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# IRIS Guidelines

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# IRIS GUIDELINES

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IAEA SERVICES SERIES No. 28

# IRIS GUIDELINES

2014 EDITION

INTEGRATED REVIEW OF INFRASTRUCTURE FOR  
SAFETY (IRIS) FOR SELF-ASSESSMENT WHEN  
ESTABLISHING THE SAFETY INFRASTRUCTURE FOR A  
NUCLEAR POWER PROGRAMME

INTERNATIONAL ATOMIC ENERGY AGENCY  
VIENNA, 2014

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Marketing and Sales Unit, Publishing Section  
International Atomic Energy Agency  
Vienna International Centre  
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1400 Vienna, Austria  
fax: +43 1 2600 29302  
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email: [sales.publications@iaea.org](mailto:sales.publications@iaea.org)  
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For further information on this publication, please contact:

Regulatory Activities Section  
International Atomic Energy Agency  
Vienna International Centre  
PO Box 100  
1400 Vienna, Austria  
Email: [Official.Mail@iaea.org](mailto:Official.Mail@iaea.org)

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# FOREWORD

The IAEA safety standards reflect an international consensus on what constitutes a high level of safety for protecting people and the environment, and therefore represent what all Member States should achieve, whilst recognizing the ultimate responsibility of each State to ensure safety when implementing a nuclear power programme.

IAEA Safety Standards Series No. SSG-16, entitled Establishing the Safety Infrastructure for a Nuclear Power Programme was published in order to provide recommendations, presented in the form of sequential actions, on meeting safety requirements progressively during the initial three phases of the development of safety, as described in INSAG-22, Nuclear Safety Infrastructure for a National Nuclear Power Programme Supported by the IAEA Fundamental Safety Principles. To that end, the 200 safety related actions, which are proposed by SSG-16, constitute a roadmap to establish a foundation for promoting a high level of safety over the entire lifetime of the nuclear power plant. These actions reflect international consensus on good practice in order to achieve full implementation of IAEA safety standards.

The IAEA has developed a methodology and tool, the Integrated Review of Infrastructure for Safety (IRIS), to assist States in undertaking self-assessment with respect to SSG-16 recommendations when establishing the safety infrastructure for a nuclear power programme, and to develop an action plan for improvement.

The IRIS methodology and the associated tool are fully compatible with the IAEA safety standards and are also used, when appropriate, in the preparation of review missions, such as the Integrated Regulatory Review Service and advisory missions.

The present guidelines describe the IRIS methodology for self-assessment against SSG-16 recommendations. Through IRIS implementation, every organization concerned with nuclear safety may gain proper awareness and engage in a continuous progressive process to develop the effective national safety infrastructure for a nuclear power programme. These guidelines are intended for use by any States contemplating the introduction of nuclear power or expanding an existing nuclear power programme and in the preparation and establishment of the safety infrastructure, in compliance with the IAEA safety standards necessary for safely executing a nuclear power plant project.

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## 1. INTRODUCTION

The IAEA General Conference encouraged the Secretariat to develop approaches to supporting the development of infrastructure for nuclear power in States either considering the introduction of nuclear power or expanding an existing nuclear power programme. A number of States have requested guidance on how to apply the IAEA safety standards in the development of a nuclear power programme.

The IAEA has issued a Specific Safety Guide on *Establishing the Safety Infrastructure for a Nuclear Power Programme* (SSG-16) [1] accordingly. Based on IAEA safety standards, this guide provides recommendations in phases 1, 2 and 3 consistent with the milestones approach described in INSAG-22 [2] and in Milestone Document [3]:

- Phase 1: ‘Safety infrastructure before deciding to launch a nuclear power programme’;
- Phase 2: ‘Safety infrastructure preparatory work for construction of a nuclear power plant after a policy decision has been taken’;
- Phase 3: ‘Safety infrastructure during implementation of the first nuclear power plant’.

SSG-16 identifies 200 safety-related actions to be taken in the first three phases of the development of a national infrastructure; these actions are classified according to the related phase and are organized around 20 safety elements, following the structure of the IAEA Safety Standards Series. The 200 actions listed in Appendix I reflect international consensus on good practice in order to reach full implementation of IAEA safety standards.

The IAEA Safety Standard Series No. GS-R-3 [4] contains requirements for self-assessment. Through self-assessment against the aforesaid actions, every organization concerned with nuclear safety may gain proper awareness and engage in a continuous progress to develop an effective and efficient national safety infrastructure for the nuclear power programme. A self-assessment is much more than answering a set of predefined questions; it is more of a learning and investigation process: it is an integral part of the development of organizations aiming at excellence. Indeed, self-assessment is a key mechanism for organizations to assess their performance and to identify areas for improvement.

Establishing the safety infrastructure for a nuclear power programme is a continuous process involving several organizations, the number and the role of which evolves as the nuclear programme develops. In the early phases of the programme, some of these organizations may even not exist: this might be the case for the operating organization or the regulatory body. Coordination mechanisms need to be implemented to reach overall safety objectives and to provide a coherent framework for the evolution and development of each organization. Therefore, self-assessment against SSG-16 should involve every organization that should implement actions listed in the Safety Guide. Coordination mechanisms and responsibilities should be formally defined, including for the management of the whole self-assessment project, to ensure that overall coherence is achieved. The practical form taken by these mechanisms and definition of responsibilities depend on the phase of the programme.

## 2. OVERVIEW

### 2.1. OBJECTIVES

The objective of the self-assessment in establishing the safety infrastructure for a nuclear power programme is to provide States with an opportunity to gain self-awareness in their

progress towards an effective and efficient safety infrastructure, to identify areas for improvement and to strive for continuous improvement in implementing the actions identified in SSG-16. Namely, self-assessment aims at the following actions for each phase of the nuclear power programme:

- Assess the current situation and progress made to establish the safety infrastructure;
- Identify gaps between the current situation and expected status of the national safety infrastructure, and list areas where improvement is needed;
- Take appropriate actions to strengthen the current safety infrastructure if necessary, in order to reach compliance with IAEA standards.

Thus, a self-assessment is also a means for:

- Preparing and sharing vision(s);
- Identifying policy level issues that need to be addressed, such as independence of the regulatory body or interface and coordination issues between different interested parties;
- Verifying that every organization is aware of safety-related elements that need to be considered and addressed;
- Verifying that safety principles and safety requirements are applied amongst the different organizations in a timely, coordinated, effective and appropriate manner as the nuclear power programme develops.
- Measuring progress made during a period can be done by repeating self-assessment.

An additional purpose of conducting a self-assessment is to be able to share experience between States.

## 2.2. MOTIVATION FOR SELF-ASSESSMENT

A self-assessment requires time, effort and resources. In return, it provides benefits to the States and its organizations, offsetting largely devoted resources and time. Motivations may include the following:

- To contribute developing safety culture across the involved organizations;
- To provide each participating organization with an opportunity to identify its own strengths and weaknesses. Self-assessment is often a better motivator for improvement than assessment conducted by external experts;
- To strengthen every organization involved, including the regulatory body<sup>1</sup> and the operating organization<sup>2</sup>, to enhance their performance and accountability, thereby improving national arrangements for safety;
- To provide a mechanism for the management to inform staff on safety strategy and objectives;
- To promote staff commitment and involvement to their organization and its processes and its performance;
- To contribute in the development of individual and collective competences for safety;
- To promote harmonization of organizational processes and practices;

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<sup>1</sup> An authority or a system of authorities designated by the Government of a State as having legal authority for conduction the regulatory process including authorizations.

<sup>2</sup> An organization applying for authorization or authorized to operate a nuclear power facility and responsible for its safety.

- To bring understanding of what it takes to establish a relevant infrastructure for nuclear safety and how to improve performance in the first phases of a nuclear programme;
- To provide early detection of various factors which could impact upon the effectiveness of the establishment of safety infrastructure, including an organization's capacity to fully discharge its duties. Based on self-assessment findings, corrective measures may be implemented to eliminate adverse factors;
- To inform all interested parties of the nuclear power programme, at a national and international levels, including the Government and the general public, on the progress of safety infrastructure establishment;
- To facilitate a common understanding between all interested parties of the progress made in the development of the safety infrastructure, as part of the national nuclear power programme.

### 2.3. WHEN TO PERFORM SELF-ASSESSMENT

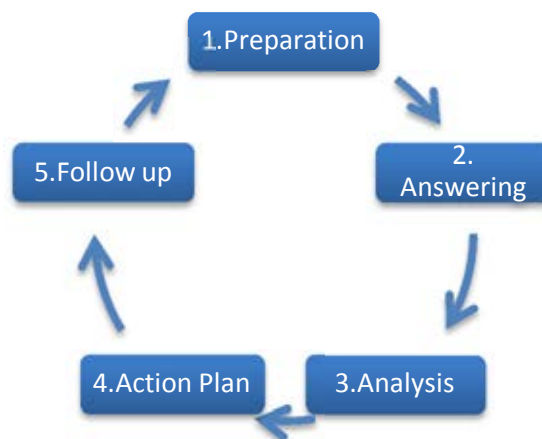
The self-assessment should be scheduled in accordance with the progress of the national power programme and should be integrated in a national strategy regarding support and services the State could receive from the IAEA or other sources.

The chosen time for performing self-assessment should be linked with the strategic or annual planning for the nuclear power programme, since implementation of self-assessment actions can be resource intensive both in terms of time and manpower.

## 3. METHODOLOGY

Except when required as a preliminary step for a review mission, the self-assessment is intended to be performed on voluntary basis along with the development of a nuclear programme. The State can be in different stages of implementation of elements of phase 1, 2 and 3 at a given time.

The self-assessment is a cyclic process consisting of five steps: preparation, answering, analysis, action plan and follow-up.



*FIG. 1. IRIS self-assessment lifecycle.*

It should be repeated at regular intervals during the establishment of the nuclear safety infrastructure in order to measure the progress made in the development of nuclear safety infrastructure and to adjust the actions which need to be implemented when identified gaps need to be addressed in each phase. If done previously, the main input for a self-assessment is the result of the previous self-assessment (action plan).

The self-assessment against SSG-16 may involve several organizations; in phase 1, the governmental project management organizations<sup>3</sup> (such organizations are referred to as “the Government” in SSG-16 and in this methodology) may be the only participating organizations, along with the regulatory body for radiation protection if it already exists. As of phase 2, it is likely that the three following organizations need to engage in self-assessment against SSG-16: the Government, the regulatory body and the operating organization. Therefore, it is important to set up arrangements to coordinate, in an effective manner, the participating organizations in order to ensure the successful implementation of the whole lifecycle of the self-assessment.

The self-assessment against SSG-16 is implemented using question-sets based on the 200 actions identified in SSG-16 and supporting text. For each action, the question-sets comprise:

- Structured questions asking about the completion of the action and implementation details;
- Comments providing guidance and clarifying objectives and concepts used in questions;
- Expectations regarding the implementation of the action.

### 3.1. PRECONDITIONS

Before engaging in the self-assessment process, the following pre-conditions should be fulfilled as a minimum:

- The Government should:
  - o Ensure that the self-assessment is performed at a meaningful stage in the national nuclear power programme;
  - o Commit itself to complete self-assessment in compliance with an agreed scope and schedule;
  - o Ensure that coordination arrangements are established and implemented between organizations taking part in self-assessment.
- The senior management of every organization taking part in self-assessment should commit itself to:
  - o Allocate adequate resources for completion of the self-assessment;
  - o Reinforce a learning and questioning attitude at all levels of the organization;
  - o Encourage staff to perform self-assessment in a frank and honest manner and in a blame-free environment;
  - o Consider self-assessment conclusions in a frank and transparent way in a blame-free culture;
  - o Fully implement the subsequent actions.

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<sup>3</sup> Organizations that are given an explicit governmental mandate to assess the feasibility of or to coordinate the development of a nuclear power programme (SSG-16); in other IAEA publications, these organizations may be referred to as the ‘NEPIO’ (‘Nuclear Energy Programme Implementing Organizations’).

### 3.2. PRINCIPLES FOR IMPLEMENTING SELF-ASSESSMENT

- 1 A clear understanding and working knowledge of SSG-16 and other related IAEA safety standards should be reached by people involved in the self-assessment.
- 2 The scope for self-assessment should be established by the State according to defined goals and expected benefits.
- 3 The self-assessment process and work should be organized so as to reach the objectives for self-assessment listed in Section 2.1.
- 4 The self-assessment should reflect the national position; the resulting actions should be agreed at national level and implemented by each relevant organization.
- 5 All relevant interested parties should be involved in the self-assessment process.
- 6 Every participating organization should commit itself towards the full implementation of the self-assessment and of the resulting actions.
- 7 Coordination mechanisms and responsibilities should be formally defined, including for the management of the whole self-assessment project, to ensure that overall coherence is achieved.
- 8 The time-frame for conducting a self-assessment should reflect a consistent status for progress of the participating organizations throughout the self-assessment process. This time-frame should be adapted to the amount of effort needed and resources available.
- 9 The self-assessment questionnaires should be answered and analysed by people in relevant organizations with an active participation in the national nuclear power programme; these people should have adequate competence in the assessed areas and knowledge of expectations and guidance from IAEA safety standards.
- 10 Self-assessment work should be distributed in such a way that a person does not respond and analyze the same safety element.

### 3.3. SELF-ASSESSMENT MANAGEMENT

In order to implement the self-assessment and reach its objectives, the following structures should be established as a minimum:

- A coordination group;
- Dedicated operational teams to implement the self-assessment, from which respondent and analysis teams will be formed.

Both senior public officials and senior managers of participating organizations should be part of the coordination group. In early phases, the governmental project management organizations could serve as coordination group or provide for the majority of its members.

The coordination group should:

- Be in charge of defining the objectives and scope for self-assessment;
- Be in charge of assigning responsibilities for performing the self-assessment to relevant organizations. The coordination group should ensure operational team members receive training and all necessary information in order to perform properly their task;
- Validate the completion of key steps of the self-assessment;
- Ensure that all the involved organizations commit to the implementation of the agreed actions; in particular, to allocate adequate resources.

The senior management is responsible for the proper implementation of the actions as agreed with the coordination group in their own organization. Thus, the senior management should:

- Be committed to implement the agreed actions in timely manner;
- Allocate adequate resources to carry out the activities;
- Ensure that the participants demonstrate a rigorous and questioning attitude.

A proposal to address operational aspects and practical details of project management for self-assessment can be found in Appendix II. States are strongly encouraged to follow these guidelines and adapt them to their specific situation as necessary.

### **3.3.1. Scope of self-assessment**

When defining the objectives and scope for self-assessment, the coordination group should take account of the overall progress in the national nuclear power programme and resource considerations.

It is recommended that all safety elements of SSG-16 be considered while defining the scope for self-assessment.

### **3.3.2. Self-assessment process steps**

In addition to the guidance provided below, detailed process maps for self-assessment are described in Appendix III.

#### **Step 1: preparation**

During this step, the whole process is planned and organized. This includes defining the scope of the self-assessment, selecting the corresponding question-sets, based on the specific situation of the State (i.e. applicable phases for each element), and formalizing a self-assessment plan. At the national level, a national plan needs to be developed and should include the self-assessment scope for each organization involved, the main steps and general time schedule. The coordination group is responsible for completion of this plan.

In the framework of the national plan, the work should be distributed to the responsible organizations so that they can assume the lead for the preparation of the relevant portion of the self-assessment, including defining the scope, ensuring that the resources are allocated at each step of the process, and that the milestones, time schedules and responsible individuals for the self-assessment process are established.

Answering and analysing the questionnaire involves the formation of respondent team(s) (RT) and analysis team(s) (AT). The RT should comprise as many staff as practically possible including senior managers, specialists and technical staff from cross-functional areas within relevant organizations. In planning and allocating the resources, account should be taken of the need to perform an independent analysis of the answers, by people not directly involved in the elaboration of the answers.

Each responsible organization should complete its respective self-assessment plan. The coordination group should ensure that all plans across participating organizations are coherent.

## **Step 2: answering**

The objective of the answering phase is to provide descriptive responses to an agreed self-assessment questionnaire along with all relevant documentary evidence.

The RT should receive training and the expected performance criteria should be communicated to them. The training should ensure proper awareness of the relevant IAEA safety standards, thus providing guidance on how to proceed to establish an effective safety infrastructure for the nuclear power programme.

Each RT is responsible for completion of this step, including quality-checking the answers. Responsibilities should be allocated to ensure that answers are submitted in a standardized format across the different participating organizations.

Detailed and practical guidance on the answering step can be found in Appendix IV.

## **Step 3: analysis of responses**

The expected outcome of the analysis step should be a documented comparison of how the answers given correspond to the criteria used as measures of compliance. This analysis is based on a comparison of the answers to the questions to the performance expectations and assessment criteria for the question.

The analysis of responses should then be performed by analysis team(s) (AT) independent of the RT that answered the questionnaire. As much as possible, the same individual should not be in both teams. In any case, an individual should never analyse her/his own responses. Reviewers might be less numerous than respondents and should have a broader perspective.

The AT can interview the RT for clarification of answers or ask for more documentary evidence in support for an answer. Each AT is responsible for completion of this step; the AT should follow a standardized methodology approved by the coordination group so that consistency across different participating organizations is ensured.

The analysis should clearly identify the strengths and weaknesses of the organizations and their current performance relative to the assessment criteria, including any gaps to be addressed, and recommendations should be proposed accordingly. The conclusions of this step, including the recommendations, should be shared with and discussed by the coordination group with a view to performing an integrated analysis of the answers and developing a coordinated action plan for improvement.

Upon completion of the self-assessment analysis step, a consolidated outcome report should be prepared. It should identify areas for improvement together with recommendations of corrective measures. This analysis report should be extensively discussed at the coordination group, possibly amended, and approved. Its final version should be broadly distributed through each participating organization, so that proper awareness is gained by staff.

## **Step 4: action planning**

For every safety element of SSG-16 and according to the phase of the nuclear power programme, each participating organization should list, as appropriate, recommendations for



corrective measures. Each recommendation should refer to the appropriate actions of SSG-16 as a basis. The AT should work in cooperation with other members of the operational team to ensure coordination and comprehensive understanding of the overall vision.

An integrated action plan (IAP) should be jointly developed with inputs from each participating organization to address all areas for improvement identified during the analysis step. The IAP should be based on the analysis report. The IAP should be developed under the authority of the coordination group. The coordination group should agree on priorities and timelines to be observed, thus ensuring the coherence of a structured action plan. Success criteria and outcomes could be identified. The coordination group should be able to settle possible interface issues among the involved organizations.

The responsibilities for the implementation of the corrective measures in the IAP should be assigned to the relevant organizations. The senior management of each organization should have the authority to implement the actions in the respective areas of responsibility and commit their organization to the completion of the definitive IAP in the agreed timeframe.

### **Step 5: implementing the action plan and follow-up**

Senior management of every participating organization is responsible for the implementation of the agreed IAP. Senior management should identify responsible managers and mobilize adequate resources to implement each action in the agreed timeframe.

This step should include detailed and transparent communication of results, conclusions and the agreed action plan to staff, in order to gain their commitment and motivation to implement the plan. This step also follows up progress with the implementation, including indicators of the status of the implementation of the IAP. A formal and structured follow-up of the implementation should be planned, since this is the mechanism by which the organization ensures that implementation of the action plan is delivering the desired results and objectives.

Missions could be organized to review or audit the action plan implementation. Relevant members of the coordination group should be part of any preparatory work for audit or review missions. The coordination group should present a periodic and consolidated progress review to the Government, with results of any audits or review missions.

#### **3.3.3. Time frames to conduct self-assessment**

The recommended time frame is to take between 1 to 2 months for step 1, and 2 to 3 months for step 2 as well as for step 3. Overall, steps 1 to 3 should be completed within 6 months, so that results reflect the same phase in every organization and in the overall nuclear power programme. The coordination group should seek efficiency and timeliness and make every effort to shorten this time. It is recognized that overall duration for steps 1 to 3 of self-assessment may depend on objectives, scope and phase.

The IAP should provide forecasted time lines for the implementation of each action compatible with the overall national nuclear power programme.

### **3.3.4. Staff involvement, competence and training**

Involvement of sufficient staff members in every organization taking part in the self-assessment is a prerequisite to a successful self-assessment. A self-assessment is an opportunity to develop or reinforce a continuous improvement culture across the organization. An organization should select widely from all its relevant staff members to ensure that the self-assessment answers and their evaluated outcomes will be pertinent and coherent among them.

The coordination group should ensure that each participating organization provides for the adequate training of every selected staff member before self-assessment begins, with the possible support of the IAEA.

Support from the IAEA could be provided, especially for States in phase 1. However, the IAEA will not be involved in performing the self-assessment or decision making. The IAEA could provide support to understand the level of detail and technical content expected in the answers to the questionnaire. Assistance in preparation of the action plan may also be needed. This support is especially relevant in States with limited experience of the nuclear sector.



## **APPENDIX I: THE TWENTY SAFETY ELEMENTS OF SSG-16**

### **IMPLEMENTING IAEA GENERAL SAFETY REQUIREMENTS FOR THE ESTABLISHMENT OF THE SAFETY INFRASTRUCTURE**

- ACTIONS 1–10: NATIONAL POLICY AND STRATEGY FOR SAFETY
- ACTIONS 11–19: GLOBAL NUCLEAR SAFETY REGIME
- ACTIONS 20–23: LEGAL FRAMEWORK
- ACTIONS 24–38: REGULATORY FRAMEWORK
- ACTIONS 39–47: TRANSPARENCY AND OPENNESS
- ACTIONS 48–60: FUNDING AND FINANCING
- ACTIONS 61–71: EXTERNAL SUPPORT ORGANIZATIONS AND CONTRACTORS
- ACTIONS 72–84: LEADERSHIP AND MANAGEMENT FOR SAFETY
- ACTIONS 85–98: HUMAN RESOURCES DEVELOPMENT
- ACTIONS 99–104: RESEARCH FOR SAFETY AND REGULATORY PURPOSES
- ACTIONS 105–116: RADIATION PROTECTION
- ACTIONS 117–121: SAFETY ASSESSMENT
- ACTIONS 122–132: SAFETY OF RADIOACTIVE WASTE MANAGEMENT, SPENT FUEL MANAGEMENT AND DECOMMISSIONING
- ACTIONS 133–145: EMERGENCY PREPAREDNESS AND RESPONSE

### **IMPLEMENTING THE IAEA SPECIFIC SAFETY REQUIREMENTS FOR THE ESTABLISHMENT OF THE SAFETY INFRASTRUCTURE**

- ACTIONS 146–159: OPERATING ORGANIZATION
- ACTIONS 160–169: SITE SURVEY AND SITE EVALUATION
- ACTIONS 170–184: DESIGN SAFETY
- ACTIONS 185–188: PREPARATION FOR COMMISSIONING
- ACTIONS 189–192: TRANSPORT SAFETY
- ACTIONS 193–200: INTERFACES WITH NUCLEAR SECURITY

## APPENDIX II: PROPOSED PRACTICAL PROJECT MANAGEMENT FOR SELF-ASSESSMENT

### II.1. OVERALL PROJECT ORGANIZATION TO CONDUCT SELF-ASSESSMENT

To ensure the coherence of the self-assessment process, inside an organization or between several organizations, it is needed that clear responsibilities and effective coordination mechanisms be defined. The recommended approach for self-assessment project management is illustrated on the following chart. Three participating organizations are featured, but such a framework, with minor modifications, could also be applied by a single organization conducting a self-assessment.

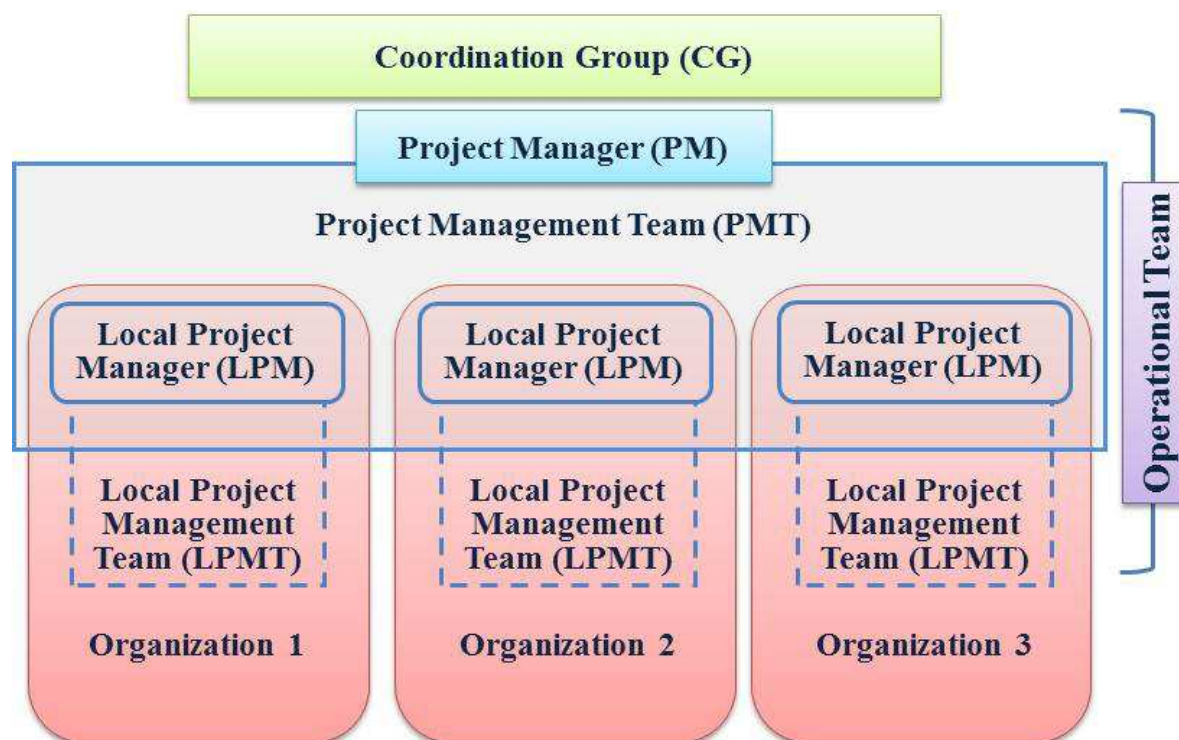


FIG. 2. Project management organizational chart.

Detailed functions and responsibilities are described in the following section.

### II.2. PROJECT INFRASTRUCTURE, ROLES AND RESPONSIBILITIES

#### Sponsoring organization

The sponsoring organization provides for the Secretariat of the project and acts as an enabler towards its completion. An adequate State organization should be identified to sponsor the project. In phase 1 and possibly in phase 2, the governmental project management organizations could be chosen, possibly supported by relevant Ministries or public agencies.

Once the regulatory body reaches sufficient maturity, it is possible that it be chosen as the sponsoring organization for self-assessment.

### **Project director**

The project director (PD) is accountable for the project outcome. The PD is nominated by the Government. It is advisable that the PD be chosen as a top manager (at best the Head) of the sponsoring organization or as a high senior official in Ministries or agencies superseding the sponsoring organization. In the last case, efficient communication should be ensured between the PD and the sponsoring organization. The PD reports to the Government.

### **Coordination group**

A coordination group (CG) could meet under the PD lead to validate key steps in the project. Senior management of every organization taking part in self-assessment should be part of this group. Other members or observers approved by the Government could belong to organizations concerned with the nuclear power programme, but not taking part per se in self-assessment (e.g., universities, research centres, etc.); the role and responsibilities of such members or observers should be clearly defined.

### **Project manager and project management team**

The project manager (PM) is responsible for the practical organization of the project and to consolidate outputs at the project level. The PM ensures for coordination in case interfaces require cross organizational discussion, or if otherwise needed. The PM is proposed by the PD for nomination by the Government, after approval by the CG. It is advisable that the PM be chosen as a respected member of the sponsoring organization. The PM reports to the PD.

To prepare for the self-assessment and guide the completion of the self-assessment process, the PM should receive the support of a project management team (PMT). The senior management of each organization, in coordination with the PM, is responsible to designate a representative in the PMT. Other members belonging to the sponsoring organization, the participating organizations or other concerned or supportive organizations, such as public agencies or universities, could be part of the PMT.

### **Local project manager and local project management team**

If a single organization is conducting the self-assessment, the PM and the local project manager (LPM) could be the same person, and the PMT and the local project management team (LPMT) the same team, except if, due to the large size of the organization, dedicated working groups are set. The senior management of each participating organization assigns a LPM.

If several organizations are participating in the self-assessment, the representative designated by the senior management of each participating organization to the PMT has function, in the participating organization, of the LPM. The LPM is responsible to consolidate outputs at the level of its organization.

It could also be appropriate that organizations with larger size establish a LPMT for self-assessment, headed by the LPM. Under the coordination of the PM, the LPM is responsible for the practical implementation of the project within their organization.

### **Term of reference for project management**

A term of reference (ToR) specifying respective responsibilities and powers of the CG, PM, PMT and LPMT should be approved by the CG in its first meeting. The ToR should be prepared by the Government in collaboration with members of the CG. Arrangements should be agreed for possible revisions of the ToR, or to shape its application and scope according to the step of the project. Topics covered could include the following ones:

- Detailed responsibilities and powers of the PD;
- The way meetings of the CG are called (calling authority, frequency, agenda, etc.);
- The way meetings of the PMT are called (calling authority, frequency, agenda, etc.);
- Detailed articulation and responsibilities between PMT and LPMT;
- Coordination mechanisms in case an issue requires cross organizational attention;
- The power of the PM to be able or not to launch audits or peer review missions;
- The detailed way the PM and the LPM report on the project.

### **II.3. OPTIONS TO CONDUCT SELF-ASSESSMENT**

To conduct self-assessment, several options are available, depending on the phase and complexity of the nuclear power programme. The governmental project management organizations may be well adapted to perform the complete self-assessment for phase 1; in such a case, the PM and the LPM could be the same person, and the PMT and the LPMT the same team. In phase 2 or 3 however, it is likely that several distinct organizations will need to take part to self-assessment against SSG-16. A cross organizational working group might be gathered, ensuring that a coherent approach is followed, but at the cost of being resource intensive. Alternatively, a preferred and more flexible approach would be that appropriate modules be sent to relevant working groups in every organization. The LPMs and PM are then responsible to consolidate outputs respectively at organization and project levels.

Depending on the chosen project frame and outline, working sessions may be intensive or distributed. Each LPM organizes working sessions to complete self-assessment and the PM ensures for coordination in case interfaces require cross organizational discussion, or if otherwise needed.

## APPENDIX III: PROPOSED DETAILED PROCESS MAPS FOR SELF-ASSESSMENT

### III.1. A PROCESS MAP FOR STEP 1: PREPARATION

No	Process Step	Details	Responsibility	Output
1	<b>INPUT:</b> identified need to perform a self-assessment and/or the results from implementation of the action plan of a previous self-assessment.	The need to perform a self-assessment should be recognized by the highest public managers responsible for the nuclear power programme at governmental level. They may receive advices from the IAEA, contractors or staff of national nuclear organizations.	Minister responsible for nuclear power programme	Request for IAEA
2	The Government and senior management of participating organizations make the decision to perform self-assessment and commit to provide all resources necessary for the self-assessment to be effective	<p>The commitment at organization senior management level is important considering that the self-assessment can be time-consuming and requires adequate resources which can be significant. The following decisions should be formalized:</p> <ul style="list-style-type: none"> <li>- Commitment to complete the self-assessment, including action implementation and follow-up;</li> <li>- The assignment of a project director (PD);</li> <li>- The constitution of a coordination group (CG).</li> </ul> <p>These decisions should be published by the Government and appropriate arrangements should be taken to ensure the involvement of each participating organization towards completion of self-assessment.</p>	Government and senior management of each participating organization	<p>Appointment of the PD.</p> <p>Designation of the CG.</p> <p>Published decisions and arrangements to secure participation of relevant organizations towards self-assessment completion.</p>
3	Preparation and first meeting of the CG	<p>The PD proposes a project manager (PM) for nomination with draft terms of reference for project management (ToR), well in advance for discussion. If applicable, the representative of each organization in the CG proposes a local project manager (LPM).</p> <p>In its first meeting, the CG should discuss, possibly amend, and approve the following:</p> <ul style="list-style-type: none"> <li>- PM nomination;</li> </ul>	PD, CG	<p>Appointment of a PM.</p> <p>Approval of the ToR.</p> <p>If applicable, appointment of the LPM in each participating organization with responsibilities defined.</p> <p>Agreed scope, objectives, time frame and schedule for</p>



No	Process Step	Details	Responsibility	Output
		<ul style="list-style-type: none"> <li>- LPM nomination and agreement on their authority for managing the project in their respective organization;</li> <li>- ToR;</li> <li>- Scope and objectives of the self-assessments;</li> <li>- The milestones, including when the CG approval is requested, and the corresponding general schedule.</li> </ul> <p>The PM and the LPMs should neither answer questions nor analyse them.</p>		<p>the self-assessment project. Documentation of these decisions and commitments (e.g., minutes of meeting)</p>
4	Support, consultant and/or partnership requests to be considered	According to the national organization and the self-assessment scope, partnerships may be necessary to adequately perform the self-assessment. A consultant may be engaged if the State has lack of experience in conducting self-assessment. Support can be sought as necessary either from the IAEA or experienced States.	PD, PM	Access to external support and advice on self-assessment.
5	Prepare national self-assessment plan	<p>According to phase and taking into account any national specificity, the PMT should develop a comprehensive national self-assessment plan, and decide on questionnaires and distribution amongst relevant organizations.</p> <p>Consideration should be given to:</p> <ul style="list-style-type: none"> <li>- Goals of self-assessment according to objectives and scope defined by the CG;</li> <li>- Assessment criteria finalized;</li> <li>- Detailed organizational breakdown with responsibilities defined;</li> <li>- Timelines and project planning;</li> <li>- Coordination issues and interfaces.</li> </ul>	PMT	Draft national self-assessment plan

No	Process Step	Details	Responsibility	Output
6	Prepare local self-assessment plans	Based on the national self-assessment plan, every participating organization should plan for local implementation of self-assessment. It should make available adequate resources, define timelines and responsibilities. At this stage, respondent team(s) (RT) and analyst team(s) (AT) should be identified. The AT members should not be the same as the members of the RT. The AT members should be of sufficient experience to make detailed judgments about all responses to the questionnaire in accordance with the agreed criteria.	PMT, LPMT	Draft local self-assessment plans with resources (RT and AT) and timelines
7	Finalize complete self-assessment plan	Consolidate all local self-assessment plans and ensure their correct coordination to meet draft national self-assessment plan and expectations.	PM, PMT	Final national self-assessment plan
8	Approve national self-assessment plan and communicate widely in participating organizations	The CG approves national self-assessment plan with possible amendments and commits itself to its full implementation. At this occasion and during the preparation step, the PM and the LPMs should communicate widely on self-assessment in such a way that the objectives of self-assessment are fully understood and accepted by all concerned organizations.	PD, CG	Final national self-assessment plan approved and staff is involved and supportive

III.2. A PROCESS MAP FOR STEP 2: ANSWERING

No	Process Step	Details	Responsibility	Output
1	INPUT: national and local self-assessment plans and background materials. Question-sets and associated criteria adapted to each participating organization.	All relevant materials, questionnaires and tools should be given to the RT (which comprises individuals having the expertise and experience to cover the spectrum of activities within the scope of the self-assessment).	PMT	Comprehensive documentation and other necessary resources facilitate the answering step.
2	Deliver training sessions for the RT	The PMT should organize training sessions with the assistance and in coordination with the LPM. Cross organizational sessions may be arranged to ensure harmonization. Support from the IAEA could be provided. Training should include the details of self-assessment questionnaire, understanding of scope, objectives and the answering process and, if used, self-assessment Software (e.g., IRIS software). Performance criteria developed with the questionnaire could be discussed with the RT for them to gain awareness on expectations.	PMT, IAEA, other external supports	The RT competent to answer all questions in the agreed scope of the self-assessment.
3	Responding to the questionnaire	The RT should provide thorough, in-depth descriptive responses to the self-assessment questionnaire together with all documentary evidence necessary to support the answers. The responses should describe the current situation within the organizations and care should be taken to avoid making aspirational responses, such as desired or planned improvements not yet achieved. Descriptive responses can be tricky and training should have addressed this aspect. Care should be taken in writing the responses so that they are neither too concise, thus failing to fully explain the current status, nor too detailed so that the essence is lost.	RT and co-opted members	Fully developed responses to questions from all areas within the scope of the self-assessment.

No	Process Step	Details	Responsibility	Output
		<p>Similarly, collecting documentary evidence can also be tricky. Careful consideration should be given to what evidence is sufficient to support the answer given. No additional material would then be required.</p> <p>Responding to the questionnaire is a time consuming and resource intensive task. It is advisable to complete it within a manageable timeframe usually as group exercises in which the whole or subsets of the RT are present. Care should be taken to avoid giving responses individually.</p>		
4	Quality check of responses	Descriptive responses and their documentary evidence should be checked by the LPMT for quality, consistency and completeness.	LPMT	Confidence that the answers have been completed adequately and are ready to be forwarded to the AT.
5	Finalization of response file	A clear and consistent document containing all responses to the questionnaire should be prepared by the RT, using a template agreed at the outset of the self-assessment project.	RT	Responses file with the essential documentary evidence in hard copy and / or electronic form, as appropriate.

### III.3. A PROCESS MAP FOR STEP 3: ANALYSIS

No.	Process Step	Details	Responsibility	Output
1	<b>INPUT:</b> responses file with documentary evidence in hard copy or electronic form, as available.	<p>As far as is practical, the AT should be independent from the RT.</p> <p>The AT members should be fully trained for their tasks. They should be informed about the relevant procedures, which cover the analysis activities.</p> <p>There should be an 'entrance meeting' to transfer all information from previous steps to the AT with the participation of: the LPM, respondent team leader and the AT members and possibly the PM. The participation of the RT Members should be welcomed. If necessary they can further explain their answers, or be requested to provide further information or evidence. The agenda should include presentation of the RT report, questions and answers session.</p>	LPM, RT, AT, PM	The AT competent and adequately resourced to analyse the responses to the questionnaire
2	Launch analysis	<p>The AT should be provided the information on the scope and extent of the analysis step. The answers should be distributed to the AT members, as appropriate. Preliminary comments from the AT members should be obtained.</p>	LPM, AT	Analysis begins
3	Analysis	<p>Analysis includes the following actions:</p> <ul style="list-style-type: none"> <li>- To assess the completeness of responses and their relevance;</li> <li>- To review the answers against the agreed assessment criteria;</li> <li>- To review the provided evidence and references for the objectivity of the answers;</li> <li>- To clarify answers, when needed;</li> <li>- To provide a structured, concise report on the analysis performed (analysis report), including recommendations and justifications.</li> </ul>	AT	Formal, structured review of the responses and drafting of a report of the analysis step.

No.	Process Step	Details	Responsibility	Output
4	Validation of the analysis	The results are presented to the LPM and the RT in order to ensure compliance with the self-assessment procedure and to resolve conflicts, if any. There may be a difference of opinions in interpreting questions/ responses between the RT and the AT; in such cases the LPM has the final word.	AT	Assurance that the respondent and analysis steps have been conducted appropriately, in accordance with the requirements and scope of the self-assessment.
5	Analysis Report distribution	Report to senior management of the organization on: methodology, results, gap justification, evaluation of every conclusion and suggestions for the actions. Report to the PM who ensures for coherence. In this regard, the PMT should assist the LPM and the senior management if needed. Consolidated report is shared with all CG members.	LPM, AT, PMT	Analysis report validated, consolidated and shared. Documentation on evaluation and suggestions for action plan.

### III.4. A PROCESS MAP FOR STEP 4: ACTION PLANNING

No.	Process Step	Details	Responsibility	Output
1	<b>INPUT:</b> analysis report	The analysis reports provide the raw material for developing actions for the continuous improvement of the safety infrastructure for a nuclear power programme.	PM	Final analysis report is sent for action plan preparation to senior management of each participating organization and the LPM
2	Each organization prioritizes analysis findings and accordingly develops a local draft action plan; the PM consolidates these plans.	Based on the analysis report, each participating organization (LPM) prepares a tentative local action plan (LAP) with tentative resource planning and responsible managers for implementation. To support priority setting and preparation of the tentative LAP, grouping of the findings of each topic addressed in the analysis step is useful. Conclusions and recommendations regarding how well the assessment criteria were fulfilled may be grouped in four categories: <ul style="list-style-type: none"> <li>- No compliance;</li> <li>- Little compliance;</li> <li>- Fair compliance;</li> <li>- Full compliance.</li> </ul> A category grouping offers a good distinction between topics that are fully achieved relative to those that inadequately comply with the criteria. Four category grouping allows also trending. The LPM submits the LAP to the organization's senior management for validation, and the proposal is sent to the PM. The PMT should consolidate these LAPs in a single coherent tentative integrated action plan (IAP), in collaboration with every LPM.	LPM, PMT	Analysis results divided into four groups in order to identify priorities for improvement Draft consolidated action plan with tentative resource planning and responsible individuals A tentative IAP
3	The CG discuss the tentative IAP and enact an amended	The tentative IAP should be extensively discussed at the CG, CG and possibly amended after consultation of the organization	CG	Definitive action plan approved and commitment of each

<b>No. Process Step</b>	<b>Details</b>	<b>Responsibility</b>	<b>Output</b>
	Integrated Action Plan		participating organization for implementation
	<p>concerned by the change proposals. The CG ensures that for every action in the plan, there is an organization clearly assigned for its implementation. The amended IAP should be enacted after a formal meeting of the CG.</p> <p>Setting of improvement priorities may be necessary since available resources (e.g., manpower, time and funds) may not allow all necessary actions to be taken at the same time.</p>		
4	<p>In each participating organization, senior management develop a workplan to address (eliminate or strengthen) every identified improvement area under his line of responsibility.</p>	<p>Based on the updated IAP, the local action plans (LAP) are also updated. The responsible managers are identified by the LPMT and assigned by senior management of each participating organization for implementation. Senior management of each organization ensures that there is a person clearly responsible for each action. The line manager has best understanding of what it takes to address the issue (in terms of practical activities, manpower, funds and time) and should contribute to finalize the LAP. Coordination for each organization is ensured by the LPMT, the PM ensures overall coherence.</p>	<p>Senior and line management LPMT</p> <p>Work-plan for each improvement topic</p> <p>Clearly assigned line-management responsibility for the implementation of every action identified in the Action Plan for the organization.</p>
6.	<p>Review Local Action Plans.</p> <p>The LAP is reviewed and priorities with time-lines for their execution are set. This prioritized and time lined file of local work plans forms the core of the action plan. Senior management establish an implementation sequence for the LAP. The PM updates and finalizes the IAP and for signature by CG members. Every participating organization should commit itself to the completion of this plan in the agreed timeframe.</p>	<p>Coordination LPMT, PM</p> <p>Senior and line management</p>	<p>The IAP contains prioritized actions and is signed by CG members.</p>
7	<p>Action plan reviewed by peers</p>	<p>Government, PD, CG</p>	<p>Decision on external peer review.</p>
8	<p>International peer review.</p>	<p>To complete the organization's understanding of its current</p>	<p>Government, Updated action plan, based on</p>



<b>No.</b>	<b>Process Step</b>	<b>Details</b>	<b>Responsibility</b>	<b>Output</b>
9	Output	<p>status against the criteria, a peer review may be organized. In due course, the results of the peer review should be reflected in the IAP and in the LAP.</p> <p>When all steps have been taken to identify and to prioritize the actions for the continuous improvement of the organizations.</p> <p>The IAP should be published and circulated widely, including to all those who have a part to play in its implementation.</p>	<p>PD</p> <p>Government, PD, CG</p>	<p>the suggestions and recommendations of peers external to the organization.</p> <p>Publication of the IAP</p>

### III.5. A PROCESS MAP FOR STEP 5: IMPLEMENTATION AND FOLLOW UP

No.	Process Step	Details	Responsibility	Output
1	<b>INPUT:</b> prioritized integrated action plan and local action plans	The integrated action plan (IAP) has been made available to all interested parties, particularly to those who will take some part in its implementation (including all staff of the organization).	Government, PD, CG	Distribution of the IAP
2	IAP made available to all staff members of relevant organization, and self-assessment results actively communicated to all interested parties	It is essential that findings and conclusions of self-assessment are widely publicized and explained fully within the concerned organization so that everyone remains on board and contributes to implementation of the action plan. Dedicated presentations and communication actions could be led by the LPMT in every participating organization with the support of the PMT.	CG, PMT, LPMT	Raised awareness among staff members and understanding of the vision and objectives arising from the Action Plan.
3	Designated managers review and, if needed, update the LAPs for activities under their responsibility	Local action plans (LAP) are implemented in accordance with the agreed timescale and priorities under the authority of senior management.	Senior and line management	Updated LAPs for implementation
4	Ensure staff's commitment and motivation in implementing the plan	Motivational aspects should not be underestimated. Organizational and individual benefits should be stressed and, management should demonstrate its commitment to the improvements. Staff should be kept fully involved in the on-going implementation of the actions, ensuring that enthusiasm and support is maintained, even for the longer-term actions and those with significant implications for staff.	Senior and line management	Committed staff that understand and contribute to the on-going implementation of the Action Plan.
5	Incorporate the LAP and, if any its work plans, into the annual planning process of the organizations	Ensure that all actions are incorporated into the annual plans of the departments and other units of the organization.	Senior and line management	Organization's annual plans include all activities from the self-assessment action plan.
6	Implement the action plan	The action plan is implemented according to an appropriate sequence and in accordance with agreed timelines.	Responsible persons as designated in	Orderly, logical implementation of the self-assessment action plan in accordance with

No.	Process Step	Details	Responsibility	Output
7	Regular follow-up of progress with the implementation of the actions	<p>Regular follow-up should be done by introducing it as a permanent item in the management meeting agenda and also by the PMT (at least quarterly).</p> <p>A peer review (national or international, such as the IAEA's IRRS dedicated module) may be requested to ensure effective implementation in accordance with international requirements and good practices.</p>	PD, CG, senior and line management	Regular updates on the progress of implementing the actions and understanding of any changes to the plan as circumstances dictate.
8	Take corrective actions as needed to keep the implementation on course	<p>Corrective measures should be taken to ensure that actions taken are in line with the LAP and contribute to improve and/or strengthen the organization performance and the overall infrastructure for safety.</p> <p>If actions taken and investments made show little or no real improvements, the issue should be reviewed during CG and decisions made on whether to modify or discontinue the implementation of that particular work plan (i.e., return to step 3).</p> <p>Any event which could affect the IAP and its implementation should be reported to PM and the PMT for deciding possible changes and for amending IAP as necessary.</p>	PD, CG, senior and line management	Updated LAP
9	Audit action implementation, if needed	If in doubt, the implementation of the actions may be externally audited, and actions taken as recommended by the auditors to maintain progress (or discontinue implementation of a problematic actions). If needed, return to step 3 or have a particular action discontinued.	Senior Management, PD, CG	External audit reports, updated local action plan, progress reports and final results for each topic.

No.	Process Step	Details	Responsibility	Output
10	Progress report of action implementation and results achieved	Reporting should be done inside and outside the organizations. For example, reports should be delivered to the Government by the PD on a regular basis Repeat steps 3 - 10 until the actions needed are done and the action is approved as “completed” by the CG.	Senior Management	Progress reports indicating the extent of implementation of the actions
11	Evaluation of how implementation of the actions is affecting organizational performance	Organizations should ensure that the implementation of the actions is taking it closer to its desired results and objectives. Organizations should take prompt adjustments whenever needed. If the investment is not producing the expected results, the work plan should be reviewed, if necessary comprehensively for all topic areas.	Senior Management	Assessment of the increased organizations’ performance and adjustments to the Local Action Plan if necessary.
12	Finalization of implementation of all actions	A fully implemented action plan prepares organizations for its next self-assessment and therefore maintains the cycle of continuous improvement.	Government, PD	Improved organization performance and a decision on the scope and timescale of the next self-assessment

## **APPENDIX IV: PRACTICAL GUIDANCE FOR THE ANSWERING STEP**

If applicable, the RT should consider the result and content of the previous self-assessment prior to engaging in the answering step.

Prior to answering the primary questions, the RT should make a collective decision regarding the status of development and implementation of the SSG-16 actions to conclude what answer (yes or no) should be given to the primary questions. The RT should seek to fully understand the objective and the purpose of the corresponding issue. To this aim, a thorough reading and understanding of the relevant SSG-16 section and corresponding IAEA Safety Requirements is recommended before answering the primary-questions.

Answers provided to primary and subsidiary questions should reflect the current factual situation at the time of the answering step, not the desired or planned state. Detailed answers should be elaborated in response to the subsidiary questions to support and specify the claim of an action being implemented or not.

For the case when the answer to the primary question is positive, evidence should be provided to detail what actions have been implemented, who are the responsible organizations involved and which is their contribution to the implementation of the action, what aspects have been taken into account in the implementation of the action, how is the implementation of the action reviewed, etc. Relevant documents should be attached to support the answer. Identification of what is still needed to fully complete an action should also be provided.

For the case when the answer to the primary question is negative, the respondent should identify the main reasons for which the action has not been considered as implemented and should also provide information on any measure planned to implement the action (including evidence of such plans). The relevant documents should be attached.

Answers should aim at facilitating the identification of gaps during the subsequent analysis step.

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## CONTRIBUTORS TO DRAFTING AND REVIEW

Bouyt G.	International Atomic Energy Agency
Chi Dung L.	Vietnam Agency for Radiation and Nuclear Safety (VARANS), Vietnam
Cletienne M.	International Atomic Energy Agency
Girard J.	Consultant, France
Grlicarev I.	Slovenian Nuclear Safety Administration, Slovenia
Jubin J.-R.	International Atomic Energy Agency
Lignini F.	AREVA, France
Nicic A.	International Atomic Energy Agency
Okano K.	Japan Nuclear Energy Safety Organization (JNES), Japan
Tronea M.	National Commission for Nuclear Activities Control (CNCAN), Romania
Ueda Y.	Japan Nuclear Energy Safety Organization (JNES), Japan







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#### *Jean de Lannoy*

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