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Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level (GOV/2013/38)

Report by the Director General

Summary

- In 2013, the Director General submitted to the Board of Governors a report entitled "The Conceptualization and Development of Safeguards Implementation at the State Level" (GOV/2013/38). In response to Member States' requests at the September 2013 meetings of the Board of Governors and during the consultation process held in 2013–2014, this supplementary document provides clarifications and additional information to GOV/2013/38.

Key Points

- Safeguards challenges are growing and becoming more complex. In order to continue to draw soundly based safeguards conclusions and to increase confidence that States are abiding by their safeguards obligations, the Agency has been developing and applying a concept for safeguards implementation, within the existing legal framework, termed the State-level concept (SLC).

- The SLC refers to the general notion of implementing safeguards in a manner that considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the State's safeguards agreement.

- The SLC is applicable to all States. To date, customized (i.e. tailor-made) State-level safeguards approaches (SLAs) for individual States have only been implemented for States under integrated safeguards.

- The Secretariat will continue to implement the existing 53 SLAs for States under integrated safeguards and is currently in the process of updating these SLAs as described in GOV/2013/38 and in this document. The Secretariat also plans for the progressive development of SLAs for other States in the future. In developing and implementing an SLA for a State, the Agency will consult with the State and/or regional authority, particularly on the implementation of in-field safeguards measures.

- The implementation of safeguards, as described in GOV/2013/38 and in this document, will not entail the introduction of any additional rights or obligations on the part of either States or the Agency, nor any modification in the interpretation of existing rights and obligations.

- The Secretariat will use uniform processes and better defined procedures to develop SLAs and guide safeguards implementation in a consistent and non-discriminatory manner for all States with the same type of safeguards agreement.

- It is essential that the effectiveness of safeguards be maintained. In this regard, nuclear material accountancy and its verification in the field will remain at the core of safeguards implementation. Verification effort will continue to be concentrated on the sensitive stages of the nuclear fuel cycle.

- The implementation of safeguards, as described in GOV/2013/38 and in this document, improves safeguards effectiveness by enabling the Agency to be more focused on the attainment of technical objectives instead of mechanistically carrying out safeguards activities. This also results in better use of Agency resources by helping the Agency to avoid conducting more activities than are needed for effective safeguards.

- The Secretariat will continue to engage in open dialogue on safeguards matters with States and interact with them on the implementation of safeguards, including in the context of the SLC. The Board of Governors will be kept informed of progress made in the development and implementation of safeguards in the context of the SLC.

Recommended Action

- It is recommended that the Board of Governors take note of:

    a) the clarifications and additional information provided in this supplementary document; and

    b) the Director General's intention to continue to keep the Board of Governors informed on the matter.

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Supplementary Document to the Report on The Conceptualization and Development of Safeguards Implementation at the State Level (GOV/2013/38)

Report by the Director General

A. Background

1. On 12 August 2013, the Director General submitted a report to the Board of Governors *The Conceptualization and Development of Safeguards Implementation at the State Level* (GOV/2013/38). The report was prepared in response to General Conference resolution GC(56)/RES/13 of September 2012, in which the Secretariat was requested to report to the Board of Governors on "the conceptualization and development of the State-level concept for safeguards."

2. The Director General's report was considered by the Board of Governors at its meetings in September 2013. During those meetings, a number of Member States raised questions about different aspects of the State-level concept, as described in GOV/2013/38, and requested that the Secretariat provide clarifications and additional information.[1] The Board of Governors, inter alia, took note of the report[2] and noted the Director General's statement that he would prepare a supplementary document to provide the Board of Governors with more information before the 2014 General Conference, and that the Secretariat would consult in that regard with Member States after the 2013 General Conference to ensure that the Secretariat had captured all of the points to be addressed in that document.

3. On 20 September 2013, the General Conference adopted resolution GC(57)/RES/13 noting the Director General's report and his intention to produce, after consulting with Member States, a supplementary document for consideration and action by the Board of Governors before the fifty-eighth (2014) session of the General Conference, providing further clarification and information to address questions and issues raised.

4. Starting in November 2013, the Secretariat began the aforementioned consultations with Member States. The Director General initiated the consultation process with the issuance of a Note by the Secretariat (2013/Note 70 of 8 November 2013). Through that note, all Member States were invited to provide to the Secretariat comments in writing, in particular with respect to whether the eight areas

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[1] GOV/OR. 1360, paras 151-274; GOV/OR. 1361, paras 1-97; and GOV/OR. 1362, paras 1-41.

[2] GOV/OR. 1362, paras 37-41.

identified by the Secretariat in that note covered Member States' questions and whether there were any additional issues which would require further clarification by the Secretariat.

5. In his introductory statement to the Board of Governors at its meetings in November 2013, the Director General invited all Member States to provide comments and raise any additional issues they may have and further informed the Board of Governors that he planned to hold a series of technical meetings and other consultations. These consultations began in January 2014.[3] The Secretariat held six interactive technical meetings with Member States during the period January to July 2014 (see Annex 2). The Secretariat's presentations at those meetings were posted on GovAtom following each meeting. A consolidated compilation of those presentations is also available on GovAtom.[4]

6. The consultation process held in 2013-2014, as well as the questions and issues raised by Member States during the 2013 September meetings of the Board of Governors and the fifty-seventh (2013) session of the General Conference, provided the basis on which the supplementary information contained in this document was prepared. In addition to providing more details on information presented in GOV/2013/38, this document also describes how the State-level concept is applicable to States with item-specific safeguards agreements and States with voluntary offer agreements (VOAs), as requested by Member States at the September 2013 meetings of the Board of Governors.

B. Overview

7. The purpose of Agency safeguards is to verify States' undertakings under their respective safeguards agreements with the Agency. The safeguards conclusions drawn by the Agency provide assurance to the international community that States are abiding by their safeguards obligations under those agreements. In this regard, the Agency seeks to provide credible assurance relevant to the verification it undertakes pursuant to all types of safeguards agreements, as it is not possible to provide absolute assurance.

8. The global nuclear landscape continues to change and verification challenges are growing and becoming more complex. Across the world, more nuclear facilities and material are being placed under safeguards. Over the past five years alone, safeguards have been applied to 14% more nuclear material and 136 additional nuclear facilities and other locations[5]. This global trend is expected to continue. In addition, new nuclear facilities are becoming ever more sophisticated, making the implementation of safeguards more challenging. International nuclear cooperation between States is also intensifying, with an expansion of trade in nuclear material and technologies. All this requires that the Agency consider how it can carry out its safeguards activities more effectively and efficiently and continuously improve its productivity.

The State-Level Concept

9. In order to continue to draw soundly based safeguards conclusions and to increase confidence that States are abiding by their safeguards obligations, the Agency has been developing and applying a concept for safeguards implementation, within the existing legal framework, termed the *State-level*

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[3] Consultations were also held during the preparation of GOV/2013/38.

[4] Consolidated compilation of Secretariat presentations at the technical meetings on the State-level concept (SLC)

[5] This refers to material balance areas containing locations outside facilities where nuclear material is customarily used (LOFs). See GOV/2014/27, page 3, para. 1.

concept[6] (SLC). The SLC refers to the general notion of implementing safeguards in a manner that considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the State's safeguards agreement.

10. The SLC is applicable to all States with safeguards agreements in force. Although 'State as a whole' considerations in the implementation of safeguards are long-standing, dating back to the early 1990s, the term SLC has been used by the Secretariat only since 2004. Certain elements of the SLC have been applied to some degree.[7] However, customized (i.e. tailor-made) *State-level safeguards approaches* (SLAs) for individual States have been implemented to date only for the 53 States under *integrated safeguards* (i.e. States with comprehensive safeguards agreements[8] (CSAs) and additional protocols[9] (APs) for which the *broader conclusion* has been drawn and where the necessary arrangements have been completed to implement the SLAs).

11. The safeguards agreement and, where applicable, the AP concluded between the Agency and a State will continue to govern safeguards implementation by the Agency for that State. The implementation of safeguards in the context of the SLC, as described in GOV/2013/38 and in this document, will not entail the introduction of any additional rights or obligations on the part of either States or the Agency, nor any modification in the interpretation of existing rights and obligations under safeguards agreements and, where applicable, APs.

Development and Implementation of SLAs

12. An SLA is detailed in an internal safeguards document developed by the Secretariat. It consists of *safeguards objectives* for that State and the applicable *safeguards measures*, to be implemented by the Agency, through *safeguards activities* in the field and at Headquarters, to address those objectives.

Establishment of Generic and Technical Safeguards Objectives

13. Generic safeguards objectives (hereinafter referred to as '*generic objectives*') are established by the Secretariat on the basis of the State's safeguards agreement to implement effective safeguards for the State, and are common to all States with the same type of safeguards agreement.[10] The scope of a safeguards agreement does not change when the State concludes an AP, which provides the Agency with broader rights of access to information and locations. The AP measures will continue to be

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[6] The terms in italics in Section B are described in Annex 1.

[7] For example, evaluation of all safeguards relevant information available about a State to draw safeguards conclusions and the consideration of factors that are specific to a State (i.e. State-specific factors) in the implementation of safeguards. See para. 37 of this document.

[8] This term refers to safeguards agreements based on INFCIRC/153 (Corrected), which includes both CSAs with small quantities protocols (SQPs) (based on either the original standard text contained in GOV/INF/276, Annex B, or the revised standard text contained in GOV/INF/276/Mod.1 and Corr.1, Annex B), as well as CSAs without SQPs.

[9] This refers to additional protocols which are based on INFCIRC/540 (Corrected).

[10] For a CSA State, safeguards are to be applied, in accordance with the terms of the agreement, on all nuclear material in all peaceful nuclear activities within the territory of the State, under its jurisdiction or carried out under its control anywhere. For a State with an item-specific safeguards agreement, safeguards are to be applied, in accordance with the terms of the agreement, to items subject to safeguards under the agreement. For VOA States, safeguards are to be applied, in accordance with the terms of the agreement, on nuclear material in facilities selected under each VOA. See Section C.3 of this document describing the scope of application of safeguards agreements.

implemented only in those States that have an AP in force.[11] The generic objectives established are the following:[12,13]

For States with CSAs:

- to detect any diversion of declared nuclear material at declared facilities or locations outside facilities where nuclear material is customarily used (LOFs);
- to detect any undeclared production or processing of nuclear material at declared facilities or LOFs; and
- to detect any undeclared nuclear material or activities in the State as a whole.

For States with item-specific safeguards agreements:

- to detect any diversion of nuclear material subject to safeguards under the safeguards agreement; and
- to detect any misuse of facilities and other items subject to safeguards under the safeguards agreement.

For States with VOAs:

- to detect any withdrawal of nuclear material from safeguards in selected facilities or parts thereof, except as provided for in the agreement.

14. To address the generic objectives for a State, the Secretariat establishes technical safeguards objectives (hereinafter referred to as '*technical objectives*') to guide the planning, conduct and evaluation of safeguards activities for that State. The technical objectives, which will remain within the scope of the State's safeguards agreement, form the basis for identifying safeguards measures and conducting safeguards activities for a State. They may differ from State to State, depending on, for example, the nuclear fuel cycle and related technical capabilities of the State. The technical objectives are established through the conduct of either an *acquisition path analysis* (for States with CSAs) or a *diversion path analysis* (for States with item-specific safeguards agreements or VOAs).

15. Acquisition and diversion path analyses are structured, technical methods and do not involve judgements about a State's intention to pursue any such path. The use of such analyses to establish technical objectives dates back to the 1980s when the *Safeguards Criteria* were developed. The implementation of an SLA for a State will focus on attaining the technical objectives established for the State instead of mechanistically carrying out the activities listed in the Safeguards Criteria.

Verification Effort

16. An SLA for a State will be executed through an *annual implementation plan*. The *verification effort* for a State will continue to be determined in accordance with the State's safeguards agreement and, where applicable, the AP. The SLA will not introduce any new safeguards measures beyond those set out in the State's safeguards agreement and, where applicable, the AP. The SLA may involve possible adjustments in the frequency and intensity of the implementation of the existing safeguards

[11] Or when the State notifies the Agency that it will apply its AP provisionally pending its entry into force. The SLC is not a substitute for an AP, i.e. it is not designed as a means for the Agency to obtain from a State without an AP in force the information and access provided for in the AP.

[12] See Section C.3 of this document.

[13] The order in which these generic objectives are presented does not imply any order in their importance.

measures. However, any such adjustments will be made within the flexibility provided for in the safeguards agreement and subsidiary arrangements.[14]

17. With regard to an SLA for a State, the State and/or regional authority will be consulted during the development and implementation of the SLA. Consultations between the Agency and State or regional authority are important to effective and efficient safeguards implementation and will remain so. These consultations take many forms and occur on a regular basis throughout the various processes of safeguards implementation.

18. It is essential that the effectiveness of safeguards be maintained. In this regard, nuclear material accountancy and its verification in the field will remain at the core of safeguards implementation and continue to be the primary basis for deriving a conclusion on the non-diversion of declared nuclear material. The Agency will continue to concentrate its verification effort on the sensitive stages of the nuclear fuel cycle and on nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made.

19. The Agency is implementing safeguards for an increasing number of facilities and in more States without a commensurate increase of resources. By implementing SLAs, the Agency will make every effort to ensure efficiency in safeguards implementation, without compromising safeguards effectiveness. As is required under safeguards agreements, the Agency will continue to take full account of technological developments in the field of safeguards as another means by which safeguards can be implemented more cost-effectively. The Agency will consider whether further reductions in the frequency and intensity of routine inspections for States are possible, consistent with the effective implementation of safeguards. The aim is the optimization of safeguards implementation, both in terms of effectiveness and efficiency, not to shift verification effort from one group of States to another.

20. Evaluation of the effectiveness of safeguards implementation will involve consideration of whether planned activities meet the technical objectives of the SLA, whether all of the planned safeguards activities were actually conducted, and whether or not the activities were conducted in such a way as to attain the technical objectives to the level planned. It will continue to be important for the Agency to be able to measure and report information to Member States regarding its performance in meeting its safeguards objectives.

State-Specific Factors

21. In developing and implementing an SLA for a State, and in planning, conducting and evaluating its safeguards activities for that State, the Agency considers and uses *State-specific factors*. This practice is long-standing. State-specific factors are based on factual information about a State, are objective and are objectively assessed by the Agency in the implementation of safeguards for a State. In the future, a more systematic consideration and better use of State-specific factors are foreseen. State-specific factors are based on technical considerations and will be used objectively and consistently for all States. States will be consulted on the use of State-specific factors, particularly those that may impact in-field safeguards activities, during both the development and subsequent implementation of the SLA for the State.

22. The exhaustive list of the six objective State-specific factors is:

(i) the type of safeguards agreement in force for the State and the nature of the safeguards conclusion drawn by the Agency;

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[14] See Section C.5.4 of this document.

(ii) the nuclear fuel cycle and related technical capabilities of the State;

(iii) the technical capabilities of the State or regional system of accounting for and control of nuclear material (SSAC/RSAC);

(iv) the ability of the Agency to implement certain safeguards measures in the State;

(v) the nature and scope of cooperation between the State and the Agency in the implementation of safeguards; and

(vi) the Agency's experience in implementing safeguards in the State.

Evaluation of Safeguards Relevant Information

23. Another long-standing element of the SLC is the comprehensive evaluation of all *safeguards relevant information* available to the Agency about a State. Safeguards relevant information refers to information relevant for the implementation of Agency safeguards and which contributes to the drawing of soundly based safeguards conclusions.

24. Safeguards implementation in the context of the SLC, as described in GOV/2013/38 and in this document, will not introduce any changes to the type of information being used in the implementation of safeguards (i.e. State-provided information, information from Agency safeguards activities, and other relevant information (such as *open source information* and *information from third parties*)). The overwhelming majority of information will continue to come from States themselves and from Agency safeguards activities. States will not be required to provide any additional information beyond their existing legal obligations. The Agency will continue to conduct rigorous review and validation of all information, including open source and third party information and, as appropriate, seek clarification from the State in question. Information security will continue to be of vital importance to the Agency given the sensitivity of the information in its custody.

25. *State evaluation*[15] is performed by individual *State evaluation groups* (SEGs) established within the Department of Safeguards for every State with a safeguards agreement in force. SEGs consist of Departmental staff members with the appropriate expertise to evaluate all safeguards relevant information about a State. SEGs conduct their evaluation work using structured processes and Departmental methodologies to minimize biases and ensure objectivity. In addition, oversight mechanisms are in place to ensure that State evaluation is conducted thoroughly and consistently.

Drawing of Safeguards Conclusions

26. The Agency will continue to draw and report a safeguards conclusion for each State on an annual basis. In order to draw an independent and soundly based safeguards conclusion, the Agency needs to have conducted a sufficient level of safeguards activities and a comprehensive evaluation of all safeguards relevant information available to it about a State, and to have addressed all identified anomalies, questions and inconsistencies. A safeguards conclusion is drawn when all of the necessary safeguards activities have been completed and no indication has been found by the Agency that, in its judgement, would constitute a safeguards concern. The Secretariat will continue to follow uniform internal processes and defined procedures to enable the Agency to draw independent and objective safeguards conclusions based on its own verification activities and findings.

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[15] State evaluation refers to the on-going evaluation of all safeguards relevant information available to the Agency about a State aimed at assessing the consistency of that information in the context of a State's safeguards obligations.

Impact on Effectiveness and Efficiency of Safeguards

27. A key objective of implementing safeguards in the context of the SLC, as described in GOV/2013/38 and in this document, will be to increase the Secretariat's productivity. In doing so the Secretariat will take fully into account the safeguards implementation principles described in GOV/2013/38.[16] The safeguards implementation processes described in GOV/2013/38 and in this document[17] will be better integrated and more systematically applied to achieve more consistent, objective and effective safeguards implementation. Safeguards will be implemented for all States through the systematic use of improved internal processes and procedures within the Department of Safeguards' quality management system (QMS), in order to ensure consistent and non-discriminatory safeguards implementation for all States with the same type of safeguards agreement.

28. In implementing safeguards in the context of the SLC as described in GOV/2013/38 and in this document, the Secretariat expects a number of further benefits in terms of effectiveness and efficiency. The more systematic consideration and better use of State-specific factors will enable the development and implementation of a tailor-made SLA for a State. An SLA will identify options for safeguards measures to be implemented in the field and at Headquarters, allowing for comparisons between their cost-effectiveness and providing greater flexibility in safeguards implementation within the limits provided for in the State's safeguards agreement. Instead of mechanistically carrying out the activities listed in the Safeguards Criteria, implementation of SLAs will be more focused on the attainment of the technical objectives, thereby allowing for a concentration of safeguards effort on areas of greater safeguards significance in a State. The technical objectives will be established by applying structured and technically based analytical methods (i.e. acquisition or diversion path analyses). By focusing on the attainment of technical objectives, safeguards implementation will be more performance-oriented and will help the Agency to avoid spending resources on conducting more activities than are needed for effective safeguards. This will result in better use of Agency resources. Utilizing uniform processes and better defined procedures to develop SLAs for all States will help generate efficiencies. Also, the use of a technically based approach for developing SLAs will help ensure soundly based safeguards conclusions and consistency and non-discrimination in safeguards implementation.

Next Steps

29. The Secretariat will continue to implement the existing 53 SLAs for the States under integrated safeguards and is currently in the process of updating these SLAs as described in GOV/2013/38 and in this document. The Secretariat also plans for the progressive development of SLAs for other States in the future. In developing and implementing an SLA for a State, the Agency will conduct consultations with the State and/or regional authority, particularly on the implementation of in-field safeguards measures.

30. Recognizing that effective and efficient safeguards implementation requires a cooperative effort between the Agency and States, the Secretariat will continue to engage in open dialogue on safeguards matters with States to increase transparency and build confidence and to interact with them on the implementation of safeguards, including in the context of the SLC. The Board of Governors will be kept informed of progress made in the development and implementation of safeguards in the context of the SLC and the associated impact on effectiveness and efficiency, as appropriate.

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[16] See para. 2 of GOV/2013/38.

[17] See Figure 1 of GOV/2013/38 and Figure 2 of this document.

C. Clarifications and Additional Information

31. In this document, clarifications and additional information are provided on the following SLC and related topics:

- SLC and its application to States with different types of safeguards agreements;
- legal framework within which safeguards are implemented, including in the context of the SLC;
- scope of application of safeguards agreements and the associated generic objectives for safeguards implementation;
- establishment of technical objectives through acquisition or diversion path analyses;
- determination of verification effort for a State under an SLA;
- consideration and use of State-specific factors in the development of SLAs and implementation of safeguards;
- collection, processing, evaluation and use of safeguards relevant information;
- maintenance of information security in the area of safeguards;
- measurement of performance and quality management;
- drawing of safeguards conclusions; and
- consultations with States in the development of SLAs and implementation of safeguards.

As requested by Member States during the technical meetings, this document includes a glossary of key terms used by the Secretariat in describing the implementation of safeguards in the context of the SLC. (See Annex 1.)

C.1. SLC and its Application to States with Different Types of Safeguards Agreements

32. The SLC refers to the general notion of implementing safeguards in a manner that considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the State's safeguards agreement.

33. Although 'State as a whole' considerations in the implementation of safeguards are long-standing for States with CSAs, dating back to the early 1990s,[18] the term SLC has been used by the Secretariat only since 2004. The historical background, evolution and implementation of safeguards at the State level during the last two decades, for States with CSAs, is explained in GOV/2013/38[19] as well as in the Secretariat's presentations during the 2014 technical meetings. Figure 1 highlights some of the key developments in that regard. In 2001, the Agency began developing and

[18] The expression 'State as a whole' has often been used in the context of para. 2 of INFCIRC/153 (Corrected), referring to the Agency's right and obligation to verify that all nuclear material in a CSA State has been declared by the State (i.e. the correctness and completeness of a State's declarations). This will continue to be the case for CSA States, but this expression does not apply in the same manner to States with item-specific safeguards agreements or with VOAs as the scope of these agreements is different from the scope of a CSA. Elements of the SLC have been applied to varying degrees to all States (e.g. the evaluation of all safeguards relevant information about a State), within the scope of a State's safeguards agreement. See para. 37 of this document.

[19] See Section C of GOV/2013/38.

implementing SLAs for individual States with a CSA and an AP and for which the Agency had drawn the broader conclusion in the context of integrated safeguards. Based on the experience gained in the implementation of integrated safeguards, the Secretariat's intention remains to develop and implement SLAs for other States with CSAs in order to both strengthen the effectiveness and improve the efficiency of safeguards implementation for those States.[20] Furthermore, as described in this document, the SLC is also applicable to States with item-specific safeguards agreements[21] and VOAs, fully taking into account the rights and obligations of the parties under those agreements.[22]

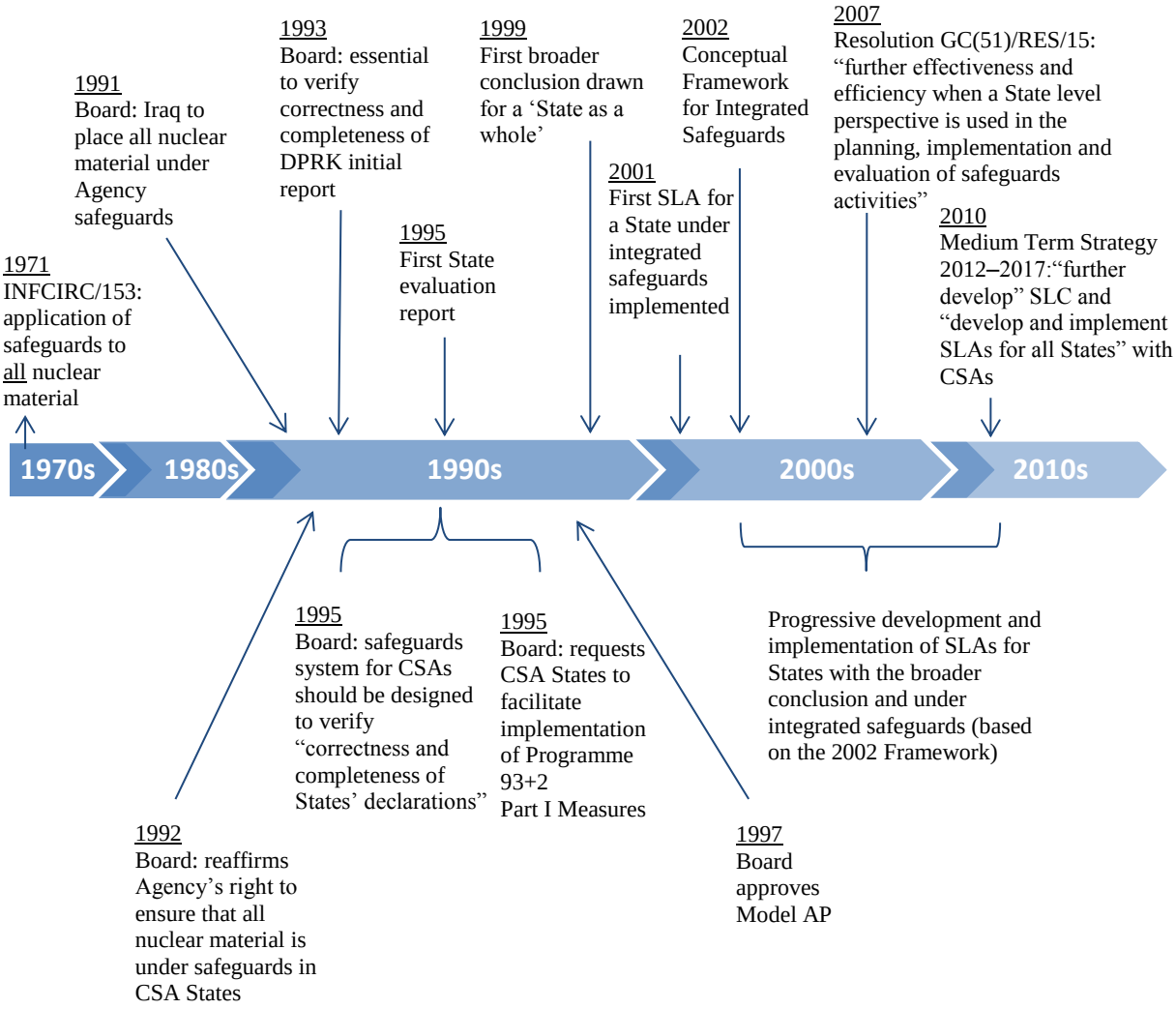

Figure 1: Key developments in safeguards implementation for the 'State as a whole'[23]

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[20] By using safeguards measures available under CSAs.

[21] The Agency applies safeguards pursuant to item-specific safeguards agreements for three States. Two of these States have more than one such agreement in force. See GOV/2014/27, Table 4.

[22] For a State with a VOA, safeguards are to be applied to nuclear material in facilities or parts thereof selected for the application of safeguards under the VOA. For a State with an item-specific safeguards agreement, safeguards are to be applied to items subject to safeguards under the agreement. See footnote 10 and Section C.3 of this document describing the scope of application of safeguards agreements.

[23] See, for example, GOV/2532; GOV/DECISIONS 1991-92, 91-92/21; GOV/2636; GOV/DECISIONS 1994-95, 94-95/28; GOV/DECISIONS 1994-95, 94-95/44; INFCIRC/540 (Corrected); GOV/2002/8; GC(51)/RES/15.

34. Implementing safeguards as described in GOV/2013/38 and in this document will entail the application of a number of elements of the SLC, within the scope of each specific safeguards agreement, associated with the safeguards implementation processes described in Figure 2.

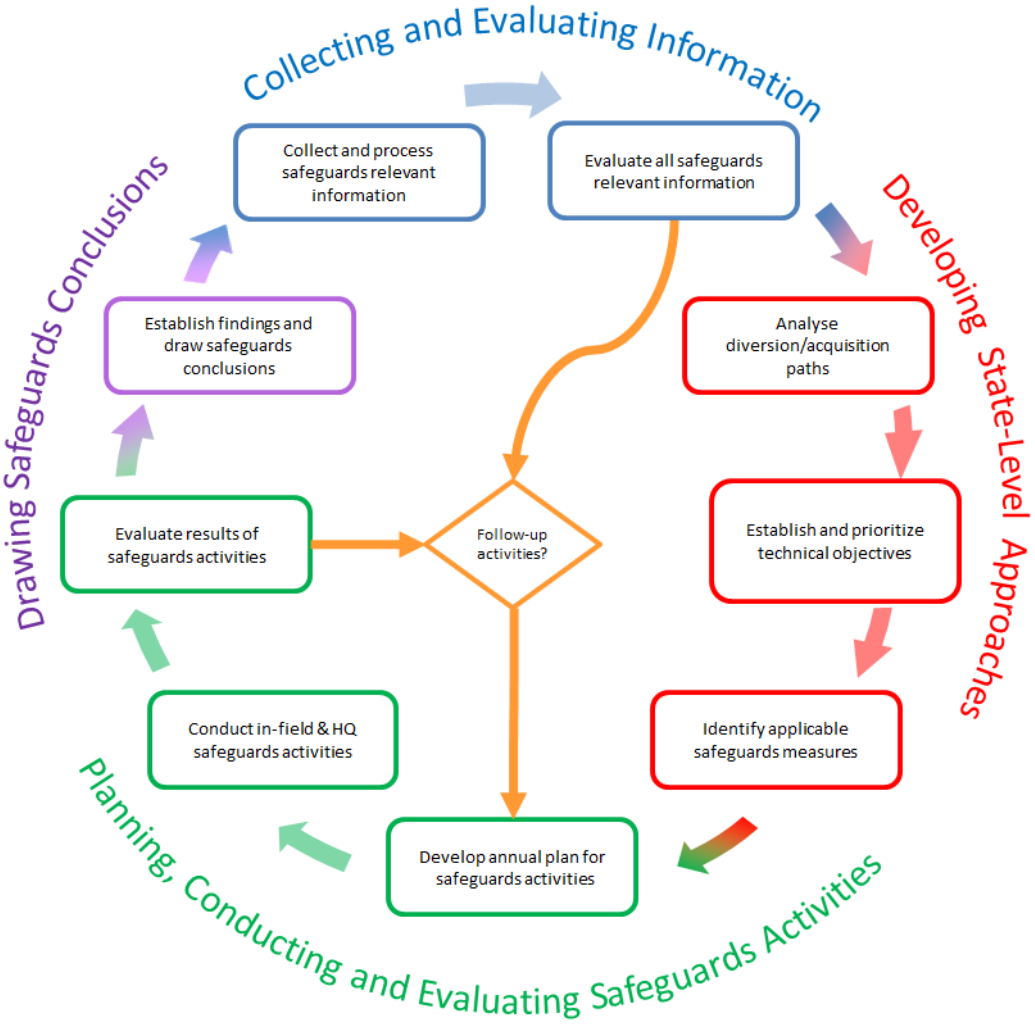

Figure 2: Processes to support safeguards implementation for all States with safeguards agreements

35. The SLC elements are:

- establishment and pursuit of safeguards objectives for a State (i.e. generic objectives that are established on the basis of the scope of a State's safeguards agreement and related technical objectives that are developed on the basis of either acquisition or diversion path analysis[24]);
- development of a customized (i.e. tailor-made) safeguards approach for a State (i.e. SLA) and its execution through an annual implementation plan;
- consideration and use of State-specific factors in the implementation of safeguards;
- evaluation of all safeguards relevant information available to the Agency about a State; and
- drawing and reporting of a safeguards conclusion for a State each year.

[24] Based on the scope of the safeguards agreement.

36. To ensure consistency and non-discrimination in safeguards implementation, these elements will be applied to all States with safeguards agreements in force. The manner in which these elements will be applied to States with different types of safeguards agreements is summarized in Table 1 and elaborated in greater detail in the relevant sections throughout this document.

Elements of the SLC	CSA	Item-Specific	VOA
Generic objectives	√	√	√
Technical objectives	√	√	√
Acquisition path analysis	√		
Diversion path analysis		√	√
State-level safeguards approach addressing:			
- All nuclear material in all peaceful nuclear activities in the State	√		
- Specified facilities, nuclear material, equipment or other items subject to safeguards in the State		√	
- Nuclear material in selected facilities or parts thereof in the State			√
Annual implementation plan	√	√	√
State-specific factors	√	√	√
Evaluation of all safeguards relevant information	√	√	√
Safeguards conclusion drawn and reported for a State	√	√	√

Table 1: Elements of the SLC and their application to States with different types of safeguards agreements

37. Many of these elements have been applied for several years to varying degrees for all States. For example, the Agency's practice of evaluating all safeguards relevant information available to it about a State as a basis for drawing safeguards conclusions is long-standing for all States. State-specific factors have been in use to varying degrees in safeguards implementation for States with all types of safeguards agreements. In contrast, SLAs, another key element, have been developed and implemented so far only for States under integrated safeguards. As compared to safeguards implementation to date, the Secretariat now plans to gradually start developing and implementing SLAs for all States, and to update the existing 53 SLAs for the States under integrated safeguards, using the improved processes described in GOV/2013/38 and in this document (see Section E). Elements that have already been applied in safeguards implementation, such as acquisition and diversion path analyses, will be conducted through clearly defined procedures. State-specific factors will be more systematically considered and better utilized. Other elements, such as the evaluation of all safeguards relevant information and drawing and reporting of a safeguards conclusion for each State, will remain unchanged.

C.1.1. Key Points: SLC and its Application to States with Different Types of Safeguards Agreements

38. The SLC refers to the general notion of implementing safeguards in a manner that considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the State's safeguards agreement. The SLC is applicable to all States. The implementation of safeguards in the context of the SLC as described in GOV/2013/38 and in this document, for all States, will entail the establishment and pursuit of safeguards objectives for a State (i.e. generic objectives that are established on the basis of the scope of a State's safeguards agreement and related technical objectives that are developed on the basis of either acquisition or diversion path analysis); the updating or

development of a customized SLA for a State and its execution through an annual implementation plan; the more systematic consideration and better use of State-specific factors in the implementation of safeguards; the continued evaluation of all safeguards relevant information available to the Agency about a State; and the continued drawing and reporting of a safeguards conclusion for a State each year.

C.2. Legal Framework

39. This section provides clarifications and additional information on the legal framework within which safeguards are implemented and will be implemented in the context of the SLC as described in GOV/2013/38 and in this document.[25] Additional information on the questions and issues raised by Member States in connection with the legal aspects of safeguards implementation in the context of the SLC are addressed in the relevant sections of this document.

40. Article VI.F of the IAEA Statute provides that the Board of Governors has the authority to carry out the functions of the Agency which are set out in Article III.A of the Statute. These functions include, inter alia, the establishment and administration of safeguards.

41. When the Board of Governors approves a safeguards agreement, it authorizes the Director General to conclude and subsequently implement the agreement. The Board of Governors has delegated to the Director General the authority to conclude and implement all safeguards agreements concluded between the Agency and States. The Director General keeps the Board of Governors informed on safeguards implementation matters by oral reports, through the annual *Safeguards Implementation Report* (SIR), as well as through specific reports on safeguards implementation matters.

42. The safeguards agreement and, where applicable, the AP concluded between the Agency and a State govern the implementation of safeguards by the Agency for that State. Currently, the Agency applies safeguards for 180 States[26] on the basis of three types of safeguards agreements, namely CSAs based on INFCIRC/153 (Corrected)[27], item-specific safeguards agreements based on INFCIRC/66/Rev.2 and VOAs which are also based on INFCIRC/153 (Corrected) but are different in scope as compared to CSAs. Any State with a safeguards agreement may conclude an AP.[28]

43. Safeguards implementation for a State in the context of the SLC as described in GOV/2013/38 and in this document will continue to be governed by the safeguards agreement and, where applicable, the AP concluded by that State with the Agency. Such implementation is designed to enable the Agency to meet the requirements of the safeguards agreement in a more effective and efficient manner. It will not entail the introduction of any additional rights or obligations on the part of either States or the Agency, nor any modification in the interpretation of existing rights and obligations under safeguards agreements and, where applicable, APs.

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[25] The topic was discussed at the fifth technical meeting on 30 May 2014.

[26] And Taiwan, China.

[27] As of 31 July 2014, 95 States with minimal or no nuclear activities had operational SQPs to their CSAs based on the original SQP standard text (42 States) or the revised standard text (53 States). Under an SQP based on the original standard text, the implementation of most of the provisions in Part II of a CSA are held in abeyance as long as certain criteria are met. The revised standard text changed the eligibility criteria for an SQP, making it unavailable to a State with an existing or planned facility, and reduced the number of safeguards provisions in Part II of a CSA the implementation of which was held in abeyance under the original standard text.

[28] See INFCIRC/540 (Corrected), Foreword.

C.2.1. Key Points: Legal Framework

44. The safeguards agreement and, where applicable, the AP concluded between the Agency and a State govern the safeguards implementation by the Agency for that State. This will continue to be the case when implementing safeguards in the context of the SLC as described in GOV/2013/38 and in this document; such implementation does not entail the introduction of any additional rights or obligations on the part of either States or the Agency, nor any modification in the interpretation of existing rights and obligations under safeguards agreements and, where applicable, APs.

C.3. Scope of Application of Safeguards Agreements and Generic Objectives

45. This section provides clarifications and additional information on the scope of application of safeguards under the three types of safeguards agreements and on the generic objectives established by the Secretariat on the basis of the State's safeguards agreement in order to implement effective safeguards for a State.[29] The scope of all three types of safeguards agreements and the generic objectives are summarized in Table 2.

46. The purpose of Agency safeguards is to verify States' undertakings under their respective safeguards agreements with the Agency. As stated in Section C.2 above, safeguards implementation is governed by the safeguards agreement and, where applicable, the AP, between the Agency and the State. The scope of all safeguards agreements is determined by the State's undertaking and the Agency's right and obligation to apply safeguards as set out in each agreement. The scope of a safeguards agreement does not change when the State concludes an AP. AP measures, which provide the Agency with broader access to information and locations will continue to be implemented only in those States that have an AP in force.[30]

C.3.1. States with CSAs

47. Under a CSA, safeguards are to be applied on all nuclear material in all peaceful nuclear activities within the territory of a State, under its jurisdiction or carried out under its control anywhere, for the exclusive purpose of verifying that such material is not diverted to nuclear weapons or other nuclear explosive devices.[31]

48. The scope of a CSA, with or without a small quantities protocol (SQP), does not change when the State concludes an AP. The AP equips the Agency with important additional measures that significantly increase the Agency's ability to verify the peaceful use of all nuclear material in a State with a CSA. Given the importance of an AP in that regard, the Director General will continue to encourage States that have not yet done so to bring an AP into force.[32] If a State with a CSA concludes an AP, the measures contained in the AP can be implemented when the AP enters into force, or when the State notifies the Agency that it will apply its AP provisionally pending its entry into force.

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[29] The topics were discussed at the second technical meeting on 25 February 2014.

[30] See footnote 11.

[31] Paras 1 and 2 of INFCIRC/153 (Corrected), specify the State's undertakings and the Agency's right and obligation under a CSA. The State's obligation to declare all nuclear material in all peaceful nuclear activities and the Agency's right and obligation to apply safeguards to all such material are also addressed in paras 7, 8, 11, 12, 13, 18 and 19 of Part I; and paras 43, 44, 46, 51, 54, 56, 57, 62, 63, 64, 65, 71, 72, 73, 74 and 76 of Part II.

[32] See para. 32 of GOV/2013/38.

49. Under this type of safeguards agreement, the Agency seeks to verify that all nuclear material required to be safeguarded is declared by the State (i.e. the correctness and completeness of the State's declarations).[33] To do so, as described in GOV/2013/38, safeguards activities are conducted[34] to address the three generic objectives[35] established by the Secretariat, namely[36]:

- to detect any diversion of declared nuclear material at declared facilities or LOFs;
- to detect any undeclared production or processing of nuclear material at declared facilities or LOFs; and
- to detect any undeclared nuclear material or activities in the State as a whole.

50. In applying the SLC, as described in GOV/2013/38 and in this document, for a State with a CSA, emphasis will continue to be on the attainment of the generic objectives. These are common to all States with CSAs. The safeguards measures that will be included in the State's SLA in order to address the generic objectives will be those specified in the CSA[37] and, where applicable, the AP[38]. Additionally, the Agency will continue to implement the measures described in Part 1 of Programme 93+2, as indicated by the Director General in GOV/2807, to improve the Agency's ability to detect undeclared nuclear material and activities subject to safeguards in CSA States and to ensure that all nuclear material required to be safeguarded is under Agency safeguards.[39]

C.3.2. States with Item-Specific Safeguards Agreements

51. Under an item-specific safeguards agreement, safeguards are to be applied to specified items subject to the agreement (e.g. nuclear material, non-nuclear material, facilities, equipment or components) to verify that such items are not used for the manufacture of any nuclear weapon or to further any military purpose, and that such items are used exclusively for peaceful purposes and not for the manufacture of any nuclear explosive device. Safeguards implementation under such agreements does not cover all nuclear material in all nuclear activities in the State's territory, under its jurisdiction and or carried out under its control anywhere.

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[33] In several instances involving the implementation of safeguards pursuant to CSAs, the Board of Governors has requested States to declare to the Agency all nuclear material and facilities subject to safeguards and the Director General to verify the correctness and completeness of States' declarations under CSAs (see for example GOV/DECISIONS 1990-91, 90-91/71; GOV/DECISIONS 1991-92, 91-92/39; GOV/2636; GOV/2003/69; GOV/2004/18; GOV/DECISIONS 2004-05, 04-05/16; GOV/DECISIONS 2004-05, 04-05/35; GOV/2011/41).

[34] For States with SQPs based on the original standard text, the implementation of certain provisions in Part II of the CSAs are held in abeyance, with the exception of the articles corresponding to paras 33, 34, 39, 42 and 91 of INFCIRC/153 (Corrected). For States with SQPs based on the revised SQP text, the implementation of the provisions in Part II of the CSA are held in abeyance, with the exception of the articles corresponding to paras 33-39, 41, 49, 50, 60, 68, 69, 71, 73-77, 83, 85-91, 95 and 96 of INFCIRC/153 (Corrected).

[35] These three objectives were articulated in the SIR for 2006 (GOV/2007/21). They were established by the Secretariat taking into account, inter alia, paras 2 and 28 of INFCIRC/153 (Corrected).

[36] The order in which these generic objectives are presented does not imply any order in their importance.

[37] To pursue the generic objective of detecting any undeclared nuclear material or activities in a State without an AP, for the State as a whole, the Agency utilizes the measures provided in the CSA, evaluates all safeguards relevant information available to the Agency about the State, and, as necessary, seeks clarifications from the State. If the Agency considers that information made available by the State is not adequate for it to fulfil its responsibilities under the CSA, the Agency may make special inspections, in accordance with paras 73 and 77 of INFCIRC/153 (Corrected).

[38] The implementation of an AP significantly increases the Agency's ability to detect undeclared nuclear material and activities in a State with a CSA.

[39] Measures being implemented by the Agency since 1995 within the existing legal authority provided under CSAs include broader access to information; increased physical access; optimized use of technology advances and increased cooperation with SSACs/RSACs. See GOV/2013/38, paras 5 and 6.

52. Under this type of safeguards agreement, the Agency seeks to verify that no items subject to safeguards are used for the manufacture of any nuclear weapon or to further any other military purpose and that such items are used exclusively for peaceful purposes and not for the manufacture of any nuclear explosive device. To do so, safeguards activities are conducted to address the two generic objectives established by the Secretariat, namely[40]:

- to detect any diversion of nuclear material subject to safeguards under the safeguards agreement; and
- to detect any misuse of facilities and other items subject to safeguards under the safeguards agreement.

53. In applying the SLC as described in this document for a State with an item-specific safeguards agreement, emphasis will continue to be on the attainment of the generic objectives. These objectives are common to all States with such agreements. The safeguards measures that will be included in the State's SLA are those specified in the State's item-specific safeguards agreement and, where applicable, the AP. [41]

C.3.3. States with VOAs

54. Under a VOA, safeguards are to be applied on nuclear material in selected facilities or parts thereof to verify that such material is not withdrawn from safeguards, except as provided for in the agreement. However, VOA States' undertakings vary from one VOA to another.[42] Safeguards implementation for each of the five States with VOAs does not cover all nuclear material in all nuclear activities in the State's territory, under its jurisdiction or carried out under its control anywhere.

55. Under this type of safeguards agreement, the Agency seeks to verify that nuclear material in selected facilities or parts thereof is not withdrawn from safeguards, except as provided for in the agreement. In implementing safeguards for a State with a VOA, safeguards activities are conducted to address the following generic objective established by the Secretariat:

- to detect any withdrawal of nuclear material from safeguards in selected facilities or parts thereof, except as provided for in the agreement.

56. In applying the SLC as described in this document for a State with a VOA, emphasis will continue to be on the attainment of this generic objective. It is common to all States with VOAs. The safeguards measures that will be included in the State's SLA are those specified in the State's VOA and AP. [43]

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[40] The order in which these generic objectives are presented does not imply any order in their importance.

[41] By implementing measures under an AP to an item-specific safeguards agreement, the Agency also seeks to obtain and verify information that could enhance the safeguards conclusions for States with CSAs.

[42] See, for example, INFCIRC/263, Art. 1; INFCIRC/288, Art. 1; INFCIRC/290, Art. 1; INFCIRC/327, Art. 1; and INFCIRC/369, Art. 1.

[43] By implementing measures under an AP to a VOA, the Agency also seeks to obtain and verify information that could enhance the safeguards conclusions for States with CSAs.

Type of agreement	Scope of Application of Safeguards Agreements	Generic Objectives
CSA	All nuclear material in all peaceful nuclear activities in the State	• To detect any diversion of declared nuclear material at declared facilities or LOFs • To detect any undeclared production or processing of nuclear material at declared facilities or LOFs • To detect any undeclared nuclear material or activities in the State as a whole
Item-specific	Specified items subject to safeguards in the State	• To detect any diversion of nuclear material subject to safeguards • To detect any misuse of facilities and other items subject to safeguards
VOA	Nuclear material in selected facilities or parts thereof in the State	• To detect any undeclared withdrawal of nuclear material in selected facilities or parts thereof

Table 2: Summary of the scope of application of safeguards agreements and the associated generic objectives

C.3.4. Key Points: Scope of Application of Safeguards Agreements and Generic Safeguards Objectives

57. The purpose of Agency safeguards is to verify States' undertakings under their respective safeguards agreements with the Agency. The Secretariat establishes and pursues generic objectives on the basis of the State's safeguards agreement to implement effective safeguards. For CSA States, safeguards are to be applied to all nuclear material in all peaceful nuclear activities within the territory of the State, under its jurisdiction or carried out under its control anywhere. For States with item-specific safeguards agreements, safeguards are to be applied to items subject to such agreements. For a VOA State, safeguards are to be applied to nuclear material in selected facilities or parts thereof under the VOA. Generic objectives are established on the basis of the scope of the State's agreement, and are common to all States with the same type of safeguards agreement. The scope of a safeguards agreement does not change when a State concludes an AP.

C.4. Technical Objectives and Acquisition/Diversion Path Analyses

58. This section provides clarifications and additional information on technical objectives that are established by the Secretariat to address the generic objectives and to guide the planning, conduct and evaluation of safeguards activities. The generic and technical objectives will become part of a State's SLA. The SLA also describes how the technical objectives are established through the conduct of acquisition or diversion path analysis.[44]

59. The use of such analyses dates back to the 1980s when the Safeguards Criteria were developed by the Secretariat by analysing the paths through which nuclear material could be diverted from a

[44] The topics were discussed at the second technical meeting on 25 February 2014.

safeguarded facility, including through the undeclared production or processing of nuclear material at the facility, and assessing the time it would take to convert diverted nuclear material into a form suitable for use in a nuclear weapon or other nuclear explosive device. In developing the Safeguards Criteria, safeguards activities to be conducted by the Agency at each type of nuclear facility and for each type of nuclear material were identified to address technical objectives to detect and deter such diversion or misuse. However, the Safeguards Criteria listed only the activities to be conducted and not the technical objectives. As a result, the application of the Safeguards Criteria has been more focused on completing the specified activities rather than attaining the technical objectives that the activities were designed to address.

60. In implementing safeguards as described in GOV/2013/38 and in this document, the Secretariat plans to develop SLAs that are more focused on the attainment of technical objectives instead of mechanistically carrying out the safeguards activities listed in the Safeguards Criteria.

61. Technical objectives will be established by the Secretariat through the conduct of either an acquisition path analysis (for States with CSAs) or a diversion path analysis (for States with item-specific safeguards agreements or VOAs).[45] The technical objectives will be focused on detecting and deterring any activity (e.g. removal of nuclear material or items placed under safeguards and undeclared production or processing of nuclear material at declared facilities) along a technically plausible path.

62. Unlike the generic objectives, which are common to all States with the same type of safeguards agreement, technical objectives may differ from State to State, depending in particular on the nuclear fuel cycle and related technical capabilities of a State (e.g. the type, form and quantities of nuclear material, the type of nuclear facilities, and the technical capabilities to produce, process and use nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made). Technical objectives will form the basis on which safeguards measures will be identified and safeguards activities will be conducted for a State. This is elaborated in greater detail below, according to the type of safeguards agreement.

C.4.1. States with CSAs

63. For a State with a CSA, the Secretariat will conduct an acquisition path analysis to establish the technical objectives. Acquisition path analysis is a structured method used to analyse the plausible paths by which, from a technical point of view, nuclear material suitable for use in a nuclear weapon or other nuclear explosive device could be acquired. Each path is made up of the steps that would be required to acquire nuclear material and process it into a form suitable for use in a nuclear weapon or nuclear explosive device. Technical objectives are established for detecting the various steps along each path. The analysis takes into account the scope of the CSA[46] (i.e. all nuclear material in all peaceful nuclear activities in the State) in order to address all the generic objectives for the State and is focused on nuclear material (not on weaponization). As stated in GOV/2013/38, it does not involve judgements about a State's intention to pursue any such path.

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[45] Acquisition path analysis considers all nuclear fuel cycle and related technical capabilities of a State and is therefore only conducted for CSA States in line with the scope of their agreements. Diversion path analysis is limited to the analysis of the means by which nuclear material could be diverted from a safeguarded nuclear facility, or by which facilities or other items subject to safeguards could be misused, and is therefore conducted for States with item-specific safeguards agreements and VOAs in line with the scope of their agreements.

[46] In establishing technical objectives, the Secretariat takes into account, inter alia, paras 2 and 28 of INFCIRC/153 (Corrected).

64. For example, for a State with a declared uranium conversion facility and a declared research reactor, one acquisition path might be: the diversion of declared uranium from the conversion facility, the undeclared manufacture of uranium targets from the diverted uranium in an undeclared facility, the undeclared irradiation of the targets in the declared research reactor to produce plutonium, and the undeclared reprocessing of the targets to produce separated plutonium. Technical objectives would then be established to detect each of the steps along the path, i.e. detect the diversion of declared uranium from the conversion plant, detect undeclared manufacture of uranium 'targets', detect the misuse of the research reactor to irradiate undeclared targets and detect undeclared reprocessing of the irradiated targets. Each of the technical objectives addresses a generic objective for the State, as illustrated in the example in Figure 3.

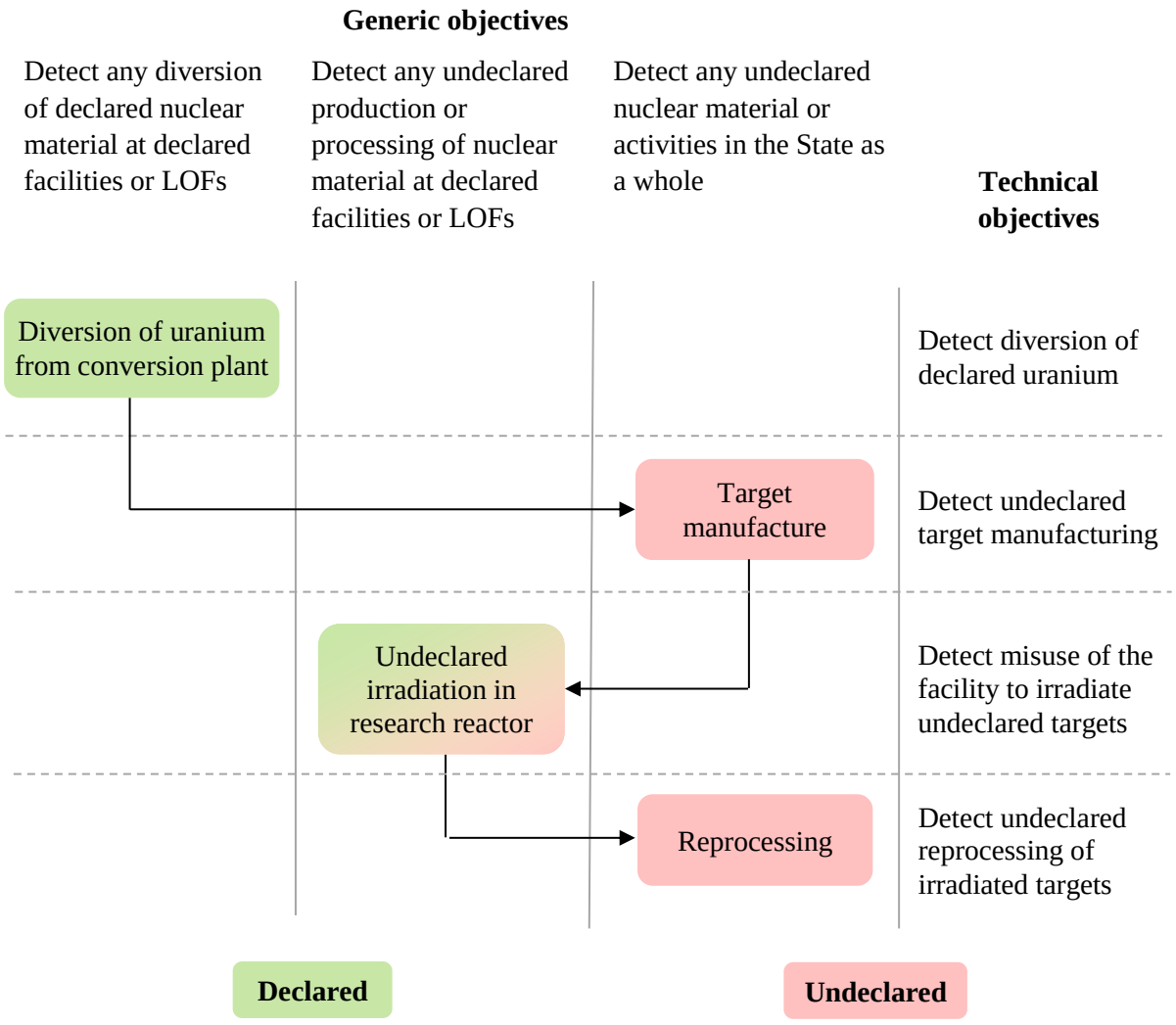

Figure 3: Example of technical objectives established based on acquisition path analysis

C.4.2. States with Item-Specific Safeguards Agreements

65. For a State with an item-specific safeguards agreement, the Secretariat will conduct diversion path analysis to establish technical objectives. Diversion path analysis is a structured method used to analyse the paths by which, from a technical point of view, nuclear material subject to safeguards could be diverted from a facility, or by which facilities or other items subject to safeguards could be misused.

66. The analysis takes into account the scope of the safeguards agreement and identifies paths for the diversion of nuclear material from a facility and/or the use of a safeguarded facility for the undeclared introduction, production and diversion of nuclear material, including possible methods of concealment of the removal. Each path is made up of steps that would be required to accomplish the path. Technical objectives are established for detecting the various steps of each path.

67. For example, for a research reactor subject to safeguards, the analysis may identify paths such as (i) diversion of declared fresh fuel, (ii) diversion of declared core fuel, (iii) diversion of declared spent fuel, or (iv) undeclared irradiation of targets in the research reactor to produce plutonium. Technical objectives would then be formulated for the detection of the activities that comprise each of those paths, i.e. detect the diversion of fresh fuel, detect the diversion of core fuel, detect the diversion of spent fuel and detect the undeclared irradiation of targets to produce plutonium, as depicted in Figure 4.

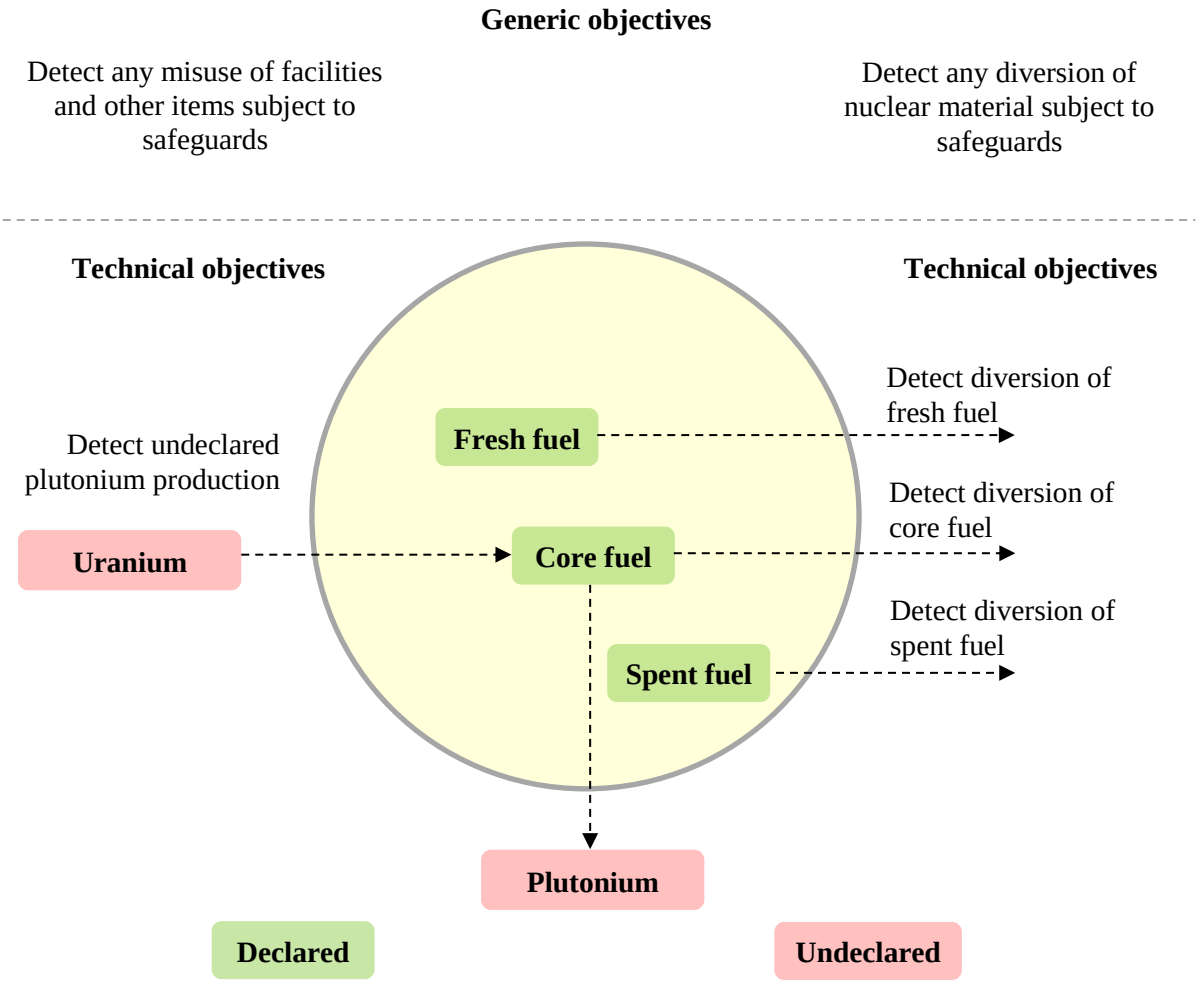

Figure 4: Example of technical objectives established based on diversion path analysis for a research reactor under an item-specific safeguards agreement

C.4.3. States with VOAs

68. For a State with a VOA, the Secretariat will establish technical objectives by conducting diversion path analysis. Taking into account the scope of the VOA, the technical objectives will focus on detecting any withdrawal from safeguards of nuclear material from activities in selected facilities or parts thereof, except as provided for in the agreement. For a VOA State, diversion path analysis is a structured method used to analyse the paths by which, from a technical point of view, nuclear material

to which safeguards are being applied could be withdrawn from activities in selected facilities or parts thereof, except as provided for in the agreement.

69. The analysis identifies paths for the undeclared removal of nuclear material from a facility and/or the use of a safeguarded facility for the undeclared production and withdrawal of nuclear material, including possible methods of concealment of the removal. Each path is made up of steps that would be required to accomplish the path. Technical objectives are established for detecting the various steps of each path.

70. For example, for an enrichment plant selected for the application of safeguards under a VOA, the analysis may identify paths such as (i) undeclared removal of natural UF_6 feedstock, (ii) undeclared removal of low enriched UF_6 product, (iii) undeclared removal of depleted UF_6 tails and (iv) undeclared removal of UF_6 from the enrichment process. Technical objectives would then be established for the detection of the activities that comprise each of those paths, i.e. detect the undeclared removal of natural UF_6 feedstock, detect the undeclared removal of low enriched UF_6 product, detect the undeclared removal of depleted UF_6 tails and detect the undeclared removal of UF_6 from the enrichment process, as depicted in Figure 5.

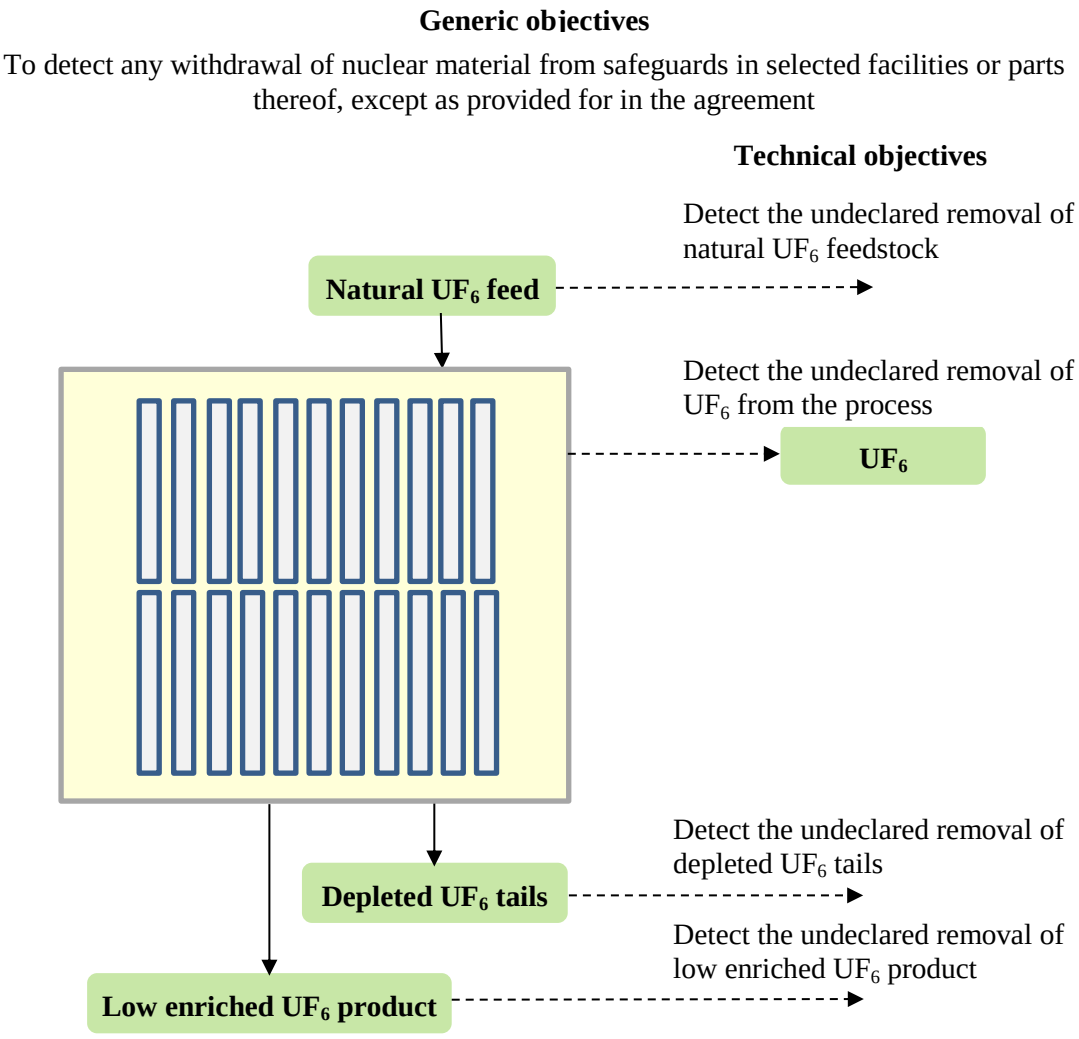

Figure 5: Example of technical objectives established based on diversion path analysis for a centrifuge enrichment plant under a VOA

C.4.4. Key Points: Technical Objectives and Acquisition/Diversion Path Analyses

71. Technical objectives are established by the Secretariat for a State to guide the planning, conduct and evaluation of safeguards activities in order to address the generic objectives established on the basis of the State's safeguards agreement. They will form the basis on which safeguards measures will be identified and safeguards activities will be conducted for a State. Technical objectives will be established through the conduct of either an acquisition path analysis (for States with CSAs) or diversion path analysis (for States with item-specific safeguards agreements or VOAs). Acquisition and diversion path analyses are structured technical methods that do not involve judgements about a State's intention to pursue any such path. The technical objectives will remain within the scope of the relevant safeguards agreement, but may differ from State to State, depending, for example, on the nuclear fuel cycle and related technical capabilities of the State.

C.5. Verification Effort

72. This section provides clarifications and additional information on the level of safeguards activities conducted for a State (i.e. verification effort), how it has been determined to date based on the Safeguards Criteria and in the context of integrated safeguards, and how it is planned to be determined in the future, distinguishing between States with different types of safeguards agreements.[47]

73. Verification effort for a State is the level of safeguards activities conducted by the Agency for the State, both in the field and at Headquarters. In the field, the level of effort can be expressed as the frequency and the intensity of the activities, i.e. how often and the extent to which they are conducted. For example, for a safeguarded facility, frequency is the number of inspections conducted per year and the intensity is the level of activities performed during an inspection. Verification effort in Headquarters includes the processing, review and validation of information from States, resulting from in-field safeguards activities and equipment, and from open and other sources, including the evaluation of the consistency of all of the safeguards relevant information, as described in detail in Section C.7.

74. In determining the level of safeguards activities, the Agency takes into account the quantity and type of nuclear material, and the facility types and operating status (e.g. under construction, in operation, closed down or under decommissioning) and the nuclear fuel cycle and related technical capabilities, within the scope of the relevant safeguards agreement. Safeguards agreements require that, in order to ensure optimum cost-effectiveness in the implementation of safeguards, use should be made by the Agency of such means as "concentration of verification procedures on those stages in the nuclear fuel cycle involving the production, processing, use or storage of nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made, and minimization of verification procedures in respect of other nuclear material".[48]

75. In implementing safeguards as described in GOV/2013/38 and in this document, it is essential that the effectiveness of safeguards be maintained. In this regard, nuclear material accountancy and its verification in the field will remain at the core of safeguards implementation. For States with CSAs, the Agency will continue to concentrate its verification effort on sensitive stages of the nuclear fuel cycle and on nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made.

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[47] The topic was discussed at the third technical meeting on 19 March 2014.

[48] INFCIRC/153 (Corrected), para. 6.(c). Similar provisions are contained in VOAs.

C.5.1. Safeguards Criteria

76. Since the late 1980s, verification effort at declared facilities has been based on the Safeguards Criteria. The Safeguards Criteria specify the frequency and intensity of safeguards activities for each type of facility and LOF, taking into account the quantity and type of nuclear material. In order to determine the time it would take to convert diverted nuclear material to a nuclear weapon or other nuclear explosive device, it was necessary to identify the steps in the process that would be needed (the pathway for the processing of the material) and to assess the time it would take to conduct those steps. The 'timeliness' goals set out in the Safeguards Criteria[49] (which influence the frequency of safeguards activities) for detecting the abrupt diversion of a significant quantity[50] or more of nuclear material were developed under the assumption that the State's technical capability to process diverted nuclear material into weapons usable material could not be ruled out. The Safeguards Criteria were formulated to assign higher probabilities of detection (verification intensity) to activities associated with the detection of the diversion of 'direct use' nuclear material.[51] The use of the Safeguards Criteria in the context of the SLC is described in Section C.5.4 *Verification Effort under State-Level Approaches*.

C.5.2. Taking Advantage of New Techniques and Technological Developments

77. In the implementation of safeguards, the Agency has continued to look for ways to ensure optimal cost-effectiveness. One way of doing so is by taking advantage of technological developments, as stipulated by safeguards agreements. More specifically, CSAs and VOAs provide that in implementing safeguards the Agency shall, inter alia:

- take full account of technological developments in the field of safeguards;
- make every effort to ensure optimum cost-effectiveness and the application of the principle of safeguarding effectively the flow of nuclear material subject to safeguards under the agreement; and
- make use, for example, of such means as statistical techniques and random sampling in evaluating the flow of nuclear material.[52]

Some examples of the implementation of such techniques and technological developments in implementing safeguards are:

- use of remote transmission of data from safeguards equipment installed in the field to Headquarters (remote monitoring);
- use of short notice, unannounced and randomized routine inspection schemes; and
- use of operational data submitted by operators through 'mailbox' declarations.[53]

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[49] The timeliness goals specified by the Safeguards Criteria are: one month for un-irradiated direct use material, three months for irradiated direct use material and one year for indirect use material.

[50] The approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be ruled out. For early consideration of this topic see, for example, the SIR for 1977, GOV/1911, Section 1.2.2.

[51] The probabilities of detection in the Safeguards Criteria are specified as low (20%), medium (50%) and high (90%) and depend on the type of material and the inspection purpose (e.g. physical inventory verification, transfers of nuclear material, 'timely' detection of abrupt diversion).

[52] See, for example, INFCIRC/153 (Corrected), para. 6 and INFCIRC/288, Art. 6. Item-specific safeguards agreements provide that safeguards procedures to be applied by the Agency are those specified in the agreements, as well as such additional procedures as result from technological developments and as may be agreed to between the Agency and the State. See, for example, INFCIRC/816, Section 19.(a).

[53] Declarations of operational activities at facilities that are submitted electronically, time-stamped and irretrievable, which can be randomly validated by the Agency.

78. The potential benefits of applying these techniques and technologies include: increased detection and deterrence capabilities, timely access to data and information on the state-of-health of safeguards equipment and, in some cases, a reduction of in-field safeguards activities. However, there may also be possible impacts that need to be assessed prior to the application of these techniques and technologies, such as an increase in Agency activities at Headquarters, the need to procure, install and maintain safeguards equipment in the field and the impact on the State and/or facility operators. The relative benefits and potential impacts will be weighed in determining whether or not to pursue the application of a new technique or technological development.

79. The implementation of these techniques and technologies depends also on whether the required practical conditions can be met by the State and/or operator so that safeguards activities can be implemented effectively. Accordingly, the Agency consults with the State and/or operators on whether, and how, the conditions can be met.

80. The Agency has been implementing these techniques and technologies in a number of States for many years. Remote monitoring has been implemented since 1999 and, as of the end of 2013, there were a total of 278 systems[54] in operation in 123 facilities, in 22 States with CSAs and with VOAs.[55] Short notice routine inspection schemes are applied at 46 facilities in 13 States, including 12 States with CSAs and in one State under an item-specific safeguards agreement. Schemes that enable effective implementation of unannounced inspections are in place at 50 facilities in 20 States with CSAs and three States with VOAs.

C.5.3. Integrated Safeguards

81. During the timeframe 1999 to 2001, the Agency developed the conceptual framework for integrated safeguards, which was presented to the Board of Governors in 2002.[56] In 2001, in the context of integrated safeguards, the Agency began developing and implementing individual safeguards approaches (SLAs) for States with CSAs and APs and for which the Agency had drawn the broader conclusion. Although some considerations relating to the State as a whole were reflected in these approaches, the primary basis for determining safeguards activities at declared facilities in these States remained the Safeguards Criteria, albeit their application adjusted to take into account the broader conclusion for such States. The implementation of SLAs in the context of integrated safeguards has resulted in efficiencies[57] and the further optimization of safeguards implementation, as described in GOV/2013/38 and in this document, for States under integrated safeguards is expected to result in further efficiencies. Figure 6 shows the introduction of SLAs for the 53 States[58] in which those SLAs are currently being implemented.

C.5.4. Verification Effort under State-Level Approaches

82. Safeguards implementation as described in GOV/2013/38 and in this document envisages the progressive development of an SLA for all States.[59] In the process of developing an SLA for a State, more systematic consideration will be given to and better use will be made of State-specific factors.

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[54] Surveillance and radiation systems; this excludes remotely monitored seals.

[55] And Taiwan, China.

[56] *The Conceptual Framework for Integrated Safeguards*, GOV/2002/8, 8 February 2002.

[57] See para. 192 of this document.

[58] And Taiwan, China.

[59] The existing SLAs for States under integrated safeguards (as described in the previous paragraph) will be updated as described in the next sub-section.

An SLA will identify the generic and technical objectives for the State and the applicable safeguards measures to address them. Figure 7 illustrates how technical objectives are established and safeguards measures are identified for a CSA State based on an acquisition path analysis. The SLA is executed through an annual implementation plan.

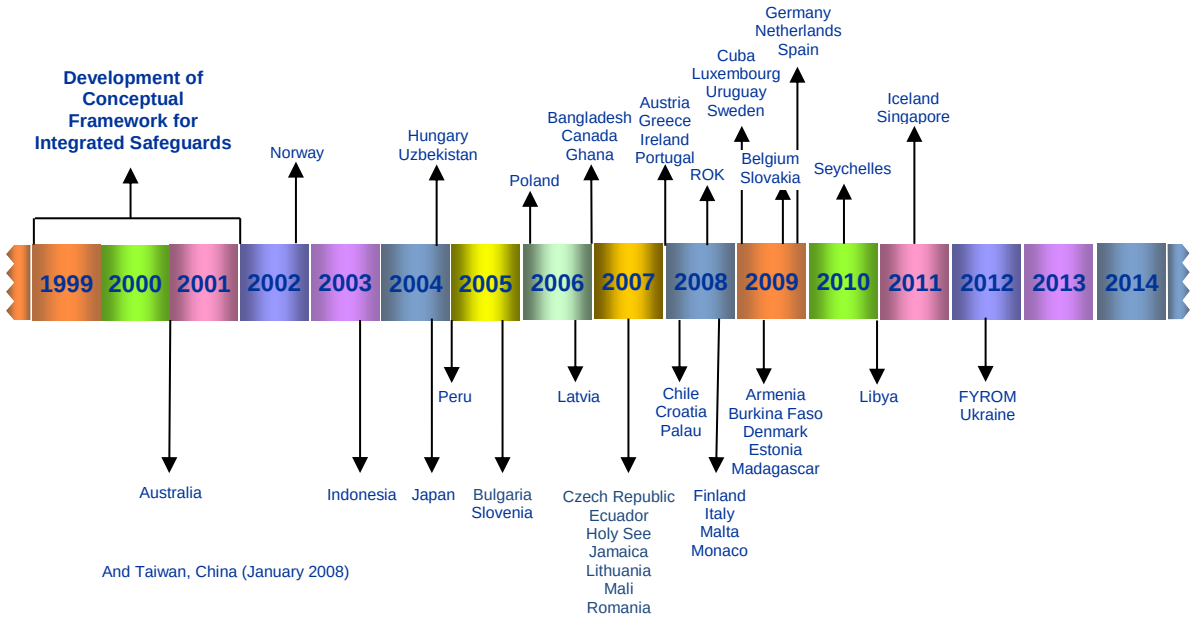

Figure 6: Introduction and implementation of SLAs for States under integrated safeguards

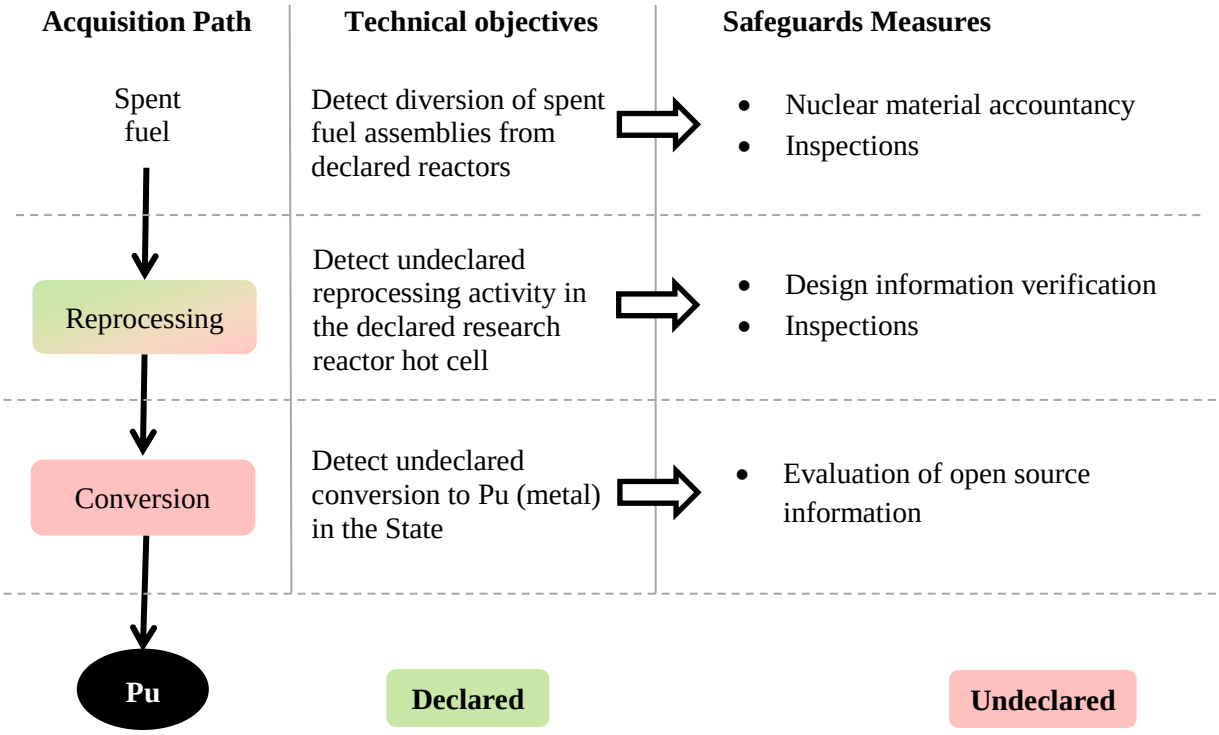

Figure 7: Establishing technical objectives for a CSA State based on an acquisition path analysis and identifying safeguards measures to address the technical objectives

83. Where possible, an SLA will identify more than one safeguards measure[60] that could be used to address each technical objective, to allow for flexibility in implementation as well as the comparison of the cost-effectiveness of the different measures. The safeguards measures, including considerations for the relative frequency and intensity of their implementation, will be selected considering:

- the type of safeguards agreement;
- all technically plausible acquisition paths (for States with CSAs);
- all technically plausible diversion paths (for States with item-specific safeguards agreements and VOAs);
- the technical objectives; and
- the prioritization of technical objectives.

84. The frequency and intensity of implementing safeguards measures to address technical objectives for a State are determined on the basis of priorities assigned to each technical objective. Priorities are assigned taking into consideration the following:

- the State's nuclear fuel cycle and related technical capabilities to acquire nuclear material suitable for use in a nuclear weapon or other nuclear explosive device through a particular path, as assessed in the acquisition path analysis (for States with CSAs);
- the State's technical capabilities to divert nuclear material or misuse a facility, as assessed in diversion path analysis (for States with item-specific safeguards agreements or VOAs);
- stage of the nuclear fuel cycle, focusing priority on nuclear material from which nuclear weapons could be readily made;
- the Agency's ability to address the technical objective effectively; and
- the number of paths covered by the technical objective.

85. In implementing safeguards for a State as described in GOV/2013/38 and in this document, verification effort will continue to be determined in accordance with the relevant safeguards agreement and, where applicable, the AP. The SLA will not introduce any new safeguards measures beyond those set out in the State's safeguards agreement and, where applicable, the AP. The SLA may involve possible adjustments in the frequency and intensity of the implementation of existing safeguards measures, as described below. All types of safeguards agreements provide some flexibility for the Agency to adjust the frequency and intensity of its safeguards activities for a State. The actual routine inspection effort agreed between the Agency and a State will be kept to a minimum consistent with effective implementation within the limits specified in the subsidiary arrangements to a safeguards agreement.[61] Nuclear material accountancy and its verification in the field will remain at the core of safeguards implementation and continue to be the primary basis for drawing conclusions on the non-diversion of declared nuclear material. The aim is to optimize safeguards implementation within each State, not to shift verification effort from one group of States to another.

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[60] For States with SQPs to their CSAs, the safeguards measures contained in Part II of CSAs for which the implementation is held in abeyance will not be included. See footnote 34.

[61] For example, with respect to the frequency and intensity of routine inspections, the Agency is required under CSAs to keep the number, intensity, duration and timing of such inspections to a minimum consistent with effective implementation and to make optimum and economical use of inspection resources (INFCIRC/153 (Corrected), para. 78). Item-specific safeguards agreements (e.g. INFCIRC/66/Rev.2, para. 47) and VOAs contain similar provisions. For certain types of facilities, however, the maximum inspection effort allowed for in a CSA is often much higher than the Agency actually needs to perform. CSAs and VOAs specifically provide for adjustments to these activities based on specified criteria (see INFCIRC/153 (Corrected), para. 81 and a similar provision in VOAs). For States with SQPs based on the original standard text, the Agency does not conduct in-field safeguards activities under the CSA. For States with SQPs based on the revised standard text, the Agency may conduct inspections under the CSA. If a State with an SQP concludes an AP, the Agency may conduct complementary access in the States, as provided for in the AP.

86. In addition to the implementation of safeguards measures identified in the SLA and executed through an annual implementation plan, anomalies, questions and inconsistencies that may arise will be followed up in a timely manner with the State and/or regional authority.

States with CSAs, without APs

87. Currently, for a State with a CSA but without an AP, safeguards activities are conducted at declared facilities and LOFs as specified in the Safeguards Criteria, and new techniques and technologies are implemented, as applicable, to strengthen effectiveness and improve efficiency. Safeguards measures in the safeguards agreement are used to detect diversion of declared nuclear material and undeclared nuclear material and activities. Anomalies, questions and inconsistencies that may arise are followed up in a timely manner with the State and/or regional authority.

88. In the future, the Secretariat plans to progressively develop SLAs for each State with a CSA only. In doing so, more systematic consideration will be given to, and better use will be made of, State-specific factors (e.g. the technical capabilities of the SSAC/RSAC). The SLA will identify safeguards measures to address the prioritized technical objectives for the State, including the relative frequency and intensity of their implementation. Although some flexibility in the implementation of safeguards measures may be introduced, activities based on the Safeguards Criteria will serve as the primary basis for attaining technical objectives at declared facilities and LOFs. Priority will continue to be focused on the sensitive stages of the nuclear fuel cycle and on the nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made. Any change in the way in-field safeguards measures are implemented will be subject to prior consultation with the State and/or regional authority. In addition to implementing the measures in the SLA, anomalies, questions and inconsistencies that may arise will be followed up in a timely manner with the State and/or regional authority.

89. Table 3a summarizes the difference between the implementation of safeguards to date, and future safeguards implementation under an SLA, for a State with a CSA only.

States with CSAs and APs, without the broader conclusion

90. Currently, for a State with a CSA and an AP in force for which the broader conclusion has not yet been drawn, safeguards measures in the safeguards agreement and the AP are implemented to verify the non-diversion of declared nuclear material and the absence of undeclared nuclear material and activities. Safeguards activities conducted at declared facilities and LOFs are as specified in the Safeguards Criteria and new techniques and technologies are implemented, as applicable, to improve the effectiveness and efficiency of safeguards. Under an AP, a broader range of safeguards information and measures is available to the Agency which significantly increases its ability to detect undeclared nuclear material and activities in a State. For these States, significant effort is directed towards the implementation of the AP measures and the evaluation of all safeguards relevant information in order to support the drawing of the broader conclusion for the first time. Anomalies, questions and inconsistencies that may arise are followed up in a timely manner with the State and/or regional authority.

91. The Secretariat plans to develop SLAs for each State with a CSA and an AP but without the broader conclusion. In doing so, more systematic consideration will be given to, and better use will be made of, State-specific factors (e.g. the ability to implement certain safeguards measures such as the use of operational data submitted through mailbox declarations). The SLAs will identify safeguards measures to address the prioritized technical objectives, including the relative frequency and intensity of their implementation. Although some flexibility in the implementation of safeguards measures may be introduced, activities based on the Safeguards Criteria will serve as the primary basis for attaining technical objectives at declared facilities and LOFs. Priority will continue to be focused on the

sensitive stages of the nuclear fuel cycle and on the nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made. Any change in the way in-field safeguards measures are implemented will be subject to prior consultation with the State and/or regional authority. In addition to implementing the measures in the SLA, anomalies, questions and inconsistencies that may arise will be followed up in a timely manner with the State and/or regional authority.

92. Table 3a summarizes the difference between the implementation of safeguards to date, and safeguards implementation under an SLA, for a State with a CSA and AP for which a broader conclusion has not yet been drawn.

States with CSAs and APs and the broader conclusion

93. For a State with a CSA and AP in force, a broad range of safeguards information and measures are available to the Agency. After conducting sufficient safeguards activities for the State and finding no indication of the diversion of declared nuclear material from peaceful nuclear activities and no indication of undeclared nuclear material or activities for the State as a whole, the Agency can draw the broader conclusion for the State that all nuclear material remained in peaceful activities.[62]

94. Once a broader conclusion is drawn for a State, an SLA can be developed and implemented in the context of integrated safeguards. Integrated safeguards refer to an optimized combination of all safeguards measures available to the Agency under CSAs and APs. To date, such SLAs have been developed and implemented for 53 States with the broader conclusion. In addition to implementing the safeguards measures set out in the SLA, anomalies, questions and inconsistencies that may arise are followed up in a timely manner with the State and/or regional authority.

95. The Agency will continue to implement integrated safeguards for States with the broader conclusion. However, the existing 53 SLAs for States with the broader conclusion will be updated, using the improved processes described in GOV/2013/38 and in this document, to further optimize the implementation of integrated safeguards for these States. For States for which the broader conclusion will be drawn for the first time, SLAs will be developed as described in these documents. In doing so, more systematic consideration will be given to, and better use will be made of, State-specific factors. The updated SLAs will identify safeguards measures to address the prioritized technical objectives, including the relative frequency and intensity of their implementation. Priority will continue to be focused on the sensitive stages of the nuclear fuel cycle and on the nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made. Any change in the way in-field safeguards measures are implemented will be subject to prior consultation with the State and/or regional authority. In addition to implementing the safeguards measures set out in the SLA, anomalies, questions and inconsistencies that may arise will be followed up in a timely manner with the State and/or regional authority.

96. Table 3b summarizes the difference between the implementation of integrated safeguards to date, and safeguards implementation under an optimized SLA, for a State with a CSA and AP for which a broader conclusion has been drawn.

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[62] Safeguards conclusions are drawn annually for all States with safeguards agreements in force. A broader conclusion is subject to reevaluation and reconfirmation each year. See Section C.10 of this document.

Type of agreement /conclusion	Safeguards implementation to date	Safeguards implementation under an SLA
CSA only	Safeguards measures implemented for declared facilities/LOFs as specified in the Safeguards Criteria New techniques and technologies implemented, as applicable	Safeguards measures, including new techniques and technologies as applicable, implemented to address prioritized technical objectives (TOs) for declared facilities/LOFs, [63] including the frequency and intensity of their implementation
	Safeguards measures provided for in the CSA utilized to detect undeclared nuclear material or activities	Safeguards measures provided for in the CSA utilized to address TOs to detect undeclared nuclear material or activities
	Anomalies, questions and inconsistencies followed up	Anomalies, questions and inconsistencies followed up
	Use of State-specific factors	Better use of State-specific factors
CSA + AP without broader conclusion	Safeguards measures implemented for declared facilities as specified in the Safeguards Criteria New techniques and technologies implemented, as applicable	Safeguards measures, including new techniques and technologies as applicable, implemented to address prioritized TOs for declared facilities/LOFs, [64] including the frequency and intensity of their implementation
	Safeguards measures of the CSA and the AP utilized to detect undeclared nuclear material and activities	Safeguards measures of the CSA and AP utilized to address prioritized TOs to detect undeclared nuclear material and activities
	Anomalies, questions and inconsistencies followed up	Anomalies, questions and inconsistencies followed up
	Use of State-specific factors	Better use of State-specific factors

Table 3a.Verification effort for States with CSAs

[63] Activities based on the Safeguards Criteria will serve as a primary basis for attaining technical objectives at declared facilities and LOFs.

[64] Activities based on the Safeguards Criteria will serve as a primary basis for attaining technical objectives at declared facilities and LOFs.

Type of agreement /conclusion	Safeguards implementation to date	Safeguards implementation under an SLA
CSA + AP with broader conclusion	**SLA under the Conceptual Framework for Integrated Safeguards (IS) (2002)**:	**Optimized State-level Safeguards Approach**
	Adapted model IS approaches implemented for facilities/LOFs, including some reduction in the frequency and intensity of safeguards activities (from that of the Safeguards Criteria), and use of new techniques and technologies, as applicable	Safeguards measures, including new techniques and technologies as applicable, implemented to address prioritized TOs for declared facilities/LOFs, including the frequency and intensity of their implementation
	A plan for the general level and focus of complementary access implemented to be conducted to detect undeclared nuclear material and activities	Safeguards measures (including complementary access) implemented to address prioritized TOs to detect undeclared nuclear material and activities
	Anomalies, questions and inconsistencies followed up	Anomalies, questions and inconsistencies followed up
	Use of State-specific factors	Better use of State-specific factors

Table 3b.Verification effort for States with CSAs

States with item-specific safeguards agreements

97. Currently, for a State with an item-specific safeguards agreement, safeguards measures are implemented as specified in the Safeguards Criteria with respect to items subject to safeguards, and new techniques and technologies are implemented, as applicable, to strengthen effectiveness and improve efficiency. Anomalies, questions and inconsistencies that may arise are followed up in a timely manner with the State.

98. In due course, the Secretariat plans to progressively develop SLAs for States with an item-specific safeguards agreement. An SLA will consist of the individual approaches for facilities and other items subject to safeguards under the agreement. Each facility-specific or other item-specific safeguards approach will be developed by conducting a diversion path analysis to establish technical objectives and by identifying safeguards measures of the safeguards agreement to address those technical objectives. In doing so, more systematic consideration will be given to, and better use will be made of, State-specific factors (e.g. ability of the Agency to implement certain safeguards measures such as remote monitoring). Although some flexibility in the implementation of safeguards measures may be introduced, activities based on the Safeguards Criteria will serve as the primary basis for attaining the technical objectives. Any change in the way in-field safeguards measures are implemented will be subject to prior consultation with the State. In addition to implementing the safeguards measures set out in the SLA, anomalies, questions and inconsistencies that may arise will continue to be followed up in a timely manner with the State.

99. Table 4 summarizes the difference between the implementation of safeguards to date, and safeguards implementation under an SLA, for a State with an item-specific safeguards agreement.

Safeguards implementation to date	Safeguards implementation under an SLA
Safeguards measures implemented for items subject to safeguards as specified in the Safeguards Criteria	Safeguards measures, including new techniques and technologies as applicable, implemented to address TOs for items subject to safeguards,[65] including the frequency and intensity of their implementation
New techniques and technologies implemented, as applicable	
Anomalies, questions and inconsistencies followed up	Anomalies, questions and inconsistencies followed up
Use of State-specific factors	Better use of State-specific factors

Table 4: Verification effort for a State with an item-specific safeguards agreement

States with VOAs

100. Currently, for a State with a VOA, safeguards activities are conducted in respect of nuclear material in selected facilities or parts thereof, as specified in the Safeguards Criteria, and new techniques and technologies are implemented, as applicable, to strengthen effectiveness and improve efficiency. Anomalies, questions and inconsistencies that may arise are followed up in a timely manner with the State.

101. In due course, the Secretariat plans to progressively develop SLAs for States with a VOA. An SLA will consist of the individual approaches for facilities or parts thereof selected for the application of safeguards under the agreement. Each facility-specific safeguards approach will be developed by conducting diversion path analysis to establish technical objectives and identifying safeguards measures of the safeguards agreement to achieve those technical objectives. In doing so, more systematic consideration will be given to, and better use will be made of, State-specific factors (e.g. the technical capabilities of the SSAC/RSAC). Some flexibility in the implementation of safeguards measures may be introduced. Some of the activities based on the Safeguards Criteria may serve as a basis for addressing the technical objectives. Any change in the way in-field safeguards measures are implemented will be subject to prior consultation with the State and/or regional authority. In addition to implementing the safeguards measures set out in the SLA, anomalies, questions and inconsistencies that may arise will be followed up in a timely manner with the State and/or regional authority.

102. Table 5 summarizes the difference between the implementation of safeguards to date, and safeguards implementation under a SLA for a State with a VOA.

[65] Activities based on the Safeguards Criteria will serve as a primary basis for attaining technical objectives at declared facilities and LOFs.

Safeguards implementation to date	Safeguards implementation under an SLA
Safeguards measures implemented for selected facilities or parts thereof as specified in the Safeguards Criteria New techniques and technologies implemented, as applicable	Safeguards measures, including new techniques and technologies as applicable, implemented to address TOs for selected facilities or parts thereof[66], including the frequency and intensity of their implementation
Anomalies, questions and inconsistencies followed up	Anomalies, questions and inconsistencies followed up
Use of State-specific factors	Better use of State-specific factors

Table 5.Verification effort for a State with a VOA

C.5.5. Improved Work Practices to Ensure Consistency and Non-Discrimination

103. During recent years, work practices in the Secretariat have been improved to ensure that technically sound and consistent practices are followed in the determination of verification effort for all States. In this regard, there has been further development and documentation of internal procedures and guidance, improvement of key support and oversight processes and adjustments to the training programme to ensure consistency and non-discrimination. Guidance documents have been produced for the development of SLAs for States with CSAs and for acquisition path analysis. All associated process maps have been updated. A Departmental review structure, including committee review of all new safeguards approaches, has been established. In line with the principle of non-discriminatory safeguards implementation for States with the same type of safeguards agreement, even greater emphasis will be placed on establishing and following uniform processes and better defined procedures.

C.5.6. Key Points: Verification Effort

104. The implementation of safeguards as described in GOV/2013/38 and in this document envisages, as a first priority, the updating of existing SLAs (for States with CSAs, APs and the broader conclusion) and the development and implementation of SLAs for States with a CSA and AP are in force and for which the broader conclusion has been drawn but for which no SLA has yet been developed. SLAs will be developed and implemented for States with CSAs and APs in force and for which the broader conclusion has not yet been drawn, and the Secretariat will continue to conduct the necessary safeguards activities and evaluations to draw the broader conclusion. SLAs will progressively be developed for other States with CSAs and for States with item-specific safeguards agreements or VOAs. Verification effort for a State will continue to be determined in accordance with the State's safeguards agreement and, where applicable, the AP. The SLA will not introduce any new safeguards measures beyond those set out in the State's safeguards agreement and, where applicable, the AP. However, it may involve possible adjustments in the frequency and intensity of the implementation of the existing safeguards measures within the flexibility provided for in the relevant safeguards agreement and subsidiary arrangements. Changes aimed at optimizing in-field safeguards activities will be done in consultation with the State. It is essential that effectiveness of safeguards be maintained. In this regard, nuclear material accountancy and its verification in the field will remain at the core of safeguards implementation and continue to be the primary basis for deriving a conclusion

[66] Some of the activities based on the Safeguards Criteria may serve as a basis for addressing the technical objectives.

on the non-diversion of declared nuclear material. Verification effort will continue to be concentrated on the sensitive stages of the nuclear fuel cycle and on nuclear material from which nuclear weapons or other nuclear explosive devices could readily be made. The aim is to optimize safeguards implementation, both in terms of effectiveness and efficiency, not to shift verification effort from one group of States to another. Safeguards will be implemented for all States through the use of uniform processes and better defined procedures.

C.6. State-Specific Factors

105. This section provides clarifications and additional information on the six State-specific factors and the manner in which they will be used in the development of SLAs, and in the planning, conduct and evaluation of safeguards activities.[67]

106. The term 'State-specific factors' refers to safeguards-relevant factors that are particular to a State which are used in the development of an SLA for a State, and in the planning, conduct and evaluation of safeguards activities for that State. They are based on factual information about a State, are objective and are objectively assessed by the Agency in the implementation of safeguards for a State. As noted in GOV/2013/38, they do not include political or other extraneous considerations.

107. The use of such 'factors' in implementing safeguards is long-standing. Various terms have been used to describe such factors to Member States since 1978 in safeguards implementation reports and other reports by the Director General to the Board of Governors on safeguards related matters.[68] The State-specific factors identified in GOV/2013/38 (listed below) have already been in use to varying degrees in safeguards implementation, for States with all types of safeguards agreements. In the context of the SLC, they are collectively referred to as 'State-specific factors'.

108. The exhaustive list of the six objective State-specific factors that will be considered systematically and used in the development of an SLA, and/or in the planning, conduct and evaluation of safeguards activities for a State is:[69]

(i) the type of safeguards agreement in force for the State and the nature of the safeguards conclusion drawn by the Agency;

(ii) the nuclear fuel cycle and related technical capabilities of the State;

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[67] The topic was discussed at the third technical meeting on 19 March 2014.

[68] For example, in the SIR for 1978, the Board of Governors was informed, inter alia, that the Secretariat analysed in detail the effectiveness of the SSACs and equivalent systems in those States in which safeguards had been implemented and a summary of the analysis and a report on the results achieved so far were included in the SIR (GOV/1939, para 9). In 1983, in a *Report on Safeguards Related Issues*, the Director General informed the Board of Governors that in developing safeguards approaches for generic types of facilities (model approaches) and by modifying the model approaches, for individual facilities (facility approaches) the Secretariat took into account among other factors: objectives, basic concepts and measures defined in INFCIRC/66/Rev.2 and INFCIRC/153 (Corrected); terms of the relevant safeguards agreement and other basic documents; design information and operating practices of the facility under consideration; detection goals; technical limitations of safeguards measures; and diversion assumptions and concealment methods (GOV/2107, para 31). In subsequent SIRs, factors were referred to in connection with safeguards approaches under all types of safeguards agreements (see, for example, SIR for 1989, GOV/2444, para 9). Under the *Conceptual Framework for Integrated Safeguards* presented to the Board of Governors in 2002, "State-specific features and characteristics" were identified for the development of SLAs for States under integrated safeguards (GOV/2002/8, paras 21-24).

[69] In 2012-2013, the Standing Advisory Group on Safeguards Implementation (SAGSI) considered the issue of State-specific factors and their role in the development of SLAs. SAGSI provided advice to the Director General on the objective use of the six State-specific factors being considered by the Agency. SAGSI's advice to the Director General emphasized the importance of objectivity and non-discrimination in the use of State-specific factors.

(iii) the technical capabilities of the State or regional system of accounting for and control of nuclear material (SSAC/RSAC);

(iv) the ability of the Agency to implement certain safeguards measures in the State;

(v) the nature and scope of cooperation between the State and the Agency in the implementation of safeguards; and

(vi) the Agency's experience in implementing safeguards in the State.

109. In implementing safeguards as described in GOV/2013/38 and in this document, there will be a more systematic consideration given to and better use made of State-specific factors in safeguards implementation for all States. This involves a determination of the factors that are relevant to each step in the development of an SLA and in the planning, conduct and evaluation of safeguards activities for a State, with an assessment of their impact on safeguards implementation for that State. Better use of State-specific factors will facilitate the further optimization of safeguards implementation, strengthening effectiveness and improving efficiency (see Section D of this document). The use of State-specific factors, particularly those that may impact in-field safeguards activities, will continue to be discussed with the State and/or regional authority during both the development and subsequent implementation of the SLA (see para. 184 of this document).

110. Each of the six factors is described below, as well as the steps in the development of an SLA or in the planning, conduct and evaluation of safeguards activities the factor may influence, and provisions found in the different types of safeguards agreements that are relevant for their use.

C.6.1. The Type of Safeguards Agreement in Force for the State and the Nature of the Safeguards Conclusion Drawn by the Agency

111. This factor is used to establish generic and technical objectives, to identify applicable safeguards measures as well as to plan, conduct and evaluate safeguards activities.

112. The type of safeguards agreement in force and the safeguards conclusion drawn for a State are factual information regarding a State, which are reported annually in the SIR. Safeguards implementation is governed by the safeguards agreement and, where applicable, the AP, between the Agency and the State. Accordingly, as described in Section C.3, the Secretariat establishes the generic objectives to be addressed for a State.

113. In the development of an SLA for a State, technical objectives to address the generic objectives are established and safeguards measures to address the technical objectives are identified (see Section C.4 above). The safeguards measures that can be utilized by the Agency in the implementation of safeguards for a State are those available under the State's safeguards agreement and, where applicable, the AP. The nature of the safeguards conclusion drawn by the Agency and presented in the SIR is also taken into account in the planning, conduct and evaluation of safeguards activities for a State. In particular, the broader conclusion is a key factor, since this enables the Agency to implement integrated safeguards for the State, as described in para. 38 of GOV/2013/38.

C.6.2. The Nuclear Fuel Cycle and Related Technical Capabilities of the State

114. This factor is used in acquisition path analysis (or diversion path analysis for non-CSA States) and in the establishment and prioritization of technical objectives, which are key elements in the development of an SLA.

115. The nuclear fuel cycle and related technical capabilities of a State are considered insofar as they are within the scope of the applicable safeguards agreement. This may include, for example:

(i) the number and types of facilities and LOFs under safeguards;

(ii) the safeguards relevant characteristics of these facilities and LOFs;

(iii) nuclear material type, quantities and flows;

(iv) nuclear fuel-cycle related research and development activities;

(v) technical capabilities to build indigenous nuclear technologies, in particular enrichment and reprocessing, for the production, processing or use of nuclear material, or for any particular stage of the nuclear fuel cycle; and

(vi) export and import of nuclear material and of nuclear-related equipment and materials.

116. The information on the State's nuclear fuel cycle and related technical capabilities comes from a State's nuclear material accounting reports, design information questionnaires, AP declarations; declarations from other States (e.g. exports, joint research and development activities reported by VOA States); and open sources (e.g. scientific publications). The information used about the nuclear fuel cycle and related technical capabilities of a State is factual in nature and objective, and is validated by the Agency (see Section C.7 of this document). In using this factor, the Agency takes into account the scope of the State's undertaking under its safeguards agreement. Internal processes and guidance exist to ensure this factor is used consistently in acquisition/diversion path analysis and in the development of SLAs.

117. For States with a CSA and, where appropriate, an AP[70], this factor is used in acquisition path analysis and in the establishment and prioritization of technical objectives, which are key elements in developing an SLA for each State. The use of this factor enables the Agency to apply safeguards to all nuclear material and to concentrate its verification procedures on those stages in the nuclear fuel cycle involving the production, processing, use, or storage of nuclear material from which nuclear weapons or other explosive devices could readily be made.[71] This factor also enables the Secretariat to determine what verification activities in the field may be appropriate including, for example, ad hoc or routine inspections, or both.[72]

118. For States with item-specific safeguards agreements[73], this factor is used in diversion path analysis for the facilities and other items subject to safeguards and in the establishment and prioritization of technical objectives, which are key elements in developing an SLA for each State. The use of this factor enables the Agency to apply safeguards to the items subject to the agreement (e.g. nuclear material, non-nuclear material, facilities, equipment or components).

119. For States with VOAs[74], this factor is used in diversion path analysis for nuclear material in safeguarded facilities and in the establishment and prioritization of technical objectives, which are key elements in developing an SLA for each VOA State. The use of this factor enables the Agency to

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[70] INFCIRC/540 (Corrected), Art. 2 relates to additional information to be provided by States to the Agency about their nuclear fuel cycle and related technical capabilities. Such information includes nuclear fuel cycle-related research and development activities not involving nuclear material, buildings on sites, manufacturing activities, uranium mines, and uranium and thorium concentration plants, holdings and exports of source material, processing of wastes, exports of specified equipment and non-nuclear material, and 10-year plans for the development of the nuclear fuel cycle.

[71] See, for example, paras 2 and 6 of INFCIRC/153 (Corrected).

[72] INFCIRC/153 (Corrected) paras 71, 72, 74, 76(c) and 78-81. In this regard, para. 81(c) of INFCIRC/153 (Corrected) requires the Agency, in planning its routine inspections, to take into account, inter alia, the "characteristics of the State's nuclear fuel cycle, in particular, the number and type of facilities containing nuclear material subject to safeguards".

apply safeguards to the nuclear material in facilities or parts thereof, which were offered by the State and selected by the Agency from the list of eligible facilities for the application of safeguards.

C.6.3. The Technical Capabilities of the State or Regional System of Accounting for and Control of Nuclear Material (SSAC/RSAC)

120. The use of this factor influences the determination of opportunities for increased efficiency (e.g. joint inspections, Agency use of national inspection data) in the conduct of safeguards activities and evaluation of their results.

121. By using this factor, the Agency can make better use of SSAC/RSAC findings or their technical capabilities. This is based on an objective evaluation of whether, for example:

(i) an SSAC/RSAC conducts national/regional inspections or audits in facilities or LOFs;

(ii) facilities and LOFs have quality assurance programmes that meet international standards (e.g. standard ISO 9001 of the International Organization for Standardization (ISO)) for their nuclear material accounting;

(iii) the nuclear material accounting data reported by the SSAC/RSAC meet international target values; and

(iv) the SSAC/RSAC possesses and uses its own verification equipment.

In using this factor the Agency is not assessing the performance of the SSAC/RSAC in meeting its objectives under national or regional requirements but is looking for assurances of the quality of the information provided or made available to the Agency under the safeguards agreement.

122. For CSA States, the Agency takes into account the technical capabilities of the SSAC/RSAC.[75] Safeguards are applied in such a manner as to enable the Agency to verify, in ascertaining that there is no diversion of nuclear material from peaceful activities to nuclear weapons or other explosive devices, findings of the SSAC/RSAC.[76] In doing so, the Agency is entitled to conduct independent measurements and observations, in accordance with the CSA.

123. For States with VOAs, the Agency takes into account the technical capabilities of the SSAC/RSAC.[77] This is also the case for one State with an item-specific safeguards agreement which

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[73] Item-specific safeguards agreements contain a number of provisions that relate to information about parts of the State's nuclear-fuel cycle, i.e. nuclear material, facilities, equipment or other items which are subject to safeguards under a specific agreement and related technical capabilities (e.g. information relating to the construction of a reactor or operation of any item which is required to be subject to safeguards under the agreement).

[74] VOAs contain similar provisions that relate to information about parts of the State's nuclear fuel cycle and related technical capabilities which is used by the Agency in the planning, conduct and evaluation of its safeguards activities under the VOAs (e.g. use of technological developments ensuring optimum cost-effectiveness, the application of the principle of safeguarding effectively the flow of nuclear material subject to safeguards; and the purpose, scope, frequency and intensity of routine inspections and criteria for determining such inspections).

[75] The Agency is required under all CSAs to take due account of the technical effectiveness of the SSAC/RSAC in its verification activities. See, for example, INFCIRC/153 (Corrected), para. 7.

[76] INFCIRC/153 (Corrected), para. 7.

[77] The SSAC-related provisions in all VOAs are similar to those contained in CSAs (see footnote 76 above). Under each VOA, the State is required to establish and maintain an SSAC and the Agency is required to take due account of the technical effectiveness of the SSAC/RSAC in its verification activities.

contains provisions concerning the SSAC.[78] In applying these provisions in each VOA State and in States with an item-specific safeguards agreement in force, the Agency takes into account the scope of the State's undertaking under its agreement.

C.6.4. The Ability of the Agency to Implement Certain Safeguards Measures in the State

124. The use of this factor influences the identification of applicable safeguards measures in the development of an SLA for a State and the frequency and intensity of safeguards activities as reflected in the annual implementation plan for the State.[79]

125. Examples of such measures aimed at further optimizing safeguards implementation include remote monitoring, short notice, unannounced and randomized routine inspection schemes and the use of operational data submitted by facility operators through 'mailbox' declarations. The Agency first evaluates if the implementation of such a measure could improve safeguards effectiveness and/or efficiency. If so, the State is consulted to determine if it is possible to implement the measure effectively, to discuss the impact on the State and/or the facility operators and to put in place the necessary practical arrangements for its implementation in the State. This factor is objective, as specific safeguards measures aimed at optimizing safeguards implementation can either be implemented or not. If a State is not in a position to facilitate the implementation of a measure (e.g. remote monitoring, submission of operator data through mailbox declarations), other available safeguards measures will be identified for the SLA.

C.6.5. The Nature and Scope of Cooperation between the State and the Agency in the Implementation of Safeguards

126. The use of this factor influences the focus, frequency and intensity of safeguards activities in the field or at Headquarters which are reflected in the annual implementation plan and the conduct of activities contained therein (e.g. design information verification, inspections, complementary accesses, review of State reports and declarations).

127. All types of safeguards agreements require States and the Agency to cooperate to facilitate the implementation of safeguards under their respective agreements.[80] Cooperation considered in this State-specific factor is specified in a State's safeguards agreement, as described below, and is based on facts and covers all aspects of safeguards implementation under a safeguards agreement. Cooperation on the part of the State includes:

(i) the timeliness and completeness of State reports (e.g. including inventory change reports (ICRs), physical inventory listings (PILs), material balance reports (MBRs)), declarations (e.g. AP declarations) and design information (e.g. early design information, complete design information questionnaires or updates thereof);

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[78] In other item-specific agreements where no similar provisions exist, the Agency takes into account the technical capabilities of the State authority that is, inter alia, providing required reports and facilitating in-field activities.

[79] Para. 6 of INFCIRC/153 (Corrected) requires the Agency to take full account of technological developments, make every effort to ensure optimum cost-effectiveness and safeguard effectively the flow of nuclear material. A similar provision is contained in each VOA. Relevant provisions for this factor are also found in item-specific agreements and related subsidiary arrangements.

[80] INFCIRC/153 (Corrected) provides in para. 3 that "the Agency and the State shall co-operate to facilitate the implementation of the safeguards provided for therein." Similar provisions are contained in VOAs and item-specific safeguards agreements.

(ii) the facilitation of inspector access (e.g. for design information verification, inspections or complementary access) and activities during such access (e.g. sampling);

(iii) responsiveness to addressing anomalies, questions or inconsistencies;

(iv) acceptance of inspectors designation and issuance of visas; and

(v) granting privileges and immunities to Agency inspectors and assets.

Cooperation on the part of the Agency includes:

(i) the timeliness of Agency statements on the results of inspections and conclusions drawn from activities conducted;

(ii) timely notification of in-field verification activities (e.g. for design information verification, inspections or complementary access); and

(iii) responsiveness to State requests for information or clarifications.

128. The time limits for submission of relevant information by the State to the Agency and by the Agency to the State are specified in the safeguards agreement and, where applicable, the AP and further detailed in subsidiary arrangements, as appropriate. Inspector designation, issuance of visas, provision of services, and access for in-field activities are also specified in the safeguards agreement, and further detailed in subsidiary arrangements or in other agreed practical arrangements, as appropriate. Provision of complete, correct and timely reports, facilitation of Agency in-field verification activities and responsiveness to safeguards implementation issues both by the State and by the Agency can streamline the conduct of in-field and Headquarters safeguards activities (e.g. less time, fewer activities).

C.6.6. The Agency's Experience in Implementing Safeguards in the State

129. The use of this factor influences the identification of applicable safeguards measures in the development of an SLA for a State, the frequency and intensity of safeguards activities as reflected in the annual implementation plan for the State and the conduct of safeguards activities and evaluation of their results.

130. This factor is based on factual information about the Agency's experience at individual facilities or locations in a State and for the State in general in connection with the implementation of safeguards under the safeguards agreement. Examples include: (i) existing or recurring field conditions (e.g. spent fuel pond conditions affecting spent fuel verification, local weather conditions possibly affecting the performance of electronic equipment, the frequency of power outages) that influence the identification of safeguards measures that can be applied in the field; (ii) a State consistently meeting specific reporting requirements, which allows the Agency to plan its in-field verification activities in advance and may result in reduced activities both in the field and at Headquarters; (iii) delay in the shipment of samples taken for the Agency's use, which affects the evaluation of inspection results at Headquarters; (iv) a State allowing its facility operators to apply Agency electronic seals to items being shipped which may result in reduced on-site verification activities; (v) the number and type of unresolved anomalies in the State, which affects the Agency's ability to address all technical objectives; and (vi) local security conditions that can impede the access to facilities by Agency inspectors.

C.6.7. Key Points: State-Specific Factors

131. The use of State-specific factors in safeguards implementation is long-standing. State-specific factors are based on factual information about a State, are objective and are objectively assessed by the Secretariat in the implementation of safeguards for a State. In implementing safeguards as described in

GOV/2013/38 and in this document, there will be a more systematic consideration and better use of State-specific factors in the development of an SLA and in the planning, conduct and evaluation of safeguards activities for a State. The six objective State-specific factors identified comprise the exhaustive list of factors to be used. They are each based on technical considerations and will be used objectively and consistently for all States. The use of State-specific factors, particularly those that may impact in-field safeguards activities, will continue to be discussed with a State during both the development and subsequent implementation of its SLA. The steps in the development of an SLA or in the planning, conduct and evaluation of safeguards activities that each factor may influence are summarized in Table 6.

		Safeguards agreement and conclusion	Nuclear fuel cycle and related technical capabilities	Technical capabilities of SSAC/RSAC	Implement certain safeguards measures	Nature and scope of cooperation	Agency's experience
Developing State-Level Approaches	**Analyse diversion/acquisition paths**		✓				
	Establish and prioritize technical objectives	✓	✓				
	Identify applicable safeguards measures	✓			✓		✓
Planning, Conducting and Evaluating Safeguards Activities	**Develop annual plan for safeguards activities**	✓			✓	✓	✓
	Conduct in-field & HQ safeguards activities	✓		✓		✓	✓
	Evaluate results of safeguards activities	✓		✓			✓

Table 6: Steps in the development of an SLA and in the planning, conduct and evaluation of safeguards activities that each State-specific factor may influence

C.7. Safeguards Relevant Information

132. This section provides clarifications and additional information on the safeguards relevant information used by the Agency for the implementation of safeguards and how such information is collected, processed, evaluated and used.[81]

133. 'Safeguards relevant information' refers to information relevant for the implementation of Agency safeguards and which contributes to the drawing of soundly based safeguards conclusions. It is collected, evaluated and used by the Agency in exercising its rights and fulfilling its obligations under safeguards agreements.

134. Safeguards implementation as described in GOV/2013/38 and in this document will not introduce any change to the current situation regarding the type of safeguards relevant information used in the implementation of safeguards. In the development and implementation of an SLA, no additional information will be required from the State beyond information required to be provided to the Agency

[81] The topic was discussed at the fourth technical meeting on 19 April 2014.

under its safeguards agreement (e.g. information concerning nuclear material and facilities subject to safeguards under the agreement). When explicitly discussed and agreed between the State and/or regional authority and the Agency, the State may provide additional information to the Agency, for example, facility operational data provided in 'mailbox' declarations to implement a specific approach at a particular facility (e.g. fuel fabrication plant).

135. For all States, the Agency collects and processes three main types of safeguards relevant information:

(i) information provided by the State itself (e.g. declarations and reports, including clarifications and amplifications at the Agency's request[82], and voluntarily-provided information);

(ii) information from safeguards activities conducted by the Agency in the field and at Headquarters (e.g. inspections, design information verification, material balance evaluations); and

(iii) other relevant information (e.g. from open sources or provided by third parties).

The first two categories of information make up the great majority of the information used for safeguards implementation. All safeguards relevant information collected by the Agency is processed through steps that include validation through internal consistency review by staff with relevant technical expertise.

136. The collection, processing and evaluation of safeguards relevant information in the implementation of safeguards have evolved since the Agency first began to implement safeguards, in particular over the last two decades.[83] Figure 8 highlights some of the developments regarding the use of safeguards relevant information for safeguards implementation.

C.7.1. Collection and Processing of Safeguards Relevant Information

State-provided information

137. Safeguards relevant information provided to the Agency by the State itself includes:

(i) reports and declarations required and submitted under a State's safeguards agreement and, where applicable, AP, including ICRs, PILs, MBRs, design information and AP declarations;

(ii) information provided on the basis of practical arrangements agreed between the State and the Agency such as facility operational data provided in 'mailbox' declarations; and

(iii) information provided by the State voluntarily through regular reports under the voluntary reporting scheme and neptunium and americium monitoring scheme.

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[82] See, for example, para. 69 of INFCIRC/153 (Corrected). Similar provisions are contained in VOAs and item-specific agreements. See, for example, Art. 67 of INFCIRC/327; para. 44 of INFCIRC/66/Rev.2; para. 54 of INFCIRC/754.

[83] See, for example, GOV/2532; GOV/2554, Attachment 1; GOV/INF/646; GOV/2554/Attachment 2/Rev.2; GOV/DECISIONS 1991-92, 91-92/22; GOV/2629; GOV/DECISIONS 1992-93, 92-93/21; GOV/2784; GOV/2807; GOV/DECISIONS 1994-95, 94-95/44; GOV/DECISIONS 1996-97, 96-97/33; GOV/INF/2000/26; GOV/2005/9; GC(49)/RES/13; GOV/2012/36-GC(56)/11.

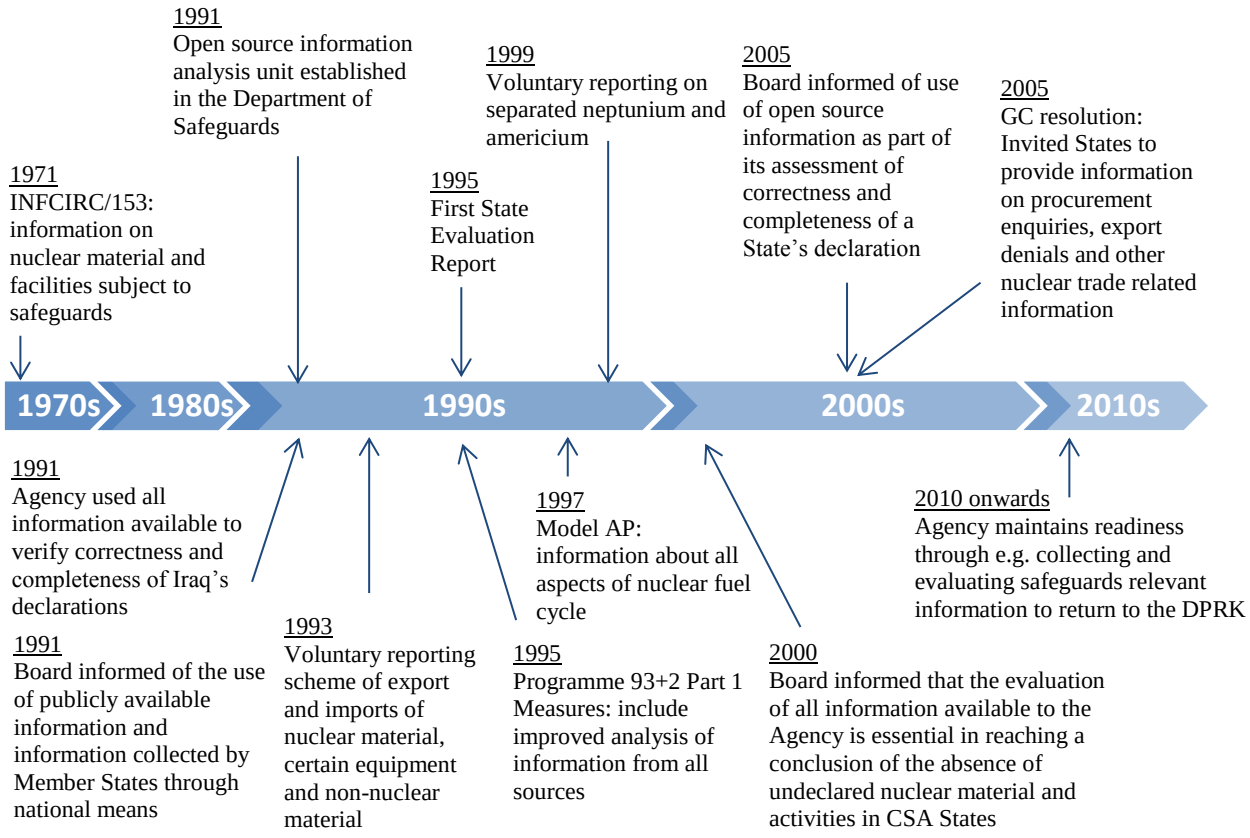

Figure 8: Highlights of developments regarding the use of safeguards relevant information for safeguards implementation

138. Overall, nuclear material accounting reports from States with CSAs and VOAs (e.g. ICRs, PILs, MBRs)[84] constitute the greatest percentage of all safeguards relevant information collected and processed by the Agency. On an annual basis, the Agency receives around 700 000 nuclear material accounting report entries (included in approximately 6600 ICRs, 2000 MBRs and 6000 PILs) from States with CSAs and VOAs; around 2100 AP declarations from States with CSAs and VOAs; around 150 reports and notifications from States with item-specific safeguards agreements, around 150 reports under the voluntary reporting scheme; around 150 reports of denied nuclear trade related procurement enquiries; and approximately 10 reports in the context of the neptunium and americium monitoring scheme.

139. All information provided by a State requires validation by the Secretariat using well-defined internal processes and relevant technical expertise. Staff members from the Department of Safeguards with appropriate technical expertise assess the accuracy and quality of each piece of information provided, including its internal consistency.[85] Validation assessment includes:

[84] Item-specific safeguards agreements require the submission of reports on inventories of items subject to safeguards and changes in the inventories, as well as notifications of imports, exports and domestic transfers of such items.

[85] The amount of work required to perform this assessment is not proportional to the size of a report or declaration but depends on the accuracy and completeness of information provided by a State and its responsiveness to Agency follow-up questions and clarifications about the information.

(i) checking the internal consistency of nuclear material accounting reports, such as matching reports on domestic transfers of nuclear material from one facility to another facility in the State or on international transfers of nuclear material from one State to another State (i.e. transit matching);

(ii) checking the consistency between States' declarations such as comparing a State's AP declarations of research and development activities not involving nuclear material conducted with another State with the AP declarations of the partner State; and

(iii) checking the consistency of States' declarations with other information available to the Agency such as comparing a State's reported depleted uranium inventories with the Agency's Directory of Radiotherapy Centres (DIRAC) database, which contains information about medical radiology equipment in Member States that may contain depleted uranium as shielding or comparing States' reported inventories of nuclear material with information that they have reported to the Incident and Trafficking Database (ITDB).

Information from Agency Safeguards Activities

140. Much of safeguards relevant information is generated from safeguards activities conducted by the Agency in the field and at Headquarters. In-field activities generating safeguards-relevant information include inspections (e.g. nuclear material accountancy verification, non-destructive assay measurements, sampling, use of containment and surveillance devices), design information verification, complementary access (under an AP) and flow sheet verification (under the neptunium and americium monitoring scheme).

141. In-field safeguards activities are conducted to verify State-provided information and to contribute to ensuring that State reports and declarations are correct and complete. A range of technical expertise is necessary for inspectors to conduct in-field activities and to assess the information generated from these activities. This includes knowledge of the nuclear fuel cycle, skills to use safeguards equipment and in-field experience.

142. Safeguards activities at Headquarters generating safeguards relevant information include the review of data remotely transmitted from safeguards equipment installed at facilities, review of surveillance data from cameras installed at facilities, verification of metal seals detached from installations and returned from the field, evaluation of analytical results from safeguards samples collected in the field and material balance evaluation. A broad range of technical expertise is also required by the inspectors, technicians, evaluators and analysts conducting these assessments.

143. All information generated from safeguards activities also requires validation by the Secretariat using well-defined internal processes and relevant technical expertise. Staff members from the Department of Safeguards with appropriate technical expertise assess the accuracy and quality of each piece of information generated. For example, the results of non-destructive assay measurements conducted in the field in a State and the results of destructive analysis of nuclear material samples collected are compared with the State's nuclear material declarations to detect biases in the data and estimate measurement uncertainties. Statistical analyses make it possible to assess separately the measurement uncertainties of the operator (contributing to the assessment of the technical capability of the SSAC/RSAC and quality of its findings) and of the Agency inspectors. Technical expertise necessary to perform these analyses includes in-depth knowledge of nuclear fuel cycle processes, statistical methods, physics, chemistry and metrology. Another example is the evaluation of environmental sampling results. The characteristics of particles on swipe samples can be analysed and compared using computer models with the nuclear processes declared by the State. The technical expertise necessary to perform this kind of analysis includes in-depth knowledge of the nuclear fuel cycle, process modelling and expert software, physics, chemistry and statistical data analysis. Any

results of these analyses that are inconsistent with the declared nuclear material and activities at the sampling location are checked for possible technical or human errors (e.g. a mislabelled sample, laboratory error, cross contamination) and followed up with the State and/or regional authority, as appropriate.

Other relevant information

144. Safeguards relevant information is also obtained by the Agency from other sources including open sources and third party information. Examples of open sources include government or operator information available in the public domain (e.g. annual reports from a nuclear facility or regulatory authority), scientific and technical literature (e.g. from the Agency's International Nuclear Information System, INIS), patent databases, trade publications (e.g. *Nucleonics Week, Nuclear Fuel*), individual company websites, world trade-related data and satellite imagery, covering both free services (such as Google Earth, Bing Maps, and maps.yandex.ru) and procured images. Currently, the Agency subscribes to a variety of commercial databases (e.g. Factiva, Web of Science) and has contracts with about 20 independent commercial imagery providers.[86]

145. Third party information refers to information made available to the Agency by a State or other party (e.g. organizations, individuals), on a voluntary basis, relating to another State. It includes nuclear procurement related information (e.g. procurement attempts/export denials of nuclear material, non-nuclear material or nuclear-related equipment) and information collected through national means (e.g. information that might suggest the possible existence of undeclared nuclear material or activities which should be subject to safeguards). Third party information is a very small part of the information available to the Agency but can nevertheless be an important source of information. When corroborated with other information available to the Agency, it can help ensure that Agency safeguards are applied to nuclear material, facilities and other items required to be safeguarded. The Secretariat is careful and prudent in the use of such information. For example, the experience to date is that, after carrying out evaluation and verification activities, some third party information has been found by the Agency to be lacking in credibility while other information has been assessed to be accurate and credible.

146. The use of third party information has enabled the Agency to take follow-up actions with several States to address the correctness and completeness of their declarations. Such follow-up actions always include as a first step the direct engagement of the State in question. In most cases, the assessment of the information can be completed and the safeguards concern resulting from the information is resolved. Other safeguards relevant information, including third party information, is examined very critically, carefully evaluated, and followed up with the State concerned if necessary. Such information, when available, is assessed by the Agency together with all other information available to it. Follow-up actions are based on the potential value for the possible detection of undeclared nuclear material and activities which are required to be declared and safeguarded.[87] The

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[86] It should be noted that for a State with limited or no nuclear material or activities, in particular a State with an SQP to its CSA and no AP, information coming from the State itself or from verification activities conducted by the Agency is limited (i.e. may be limited to information about imports and exports of nuclear material and provision of an initial inventory report by States with modified SQPs and from the conduct of ad hoc inspections by the Agency to verify the nuclear material reported in the initial inventory in States with modified SQPs). For such States, safeguards relevant information about a State is also collected from other States reporting to the Agency export of nuclear material and equipment to SQP States, and from open and other sources such as the DIRAC database, Uranium - Resources, Production and Demand, commonly known as the Red Book.

[87] If credible indications about the possible existence of nuclear weapons related activities in a CSA States comes to the attention of the Agency, follow-up actions are taken on such information and the Board of Governors is informed. (See, for example, GOV/2014/17, para. 64; INFCIRC/153 (Corrected), paras 18 and 19).

Board of Governors will continue to be kept informed about the use of such information for safeguards purposes.

147. As with State-provided and Agency-generated information, the assessment of the accuracy and credibility of this other relevant information is carried out by staff with the required expertise (e.g. on the nuclear fuel cycle including advanced technology, satellite imagery, and trade data analysis). As an example, in the review of an open source article on nuclear fuel cycle-related activities (e.g. research and development related to conversion of nuclear material), an assessment will be made of the credibility of the source (e.g. from a reputable scientific journal), the accuracy of the technical information (e.g. any technical flaws in the reported results) and its safeguards relevance (e.g. reporting on conversion experiments using nuclear material). The purpose of the assessment is to determine whether any follow-up with the State is necessary and, if so, what follow-up action would be appropriate (e.g. requesting clarifications through a letter to the State, conduct of an inspection or complementary access). If such information is assessed not to be of safeguards relevance, no follow-up actions would be required and the information would not be evaluated further.

C.7.2. Evaluation of all Safeguards Relevant Information

148. As stated above, collecting and processing all safeguards relevant information are aimed at ensuring adequate follow-up with States, as appropriate, and to support the Department of Safeguards State evaluation process. No individual piece of information is used without being validated or acted upon without thorough analysis.

149. All safeguards relevant information that is collected and processed by the Agency is registered, stored and protected appropriately. The maintenance of relevant databases and other information management systems within the Department of Safeguards is aimed at providing assurance of the quality of the information and its internal consistency. The Department's information system infrastructure for such information is separate from the Agency's wider system. Staff member access to such information is strictly based on the 'need to know' principle, i.e. only if needed by reason of official duties in connection with safeguards.

150. In the evaluation step of the process of collecting and evaluating information, all safeguards relevant information available to the Agency about a State is assessed in the context of the State's nuclear and nuclear-related activities and capabilities, taking into consideration the State's undertaking under its safeguards agreement. This is known as the State evaluation process aimed at assessing the consistency of all safeguards relevant information available to the Agency for the State. The State evaluation determines the safeguards activities to be conducted for a State, including follow-up on any anomalies, questions and inconsistencies identified, and provides the basis for drawing annual safeguards conclusion for the State. Anomalies, questions, and inconsistencies identified in the State evaluation process are addressed with the State and/or regional authority through communication exchanges and follow-up activities in the field or at Headquarters, as appropriate. Through State evaluation, the Secretariat establishes its own independent findings based on which Agency safeguards conclusions are drawn (see Section C.10 of this document).

151. State evaluation is performed by State evaluation groups (SEGs) that have been established within the Department of Safeguards for every State with a safeguards agreement in force. SEGs consist of staff members in the Department of Safeguards with the appropriate expertise (e.g. on the specific nuclear fuel cycle in the State and associated verification activities) to evaluate all safeguards

relevant information for the State.[88] Led by a Country Officer from the relevant Operations Division, the SEG conducts on-going evaluation of all the safeguards relevant information available to the Agency necessary to draw soundly based safeguards conclusions. The SEG also develops the SLA and annual implementation plan for the State. The proper assessment of the consistency of all safeguards relevant information about a State requires a team of staff members with the requisite knowledge and expertise to conduct collaborative analysis. The impact of any individual biases in the State evaluation process is minimized through the use of structured processes and Departmental methodologies to more effectively assess issues, evaluate outcomes and identify potential solutions. Training activities in collaborative analysis for SEGs are important for consistent and thorough State evaluation.

152. In addition, oversight mechanisms are in place within the Department of Safeguards to ensure that State evaluation is a well-defined, thorough and robust process. State evaluation reports prepared by SEGs are first subject to a Divisional review procedure before being presented for clearance by the relevant Operations Division Director. The reports are then subject to review by a Departmental committee and its subcommittee and to quality assurance review by the Safeguards Effectiveness Evaluation Section in the Office of the Deputy Director General, Head of the Department of Safeguards.

C.7.3. Key Points: Safeguards Relevant Information

153. Safeguards relevant information refers to information relevant for the implementation of safeguards and which contributes to the drawing of soundly based safeguards conclusions. In implementing safeguards in the context of the SLC as described in GOV/2013/38 and in this document, there will be no changes to the type of information being used in the implementation of safeguards (i.e. State-provided information, information from Agency safeguards activities, and other relevant information (e.g. from open sources and third parties)). The overwhelming majority of information will continue to come from States themselves and from Agency safeguards activities. No additional information will be required to be provided by States beyond their existing legal obligations. All information, including open source and third party information, is subject to rigorous review and validation by the Secretariat before use in State evaluation and no piece of information is acted upon without thorough analysis. State evaluation is performed by individual SEGs established within the Department of Safeguards for every State with a safeguards agreement in force. SEGs consist of Departmental staff members with the appropriate expertise to evaluate all safeguards relevant information about a State. SEGs conduct their evaluation work using structured processes and Departmental methodologies to minimize biases and ensure objectivity. In addition, oversight mechanisms are in place within the Department of Safeguards to ensure that State evaluation is conducted thoroughly and consistently.

C.8. Information Security

154. This section provides clarifications and additional information on the information security goals of the Department of Safeguards and the measures taken to advance those goals.[89]

155. Information security is of vital importance to the Agency and to the Department of Safeguards, in particular, given the sensitivity of the information in its custody. The Department recognizes the need

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[88] Article VII.F of the IAEA Statute provides, inter alia, that IAEA staff, in the performance of their duties, "shall not seek or receive instructions from any source external to the Agency" and "shall refrain from any action which might reflect on their position as officials of the Agency".

[89] The topic was discussed at the fourth technical meeting on 19 April 2014.

for additional security measures to implement and continuously improve upon the three basic principles of information security:

(i) protecting the confidentiality of information so that it remains available only to staff members that required such information by reason of their official duties in connection of safeguards (i.e. 'need to know');

(ii) improving the availability of information on such a 'need to know' basis, for collaborative analysis and safeguards implementation activities; and

(iii) ensuring the integrity of information so that the findings and conclusions drawn are based on information that has not been compromised in any way.

This requires a layered approach involving physical protection, policies and procedures, technical information technology (IT) controls, as well as addressing the human factor through security awareness and training. A layered approach ensures that no single means of protection is solely relied upon.

156. The first line of protection for the premises of the Vienna International Centre is the United Nations Security and Safety Section (UNSSS). The Department of Safeguards has additional physical security measures in the form of access control to all safeguards floors, secure areas and secure offices, with additional protection for rooms containing highly confidential information. All classified information in hard copy form is stored in safes inside secure offices. The physical security of these secure areas has continued to be improved and upgraded through the extension of the access control systems in cooperation with the Department of Management and UNSSS.

157. The Secretariat implements rigorously the Agency's regime for the protection of safeguards confidential information approved by the Board of Governors in 1997. It is the basis for the Agency's Information Security Policy. The Department of Safeguards has in place additional security policies, procedures and measures to enhance its security posture, consistent and compliant with that of the Agency. While the basic principles of the confidentiality regime remain the same, the Department of Safeguards recognizes the need for additional security measures to implement and continuously improve the information security.

158. In addition, information security measures are being audited, both within the Department of Safeguards, by safeguards internal experts and by the Director General's Office of Internal Oversight Services, as well as by external auditors to ensure the highest level of quality and compliance with the IAEA Information Security Policy as well as with information security best practices (ISO 27001 – international standard for information security management).

159. Technical IT controls on the Agency's and the Department of Safeguards' IT systems are also enforced to ensure that the systems are able to guard against the growing number of sophisticated cyber-attacks and other IT security threats and risks. The Department of Safeguards network is separate from the Agency network (upon which GovAtom resides), and has a number of additional technical controls protecting the environment, including intrusion detection and protection measures. Access control is strongly enforced, both to systems and applications, and all access is granted strictly on the 'need to know' basis. Additionally, encryption is used as a further protection measure; portable devices (e.g. laptop computers, USB sticks) are encrypted. All activity on the systems is logged for auditing purposes. All Agency servers, a mainframe computer, disk storage and network equipment are stored in a highly secure data centre. Information security is being improved by measures such as, the systematic application of security patches and upgrades to servers, switches, and laptop and desktop computers; better encryption; internal and external vulnerability reviews; the development of

in-house capabilities to combat IT threats; and the enhancement of the disaster recovery and business continuity capability.

160. To build a stronger security culture, additional effort is being put into raising security awareness and addressing the human factor. Mandatory security awareness training is provided for all staff. This is reinforced through newsletters and awareness campaigns and a website dedicated to this purpose. All persons employed by the Agency are required to sign a confidentiality undertaking prior to having access to any Agency information and upon separation from the Agency.

C.8.1. Key Points: Information Security

161. Information security is of vital importance to the Department of Safeguards given the sensitivity of the information in its custody. The three basic principles of information security are: confidentiality, availability and integrity of information. Safeguards information is protected using a layered approach involving physical protection, policy and procedures, IT controls and security awareness. The Agency's regime for the protection of safeguards confidential information is implemented rigorously and regularly reviewed. All persons employed by the Agency are under an obligation to protect confidential information coming to them by virtue of their employment. This obligation continues to apply after separation from the Agency. The network of the Department of Safeguards is separate from the Agency network and is protected with a number of additional technical controls.

C.9. Performance Measurement and Quality Management

162. This section provides clarifications and additional information on the measurement of performance in safeguards implementation.[90]

163. Performance measurement can be generally defined as the process of collecting, analysing and reporting information regarding the performance of an organization in meeting its objectives. In implementing safeguards, it will continue to be important for the Agency to be able to measure and report to Member States information regarding its performance in meeting its objectives.

164. The Agency's performance in regard to the objectives of safeguards implementation is the extent to which the Agency implements effective safeguards for each State in order to draw soundly based safeguards conclusions and provide credible assurances that States are honouring their safeguards obligations. Safeguards implementation includes the planning and conduct of safeguards activities and the evaluation of their effectiveness. To plan appropriate safeguards activities, the level of activities considered to be sufficient to implement effective safeguards in order to draw a soundly based safeguards conclusion is established for each State.

165. The performance measures for safeguards activities conducted for declared facilities and LOFs are expressed in the Safeguards Criteria in terms of the probability of detecting the diversion of nuclear material within a specified period of time. Under the Safeguards Criteria, the frequency of inspections is established in order to detect the abrupt diversion of a significant quantity or more of nuclear material within a certain period of time.[91] The intensity of safeguards activities at declared facilities and LOFs is based on a specified detection probability, i.e. the probability that, if diversion of

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[90] The topic was discussed the fifth technical meeting on 30 May 2014.

[91] The frequencies are set at one month for un-irradiated direct use material (e.g., high enriched uranium and plutonium), three months for irradiated direct use material (e.g., spent reactor fuel), and one year for indirect use material (e.g., depleted, natural and low enriched uranium).

a given amount of nuclear material has occurred, the safeguards activities will detect it.[92] For States under integrated safeguards,[93] the performance measures for declared facilities and LOFs are based on model integrated safeguards approaches adapted to the States and facilities, including some reductions in frequency of inspections and intensity of activities as compared to the Safeguards Criteria.

166. When an SLA is developed for a State,[94] it will consist of generic objectives, the related technical objectives and options for safeguards measures to address those objectives. Each year, an annual implementation plan will lay out the schedule of selected activities to attain the technical objectives according to their priorities. The frequency and intensity of activities to attain technical objectives at declared facilities will continue to be expressed in terms of probabilities of detection within a particular timeframe (timely detection). For attainment of technical objectives addressing the detection of undeclared nuclear material and activities in the State as a whole, where applicable, the considerations for the level of activities will be specified in more general terms in the SLA and specific activities will be described in more detail each year in the annual implementation plan.

167. After safeguards activities are conducted, their effectiveness is evaluated. For a State with an SLA, the effectiveness evaluation will consider: whether the activities in the annual implementation plan meet the objectives of the SLA, whether all of the planned activities were actually conducted, and whether or not the activities were conducted in such a way as to attain the technical objectives to the level planned. If verification activities did not sufficiently attain a technical objective, additional activities may be planned. In addition, any anomalies, questions or inconsistencies identified in the evaluation of all safeguards relevant information will be followed up. The performance results as well as areas of difficulty in safeguards implementation will continue to be reported in the annual SIR.

168. In the implementation of safeguards, the Agency continually strives to improve and optimize its processes to effectively carry out its verification mission. This is done through the Department of Safeguards' quality management system (QMS) for continuous process improvement.

169. The Department of Safeguards' QMS provides regular and routine oversight of the key safeguards processes and their results to ensure impartiality, effectiveness and efficiency of safeguards implementation. It includes standardized Departmental guidelines; uniform processes and well-defined procedures to ensure consistency of approaches across the Department of Safeguards; Divisional and Departmental review and approval processes; and performance review and process improvement through internal quality audits and quality control reviews. Documented internal processes are reviewed periodically using a process improvement methodology, which includes condition reporting whereby nonconforming or potential nonconforming situations are documented and the root causes identified and corrected. Safeguards processes are also periodically audited by auditors from outside of the Department. As part of the QMS, knowledge management activities are being implemented to improve the retention of critical knowledge prior to the separation of staff members from the Department. It also seeks to retain process knowledge in safeguards implementation.

170. In addition to the QMS, the Department of Safeguards in 2014 initiated activities to identify, select and determine how to use performance indicators more effectively to assess its activities and their results.

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[92] Detection probabilities are is based on the premise that the State's ability to convert the material to nuclear weapons cannot be ruled out, and are set at high (90%), medium (50%) or low (20%), depending on the type of material (e.g., direct use) and the inspection purpose (e.g., physical inventory verification, verification of transfers of nuclear material, timely detection of abrupt diversion of nuclear material).

[93] As described in *The Conceptual Framework for Integrated Safeguards*, GOV/2002/8.

[94] As described in GOV/2013/38 and in this document.

171. The Agency's performance is reported to the Board of Governors through: the SIR, the *Programme Performance Report* on the Programme and Budget (for a biennium) and in The *Mid-Term Progress Report* on the Programme and Budget (for the first year of a biennium).

C.9.1. Key Points: Performance Measurement and Quality Management

172. The Agency's performance in regard to the objectives of safeguards implementation is the extent to which the Agency implements effective safeguards for each State in order to draw soundly based safeguards conclusions. The frequency and intensity of activities to address technical objectives at declared facilities will continue to be expressed in terms of probabilities of detection within a particular timeframe (timely detection). Effectiveness evaluation will consider whether the planned activities meet the technical objectives of the SLA, whether all of the planned activities were actually conducted, and whether or not the activities were conducted in such a way as to achieve the technical objectives to the level planned. It will continue to be important for the Agency to be able to measure and report to Member States information regarding its performance in meeting its objectives. In the implementation of safeguards, the Agency continually strives to improve and optimize its processes to carry out its verification mission effectively. This is done through the Department of Safeguards' QMS for continuous process improvement.

C.10. Drawing of Safeguards Conclusions

173. This section provides clarifications and additional information on the process of drawing of safeguards conclusions and the types of safeguards conclusions drawn.[95]

174. In order to draw an independent and soundly based safeguards conclusion, the Agency needs to have conducted a sufficient level of safeguards activities and a comprehensive evaluation of all safeguards relevant information available to it about a State, including the results of its verification activities. It also needs to have addressed all anomalies, questions and inconsistencies identified in the course of its safeguards activities, and assessed whether there are any indications that constitute a safeguards concern. A safeguards conclusion is drawn when all the necessary safeguards activities have been completed and no indication has been found (i.e., there are no 'findings') by the Secretariat that, in its judgement, would constitute a safeguards concern.

175. The internal process for drawing safeguards conclusions is designed to ensure that the conclusions are valid and based on an adequate level of safeguards activities and follow up activities, and supported by thorough evaluation. First, the results of safeguards activities and all other safeguards relevant information are subject to validation and are evaluated by an SEG, a group within the Department of Safeguards that collaboratively evaluates all safeguards relevant information for a State. There is a SEG for each State with a safeguards agreement in force. Results of the consistency analysis and safeguards findings and conclusions are documented in a State evaluation report, prepared by the SEG, and approved by the Director of the appropriate Division of Operations. A State evaluation report is reviewed by an internal committee that makes recommendations on safeguards conclusions to the Director General. The Director General, after considering these recommendations, in turn reports the Secretariat's findings and conclusions for all States to the Board of Governors through the annual SIR. After the Board of Governors has considered and taken note of the SIR, it authorizes the publication of the *Safeguards Statement*, which contains the findings and conclusions and the *Background to the Safeguards Statement and Summary* of the SIR.

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[95] The topic was discussed at the fifth technical meeting on 30 May 2014.

C.10.1. Safeguards Findings and Conclusions by Agreement Type

176. The Secretariat's findings and conclusions are reported by each type of safeguards agreement below.

States with CSAs and APs

(i) If the Secretariat found no indication of the diversion of declared nuclear material from peaceful activities and no indication of undeclared nuclear material or activities, the Secretariat concludes, on that basis, that all nuclear material remained in peaceful activities;[96] or

(ii) If the Secretariat found no indication of the diversion of declared nuclear material from peaceful activities, but evaluations regarding the absence of undeclared nuclear material and activities remained ongoing, the Secretariat concludes, on that basis, that declared nuclear material remained in peaceful activities.

States with CSAs but without APs

(iii) If the Secretariat found no indication of the diversion of declared nuclear material from peaceful activities, the Secretariat concludes, on that basis, that declared nuclear material remained in peaceful nuclear activities.

States with item-specific safeguards agreements

(iv) If the Secretariat found no indication of the diversion of nuclear material or of the misuse of the facilities or other items to which safeguards had been applied, the Secretariat concludes, on that basis, that nuclear material, facilities or other items to which safeguards had been applied remained in peaceful activities.

States with VOAs

(v) If the Secretariat found no indication of the diversion of nuclear material to which safeguards had been applied, the Secretariat concludes, on that basis, that nuclear material to which safeguards had been applied in selected facilities remained in peaceful activities or had been withdrawn from safeguards as provided for in the agreement.

C.10.2. Key Points: Drawing of Safeguards Conclusions

177. In order to draw an independent and soundly based safeguards conclusion, the Agency needs to have conducted a sufficient level of safeguards activities and a comprehensive evaluation of all safeguards relevant information available to it about a State, and to have addressed all identified anomalies, questions and inconsistencies. A safeguards conclusion is drawn when all of the necessary safeguards activities have been completed and no indication has been found by the Agency that, in its judgement, would constitute a safeguards concern. The Secretariat will continue to follow defined processes and procedures to enable the Agency to draw independent and objective conclusions based on its own verification activities and findings.

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[96] This is referred to as the 'broader conclusion'.

C.11. Consultations

178. This section provides clarifications and additional information on the consultations that take place between the State and/or regional authority and the Agency in the context of safeguards implementation.[97]

179. In the implementation of safeguards, consultations between the Agency and State, or regional authority, occur on a regular basis and can take many different forms (e.g. telephone calls, emails, faxes, letters, meetings, discussions during in-field verification activities). These consultations, usually conducted between the relevant Division of Operations and the designated State or regional authority, are very important to effective and efficient safeguards implementation.

180. The consultations that may occur are described below for each of the safeguards implementation processes identified in Figure 9. They are relevant for all States regardless of the type of safeguards agreement. The consultations described below reflect both past and current Agency practice. Consultations will remain important in the implementation of safeguards in the context of the SLC as described in GOV/2013/38 and in this document.

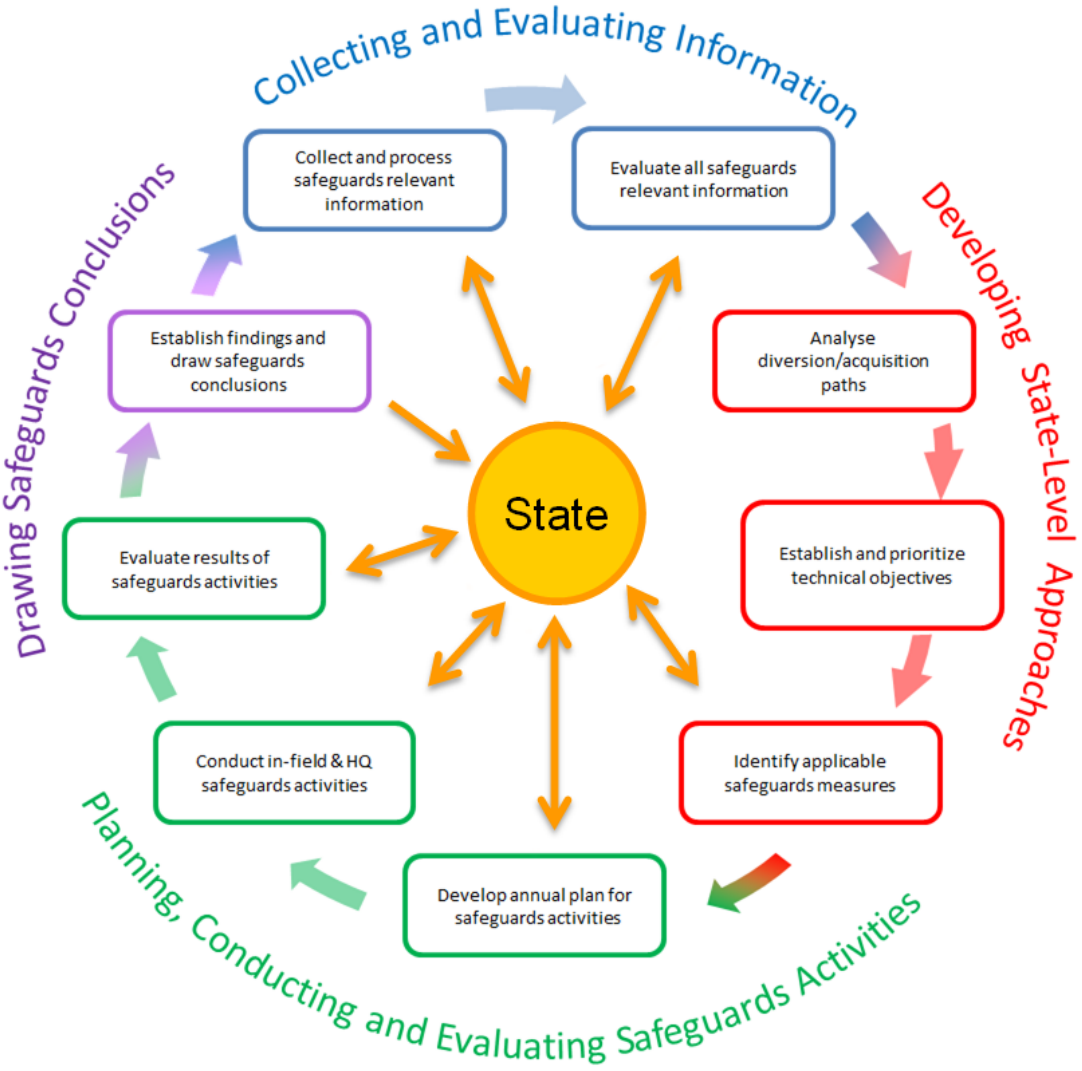

Figure 9: Consultations with a State during the safeguards implementation processes

[97] The topic was discussed at the fifth technical meeting on 30 May 2014.

C.11.1. Collecting and Evaluating Information

181. The accuracy and quality of each piece of safeguards relevant information collected by the Agency about a State, including its internal consistency, is initially assessed by the Secretariat to ensure its validity. The consistency of all safeguards relevant information available to the Agency about a State is then assessed through the State evaluation process. When questions related to such information arise as a result of these assessments, the State and/or regional authority is consulted as appropriate.

182. A State is consulted during the collection and evaluation of safeguards relevant information, including, for example, when:

(i) an inventory change report provided by the State contains mathematical or clerical errors;

(ii) a design information questionnaire provided by the State is lacking information;

(iii) a satellite image of a site procured from a commercial imagery supplier shows building structures not included in the State's AP declaration site map; and

(iv) a scientific publication describes research activities involving nuclear material not included in the State's nuclear material inventory reports.

Each of these examples would prompt the Agency to seek clarification from the State and/or regional authority with corrections or updates of State provided information, as required.

C.11.2. Developing State-Level Safeguards Approaches

183. As described in GOV/2013/38, in developing and implementing SLAs for States with the broader conclusion, the Agency will continue to conduct appropriate consultations with the States and/or regional authorities concerned. As also described, the Agency will consult with the other States and/or regional authorities with CSAs in force in the development of their respective individual SLAs. This consultation process also applies to States with item-specific safeguards agreements and VOAs.

184. Consultations with a State and/or regional authority occur throughout the process of developing an SLA for the State. This would include discussion of relevant State-specific factors (e.g. the ability to implement certain safeguards measures in the State), conduct of field trials of applicable safeguards measures (e.g. unannounced routine inspections) and development of practical arrangements for effective implementation of all safeguards measures identified for use in the field, if not already in place. These arrangements are normally addressed in subsidiary arrangements or separate procedures developed in consultation with, and agreed to by, the State. The development of an SLA is an iterative process, internally within the Secretariat as well as with the State. Such consultations are particularly important when in-field activities are being discussed. The SLA is prepared by the relevant SEG and reviewed, according to internal guidance and procedures of the Department of Safeguards. While SLAs are internal documents, relevant parts of each SLA are discussed with the State and/or regional authority concerned.

C.11.3. Planning, Conducting and Evaluating Safeguards Activities

185. In order to support better planning of the safeguards activities to be conducted for a State during a given year (as reflected in the annual implementation plan), the State or regional authority should provide to the Agency well in advance (e.g. at the beginning of the year) the operational programme for the State's nuclear facilities as well as any changes to the programme that are made during the year. This information includes the schedule for physical inventory takings, core refuelling(s) and any planned maintenance activities affecting safeguards activities in the field.

186. Consultations also occur during in-field activities to address implementation issues that may arise, e.g. nuclear material being temporarily unavailable for verification due to the unavailability of a licensed crane operator or the need for managed access due to safety or security restrictions. Opportunities for efficiencies in the conduct of safeguards activities depend upon the technical capabilities of the SSAC/RSAC (a State-specific factor) and are discussed and agreed to with the State and/or regional authority (e.g. joint inspections, use of joint equipment, use of national inspection data).

187. The results of safeguards activities conducted are evaluated to assess their consistency with State reports and declarations, as well as other safeguards relevant information available to the Agency. When anomalies, questions or inconsistencies arise, the State and/or regional authority are consulted as appropriate. A State and/or regional authority is consulted during the evaluation of safeguards activities, including when:

(i) a non-destructive assay measurement result for an item is inconsistent with the State's declaration for that item;

(ii) an environmental sample analysis result is inconsistent with the declared nuclear material or activities at the location sample; and

(iii) a complementary access identifies fuel cycle related research and development activities that were not declared by the State under its AP.

C.11.4. Drawing Safeguards Conclusions

188. As required by each type of safeguards agreement, the Agency provides statements to States and/or regional authorities on its verification activities conducted in the State and the conclusions it has drawn therefrom. These take the form of 90(a) and 90(b) statements for CSA and VOA States, 10.a., 10.b., 10.c. statements for States with APs in force, design information verification acknowledgement letters, and safeguards transfer agreement letters for States with item-specific safeguards agreements, as relevant. Consultations with a State and/or regional authorities may occur on any issues that have been identified in these communications. Finally, the Secretariat establishes its own independent findings on which its safeguards conclusions are based. Safeguards conclusions are reported annually for each State in the SIR.

C.11.5. Key Points: Consultations

189. Consultations between the Agency and State and/or regional authority are very important to effective and efficient safeguards implementation and will remain so. These consultations take many forms and occur on a regular basis throughout the various processes of safeguards implementation. With regard to an SLA, the State and/or regional authority will be consulted during both the development and implementation of the SLA for the State.

D. Impact on Effectiveness and Efficiency of Safeguards

190. A key objective of implementing safeguards in the context of the SLC, as described in GOV/2013/38 and in this document, is to strengthen the effectiveness of safeguards implementation. In so doing, the Secretariat also expects to improve the efficiency of safeguards implementation.

191. The benefits of applying the SLC elements, in terms of effectiveness and efficiency of safeguards implementation, have already been demonstrated. In terms of effectiveness, the greater use of randomised routine inspection schemes has resulted in more effective safeguards approaches at bulk handling facilities with greater safeguards coverage of the nuclear material under safeguards and increased deterrence. The evaluation of all safeguards relevant information about a State's nuclear and nuclear-related activities and capabilities has, in a number of cases, resulted in the detection of nuclear material and activities that should have been declared and placed under safeguards.

192. The implementation of SLAs has improved the efficiency of safeguards implementation for States under integrated safeguards. For example, at present, 75% of all safeguarded nuclear material is in the 53 States under integrated safeguards. Yet, the Agency spends only about 50% of its safeguards budget for safeguards implementation for these States. In comparison, in the 54 States which have CSAs and APs in force, but for which the broader conclusion (that would enable the Agency to implement integrated safeguards) has not yet been drawn, the Agency spends some 8% of its safeguards budget – while they have only some 2% of all nuclear material under safeguards. In further comparison, the Agency spends more than 20% of its safeguards budget on applying safeguards for the 55 States that have only CSAs in force, while they too possess only 2% of all nuclear material under safeguards. As stated in GOV/2013/38, the greatest opportunity for further optimizing safeguards implementation continues to be for States with CSAs and APs and for which the Agency has drawn the broader conclusion.[98] The Secretariat also anticipates that there will be benefits to developing and implementing SLAs for all States with a safeguards agreement.

193. In implementing safeguards in the context of the SLC, the Secretariat expects a number of benefits in terms of effectiveness and efficiency, including taking better account of State-specific factors, which allow for the development and implementation of an SLA. The SLAs will identify options for safeguards measures[99] to be implemented in the field and at Headquarters, allowing the Agency to compare their cost-effectiveness and providing greater flexibility in safeguards implementation. Instead of mechanistically applying the activities listed in the Safeguards Criteria, the implementation of SLAs will be more focused on the attainment of the technical objectives. By doing so, safeguards implementation will be more performance-oriented and will help the Agency to avoid spending resources on doing more than is needed for effective safeguards. Those objectives will be established by the Secretariat by using structured and technically based analytical methods (i.e. acquisition or diversion path analyses) that will be conducted according to more structured processes and better defined procedures. Utilizing the same processes and procedures for all States will help generate efficiencies. Also, using a technically based approach for developing SLAs will help to ensure more soundly based safeguards conclusions and consistency and non-discrimination in safeguards implementation.

E. Next Steps

194. The greatest opportunity for further optimizing safeguards implementation continues to be for States with CSAs and APs in force and for which the Agency has drawn the broader conclusion. In this regard, the Secretariat will continue to implement the existing 53 SLAs for States under integrated safeguards and is currently in the process of updating these SLAs as described in GOV/2013/38 and in

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[98] See para. 29 of GOV/2013/38.

[99] Within the State's safeguards agreement and, where applicable, AP.

this document, in order to further optimize the implementation of integrated safeguards. The Secretariat will also develop and implement SLAs for States with CSAs and APs in force and for which the broader conclusion has been drawn but for which no SLA has yet been developed.

195. The Secretariat will develop and implement SLAs for States with CSAs and APs in force and for which the broader conclusion has not yet been drawn, and continue to conduct the necessary safeguards activities and evaluations to draw the broader conclusion.

196. As stated previously, the SLC is applicable to all States with safeguards agreements. Therefore, the Secretariat also plans to progressively develop and implement SLAs for States with CSAs in force without an AP, for States with item-specific safeguards agreements in force, and for States with VOAs in force.

197. In developing and implementing an SLA for a State, the Agency will conduct consultations with the State and/or regional authority, particularly on the implementation of in-field safeguards measures.

198. Recognizing that effective and efficient safeguards implementation is a cooperative effort between the Agency and States, the Secretariat will continue to engage in open dialogue on safeguards matters with States to increase transparency and build confidence and, in that regard, intends to continue to interact with them on the implementation of safeguards, including in the context of the SLC.

199. The Board of Governors will be kept informed of progress made in the development and implementation of safeguards in the context of the SLC and the associated impact on effectiveness and efficiency, as appropriate.

Abbreviations

AP	additional protocol
CSA	comprehensive safeguards agreement
ICR	inventory change report
IT	information technology
LOF	location outside facilities where nuclear material is customarily used
MBR	material balance report
PIL	physical inventory listing
QMS	quality management system
RSAC	regional system of accounting for and control of nuclear material
SAGSI	Standing Advisory Group on Safeguards Implementation
SEG	State evaluation group
SIR	Safeguards Implementation Report
SLA	State-level safeguards approach
SLC	State-level concept
SQP	small quantities protocol
SSAC	State system of accounting for and control of nuclear material
TO	technical objectives
VOA	voluntary offer agreement
UNSSS	United Nations Security and Safety Section

Annex 1: Glossary of Key Terms

200. In response to Member States' requests, this section explains key terms used in GOV/2013/38 and in this document in describing the implementation of safeguards in the context of the State-level concept.

201. **Acquisition path analysis:** a structured method used to analyse the plausible paths by which, from a technical point of view, nuclear material suitable for use in a nuclear weapon or other nuclear explosive device could be acquired. Each path is made up of the steps that would be required to acquire nuclear material and process it into a form suitable for use in a nuclear weapon or other nuclear explosive device. Acquisition path analysis is used to establish technical objectives for a State with a comprehensive safeguards agreement. An acquisition path analysis does not involve judgements about a State's intention to pursue any such path.

202. **Annual implementation plan**: a schedule of safeguards activities to be conducted for a State during a given calendar year in order to address the technical objectives. The annual implementation plan is an internal document that can be updated during the course of the year to take into account any needed follow-up actions resulting from the conduct of safeguards activities or new information.

203. **Broader conclusion:** a safeguards conclusion, for a State with a comprehensive safeguards agreement and an additional protocol in force, that all nuclear material in a State remains in peaceful activities. A broader conclusion is drawn on the basis of a comprehensive evaluation by the Agency to ascertain that there are no indications of diversion of declared nuclear material from peaceful nuclear activities in a State, and no indications of undeclared nuclear material or activities in a State. When the evaluation has been completed, and no indication has been found by the Agency that, in its judgement, would give rise to a proliferation concern, the Secretariat can draw the broader conclusion that all nuclear material in a State remains in peaceful activities.

204. **Diversion path analysis:** a structured method used to analyse the paths by which, from a technical point of view, nuclear material subject to safeguards could be diverted from a facility, or by which facilities or other items subject to safeguards could be misused. Diversion path analysis is used to establish technical objectives for States with an item-specific safeguards agreement and States with a voluntary offer safeguards agreement.

205. **Generic objectives:** objectives established and pursued by the Secretariat in order to verify a State's fulfilment of its undertakings under its safeguards agreement and to draw safeguards conclusions for a State. Generic objectives are established on the basis of the scope of the applicable safeguards agreement. They are common to all States with the same type of safeguards agreement.

206. **Information from third parties:** information made available to the Agency by a State or other party (e.g. organizations, individuals), on a voluntary basis, relating to another State. Such information may include nuclear procurement related information collected by States (e.g. export denials) and information collected through national means.

207. **Integrated safeguards:** an optimized combination of all safeguards measures available to the Agency under comprehensive safeguards agreements and additional protocols. Integrated safeguards may be implemented for States for which the Agency has drawn the broader conclusion. Integrated safeguards are aimed at optimizing the effectiveness and efficiency of safeguards implementation for those States.

208. **Open source information:** information available to the public from sources external to the Agency. It includes scientific literature, information issued by public organizations, commercial companies and the news media, and commercial satellite imagery.

209. **Safeguards activities:** implementation of safeguards measures in the field or at Headquarters. Examples of such activities include verification of nuclear material, checking integrity of seals, taking environmental swipe samples for analysis.

210. **Safeguards Criteria:** a set of nuclear material verification activities and their frequency and intensity for each facility type and location outside facilities (LOF), taking into account the quantity and type of nuclear material. The Safeguards Criteria were developed by the Agency in the 1980s based on the premise that a State's possession of all the necessary capabilities to convert diverted nuclear material into a form suitable for use in a nuclear weapon or other nuclear explosive device cannot be ruled out.

211. **Safeguards measures:** measures available to the Agency under a safeguards agreement and, where applicable, an AP. Examples of such measures include nuclear material accountancy, containment and surveillance, design information verification and complementary access[100].

212. **Safeguards objectives:** generic objectives established and pursued by the Secretariat in order to verify and draw safeguards conclusions about a State's fulfilment of its undertakings under its safeguards agreement, as well as the related technical objectives that are established to address them.

213. **Safeguards relevant information:** information relevant for the implementation of Agency safeguards and which contributes to the drawing of soundly based safeguards conclusions. It is collected, evaluated and used by the Agency in exercising its rights and fulfilling its obligations under safeguards agreements. The three main types of such information are (i) information submitted by States, (ii) information obtained through Agency safeguards activities in the field and at Headquarters, and (iii) other relevant information (e.g. from open sources and provided by third parties).

214. **State evaluation:** the on-going evaluation of all safeguards relevant information available to the Agency about a State aimed at assessing the consistency of that information in the context of a State's safeguards obligations. State evaluation is conducted for the purposes of planning, conducting and evaluating safeguards activities and drawing soundly based safeguards conclusions.

215. **State evaluation group:** a group within the Department of Safeguards that collaboratively evaluates all safeguards relevant information available to the Agency about a State and documents the results in a State evaluation report, including recommendations for Secretariat findings and safeguards conclusions. The group also develops a State-level safeguards approach and the annual implementation plan for a State. State evaluation groups consist of Department of Safeguards staff with the appropriate expertise (e.g. on the specific type of nuclear fuel cycle of the State).

216. **State-level concept:** the general notion of implementing safeguards in a manner that considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the safeguards agreement.

217. **State-level safeguards approach:** a customized approach to implementing safeguards for an individual State. An SLA is detailed in an internal document developed by the Secretariat. It consists of safeguards objectives for a State as well as applicable safeguards measures, to be implemented by the Agency in the field and at Headquarters, to address those objectives.

218. **State-specific factors:** Six objective safeguards-relevant factors that are particular to a State which are used by the Secretariat in the development of a State-level safeguards approach and in the planning, conduct and evaluation of safeguards activities for that State.

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[100] Complementary access is a measure that can only be implemented for States with an AP in force, where applicable.

219. **Technical objectives:** objectives established for a State, through the conduct of acquisition or diversion path analysis, to guide the planning, conduct and evaluation of safeguards activities. The Agency seeks to attain the technical objectives in order to detect proscribed activities along a plausible acquisition or diversion path. The technical objectives support the Secretariat in addressing the generic objectives.

220. **Verification effort:** the level of safeguards activities conducted by the Agency for the State, both in the field and at Headquarters. In the field, the level of effort can be expressed as the frequency and the intensity of the activities, i.e. how often and the extent to which they are conducted.

Annex 2: Consultation Process 2013-2014

221. Starting in November 2013, the Secretariat began consultations with Member States to prepare this report. The Director General initiated the consultation process with the issuance in November 2013 of a Note by the Secretariat (2013/Note 70 of 8 November 2013). In his introductory statement to the Board of Governors at its November 2013 meeting, the Director General invited all Member States to provide comments and raise any additional issues they may have and further informed the Board of Governors that he planned to hold a series of technical meetings and other consultations. These consultations began in January 2014.

222. In addition to these consultations, the Director General continued to receive technical advice from the Standing Advisory Group on Safeguards Implementation (SAGSI) on the development and implementation of safeguards in the context of the SLC, as it routinely does also on other safeguards matters.[101]

2.1. Note by the Secretariat (2013/Note 70)

223. Following the September 2013 meetings of the Board of Governors and the General Conference, the Secretariat examined the questions and views on the SLC expressed by Member States at those meetings and grouped them under eight areas. These were communicated to Member States in a 'Note by the Secretariat' (2013/Note 70) on 8 November 2014. The eight areas were:

- Scope of application
- Legal framework
- State-specific factors
- Technical objectives
- Safeguards relevant information
- Verification effort
- Performance measurement
- Consultations

224. Through that note, all Member States were invited to provide to the Secretariat comments in writing, in particular with respect to whether the eight areas identified by the Secretariat covered Member States' questions and, as appropriate, whether there were any additional issues which would require further clarification by the Secretariat. The note also informed Member States that, as a further part of the consultation process, the Secretariat was planning to hold technical meetings to provide additional opportunities to exchange views starting in early 2014, to which Member States would be invited. The feedback received in response to 2013/Note 70 and at the 2014 technical meetings was intended to facilitate the Secretariat's work and provide the basis on which the supplementary

[101] SAGSI was established in 1975 to provide advice to the Director General on matters pertaining to safeguards implementation. SAGSI currently has 18 members from a diverse group of States. SAGSI has provided advice on topics related to the SLC since the development of the conceptual framework for integrated safeguards in the early 2000s. For the past five years, the continued evolution of safeguards implementation at the State-level has been on the agenda of all SAGSI meetings, including at its meetings in December 2013 and May 2014.

document would be prepared. The Secretariat received 18 written responses to that note.[102] A compilation of those responses is available on GovAtom.[103]

2.2. Technical Meetings

225. The Secretariat held six interactive technical meetings during the period January to July 2014. The technical meetings focussed on the eight areas identified by the Secretariat as well as two other areas identified during the course of the meetings, namely information security and the drawing of safeguards conclusions. The Secretariat presentations at those meetings were posted on GovAtom following each meeting. A consolidated compilation of those presentations is available on GovAtom.[104]

2.2.1. Technical Meeting 1

226. At the first technical meeting on 28 January 2014, the Secretariat made a presentation summarizing its analysis of the written responses received to 2013/Note 70 as well as the questions raised during the 2013 September meetings of the Board of Governors and the fifty-seventh (2013) session of the General Conference, and invited Member States to start an exchange of views. The Secretariat also outlined the planned next steps in the consultation process and a tentative timeline for the preparation of the supplementary document. The Secretariat informed Member States of its intention to produce the supplementary document in time for the June 2014 meeting of the Board of Governors.

227. In the ensuing discussion, Member States expressed additional views and asked for further clarifications on the topics addressed in GOV/2013/38 and the Secretariat's presentation. Member States also made suggestions regarding how the future consultations should be structured. Some Member States requested that the consultations continue in an open-ended format and suggested a thematic approach for future technical meetings. In response to Member States' requests at this meeting, the subsequent technical meetings were organized to address the eight themes outlined in 2013/Note 70 as well as two additional technical issues as noted below that were raised by Member States during the course of the consultations.

2.2.2. Technical Meeting 2

228. The second technical meeting on 25 February 2014 was the first full day long thematic meeting. At that meeting, the Secretariat provided information and Member States exchanged views on (i) the scope of application of the State-level concept and (ii) the generic and technical objectives of safeguards implementation.[105] The Secretariat announced that it planned to issue the supplementary document in time for the September 2014 meeting of the Board of Governors in order to allow more time for consultations with Member States.

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[102] Responses were received from: Australia, Brazil, Canada, Cuba, France, Germany, India, Iran, Japan, Oman, Russian Federation, South Africa, Switzerland, Ukraine, United Kingdom, the United States, Viet Nam and the European Union. A summary compilation of the written responses was presented at the first technical meeting in January 2014 (see Section 2.2.1 of this document).

[103] Written Responses to 2013/Note 70

[104] Consolidated compilation of Secretariat presentations at the technical meetings on the State-level concept (SLC)

[105] The meeting was attended by approximately 100 Member State representatives. Twenty-three Member State delegations took the floor.

2.2.3. Technical Meeting 3

229. At the third technical meeting on 19 March 2014, the Secretariat provided information and Member States exchanged views on (i) verification effort and (ii) State-specific factors.[106]

2.2.4. Technical Meeting 4

230. At the fourth technical meeting on 15 April 2014, the Secretariat provided information and Member States exchanged views on (i) safeguards relevant information and (ii) information security in the area of safeguards, an additional issue on which Member States had requested more information and clarification.[107]

2.2.5. Technical Meeting 5

231. The fifth technical meeting on 30 May 2014 was the last thematic meeting on the issues and questions raised by Member States. At that meeting, the Secretariat provided information and Member States exchanged views on the (i) legal framework, (ii) performance measurement, (iii) consultations, as well as (iv) drawing of safeguards conclusions, an additional issue on which Member States had requested more information and clarification.[108]

2.2.6. Technical Meeting 6

232. The sixth technical meeting on 2 July 2014 focussed on the supplementary document. The Secretariat provided information and Member States exchanged views on the planned structure and outline of the supplementary document.[109]

2.3. Other Consultations with Member States

233. In addition, the Secretariat met with States that expressed interest in discussing the SLC bilaterally. These meetings were useful for addressing States' more detailed questions, discussing the practical implications of the implementation of safeguards in the context of the SLC for individual States (e.g. SLAs), as well as for clarifying any issues that could not be addressed in the open-ended technical meetings (e.g. for confidentiality reasons). From January to July 2014, the Secretariat held 17 bilateral meetings with Member States.

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[106] The meeting was attended by approximately 100 Member State representatives. Twenty Member State delegations took the floor.

[107] The meeting was attended by approximately 90 Member State representatives. Nine Member State delegations took the floor.

[108] The meeting was attended by approximately 100 Member States representatives. Sixteen Member State delegations took the floor.

[109] The meeting was attended by approximately 90 Member State representatives. Sixteen Member State delegations took the floor.