France (4 OR 69) supported the proposal as amended by South Africa. Canada and Finland (6 OR 69) questioned the need for the amendment proposed by South Africa in view of the exclusion from safeguards of material in mining and ore processing already provided for in Paragraph 33. India (11 OR 69), however, thought it probably was worth repeating in the definition of nuclear material, but the United States (12 OR 69) expressed concern that doing so would be inconsistent with Paragraph 34, which called for reporting of imports and exports of ore.

Switzerland (7 and 10 OR 69), while appreciating the humanitarian motives for an exception for plutonium-238 used in heart pacemakers, expressed concern that significant quantities of material usable in nuclear explosives might thereby be excluded from safeguards.

Subsequently, the United States proposed (1 Doc 160) the formulation as shown in Paragraph 112, together with the formulation for Paragraph 36(c), providing for the exemption of plutonium-238 concentrations exceeding 80 percent. In presenting its proposed definition, the United States (5 OR 75) said that the wording would not affect reporting requirements of Paragraph 34(a) and (b). Australia (7 OR 75) suggested that, in the second sentence of the text for Paragraph 112, the words "shall not be interpreted as applying" be replaced by the words "shall not include." The United States (9 OR 75) had no objection to that change, but the United Kingdom (10 OR 75) and India (11 OR 75) preferred that the wording not be changed. After Italy (12 OR 75) and the Fed. Rep. of Germany) expressed support for the amendment as presented by the United States, the Committee accepted (14 OR 75) the definition as shown in Paragraph 112.

The definition for "physical inventory" proposed by the Director General in 84 Doc 62/Rev.1 was substantially the same as that shown in Paragraph 113. The final wording was recommended by the Secretariat in Part B of Doc 144 and was accepted without discussion (79-80 OR 69).

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The definition of "shipper/receiver difference" suggested in 89 Doc 62/Rev.1 read:

"...means the difference between the quantity of material in a batch as stated by the shipper and as measured by the operator of the receiving material balance area."

Part B of Doc 144 contained the wording as it appears in Paragraph 114 and was accepted (79-80 OR 69) without discussion.

The definition of "source data" suggested in 90 Doc 62/Rev.1 and included in Part B of Doc 144 read:

Source data means all of those estimates of physical and chemical values obtained from measurements and calibration and empirical data based on measurements, which are needed to identify nuclear material and arrive at batch data. Calibration and empirical data are derived from design information and operating records. The term source data may include, for example, gross weight, tare weight, volume, manometer readings, specific gravity, element concentration, and isotopic ratios.

The jointly-sponsored amendment included proposed wording (12 Doc 153) which differed insignificantly from that shown in Paragraph 115. The United Kingdom (74 OR 69) said that the revised wording had avoided using the word "estimates," which had been used in 90 Doc 62/Rev.1 in a strict statistical sense but which could be misconstrued. Without further discussion, the wording as proposed in 12 Doc 153 was accepted (75 OR 69); the slightly different final wording in Paragraph 115 apparently resulted from later editing by the Secretariat.

In the Director General's suggestions in Doc 62 for Part II, there was no separate definition for "strategic point"; that term was considered in that document as synonymous with "key measurement point" (77 Doc 62). The summary of the results of the Safeguards Technical Working Group, however, contained a separate definition (21 Doc 65) in the same wording as that shown in Paragraph 116. That text was then included as 91 A Doc 62/Rev.1 and in Part B of Doc 144; it was accepted (79-80 OR 69) without discussion.

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Interpretation

Most of the "definitions in Paragraphs 98 through 116 are self-explanatory." A few are subject to interpretation and are discussed elsewhere in this report, either as a "key issue" or in connection with the substantive provision to which it is directly related. Among the terms whose definitions are of particular importance (including those not explicitly defined in INFCIRC/153, but for which meanings were incorporated in the record) are:

Defined Terms:

"Facility" - Since a facility includes any locations where nuclear material in amounts greater than one kilogram is customarily used, a number of important record keeping, reporting, and inspection provisions which are tied to facilities are activated by this definition.

"Nuclear Material" - The term "nuclear material" is interpreted as applying to ore or ore residue. However, the reporting requirements of Paragraph 34(a) apply to international transfers of "any material containing uranium or thorium." Thus, ores are subject to this reporting requirement, a point which was made explicitly clear in the discussion.

"Strategic Points" - The definition given "strategic points;" i.e., "...a location selected during examination of design information where, under normal conditions and when combined with the information from all 'strategic points' taken together, the information necessary and sufficient for the implementation of safeguards measures is obtained and verified;..." is an important element of the overall compromise which enabled acceptance of the principle, found in Paragraph 76(c) that, for routine inspections, "inspectors shall have access only to the strategic points..."

Undefined Terms:

"Verification" - The term "verification" was left undefined, after the Committee accepted an understanding that it means the entire process of ascertaining that there has been no diversion and is not confined to validating only that information provided by states.

"Surveillance" - Although no definition was adopted, the term "surveillance" was understood to be used in the broad sense, including both human and instrumental observations.

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"Peaceful Nuclear Activities" - An explicit understanding as to the meaning of this term was adopted for inclusion in the record, under which "peaceful nuclear activities" included processes which change the chemical or isotopic composition of bulk nuclear material, regardless of the past or intended use of such material.

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ASSISTANT DIRECTOR

UNITED STATES ARMS CONTROL AND DISARMAMENT AGENCY

October 26, 1984

Mr. R. Rainer  
Legal Division  
IAEA

Dear Mr. Rainer:

The review by Myron Kratzer, International Energy Associates Limited, of the negotiating history of IAEA safeguards document INFCIRC/153 has recently been completed. I believe the results of this study will be helpful to all of us interested in safeguards. I would like to express my personal appreciation to you for your generous assistance in commenting to Mr. Kratzer on the draft report.

I am enclosing a copy of the final report for your personal use. We are also providing additional copies to the IAEA and to governments interested in IAEA safeguards.

The report quotes extensively from IAEA Board of Governors documents, and in order for us to comply with the IAEA restriction on distribution of such documents we have marked the report "Confidential." In addition in response to the request for confidentiality by some of the reviewer we have not identified the reviewers by name in this report.

Respectfully your,

*Archelaus R. Turrentine*  
Archelaus R. Turrentine  
Acting

Enclosures