Assessment and Use of State-Specific Factors in the Implementation of Safeguards

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ABSTRACT

The use of safeguards-relevant features and characteristics of a State in the implementation of safeguards has been a long-standing practice of the International Atomic Energy Agency (IAEA). These 'State-specific factors' can affect the development of State-level safeguards approaches and the planning, conduct and evaluation of safeguards activities. The IAEA has identified six State-specific factors for systematic consideration and use in the application of the State-level concept. These factors are: (i) the type of safeguards agreement in force for the State and the nature of the safeguards conclusion drawn by the IAEA; (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; (iv) the ability of the IAEA to implement certain safeguards measures in the State; (v) the nature and scope of cooperation between the State and the IAEA in the implementation of safeguards; and (vi) the IAEA's experience in implementing safeguards in the State. State-specific factors are not to be used for rating or grading a State's safeguards credentials but to identify issues that could affect the effectiveness or efficiency of safeguards implementation for the State. IAEA reports and presentations on the State-level concept have described these factors and have given examples of information that could be considered in assessing each factor. This paper expands upon the IAEA examples and makes recommendations as to how State-specific factors could be assessed by the IAEA and how these factors might affect safeguards implementation. Although quantitative metrics were considered for assessing the State-specific factors, it was determined that the general State characteristics comprising the factors cannot be meaningfully quantified; however, performance indicators can be developed for some elements comprising some factors. The paper thus discusses 'considerations' that the IAEA should assess with respect to the State-specific factors (iii), (v), and (vi) and how those considerations could affect safeguards implementation.

BACKGROUND

In the Director General's reports to the International Atomic Energy Agency (IAEA) Board of Governors in 2013 and 2014 detailing the State-level concept and in subsequent technical briefings, the IAEA described the use of safeguards-relevant features and characteristics of a State (also known as State-specific factors) in the development of safeguards approaches and in planning, conducting, and evaluating safeguards activities for the State. Although the use of State-specific factors is not new to IAEA safeguards, the IAEA intends to consider State-specific factors more systematically than in the past when implementing the State-level concept. The following six State-specific factors were identified for use in the application of the State-level concept: (i) the type of safeguards agreement in force for the State and the nature of the safeguards conclusion drawn by the IAEA; (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 IAEA to implement certain safeguards measures in the State; (v) the nature and scope of cooperation between the State and the IAEA in the implementation of safeguards; and (vi) the IAEA's experience in implementing safeguards in the State. State-specific factors are not to be used for rating or grading a State's safeguards credentials but to identify issues that could affect the effectiveness or efficiency of safeguards implementation for the State.

Non-discrimination in safeguards implementation is a fundamental principle of IAEA safeguards. Thus, IAEA safeguards decision making must be based on objective factors, or facts, whose interpretation is not subject to preferences or biases. The IAEA's assessment of a State with respect to the State-specific factors influences safeguards implementation decisions, including the determination and prioritization of safeguards objectives, the identification of applicable safeguards measures in the development of a State-level safeguards approach for a State, the frequency and intensity of safeguards activities as reflected in the annual implementation plan for the State, the conduct of safeguards activities in the field and at IAEA Headquarters, and the evaluation of the results from those safeguards activities.

IAEA reports and presentations on the State-level concept have described these factors and have given examples of information that could be considered in assessing each factor. This paper expands upon the IAEA examples and makes recommendations as to how State-specific factors could be assessed by the IAEA and how these factors might affect safeguards implementation. Although quantitative metrics were considered for assessing the State-specific factors, it was determined that the general State characteristics comprising the factors cannot be meaningfully quantified; however, performance indicators can be developed for some elements comprising some factors. The paper thus discusses 'considerations' that the IAEA should assess with respect to the State-specific factors (iii), (v), and (vi) and how those considerations could affect safeguards implementation. Summary descriptions for State-specific factors (i), (ii), and (iv), which have been addressed in greater detail in other reports, are included for completeness in the following section.

STATE SPECIFIC FACTORS (i), (ii) and (iv)

State-Specific Factor (i) – Safeguards Agreement and Conclusion

State-specific factor (i) is the type of safeguards agreement in force for a State and the safeguards conclusion drawn as reported in the Safeguards Implementation Report. The safeguards measures that can be used by the IAEA in implementing safeguards for a State are those available under the safeguards agreement, and, if applicable, additional protocol, with the State. The 'broader safeguards conclusion' drawn by the IAEA for a State enables the IAEA to develop a State-level approach that considers a higher level of assurance on the absence of undeclared nuclear material and activities in the State. For example, for a State with a comprehensive safeguards agreement, additional protocol, and a broader conclusion, the State-level safeguards approach for the State might place a lower priority (than for a State without a broader conclusion, e.g., lower probability of detection or longer timeliness) on detecting spent fuel diversion from a nuclear power reactor and associated spent fuel storage facility. State-specific factor (i) is used to (a) establish generic safeguards objectives; (b) establish and prioritize technical objectives; (c) identify applicable safeguards measures; and (d) plan, conduct, and evaluate safeguards activities.

State-Specific Factor (ii) – Nuclear Fuel Cycle and Related Technical Capabilities

State-specific factor (ii) considers the nuclear fuel cycle and related technical capabilities of a State. The information used by the IAEA to establish the fuel cycle and related technical capabilities of a State is obtained from reports and declarations submitted by the State (e.g., nuclear material accounting reports, design information questionnaires, and additional protocol declarations); declarations made by other States (e.g., import and export reports); and open source and other acquired safeguards-relevant information that has been validated by the IAEA. The assessment includes not only identifying capabilities already present

but estimating the time it would take for a State to complete an acquisition path step and to accomplish the entire acquisition path.

The information relevant to State-specific factor (ii) is used in the performance of acquisition or diversion path analysis and in the establishment and prioritization of technical objectives. These are key elements in the development of a State-level approach. For example, for a State that has the technical capability to build a gas centrifuge enrichment plant, the State-level approach might place higher priority on detecting production or import of UF_6. As an output of prioritizing technical objectives, the IAEA would establish performance targets that must be achieved if the objectives are to be met at the established level of priority. Use of this factor also enables the IAEA to determine the measures necessary for applying safeguards to all nuclear material and safeguards-relevant activities of a State in accordance with the applicable safeguards agreement and, if applicable, additional protocol.

State-Specific Factor (iv) – Implementing Certain Safeguards Measures

State-specific factor (iv) focuses on the identification of safeguards measures that can be used to further optimize safeguards implementation for a State. Such measures include remote data transmission; unannounced, short-notice, and other random inspection schemes; and the use of operational data submitted by facility operators through 'mailbox'[1] declarations. The IAEA's ability to implement certain measures can be affected by the laws of the State, the technical capabilities of the SRA and the facility operator, or conditions for IAEA access in the State. The IAEA first evaluates how the implementation of a measure could support the effective and efficient implementation of safeguards for the State. If a measure is relevant to the State-level approach and acceptable to the State, the IAEA and State discuss the potential impacts on the State or facility operators and the practical arrangements for implementing the measure. If implementation of a proposed measure cannot be practically achieved, other safeguards measures would be proposed to meet the same safeguards technical objective and performance target.

State-specific factor (iv) reflects decisions between the IAEA and the State (in cooperation with facility operators) regarding use of safeguards measures determined by the IAEA to be practical and effective to implement for enhancing the effectiveness or efficiency of safeguards implementation at a facility. These decisions are case specific and are associated with the IAEA process for determining how and where safeguards measures should be used.

STATE-SPECIFIC FACTOR (iii) – TECHNICAL CAPABILITIES OF THE SSAC/RSAC

State-specific factor (iii) focuses on the technical capabilities of the SSAC/RSAC. The required technical capabilities are specified in INFCIRC/153 (Corrected)[2], paragraphs 32, 55, and 81. These technical capabilities are implemented as part of (a) the nuclear material accounting and control (NMAC) systems of the State's nuclear facilities and locations outside facilities (LOFs) – e.g., measurement system, measurement quality, measurement control, shipper/receiver difference, physical inventory, inventory differences, records and reports, system quality assurance, and separation from nuclear material operations, and (b) the State or regional authority responsible for international safeguards (SRA) – e.g., independence from nuclear material operations, providing reports to the IAEA, and ensuring that the NMAC procedures

[1] A mailbox is a physical or electronic system for submitting information or data that the operator cannot retrieve or alter after the information or data has been deposited and time and date stamped.

[2] The Structure and Content of Agreements between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, INFCIRC/153 (Corrected), June 1972.

and arrangements are being performed correctly. In using State-specific factor (iii), the IAEA is seeking to identify technical activities in the State that assure the quality of information provided to the IAEA (i.e., assurance that all reported information is correct and accurate[3]) so that the IAEA can gain efficiencies during safeguards implementation and thus reduce use of inspectorate resources. The IAEA has already obtained significant efficiency in implementing safeguards at facilities through use of statistically based random sampling which provides assurance of correctness and accuracy of information reported by an SRA. Efficiencies have also been gained through joint use of qualifying operator monitoring or measurement equipment.

In addition to these activities, SRA activities to ensure correct performance of the NMAC system – e.g., SRA inspections or audits, SRA equipment, SRA training, and SRA records – have potential to improve the efficiency of IAEA safeguards implementation. Resource savings have already been realized at nuclear facilities in Europe through joint inspections, joint use of equipment, and joint training with EURATOM. To date, the IAEA has not determined how to use SRA records to gain efficiency without losing effectiveness. Each of these activities is discussed below.

SRA Inspections or Audits

An SRA can only establish confidence in the correctness and accuracy of installation records and reports by performing inspections or audits of the NMAC systems of the installations in the State or region. In some States, the SRA performs activities (including measurements) during inspections to independently verify that the nuclear material quantities and activities reported by the facility or LOF operator are correct and performs audits to provide assurance that the programs and procedures of the NMAC system are being correctly performed. Other States, which have high performing NMAC systems, for which independent SRA measurements no longer find differences, may decide to perform only audits at these facilities to ensure that the facility NMAC systems remain effective.

SRA inspections to provide assurance as to the correctness and accuracy of reported information, when performed in parallel with IAEA inspections, provide limited additional assurance that the information that was reported to the IAEA is correct and accurate. The greatest value of an SRA inspection would be to perform the verification before the information is submitted. However, performing the inspection in parallel with the IAEA inspection provides logistical efficiencies in that the SRA is present to accompany the IAEA inspector and impacts on the operator are reduced by reducing the number of inspectorate visits. Joint inspections, when performed according to procedures that maintain independence of IAEA findings and conclusions, can also result in IAEA resource savings.

SRA- and Operator-Owned Equipment

An SRA that performs inspections to independently verify the nuclear material quantities and activities reported by the facility or LOF operator may have equipment at an installation to support its verification activities. Where this, or operator-owned equipment can be authenticated and independently calibrated by the IAEA, the IAEA may be able to use the equipment under a joint-use arrangement. Joint use of SRA and

[3] In this paper, 'correctness' is used to mean that the information reported is true to the recorded source data; 'accuracy' is used to mean the information reflects statistically unbiased data and the 'true' quantity within the uncertainties stated in the international standard (i.e., target values) for the measurements.

operator equipment enables resource savings for the IAEA by reducing capital expenditures for the equipment and the costs for maintaining the equipment.

SRA-Provided Training

Another tool of the SRA to assist a facility or LOF to improve its NMAC system is to provide training to the NMAC staff of the installation. The SRA should also maintain a training program to ensure that SRA staff, including inspectors are qualified to perform their responsibilities. Where the responsibilities of IAEA inspectors and analysts overlap with those of SRA inspectors and analysts, joint training courses could be conducted that can reduce resources required by the IAEA or the SRA to conduct reductant training.

SRA Records

In performing its responsibilities, the SRA will (a) receive reports from the facilities and LOFs it oversees, (b) produce records documenting any inspection and/or audit activities it conducts, and (c) produce reports summarizing the inspection and audit activities and the finding of those activities. The SRA's inspection findings with respect to the correctness and accuracy of nuclear material accounting at a facility or LOF might be similar to those that would be generated by an IAEA inspection. If all inspections are conducted jointly, the SRA and IAEA inspection findings should be redundant. When the SRA inspections are conducted independently or when the SRA inspection collects information in greater detail than that collected by the IAEA, SRA records could provide greater confidence as to the correctness and accuracy of the information reported to the IAEA. However, because a State authority is typically a component of a State's government, such an SRA must be assumed to be complicit in any action taken by the State to divert nuclear material from peaceful use. To date, the IAEA has not determined how to use SRA records to gain efficiency without losing effectiveness.

STATE-SPECIFIC FACTOR (v) – COOPERATION

State-specific factor (v), the nature and scope of cooperation between the State and the IAEA in the implementation of safeguards, addresses how well a State meets its obligations under its safeguards agreement and related instruments (e.g., Subsidiary Arrangements General Part). Cooperation on the part of the State includes:

1. Bringing into force or modifying Subsidiary Arrangements, General Part, that contain the latest revisions approved by the Board of Governors;[4]
2. Establishing and maintaining an effective SSAC/RSAC with the required technical capabilities;
3. Keeping appropriate records (accounting and operating) with respect to each material balance area and making arrangements for the examination of records by inspectors;
4. Maintaining a system of measurements on which the records for the preparation of reports are based that shall be equivalent in quality to the latest international standards;
5. Ensuring the timeliness, correctness, and completeness of State reports, declarations, design information, special reports, and notifications (e.g., exports and imports) ;

[4] The IAEA encourages States to bring into force an additional protocol and to modify or rescind small quantities protocols with the original text as relevant. These actions are not listed as cooperation as they are not required actions on the part of the State but rather are voluntary in nature.

6. Being responsive to addressing anomalies, questions, or inconsistencies and IAEA requests for information or clarifications to enhance IAEA understanding of nuclear activities of a State;[5]
7. Accepting inspector designations and issuing visas;
8. Granting privileges and immunities to Agency inspectors and assets; and
9. Facilitating inspector access (e.g., for design information verification, inspections, or complementary access) and activities during such access (e.g., sampling, records review, measurements, observation, equipment installation and maintenance) and providing services and access for in-field activities as specified in the safeguards agreement and further detailed in Subsidiary Arrangements, General Part, or in other agreed practical arrangements.

Cooperation by States in meeting their safeguards obligations can be assessed to be at different levels with respect to different obligations. A State may demonstrate an inadequacy in only one or in multiple areas. A potential inadequacy in cooperation may be the result of an SRA being incapable of meeting the obligations because of, for example, lack of authority, resources, technical competence, or understanding of the obligations or a lack of willingness to cooperate with the IAEA. The reason that a number of States with additional protocols in force have not received a broader conclusion is because the IAEA has evaluated those States to have deficiencies in important areas of cooperation.

State-specific factor (v) considers cooperation by a State, including provision of complete, correct, and timely reports; facilitation of IAEA in-field verification activities; and responsiveness to safeguards implementation issues. Effective cooperation can streamline IAEA's conduct of in-field and Headquarters safeguards activities (e.g., to perform fewer activities or to take less time performing activities). Inadequate cooperation by a State mostly affects the level of effort and resources that the IAEA must expend to meet its safeguards objectives for the State, and the efficiency of those efforts.

Deficiencies in State cooperation do not change the potential paths for acquiring nuclear material suitable for a nuclear explosive by a State, and thus do not change the safeguards objectives, or the priorities of these objectives. Identification of such deficiencies can determine where IAEA or other State support activities could be most usefully offered.

When there is inadequate cooperation by a State, the primary corrective action by the IAEA is to work with the State to improve the cooperation. This often involves providing training to persons in the State to establish the necessary capabilities to meet the obligations. If the State is unwilling to improve its cooperation, the IAEA Director General may inform the Board of Governors about the lack of cooperation. Until acceptable cooperation is achieved, if appropriate, the IAEA may need to increase the number of verification activities required to meet the safeguards technical objectives. If the lack of cooperation results in an anomaly or inconsistency, IAEA actions and resources will be required to assess the anomaly or inconsistency in order to determine whether a noncompliance with the safeguards agreement occurred.

Factors for assessing each area of State cooperation have been derived from IAEA Services Series 21[6]. For example, in the area of *Facilitating Inspector Access*, these factors include:

[5] Such responsiveness should include acknowledgement by the State that they have received the request and an estimate as to when it will be able to provide a response. Responsiveness could also include providing acknowledgement and an estimate of time required for providing an answer within one month.

[6] *Guidance for States Implementing Comprehensive Safeguards Agreements and Additional Protocols*, IAEA Services Series 21, International Atomic Energy Agency, May 2016.

1. Adequate access is provided for IAEA inspectors to examine and verify design information;
2. Adequate access is provided to the IAEA to all facilities, LOFs and locations to carry out inspection activities;
3. Inspectors are permitted to carry out verification activities to achieve their inspection objectives;
4. Correct, complete and up-to-date reports, records and supporting documentation are provided to IAEA inspectors in a timely manner for examination in order to meet the objectives of the inspection or access at the location;
5. Adequate access is granted to IAEA inspectors to carry out complementary access;
6. All necessary physical and logistical support (e.g. crane operator) is provided to the IAEA;
7. All relevant nuclear material, instruments and standards are made available to inspectors for verification in a timely manner;
8. IAEA inspectors are able to observe sample taking, verify that samples are representative, and observe instrument calibration, and have samples shipped in a timely and secure manner;
9. Adequate office or work space is provided for inspectors;
10. IAEA equipment is permitted free entry and exit from a State;
11. IAEA inspectors are permitted to travel to installations without delay;
12. IAEA inspectors' notes and equipment are permitted to be removed from installations; and
13. IAEA is able to communicate, transmit or transfer information out of the State as necessary.

The following metrics can then be used for assessing the performance of each factor:

1. Specific practice of the State should be recommended to enhance safeguards implementation in other States.
2. State practice provides for effective and efficient safeguards implementation.
3. State practice decreases efficiency of safeguards implementation.
4. State practice decreases effectiveness of safeguards implementation.

Subsequently, the following metrics can be used for assessing the overall performance in each area of cooperation:

1. State has specific good practice(s) in the topical area that exceed the requirements and should be recommended to other States.
2. No action needed; State practice meets the requirements for safeguards implementation.
3. The IAEA should consult with the State on ways to improve the State's performance in the topical area.
4. IAEA assistance (e.g., ISSAS Mission[7], training, etc.) is needed to improve the State's capabilities in the topical area.

Rolling up ratings for individual factors in each area of competency and across areas of competencies to produce a global score for a State would not be meaningful. Not all factors are of equivalent importance or have equivalent impact on the effectiveness or efficiency of safeguards implementation. Each factor and area of cooperation would need to be prioritized, and appropriately weighted, for each State to establish an accurate scale. These priorities and weightings would need to reflect the nuclear fuel cycle in the State and, in themselves, could be controversial as they would be culturally and politically influenced. A global score

[7] International SSAC Advisory Service Missions are conducted for States upon their request.

that enabled ranking of States' levels of cooperation could be immediately controversial. In addition, it would neither inform changes as to how safeguards should be implemented in a State nor provide support for improving cooperation by the State.

STATE-SPECIFIC FACTOR (vi) – IAEA IMPLEMENTATION EXPERIENCE

State-specific factor (vi) addresses the IAEA's experience in implementing safeguards in a State. Four aspects of IAEA implementation experience are recommended for assessment, namely: (a) conditions in a State and at its facilities, (b) the State's record in meeting its safeguards obligations, (c) events of potential noncompliance with the safeguards agreement, and (d) the State's history of actions that go beyond safeguards agreement requirements. All of these aspects can affect the implementation of safeguards, and how they are addressed can affect the effectiveness and efficiency of safeguards implementation. Issues that should be considered by the IAEA in using information from its experience in implementing safeguards in a State in assessing these four aspects are described below.

Conditions in a State and at its Facilities that Affect the Implementation of Safeguards

These conditions include (a) national safety or security conditions that impede IAEA access to facilities or locations (e.g., earthquake or civil war); (b) conditions that prevent effective use of unannounced inspections (e.g., distance of site from international airport); (c) national laws that restrict removal or transmission of information; and (d) existing or recurring field conditions that affect use of safeguards measures (e.g., unreliable power supply or cloudy spent fuel pond water). Some of these safeguards implementation conditions in a State are not under the direct control of the SRA or facility. The measures used to implement IAEA safeguards must adapt to conditions found at facilities such that appropriate safeguards measures or equipment are used and the effectiveness of the measures applied assessed. Where the conditions can be controlled by the SRA or facility, the IAEA and SRA should collaborate to make safeguards implementation as effective and efficient as possible.

The State's Record in Meeting Certain Safeguards Obligations

The SRA's ability to meet some of the State's safeguards obligations may rely on decisions within higher levels of the government than the SRA – e.g., limitations on acceptance of inspector designations of certain nationalities, visa policies, and rules for bringing equipment into and removing equipment and materials from the State. The meeting of other obligations depends on the capabilities of the SRA and the SRA's interpretation of its role and the State's obligations in implementing the safeguards agreement. Where the conditions can be controlled by the SRA, the IAEA and SRA should collaborate to make the safeguards implementation as effective and efficient as possible. To meet its technical objectives when safeguards obligations are not met, the IAEA may need to increase the number of records reviewed and measurements made, extend the length of inspections, and increase other relevant activities at IAEA Headquarters and in the field.

Events of Potential Noncompliance with the Safeguards Agreement

The identification of questions, inconsistencies, discrepancies, and anomalies is a routine occurrence for the IAEA and identification of any of them is not a finding that the State is in noncompliance with its safeguards agreement. When an indicator of a potential noncompliance is identified, follow-up actions specific to the event must be determined and included in the annual implementation plan. If a

noncompliance is indicated, special procedures of the IAEA (e.g., notification of the BOG and special inspections) could be implemented to fully address the finding.

History of Actions that go Beyond Safeguards Agreement Requirements

State actions that go beyond normal safeguards implementation requirements and improve transparency of the State's nuclear activities and IAEA knowledge of the consistency of the State's activities with its peaceful-use commitments, can lead to greater effectiveness and efficiency of safeguards implementation. When these activities meet the same safeguards technical objectives achieved by other safeguards activities performed under the safeguards agreement or additional protocol, activities can be reduced or eliminated.

Assessing State-Specific Factor (vi)

A sample worksheet is shown in Table 1 for assessing how IAEA safeguards implementation experience

Table 1. Sample Worksheet: Safeguards Implementation Experience Considerations

Consideration	Yes/ No	Action	SG Impact	Change to State-level approach	Change to facility approach	Other actions
Conditions in a State and at its facilities that affect the implementation of safeguards						
National safety or security conditions that impede IAEA access to facilities Conditions that prevent effective use of unannounced inspections National laws or regulations that restrict removal or transmission of information Existing or recurring field conditions that affect use of safeguards measures						
Can IAEA inspectors access all regions and installations within the State?		If no, what additional IAEA verification activities could be performed to meet the SG objectives?				
Can unannounced inspections be effectively performed within the State?		If no, can other safeguards measures be implemented to meet the same SG technical objective?				
Do national laws prevent the use of certain IAEA verification measures?		If yes, what alternative verification measures could be used to achieve the same SG technical objective and performance target?				
Do facility conditions affect or limit the use of certain IAEA equipment?		If yes, what alternative verification measures could be used to achieve the same SG technical objective and performance target?				

could affect implementation of safeguards. The worksheet presents the issue for consideration, a finding with respect to the issue, and a decision as to whether an action might be taken with respect to the issue. The worksheet requires an assessment as to the safeguards impact of the issue for the State to determine if a change in how safeguards are implemented is warranted. If a change is warranted, the last three columns request a decision as to what the change should be and whether the change should be made at the State or facility level or if another action is needed.

CONCLUSION

This paper describes how the SSAC/RSAC's technical capabilities, State's level of cooperation, and IAEA's experience in implementing safeguards for a State can either achieve efficiencies in safeguards implementation or require additional safeguards activities to be conducted in the field or at IAEA Headquarters. These three factors affect the IAEA's (a) development of an annual implementation plan for safeguards activities, (b) conduct of in-field and IAEA Headquarters safeguards activities, and (c) evaluation of results of safeguards activities. The IAEA's experience in implementing safeguards in a State will also affect the determination of applicable safeguards measures used in the State-level safeguards approach. These factors are not expected to change the acquisition path analysis for a State or to change the safeguards technical objectives or performance targets for meeting the safeguards objectives.

The number or intensity of verification activities necessary to meet the safeguards objectives might be greater than that for a similar facility or location with acceptable performance, when (a) an SSAC/RSAC does not have the technical capability to ensure the correctness or accuracy of information submitted to the IAEA, (b) there is inadequate cooperation by a State, or (c) the IAEA's implementation experience identifies other areas for enhancements that would improve effectiveness or efficiency of safeguards implementation. In addition to implementing those safeguards measures necessary to achieve the safeguards objectives, and until a level of information quality or cooperation is achieved that does not affect safeguards implementation, the IAEA typically works with the State to improve the technical capability or cooperation, or to collaborate to implement more effective or efficient safeguards activities. Such activity can involve the IAEA, or other States, providing training to persons in the State, and in some cases providing basic technology, to establish the necessary capabilities to meet the obligations.