

IAEA

Preparing for an IRRS Mission – Guidance for Reviewers

June 2017



*This document has been produced with the financial assistance of the European Union.
The views expressed herein can in no way be taken to reflect the official opinion of the European Union.*

CONTENTS

I. INTRODUCTION 3

II. AN IRRS MISSION – WHAT IT IS AND WHAT IT IS NOT 3

 II.1. WHAT IT IS 3

 II.2. WHAT IT IS NOT 3

 II.3. TYPES OF MISSION..... 4

III. THE IRRS MISSION TEAM – YOUR EXPECTED EXPERTISE AND ROLE 4

 III.1. TEAM COMPOSITION..... 4

 III.2. YOUR PRE-MISSION COMMUNICATION 5

 III.3. TEAMWORK IN GROUPS..... 6

IV. PRE-MISSION DOCUMENTS AVAILABLE FOR YOU 7

V. THE RELEVANT IAEA SAFETY STANDARDS – YOUR FIRM BASIS 7

 V.1. IAEA SAFETY STANDARDS IN GENERAL 7

 V.2. IAEA SAFETY STANDARDS IN IRRS 8

 V.3. IAEA SAFETY STANDARDS IN YOUR PREPARATIONS 9

VI. THE ADVANCE REFERENCE MATERIAL – HOW TO READ IT? 10

 VI.1. CONTENTS OF THE ARM..... 10

 VI.2. REVIEWING THE SELF-ASSESSMENT..... 10

 VI.3. REVIEWING THE ARM SUMMARY REPORT 12

 VI.4. REVIEWING THE ARM OF A FOLLOW-UP MISSION 12

VII. THE IRRS MISSION REPORT TEMPLATE – HOW WILL YOU USE IT? 13

VIII. FIRST IMPRESSIONS AND YOUR PRELIMINARY QUESTION SET – WHY? 14

 VIII.1. YOUR FIRST IMPRESSIONS IN AN INITIAL MISSION..... 14

 VIII.2. YOUR FIRST IMPRESSIONS IN A FOLLOW-UP MISSION 15

 VIII.3. YOUR PRELIMINARY QUESTION SET..... 15

IX. REPORTS OF PREVIOUS MISSIONS – WHAT CAN YOU LEARN? 16

X. CONCLUDING HINTS 16

APPENDIX I: TEMPLATE OF FIRST IMPRESSIONS IN AN INITIAL MISSION 18

APPENDIX II: TEMPLATE OF FIRST IMPRESSIONS IN A FOLLOW-UP MISSION 20



I. INTRODUCTION

If you are one of the lucky experts slated to participate in an IRRS mission, welcome onboard! Rest assured that being on an IRRS team involves far more than just tedious work – it is also a challenge and an exciting opportunity to broaden your knowledge about your professional community. If you are well prepared, you will have a really great time working in the mission.

Besides offering guidance on preparation for the mission, this document also seeks to provide you with a rather informal perspective on how an IRRS mission is carried out.

This document contains frequent references to the IRRS website of IAEA¹ and its sub-site that is restricted for Reviewers². As a Reviewer in a mission you will have access to the mission data on this site. Please be aware that this site contains most of the factual information related to the actual mission that you may need in your review work.

Another important source of information that you will need in your preparations is the IRRS Guidelines, also available from the IRRS website³. Please read these carefully, as the present guidance is an addition to, and not a substitute for, the general IRRS Guidelines. (You will be periodically reminded of this throughout this document.)

It must be stressed that a successful IRRS mission relies on great teamwork and you are expected to be a team player!

II. AN IRRS MISSION – WHAT IT IS AND WHAT IT IS NOT

II.1. WHAT IT IS

The IRRS Guidelines³ defines IRRS as a mission that *“provides a peer evaluation of the host state’s regulatory infrastructures in relation to the relevant IAEA safety standards. IRRS missions provide for discussion among experienced regulators regarding both technical and policy issues of a regulatory nature.”* The emphasis is on peer review, i.e. a thorough examination, and comparison with the respective IAEA safety requirements, of the host regulatory infrastructure by experts like you.

The objectives of an IRRS mission are listed in the IRRS Guidelines, the most important messages of which are summarized here. Thus, IRRS missions are primarily aimed at providing

- i) the host country with a review of its governmental, legal and regulatory framework for safety and with findings (recommendations and suggestions) for possible further improvements, based on the requirements and guidance in the relevant IAEA safety standards;
- ii) participants (both hosts and Reviewers) with opportunities to share experience, exchange information and have discussions on their regulatory approaches.



II.2. WHAT IT IS NOT

An IRRS mission is not an inspection. It is not meant to inspect the activities of the regulator or of any operator/licensee in the host country. An IRRS mission shall never rate or form judgement on the quality or efficiency and effectiveness of the regulatory framework in the country; neither shall it compare regulatory bodies or activities of different countries.

¹<https://gnssn.iaea.org/regnet/irrs/Pages/default.aspx>

²<https://gnssn.iaea.org/sites/auth/regnet/IRRS/default.aspx>

³http://www-pub.iaea.org/MTCD/publications/PDF/SVS-23_web.pdf

In some past IRRS missions, host representatives were reluctant to accept recommendations from the IRRS team as these were seen as some kind of rating, or implying criticism. While it is the task of the team lead to challenge and correct such misperceptions if they arise, all team members are responsible for closely adhering to the IRRS Guidelines, in particular with regard to the purpose and nature of an IRRS peer review.

II.3. TYPES OF MISSION

There are two types of IRRS missions: initial and follow-up. In an initial mission the team carries out a systematic peer review of the areas in the scope of the mission against the relevant IAEA safety standard requirements. This review is based on the documents available, interviews with the host counterparts and your observations on the regulatory practices (practical details of these shall be discussed later in this guide).

A follow-up mission is conducted in order to review the progress made by the hosts in addressing the issues raised in the recommendations and suggestions (findings) offered by the initial mission. For the sake of completeness it is noted that a follow-up mission may also include areas not reviewed in the initial missions (then called an extended follow-up mission).

Naturally, the two types of missions entail slightly different activities and require that you prepare for them differently beforehand. In this guide, whenever relevant, these differences will be pointed out.

III. THE IRRS MISSION TEAM – YOUR EXPECTED EXPERTISE AND ROLE

III.1. TEAM COMPOSITION

The IRRS team is recruited from experts in regulatory activities from IAEA Member States and from the IAEA staff. The team composition is discussed in the IRRS Guidelines; we underline here only those details that may be important in your preparations for the mission.

The team leads (Team Leader, Deputy Team Leader, IAEA Coordinator, IAEA Deputy Coordinator) are responsible for organizing, coordinating, leading and keeping together the team, determining the working methods (e.g. distribution of responsibilities, reporting, scheduling, discussion forms, etc.), setting the tasks of reviewers and overseeing how these are being carried out. In some missions, members of the team leads also have assigned review areas (see Table 1 below and the notes there), but this is not necessarily the case in all missions.



The bulk of the peer review is performed by the IRRS Review Team Members (in brief “Reviewers”) and, in some missions, by IAEA Review Area Facilitators assigned to provide assistance to Reviewers.

You are expected to assist and cooperate with the Team Leader and the other members of the team leads with a view to obtaining the best mission outcome in the most effective way possible. Teamwork is the very essence of IRRS, and you are part of the team (c.f. Section III.3.).

Table 1 shows an example of a possible grouping of a typical IRRS team. Note however, that the actual size and composition of your team may differ as it depends on both the scope of the mission (as agreed by the inviting host and the IAEA) and the extent of the nuclear program in the host country.

Table 1: A possible composition of an IRRS Team

Notes	Team activities ¹⁾
1) 2)	Team Lead (TL, DTL, TC, DTC)
2)	Group A Governmental R&F (mod 1) Global nuclear safety regime (mod 2) Interface with security (mod 12)
3)	Group B Responsibilities of the regulatory body (mod 3) Management system (mod 4) Development of regulations and guides (mod 9)
3) 4)	Group C Authorization (mod 5) Review and assessment (module 6)
3) 4)	Group D Inspection (mod 7) Enforcement (mod 8)
3) 5) 6)	Group E – Facilities/Activities Radiation sources applications Research reactors Fuel cycle facilities Waste management facilities Decommissioning Transport of radioactive material
3)	Group F Emergency preparedness (mod 10)
6)	Group G – Other optional thematic areas (mod 11) - control of medical exposures - control of chronic exposures (radon, NORM and past practices) and remediation
	Administration

Notes in the table:

- 1) The IAEA Deputy Coordinator (DTC) is to be assigned to a Group
- 2) The Team Leader (TL) usually does not join any Group. The Deputy Team Leader (DTL) supports Group A or Group E
- 3) Groups C through E review the respective contents of the regulations and guides (if in scope) and provide input to Group B
- 4) Groups C and D review the respective regulatory activities in general and the NPP-related activities in specific
- 5) Group E reviews all core regulatory activities (authorization, review and assessment, inspection, enforcement) for the specific facilities and activities in the scope of the mission and provides input to Groups C and D
- 6) For small nuclear programs there is no Group E and the Facilities and Activities are to be reviewed by Groups C, D, F and G. Experts allocated to Facilities/Activities (Group E) in medium and large missions may need to work together with the experts in Group G.

III.2. YOUR PRE-MISSION COMMUNICATION

In many cases (especially when you are part of an IRRS team for the first time) you may not know many of the other team members with whom you will be working. Nevertheless, you will need to communicate with some of them during the preparation phase. Please remember that such communication is not only a necessary way of exchanging important mission information, but also the first step in developing team spirit, an essential ingredient of a successful IRRS mission.

Pre-mission communication may be necessary in the following cases:

- i) The IAEA Administrator requests your personal data for administrative purposes. Be sure to send the requested data as soon as possible; further on, the Technical Cooperation Assistant may request you to input your data into the IAEA information system to arrange travel and payment;
- ii) If you are uncertain about your mission role, or need further information or documents in your preparations for the mission, please do not hesitate to contact the IAEA Team Coordinator;
- iii) Should you find that pre-mission consultation with team members in charge of the same area as you, or working in the same group with you (as discussed in the next section) is necessary, you are encouraged to contact them and discuss preparatory issues together;
- iv) Prior to the mission you are expected to communicate your first impressions (see also Chapter VIII.) to the Team Leader and to the IAEA Coordinator;
- v) **HOWEVER**, you are not to contact anybody from the host country representatives, not even your potential counterpart in your review area. Although it may seem a good idea, this could have

unexpected adverse consequences, so please refrain from it. If you are seeking clarification or need more information, please contact the IAEA Coordinator.

III.3. TEAMWORK IN GROUPS

As shown in Table 1 above, the team is divided into groups (A through G in the example). The number of Reviewers in a group depends on the scope of the mission. Yet, in the majority of cases (apart from very small teams and follow-up missions) each group contains at least two Reviewers and one of the group members may be assigned as the group leader.



Some groups review a homogeneous area (e.g. emergency preparedness, or some of the optional additional areas); others cover several different review areas/IRRS Modules (e.g. authorization and review and assessment; or inspection and enforcement). Reviewers in a group agree at the initial team meeting their working method for conducting interviews and site visits, recording observations, reporting in team meetings and writing the mission report (c.f. below).

Basically, there are two approaches; both have successfully been used in past missions: 1) working together all the time through all review areas of the group, or 2) working separately, concentrating on different review areas. Note that the options of working alone or together are not always available. E.g. very often members of group E are dedicated to the various review areas of the group and necessarily need to work alone. When deciding on the working approach of your group, the following aspects ought to be taken into account.

Working together:

- each of you is expected to be familiar with all of the review areas assigned to the group;
- while one is conducting interviews the other can take notes;
- observations and experiences can be discussed;
- “two heads are better than one”;
- you can provide consolidated review results (observations, report texts);
- differences in previous IRRS experience are compensated for.

Working separately:

- group members may have different, specific areas of expertise;
- IRRS experience and skills are needed from all participants;
- more attention can be paid to separate review areas;
- group members have the opportunity of attending several site visits;
- report drafting may be more effective and efficient;
- when a single host counterpart is responsible for a review area, a single reviewer will make the interview, thus the host is less likely to feel pressured by a reviewer majority .

You are expected to assess the actual situation taking the above into consideration and, at the start of the mission, your group needs to decide which working method to follow. Note that for groups with more than two members and with a reasonable work distribution, the advantages of both working methods can be exploited. However, note that in most cases, unless there are special circumstances, joint work is selected.

Conducting interviews is the most important and, at the same time the most delicate, part of the mission. You need to be well prepared for that. Details of the interview preparations and techniques shall be given in separate guidelines on conducting a mission.

IV. PRE-MISSION DOCUMENTS AVAILABLE FOR YOU

As with most important endeavours, missions also begin with learning, reading, and paperwork. Be advised that, as a minimum, you need to invest a week into your preparations for an IRRS mission. Therefore, it is very important to explain this to your line manager when asking for her/his consent to your participation.

Prior to a mission you will be required to review a large amount of material. Listed below are some of the most notable documents, which will be discussed in the following sections.

General IAEA documents to be aware of:

- IRRS Guidelines;
- IAEA safety standards related to the mission in general (including primarily the latest version of GSR Part 1: *Governmental, Legal and Regulatory Framework for Safety*) and to your review area in particular⁴ (for more see in Chapter V.);
- Standard IRRS Mission Report Template (see also in Chapter VII.).

Documents related to the specific mission that you will need to study:

- Parts of the Advance Reference Material (ARM, compiled for the mission by the host organizations) that are generally relevant for the mission or specifically related to your review area (for details, see Chapter VI.);
- The initial IRRS Mission Report in case you are preparing for a follow-up mission;
- The report of the previous follow-up mission in case you are preparing to a new initial mission;
- IRRS Mission Reports of missions conducted in countries whose nuclear programs are similar to that of the actual host country (see Chapter IX.).

Documents specific to the mission are different for initial and for follow-up missions, as will be discussed in Chapter VI.

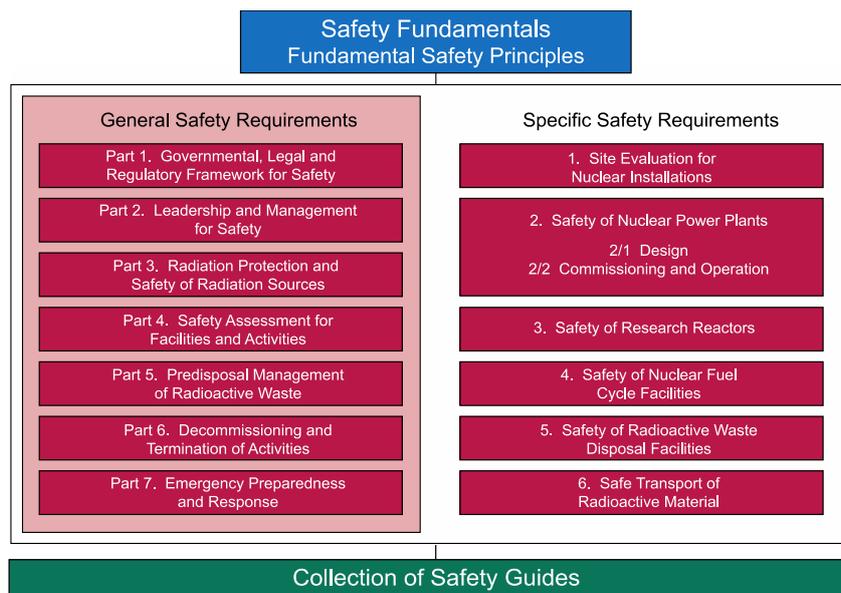
V. THE RELEVANT IAEA SAFETY STANDARDS – YOUR FIRM BASIS

V.1. IAEA SAFETY STANDARDS IN GENERAL

Since the essence of the IRRS peer review is the comparison of the host's regulatory infrastructure and framework to respective IAEA Safety Requirements (see Section II.1.), as a Reviewer you are expected to be fully familiar with the safety standards related to your review area(s).

The IAEA safety standards are organized in a hierarchical structure, with the Safety Fundamentals standing on top (the 10 fundamental safety principles therein are seldom referred to directly in IRRS

Table 2: IAEA Safety Requirement publications



⁴<http://www-ns.iaea.org/standards/default.asp?s=11&l=90>

missions). The next level comprises IAEA Safety Requirements, which shall be applied in order to meet the safety principles. IAEA Safety Guides represent the subsequent level, describing recommended ways of meeting the safety requirements. In a nutshell: for an IRRS mission requirements are obligations, whereas guides are opportunities.

A cross-cutting structuring of the IAEA safety standards reflects their practical use. General safety standards are to be applied with no regard to specific facilities or activities, and specific safety standards relate to specific facilities or activities. The actual set of IAEA Safety Requirement series is shown in Table 2.

V.2. IAEA SAFETY STANDARDS IN IRRS

The IRRS Guidelines summarize the safety standard requirements relevant to the various IRRS Modules and review areas. For your convenience a brief (and updated) list is given in Table 3.

Table 3: IAEA safety standards requirements and guides relevant in IRRS missions

Module	Review Area	Safety Requirements	Requirement	Safety Guides
1	Governmental responsibilities	GSR Part 1 (rev. 1) GSR Part 3 GSR Part 5, WS-R-5, SSR-5	1-7, 10-13 2, 18, 29, 37	
2	Global Nuclear Safety Regime	GSR Part 1 (rev. 1)	14, 15	
3	Regulatory responsibilities	GSR Part 1 (rev. 1) GSR Part 3	16-36 3, 8, 10-14, 19-20, 29, 32, 35	GS-G-1.1; GSG-4; RS-G-1.4
4	Management System	GSR Part 1 (rev. 1) GSR Part 2 GSR Part 3	19 2-14 3	GS-G-3.1
5	Authorization (general and NPP)	GSR Part 1 (rev. 1) GSR Part 3 NS-R-3, GSR Part 4 SSR-2/1, SSR-2/2	23, 24 6-8 21 4,6,7,11,25,27,31	SSG-12; GS-G-1.2; GS-G-1.3; GS-G-1.4
6	Review and Assessment (general and NPP)	GSR Part 1 (rev. 1) GSR Part 3 GSR Part 4	25, 26 13 1-24	GS-G-1.2
7	Inspection (general and NPP)	GSR Part 1 (rev. 1)	27-29	GS-G-1.3
8	Enforcement (general and NPP)	GSR Part 1 (rev. 1)	30, 31	GS-G-1.3
9	Regulations and Guides	GSR Part 1 (rev. 1)	32-34	GS-G-1.4
5-9	Research reactors	SSR-3		SSG-12; GS-G-1.2; GS-G-1.3; GS-G-1.4
5-9	Fuel cycle facilities	NS-R-5 (rev. 1)		SSG-5; SSG-6; SSG-7; SSG-12; SSG-15; GS-G-1.2; GS-G-1.3; GS-G-1.4
5-9	Radiation sources	GSR Part 3		RS-G-1.9; GS-G-1.5
5-9	Waste facilities	GSR Part 5 SSR-5		GSG-1; GSG-3; GS-G-1.2; GS-G-1.3; GS-G-1.4; SSG-12; SSG-14; SSG-40; SSG-41; WS-G-6.1
5-9	Decommissioning	GSR Part 6		WS-G-2.1; SSG-12; GS-G-1.2; -1.3; -1.4

Table 3: IAEA safety standards requirements and guides relevant in IRRS missions

Module	Review Area	Safety Requirements	Requirement	Safety Guides
5-9	Transport	SSR-6; TS-R-1		SSG-26; SSG-33; TS-G-1.1 through -1.6
5-9	Occupational radiation exposure	GSR Part 3	19-28, 52	RS-G-1.1; -1.2; -1.3
5-9	Control of medical exposure	GSR Part 3	34-42	RS-G-1.5
5-9	Control of radioactive discharges and materials for clearance; environmental monitoring	GSR Part 3 GSR Part 5		WS-G-2.3; RS-G-1.8
5-9	Control of chronic exposures	GSR Part 3		WS-G-3.1
10	Emergency preparedness and response (regulatory aspects)	GSR Part 1 (rev. 1) GSR Part 7 GSR Part 3	8	GS-G-2.1; GSG-2

It is to be noted that, as well as the Safety Guides listed in Table 3 that are directly related to the review areas, there exist a great number of Safety Guides developed for specific facilities or activities, e.g.: *SSG-2: Deterministic Safety Analysis for Nuclear Power Plants*, or *SSG-22: Use of a Graded Approach in the Application of the Safety Requirements for Research Reactors*. You may want to use these Guides during the mission. The full list of valid IAEA safety standards⁵, or lists grouped according to facilities and activities are available from the IAEA website.

If the safety and security of the radioactive sources is in the mission scope then the IRRS Code of Conduct on the Safety and Security of radioactive sources and supplementary Guidance on the Import and Export of Radioactive Sources are relevant.

V.3. IAEA SAFETY STANDARDS IN YOUR PREPARATIONS

When preparing for an IRRS mission, you should thoroughly study the IAEA safety standards related to your review area (Table 3). This is obviously important since your review is expected to result in:

- recommendations on the differences or gaps between the host's regulatory practices and the IAEA safety requirements – for this you need to be fluent in the respective safety requirements;
- suggestions on further improving the regulatory framework or practices of the host country – for this you may need the support of the respective safety guides;
- conclusions that the regulatory framework and practices meet the IAEA safety standard requirements;
- identification of good practices.

Whatever your review area, you need to be fully aware also of the requirements in GSR Part 1 (*Governmental, Legal and Regulatory Framework for Safety*), as non-compliance identified in a specific area can often be the consequence of a more fundamental issue related to the governmental, legal or regulatory framework. In such cases the general issue (root cause) needs to be addressed.

Always keep in mind that, when formulating your findings (recommendations or suggestions) – and also when commending a good practice – you must refer to and quote the relevant wording of the IAEA safety standards. To be able to do so, you need to be familiar with the text of the standards. An example of such a formulation is given in Table 4.

⁵<http://www-ns.iaea.org/standards/documents/pubdoc-list.asp?s=11&l=83>

Table 4: Table of findings

RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: <i>Assessment of the lessons learnt from the TEPCO Fukushima Daiichi accident, in particular from the stress test analyses, is not yet finalised. Relevant corrective actions and safety improvements need to be enforced by the Regulatory Body. In addition, the measures identified in the national report submitted to CNS Review Meeting have not been yet fully implemented. Note that this issue is recognized in the Action Plan.</i>	
(1)	BASIS: GSR Part 1 Requirement 15 para 3.4 states that “... The regulatory body shall require appropriate corrective actions to be carried out to prevent the recurrence of safety significant events. This process involves acquisition of the necessary information and its analysis to facilitate the effective utilization of international networks for learning from operating experience and regulatory experience.
S1	Suggestion: The regulatory body should consider making all necessary arrangements to finalise the identification of the lessons learned from the TEPCO Fukushima Daiichi accident. As a result of this, the Regulatory Body should require appropriate corrective actions to be implemented by the NPP and should determine appropriate actions to improve the regulatory framework, in a timely manner.

Note also here, that a perfectly reasonable outcome of your review may be that no recommendations or suggestions are made because the host country meets the safety requirements related to your review area.

VI. THE ADVANCE REFERENCE MATERIAL – HOW TO READ IT?

VI.1. CONTENTS OF THE ARM

The Advance Reference Material (ARM) is the collection of those documents which are provided by the host country to the Reviewers prior to the IRRS mission. The Reviewers use the ARM to obtain a picture on the environment, status and functioning of the host’s regulatory framework. In principle, the ARM should be available two months prior to the mission, yet in practice it may happen that you have less time than this to review the ARM – so be prepared for that.

Typical content of an ARM for an initial mission (refer to the IRRS Guidelines for details) is:

- a) National governmental and legal framework relevant to the scope of the mission
- b) Organization and functioning of the regulatory body
- c) Self-Assessment Report and the associated Action Plan
- d) ARM Summary Report
- e) Further documents relevant for the peer review (e.g. National Reports to the review meetings of international conventions, annual reports to the government)

The ARM for a follow-up mission is addressed in Section VI.4. There may be some follow-up missions that also include new areas to review (“extended follow-up missions”). In such cases, both types of ARM are provided by the host, and your task depends on whether you are dealing with areas in the follow-up or in the extended parts.

VI.2. REVIEWING THE SELF-ASSESSMENT

The Self-Assessment Questionnaires are standard sets of questions (available on the IAEA website⁶) for each IRRS review area, posed in such a way that you can test compliance with the IAEA Safety Requirements



⁶<https://gnsn.iaea.org/CSN/SA/SAT%20Question%20Sets%20Word%20version/Forms/AllItems.aspx>

related to the given area. We will discuss the Questionnaires only to the extent that is sufficient and useful for your introduction to their reading. For more details on the self-assessment tool (SARIS) refer to the respective page of the IAEA website⁷.

The Questionnaires are organized as follows: Primary Questions are posed on the fulfilment of the most important Safety Requirements. The answering process then branches out depending on whether the answer to the Primary Question was positive or negative. In the respective branches further True Subsidiary Question(s) or False Subsidiary Question(s) are asked and answered to give more details on compliance with the requirements, or on planned measures to become compliant, respectively. For each primary question, expectations are provided and exact references are given to the location of the respective Requirement in the standards.

5. AUTHORIZATION

5.1. GENERIC ISSUES

Related to GSR Part 1, Requirement 4, paragraph 2.12; Requirements 23 and 24, to GSR Part 4, Requirement 21

If Requirement 23 in GSR Part 1 is met

- Describe the roles and responsibilities for authorization, including competence available in the regulatory body and co-ordination and co-operation with other authorities involved
- List the types of authorizations and their application to various facilities and activities at their various life-cycles
- Describe in brief the authorization process exercised by the regulatory body including the formal requirements on the submittals and the processes of submitting the applications, evaluation of submittals, participation of stakeholders and public, decision making, setting conditions and controls;
- Describe how the regulatory decisions are formulated and recorded
- Describe the processes of appeal, license amendment, renewal, revocation

If Requirement 23 in GSR Part 1 is not met

- Describe any measures planned to establish an authorization process in line with the Requirement.

The self-assessment report contains the questions and answers as above, as well as the conclusions from the host's analysis of the answers. The hosts prepare their initial Action Plan based on the self-assessment report.

You are expected to carefully read through the Questionnaires related to your review area(s), the analysis and the related conclusions and Action Plan items. Below are some practical hints that may help you in reviewing and evaluating the answers.

- Take detailed written notes on all observations and questions that may arise when reading the answers and conclusions from the analysis. These notes will be very valuable at the end of your preparations.
- Check whether the answer indeed addresses the question. Quite often the answer to a question is formal and/or too general. In such cases, repeat the question in a more detailed form or pose equivalent ones in your notes.
- When the answers are too general or simply make references to paragraphs of certain legal vehicles:
 - Check if the referred documents are indeed relevant to the question;
 - Check also if the referred legal background supports the statement in the answer;
 - Ask (via the IAEA Coordinator) for translations of the referred texts if they are not available in the ARM. (If the text is available in the hosts' language, you may try Google Translate, but this does have limitations!)
- In many cases, answers are copy-pasted from previous ones. If you realize that, you may save time by recalling your conclusions when reading for the first time. You may wish to ask for more specific answers in your interviews.
- Take note of negative answers, in many cases they will lead you to findings.

⁷<https://gnsn.iaea.org/CSN/SA/SARIS%20download%20files%20and%20documents/SARIS%20Guidelines.pdf#search=saris%20guidelines>

- Take into account the correlation between questions or topics (e.g. Primary Question vs. subsequent True Subsidiary Questions; review and assessment with authorization; or management system with functioning of the RB). Contradicting answers may lead you to findings.
- At the end of your reading, formulate further questions based on your notes. You will correct, supplement or delete these questions when reading the ARM Summary Report and/or the IRRS Mission Report Template (see below).

VI.3. REVIEWING THE ARM SUMMARY REPORT

The general information on the country, its nuclear program and the regulatory body, the results of the self-assessment, including the conclusions and the foreseen actions are summarized by the host in a standardized report called the ARM Summary Report. The report is developed based on the format and content of the IRRS mission report template. The ARM Summary Report template contains questions (similar to those in the Self-Assessment Questionnaire but in a more condensed format) against which the hosts are expected to summarize the self-assessment results. (An example is shown in the enclosed figure.) Therefore, the ARM Summary Report has two key benefits: on one hand it provides a brief and legible summary of the main results and conclusions of the self-assessment, on the other hand it can also serve as basis for the preparation of the mission report (see also Chapter VII.).

You are expected to carefully read through the

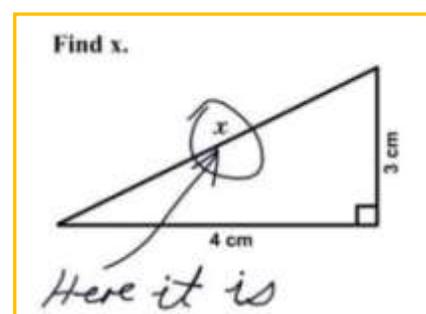
- 0th chapter (Back-ground) of the Summary Report in order to obtain a clear picture of the host;
- Section(s) related to your review area(s);
- Action Plan, in order to be aware of non-compliances that were recognized by the host.

Further practical hints to help you in reviewing and evaluating the ARM:

- Take notes on everything you feel relevant for further consideration;
- Check if the answers/text in the Summary Report are in accordance with the Self-Assessment Report;
- Check if your notes taken during reading the Self-Assessment Questionnaire remain valid;
- Check if all summary report template questions are answered;
- Check that the positive answers are supported by evidence;
- Take note of negative and/or missing answers to the summary report template questions. They may lead you to further findings;
- Question the reasons behind negative or missing answers;
- Interrelating topics and issues may be easily checked in the Summary Report.
- Be receptive to potential Good Practices;
- Check the concluding section(s) of your review area(s) in the ARM Summary Report and the respective parts of the Action Plan. See if there are actions foreseen, which qualify for a finding. Mark those findings of yours, which also appear in the Action Plan for acknowledging this in your report;
- Draft questions to pose during your interviews (see Chapter VIII.).

VI.4. REVIEWING THE ARM OF A FOLLOW-UP MISSION

A follow-up mission is conducted to review the progress made by the host in addressing the recommendations and suggestions identified during the initial mission. At the time of the follow-up mission, the ARM of the initial mission is available for the Reviewers, thus the ARM for the follow-up mission needs only to contain information on the changes that have occurred and progress made since the initial mission. Furthermore, the ARM



report will provide a status overview of the recommendations and suggestions of the initial mission, with a suggested rating by the Reviewer on their potential closure.

You are expected to:

- Carefully read through the part of the ARM report that discusses the findings (recommendations and suggestions) related to your review area(s);
- Read the part(s) of the initial mission report related to your review area(s);
- Understand the facts and circumstances underlying the findings of the initial mission.

Below are some practical hints that may help you in reviewing and evaluating the report and the conclusions of the host. For each finding:

- Take detailed written notes on all doubts, observations or questions that may arise when reading the report. Your notes will be the basis for your first impressions and your preliminary question set (see Chapter VIII.);
- Check whether the host actually addressed the issue raised by the initial mission. (It happens from time to time that a recommendation or a suggestion is misinterpreted and the host does not or does not fully address the non-compliance found by the initial mission.) You should thoroughly understand the finding by reading the Observation of the finding and the associated text in the initial mission report (refer to the first box of the example finding in Section V.3);
- Check whether progress reported in addressing the issue is evidenced by facts and/or documentation. Formulate questions if in doubt or you need more clarification (sometimes the report states completion of an action without any proof);
- Evaluate whether the conclusion on the finding suggested by the host (open / closed / closed based on progress made and confidence in effective completion) is acceptable, or whether your conclusion is different. Write down the facts and arguments that substantiate your conclusion. You need to satisfy yourself about the soundness of your evaluation and be prepared to defend your position based on logical, structured and solid factual evidence. You have to be ready to accept dissent and different opinion from the host organization and still to display your arguments in a professional and convincing manner. Even though a possible outcome of the discussion is that you change your mind after listening to the explanations of the host, you should feel able to stand by your original position if the hosts have not offered convincing evidence. The question you need to answer (to yourself) is: *Has sufficient progress been made to address the non-compliance? If not, is there evidence that there are on-going efforts to fully address it in the near future?*

Further on, please be aware that you also may propose new findings in a follow-up mission if

- significant changes in the area since the initial mission make it necessary; or
- issues are identified that were not revealed by the initial mission.

VII. THE IRRS MISSION REPORT TEMPLATE – HOW WILL YOU USE IT?

The report of an initial mission has a predefined content covering all Modules and areas of the mission. To assist the reviewers in their interviews and report writing, a Standard IRRS Mission Report Template has been developed by IAEA. Besides the predefined content and format, the template also includes instructions on how to

5.2. AUTHORIZATION OF NUCLEAR POWER PLANTS

Instructions for writing this subchapter:

Describe the situation in the country with respect to the compatibility with:

- *SSR-2/1 Safety of Nuclear Power Plants: Design Specific Safety Requirements, paragraph 2.17*
- *SSR-2/2 Safety of Nuclear Power Plants: Commissioning and Operation Specific Safety Requirements 4, 6, 7, 11, 25, 26, 31*
- *NS-R-3 Site Evaluation for Nuclear Installations*
- *SSG-12 Licensing Process for Nuclear Installations*

Any notable issues from subchapter 5.1 unique to authorization of nuclear power plants should be elaborated. Particular attention should be given to:

- Application for authorization
- Documentation of the licensing basis (modifications to licensing documentation e.g. PSAR, FSAR)
- Maintenance and updating of licensing documentation
- Specific authorization and/or licensing for
 - Siting
 - Design and construction
 - Commissioning
 - Operation
 - Staffing of the operating organization
 - Operational Limits and Conditions
 - Qualification and training of personnel
 - Management of modifications
 - Operating procedures
 - Ageing management and long-time operation
 - Severe accident management

write the various parts of the report and, for every section, it lists the relevant safety standard requirements and keywords that need to be discussed in interviews and in the report.

There is also a report template for follow-up missions; however, its role in your preparations is limited and will not be discussed here.

A typical section of the initial mission report template is provided here. Beside its use during the mission, the mission report template will serve you also during your preparations. Go through the steps below in order to complete your notes and questions on the ARM:

- Read the parts of the mission report template that relate to your review area(s);
- Check if the Self-Assessment Report or the ARM Summary Report discusses the subjects listed in the template;
- Develop questions and insert them into your notes related to the missing subjects;
- Consider if the missing subjects imply non-compliances and thus findings.

VIII. FIRST IMPRESSIONS AND YOUR PRELIMINARY QUESTION SET – WHY?

VIII.1. YOUR FIRST IMPRESSIONS IN AN INITIAL MISSION

According to the IRRS Guidelines each reviewer “...at least two weeks prior to the mission, provides written feedback to the IAEA Coordinator and the Team lead on any significant issues identified for their assigned review areas so that, if necessary, there will be sufficient time to adjust the mission programme and logistics in response to team member inputs”. Initial reporting by reviewers is essential to provide confidence to the mission lead that their preparations are underway towards ensuring a successful mission. It is of the utmost importance that you take enough time before the mission to read the ARM, familiarize yourself with the regulatory framework of the review country and prepare preliminary question sets. Your conscientious preparation is a fundamental key for a successful mission.



Your first impressions will obviously differ for initial and for follow-up missions. Follow-up missions are discussed in Section VIII.2.

For initial missions, you are expected to write down your ideas after having read the ARM on:

- issues or open questions needing further investigation from your part;
- potential recommendations;
- potential suggestions;
- any further topics that you wish to discuss or comment on (including potential good practices).

More explanations are given in the first impression template in Appendix I below.

When developing your first impressions please keep in mind:

- 1) Regarding your findings: some Reviewers attempt to prove their effective and professional performance by formulating as many findings as possible. This is not the right approach! Findings should address relevant non-compliances with IAEA Safety Requirements; must be specific and realistic; and should result in tangible improvement in the regulatory framework of the host country (all adjectives are important). Therefore, you must not feel compelled to formulate findings unless they indeed qualify accordingly and can help the hosts in improving their regulatory framework;

- 2) Regarding your presentation of first impressions: at the initial team meeting (usually held on the day before the entrance meeting) you will be requested to present your first impressions to the team and for this your Team Leader usually will not give you more than 5 minutes. Keep this in mind and try to summarize your impressions and findings (even by making a rehearsal at home) in a concise and factual manner, focusing on the key points that may be of interest for the team lead and for the rest of the team. Presentations in at most 3-4 slides are welcome. (Note that this approach should also be followed also in the daily team meetings during the mission);
- 3) Regarding further use of your initial impressions: your first impressions are not cast in stone and may change if relevant evidence is provided showing that your findings were not correct. Such evidence may be the results of discussions with either your counterparts or other team members. In some cases reviewers are reluctant to adapt their first impressions despite strong supporting evidence, and this may jeopardize the credibility of their conclusions.

VIII.2. YOUR FIRST IMPRESSIONS IN A FOLLOW-UP MISSION

A template for your initial impressions on a follow-up mission ARM is provided in Appendix II below. These impressions are expected to cover, for each finding of the initial mission belonging to your review area(s), the following items:

- quotation of the *Observation* underlying the finding in the initial mission;
- quotation of the text of the finding in the initial mission;
- summary of changes since the initial mission related to this finding (based on the ARM report);
- your first impressions on what you have read about this finding in the ARM;
- your opinion on the expected status of the finding (open/closed/open with evidence of progress).

An example of such a write-up is also given in Appendix II.

VIII.3. YOUR PRELIMINARY QUESTION SET

In the previous steps of your preparatory review, you have taken detailed notes on what you experienced, as well as on your observations and questions. Now, you have to use these notes to formulate a set of questions you intend to discuss with your host counterpart. This question set will very much affect the efficiency of your interactions with the counterpart; therefore, please try to be as clear and factual as possible. It is advisable to discuss your initial questions with your group.

It is suggested that you hand over your initial questions to your host counterpart at the earliest opportunity, possibly after the entrance meeting of the mission, in order to be addressed during the first round of the interviews. If the question set is prepared with careful attention, you will be surprised how effectively it will assist you in formulating your final opinion and in your report writing.

Preparation and handing over of a preliminary/ initial question set may have several benefits:

- it may speed up the interview process;
- it may give the counterpart the possibility of giving well considered answers;
- with written answers by the host, you will have documented answers without making notes;
- it will give you the opportunity of making several iterations in your interview process.

On the other hand, you need to be aware of a potential danger of using initial pre-prepared questions, namely, that you or your host counterpart unintentionally may tend to be constrained to covering these questions. Please be aware of this risk and do not let yourself be limited in further questioning during your interviews.

It is to be emphasized again that preparing for an IRRS mission is very time-consuming (at least one week is needed), and you must have the support of your line manager for this.

IX. REPORTS OF PREVIOUS MISSIONS – WHAT CAN YOU LEARN?

When you are handed the ARM of your mission (in fact, you will access it through a web-site), in most cases the IAEA Coordinator will also provide you with reports of previous missions of similar character (if this is not the case, ask for such reports from the IAEA Coordinator). These reports can assist you in writing down your first impressions, looking for findings and drafting your report.

You are advised to read the parts of the reports from previous missions that deal with your review area(s). When doing so:

- you may encounter topics not discussed in the ARM of the actual mission that may be relevant in your review;
- you will see practical ways of formulating findings in your area(s);
- you will have impressions on how to word the mission report in your area(s).

X. CONCLUDING HINTS

If you have read this guidance carefully and with due attention, you might have noticed quite a few useful hints on how to prepare for all the excitement, labours and troubles of an IRRS mission. We sincerely encourage you to reflect on the guidance in this document. If you follow it, you will be surprised how much easier your work will be. And you will really benefit from this, as in an initial mission you barely have two to three days for putting together your findings, and another three to four at most for drafting your report (even less in a follow-up).

As you gain more experience as a reviewer you will likely develop your own practices that could be used to supplement this guidance. IAEA experts responsible for further developing the IRRS process will be more than happy to obtain and document your experience, please, communicate with them.



Last, but definitely not least, please read the short hints below.

0. READ THIS GUIDANCE CAREFULLY FOR A SECOND TIME

1. FOR INTRODUCTION

- Let the mission also be a fun experience – it does not have to be tedious work.

2. ABOUT THE MISSION

- A mission is meant to help the host improve in its regulatory framework.
- Be sure you understand this aim and contribute to delivering it.
- Work as a true team player.

3. ON TEAMWORK

- Prior to the mission, if you need more information do not hesitate to contact the IAEA Coordinator.
- Discuss and decide with your team group members your working method at the very beginning of (or even prior to) the mission.

4. PRE-MISSION DOCUMENTS

- Make sure that you will clear at least one week for studying these documents and preparing your notes.
- Familiarize yourself with all documents available on your review area(s).

5. IAEA SAFETY STANDARDS

- Be aware of the structure and main elements of the IAEA safety standard documents.
- You must have thorough knowledge of the IAEA safety standards that relate to your review area.
- When formulating findings, you will have to find appropriate quotations from the safety standards that may form the bases for your recommendations or suggestions. If you need advice, contact the IAEA Coordinators.

6. ADVANCE REFERENCE MATERIAL

- Carefully read relevant parts of the Self-Assessment Report, including answers to questions, analysis results and Action Plan, as well as the ARM Summary Report, that relate to your review area(s).
- Write down your doubts, observations and questions and request for missing evidence when reviewing these documents.

7. MISSION REPORT TEMPLATE

- The topics in the template may lead you to uncover additional non-compliances or at least further questions.
- You may start to feed information into the template from the ARM if supported by evidence.

8. FIRST IMPRESSIONS AND QUESTION SETS

- Summarize your first impressions according to the respective template.
- Remember that the earlier you recognize an issue, the more time you will have to clarify it.
- Prepare a preliminary question set as exhaustive as possible and give it to your counterpart at the first opportunity.
- Be short, concise and factual when presenting your first impressions.

9. REPORTS OF EARLIER MISSIONS

- Read your review area(s) section in reports of as many previous missions of similar character as you can to obtain new ideas on issues, findings, and wording.

APPENDIX I: TEMPLATE OF FIRST IMPRESSIONS IN AN INITIAL MISSION

FIRST IMPRESSIONS ON THE IRRS ADVANCE REFERENCE MATERIAL

Name and Country of the Reviewer:			
Host Country:		Module No./Review area:	
<p><i>The reviewers should thoroughly read the Self-assessment Questionnaire and the ARM Summary Report related to their review areas. They should also become familiar with the IAEA safety standards relevant to their review areas (particularly GSR Part 1), and with the IRRS Guidelines. At least two weeks prior to the mission the reviewer is requested to return her/his first impressions in the format and with the content as given below.</i></p>			

1. ISSUES TO INVESTIGATE AND OPEN QUESTIONS

List in brief (possibly in bulleted format) the potential issues that need further interviewing/discussion in order to clarify whether they represent any non-compliance with IAEA safety standard requirements. List also those issues that are not clearly described in the Self-assessment Questionnaire or in the ARM Summary Report and need further clarification during the interviews. In the list please identify the location of the issues in the text (e.g. by page number, paragraph number, line number).

--

2. POTENTIAL RECOMMENDATIONS

List in brief (possibly in bulleted format) those issues found in the Self-assessment Questionnaire or in the ARM Summary Report which seem to be in non-compliance with an IAEA safety standard requirement related to the review area. Give reference to the requirement non-complied with by Identifying the safety requirement – e.g. GSR Part 1 – the number and subject of the Requirement – e.g. Requirement 23: Authorization of facilities and activities by the regulatory body – and, if possible, the relevant paragraph – e.g. 4.30. Please also identify the location of the issues in the text (e.g. by page number, paragraph number, line number).

--

3. POTENTIAL SUGGESTIONS

Based on the Self-assessment Questionnaire and the ARM Summary Report list in brief (possibly in bulleted format) any further actions/changes to be performed by the regulatory body that, although not related to any non-complying activity of the regulator, may contribute to further improving the regulatory practice. Give reference to parts of the IAEA safety standard or safety guide (in the form as given in the previous section) that underline and may serve as basis for your suggestion. Please also identify the location of the text that indicate/imply your suggestion.

4. ANY FURTHER COMMENT OR OPINION

Give any further comment or opinion you feel appropriate or necessary related to your review. This may include

- facts or statements that you consider important to include into the mission report;*
- facts or considerations that you consider interesting for reviewers of areas other than yours;*
- potential good practices, i.e. activity/practice of the host regulatory body that is outstanding, unique and worth followed by other regulators; etc.*

APPENDIX II: TEMPLATE OF FIRST IMPRESSIONS IN A FOLLOW-UP MISSION

FIRST IMPRESSIONS ON THE IRRS ADVANCE REFERENCE MATERIAL

Name and Country of the Reviewer:

Host Country:

Module No./Review area:

The following entries are to be repeated for each finding of the initial mission, belonging to the reviewed area.

Finding and its No. *(Recommendation or Suggestion with its number in the initial mission report)*

Observation by the initial mission:

Copy from the initial mission report the observation underlying the finding.

Text of finding:

Copy from the initial mission report the Recommendation or Suggestion in question.

Changes since the initial mission:

Based on the respective part of the ARM, summarize developments/progress in respect to the finding in question since the initial mission.

Reviewer's first impressions:

Summarize here your opinion on what you have read in the ARM about the finding in question and the actions you deem necessary for finalizing the evaluation of the status of the finding.

Expected status:

Give your evaluation on the status of the finding (open / closed / closed based in the progress made and with confidence in the effective completion). You may give multiple potential outcomes depending on the interviews and discussions to come.

EXAMPLE

Recommendation 21

Observation by the initial mission:

The Safety Analysis Report is one of the most important documents of a nuclear facility and one of the principal documents establishing the licensing basis of a fuel cycle facility. The SAR is meant to give a detailed demonstration of the safety of the facility, thus it should reflect all important modifications in the facility configuration that may have safety implications. Yet no provisions are in force to require periodic or occasional revision of the SAR documents.

Regular revision of the SAR could make this document more closely reflect the actual safety of the fuel cycle facilities thus contributing to a more efficient supervision of the facility.

Recommendation:

The Regulatory Body should require the updating of the SAR of fuel cycle facilities on a regular basis as well as following important modifications that have an effect on the safety of the installation.

Changes since the initial mission:

The RB carried out ten periodic safety reviews of nuclear fuel cycle facilities involving uranium enrichment plants, nuclear fuel element plants, and spent fuel reprocessing plant, etc. After this safety review, improvement requests were proposed. Nuclear safety related improvements needed to be approved by the RB. In 2015, the RB developed Administrative Measures of Licenses for Civilian Nuclear Fuel Cycle Facilities, which specified that nuclear fuel cycle facilities should conduct periodic safety reviews, and that each facility should update safety analysis reports on a regular basis. In addition, the requirement about ten periodic safety reviews carried out in the lifetime of the facility was specified in the approval criteria for facility operating licenses

Reviewer's first impressions:

The answer seems to make no difference between periodic safety reviews and regular review of the underlying Safety Analysis Reports. During the mission

- the related and quoted regulation needs to be reviewed,*
- the requested frequency and conditions (e.g. after substantial modifications) of reviewing SARs of FCFs in practice need to be examined*

Expected status:

open, closed or open, based on progress and confidence (depending on the results of the review).