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Systematic Assessment of Regulatory Competence Needs for Regulatory Bodies of Nuclear Facilities

SARCoN
Guidelines

Guidelines for Systematic Assessment of the Regulatory Competence Needs (SARCoN)

Contents

1 Background

In 2001, IAEA published TECDOC 1254[1] which examined the way in which the regulatory functions of a nuclear regulatory body result in competence needs with a focus to nuclear facilities. Using the internationally recognised Systematic Approach to Training (SAT), TECDOC 1254 provided a framework for regulatory bodies to manage, developing and maintaining the competence of its staff. Several IAEA workshops and Technical Meetings took place using TECDOC 1254, in particular, in 2004 a major Technical Meeting was held in Islamabad, Pakistan during which an elaborated procedure for conducting Training Needs Assessment was adopted.

In 2007 and based on TECDOC 1254, the IAEA produced a first draft of SARCoN guidelines and held a Technical Meeting (TM) in Vienna during which the tool was assessed by regulators. SARCoN was appreciated and was again discussed and improved by a second TM of regulators in 2008.

Following the TM in 2008, a Steering Committee (SC) of Competence of Human Resources for Regulatory Bodies was established in 2009 with the mission of advising the IAEA on how best it can assist Regulators in the Member States in area of nuclear installations' competence and training as well as to discuss and exchange information and good practices. Since then, SARCoN has been one of main documents within the work programme of the SC.

Until 2011, the SC and the previous TMs were mainly composed of regulators from countries that operate Nuclear Power Plants. However, in 2011, the SC was enlarged with a group of countries that are in the process of planning to start a nuclear power programme.

This document gives guidance for the systematic analysis of required competences of the regulatory body based on the regulatory functions and as such is equally applicable to the needs of countries "embarking" on nuclear power programmes. However, more detailed guidance according to the three development phases of countries embarking in a nuclear Power Programme [5] is under preparation by the IAEA with the support of the SC.

Different Regulatory Bodies have different regulatory, cultural and national approaches. This document is the result of years of experience and work of many experts and has been validated by the IAEA Steering Committee of Competence of Regulatory Bodies for nuclear facilities. However, the competences and overall information of these guidance and tool are in no way prescriptive neither intend to be a complete and perfect set of competence profiles. ***SARCoN's questionnaires must be tailored and adapted to the particular situation of the regulator.***

The IAEA has provided training seminars on how to use SARCoN in 18 countries. Other regulators have reported to use SARCON approach and/or its questionnaires and adapted them to their specific regulator. One of the main objectives of the IAEA seminars is to adapt the tool to the particular Member State. Information on how to request such seminars can be addressed to NSNI-Training@iaea.org. The guidelines are complemented by a free of charge software tool provided by the IAEA upon request.

The IAEA is developing a draft safety report under the title "Managing Regulatory Competence". The future safety report shall supersede TECDOC 1254. These guidelines might then be reviewed and updated.

2 Objectives of the Guidelines

The objective of these guidelines is to provide information on specific and practical means to support the implementation of the IAEA safety standards in the area of ensuring regulatory competence by systematic analysing the competences 'gap.

3 Scope

These guidelines provide a systematic approach and step-wise procedure for identifying potential training needs of regulatory bodies through gap analysis. They also provide examples of a questionnaire for self-assessment.

The methodology and process described in these guidelines come from TECDOC 1254 and are based on the IAEA safety standards and on the regulatory functions described in them. They are therefore applicable to any nuclear installations regulator. They are also applicable at all organizational levels and subdivisions, from the individuals to the organization as a whole.

The appendices and examples need to be examined in the context of the particular regulatory organization[i] and its areas of competence within the national infrastructure.

4 Introduction

A Regulatory Body's competence is dependent, amongst other things, on the competence of its staff. A necessary, but not sufficient, condition for a Regulatory Body to be competent is that its staff has the competences they need to perform the functions of the Regulatory Body. A need assessment is essential to ensure competent human resources as required in the IAEA safety standards. This analysis is expected to support Module 3, part I of the IRRS guidelines mostly for regulatory bodies with nuclear facilities.

IAEA has published a number of safety standards and other documents, in which the need and importance of ensuring regulatory competence is emphasized [1], [2], [3], [4], [6]. These documents include:

GSR PART 1 includes overall requirements for responsibilities and functions of a regulatory body including staffing and competence.

GS-R-3 includes a section dealing with human resources. The requirement is that senior management shall determine (paragraph 4.1) "…*the amount of resources necessary and shall provide the resources to carry out the activities of the organization*" and (paragraph 4.3) "…*the competence requirements for individuals at all levels*."

GS-G-3.1 gives a great deal of guidance for organizations in relation to human resource management (paragraph 2.25) and on training (paragraph 4.4 et seq.). This will not be repeated here, but the main ideas are to:

- Manage the organization's knowledge for decision making, whether internally or externally sourced;
- Define the competence needs and ensure that the competences are available;
- Plan and implement the necessary training to meet present and expected future competence needs, when internally sourced.

GS-G-1.1 provides guidance for training of the regulatory staff, including the training needs. It provides that, soon after recruitment, each member of the staff should be provided with a training plan, including, as appropriate, periodic retraining. The plan should specify the nature of the training needed, its timing and sequence and where it is to be obtained, and the levels of competence to be achieved. The basic elements of a regulatory training programme are also provided.

IAEA-TECDOC-1254 provides a detailed and systematic competence framework for regulatory bodies describing some sample tasks, and setting out the required competences in a four-quadrant model.

These Guidelines for Training Needs Assessment (TNA) give guidance for analysis of required [1]competences and associated potential training needs for the regulatory body.

5 Planning for future staffing needs

Proper management of recruitment and training requires a prior analysis of the future needs of the regulatory body, in terms of competences: i.e. knowledge, skills, and attitudes. This must include a critical evaluation of the structure of the organization, and consideration of whether it is suitable for its future tasks. This analysis should take into account expected staff turnover (loss due to retirements and resignations), restructuring and the need for hand-over (progressively to the new office holder) arrangements. The result can then be used as the template for future recruitment and promotion.

In considering its future tasks and the best use of available resources, the regulatory body will need to examine critically those topics which it considers must be retained 'in-house' as core activities, and any which it might delegate to other authorities, or as candidate areas for self-regulation by the licensee, under suitable quality assurance arrangements. A broadly used approach is to outsource (i.e. to contract out) services to an external independent body that provides assistance as the Technical Support Organization (TSO) to the regulatory body. In these cases, the regulatory body must possess an adequate number of staff qualified to specify, monitor and evaluate the work of the TSO.

As part of the planning process, the regulatory body needs to consider whether particular skills shortages could be better met through the use of external resources, such as Technical Support Organizations (TSOs), other consultants or through the secondment (or other mutual aid agreements) of staff from elsewhere, rather than by recruitment and training of internal staff.

6 Recruitment and selection

Most regulatory bodies have a policy for recruitment and selection, whether written or tacit. The age and experience levels of potential staff vary, but most jobs would require a qualification in some relevant technical specialities.

The IAEA documents listed in the Introduction do not make any particular recommendations on matters such as entrance qualifications and prior experience of recruits to the regulatory body. Each Member State (MS) may determine its policy based on national circumstances, such as the salary levels and training resources needed to attract and retain high quality staff.

[1] Competencies are groups of related knowledge, skills and attitudes (KSAs) needed to perform a particular job. Competencies are the mental, physical and behavioural tools needed for an activity or a task.

There should be a systematic recruitment process, which may include, for example, recruitment at universities and technical institutes, through technical societies and their publications, general advertisement of openings and other suitable means. The main, though not exclusive, options for recruitment are:

- Recruiting experienced staff from Industry (including foreign industry) and then redeveloping them.
- Recruiting at Graduate or Post-graduate level and then training them.

Some MSs may regard it as preferable, when recruiting from a foreign country, to avoid cultural conflicts by preferring to recruit only from the same region. Other MSs may take the opposite view to improve the diversity of recruited staff.

> Evaluation of applicants may include aptitude tests, personality tests, and assessment of the applicant's particular skills relative to those that are required for each vacancy. Experienced recruits are likely to have more appropriate skills and require less training but may bring cultural difficulties which may need addressing, while the opposite is more likely to be the case for new graduates.

Regardless of the source of new staff members, some training will be needed to introduce them to the organization and prepare them to assume their role in the organization. All Regulatory Bodies should have an Induction Training programme, which can be modified for some new staff in accordance with their experience before joining. In addition, a continuing program of training for personnel at all levels in the organization is needed to maintain and ensure continuous improvement of their competences.

7 Training Needs Assessment (TNA) for Regulatory Bodies

It is essential that the regulatory body apply a systematic approach to identify current and desired competences, determine the gaps, and design and implement training programmes to address the desired competences. The process is applicable at all organizational levels.

Training Needs Assessment may require extensive manpower in terms of resources and time. It can be used either to expand or refocus an existing training programme or to build a new training programme.

In order to conduct a TNA, one must start with the mission and functions of the organization. This information should be documented as required in GS-R-3, "Management System for Facilities and Activities," [3] Chapter 2.8 of which states:

"The documentation of the management system shall include the following:

- *The policy statements of the organization*
- *A description of the structure of the organization*
- *A description of the functional responsibilities, accountabilities, levels of authority and interactions of those managing, performing and assessing work*
- *A description of the processes and supporting information that explain how work is to be prepared, reviewed, carried out, recorded, assessed and improved."*

Every person in the regulatory body should understand the functions and the management system of the organization.

Also in GSR PART 1 [4] and GS-G-1.1 [5] the regulatory functions are identified as follows:

Major functions of the regulatory body

- Authorization
- Review and assessment
- Inspection and enforcement
- Development of regulations and guides

Supplementary functions

- Co-ordinating and monitoring Research and Development
- Emergency preparedness
- International Co-operation

The regulatory body would normally be organized into a number of units. (In this document, 'unit' is intended to mean an organizational unit at any level.) Depending on the unit, it may focus on one or more of these regulatory functions. The unit's function leads to the associated tasks that are required to fulfil its responsibilities. Each task requires a certain competence in terms of knowledge, skills, and attitudes (KSAs). This document provides a self-assessment questionnaire that would help the unit's management to identify gaps in available competences and the related KSAs, which can be corrected by recruitment, training, or outsourcing.

7.1 Process for Training Needs Assessment

The regulatory body management must determine what competences and knowledge; skills and attitudes (KSAs) are required for each of the staff positions. The Safety Report, "A Framework for Managing a Regulatory Body's Competence" provides guidance for planning the training of the various types of staff required by the regulatory body. It organizes the competences in a 'quadrant' structure as shown below, along with some typical examples.

Table 1. Quadrant Model of Competences

4. Personal and interpersonal effectiveness competences • Analytical thinking, problem solving and decision making • Personal effectiveness • Communication • Team work • Management	**1. Legal basis and regulatory processes competences** • Legal basis • Regulatory processes • Regulatory guidance documents • Licence and licensing documents • Enforcement process
3. Regulatory practices competences • Safety focused analytical techniques • Inspection techniques • Assessment techniques • Investigation techniques	**2. Technical disciplines competences** • Basic technology • Applied technology • Specialized technology

Analysis of the required competences and those available in the organization is a management responsibility. A **Training Coordinator (TC)** should be appointed, who will co-ordinate the process of comparing available competences with needed competences to identify competence "gaps" in staff knowledge, skills, and attitudes (KSA). Based on information developed in cooperation with the organization's management, the TC will quantify the number of people associated with each gap and develop a chart of the staff needs. Then, the organization's management prioritizes the gaps and

allocates resources to recruitment, training, and outsourcing to fill as many gaps as possible with the available resources. The gap analysis can be repeated periodically to determine by how much the gaps have been reduced. This evaluation would facilitate design of the next training cycle.

7.2 TNA Guidelines/Procedure

These TNA Guidelines provide a step-by-step approach to identify the gap between the existing and the desired competences and define the associated training needs.

7.2.1 Training Coordinator Tasks

1. Functions of the **Training Coordinator (TC)** should include:

- Plan the TNA;
- Brief management and staff on how to conduct the TNA;
- Organize and supervise the implementation of each step of the Gap Analysis;
- Use the results to quantify the numbers of staff corresponding to each gap;
- Consider how to fill the gaps by recruitment, training, and outsourcing;
- Report the results of the analysis and recommend means to fill the gaps to the regulatory body's management;
- For those gaps to be filled by training, develop a training programme in consultation with other staff and management;
- Supervise implementation of the training programme;
- Evaluate the training results;
- Suggest future training actions or alternative measures to ensure regulatory competence in the short, medium, and long term.

2. The TC should study these Guidelines and become thoroughly familiar with the training needs assessment procedure.

3. The TC should conduct a meeting to brief the managers and staff on the training needs analysis procedure, explaining in particular the meaning of the questionnaire and how to use it.

4. With guidance from the TC, each unit of the regulatory body should conduct a self-assessment of its needs, taking into account the description of the **functions** of that unit.

The Training Coordinator (TC) is a demanding role in terms of time and qualification. Some countries outsource the service to an external consultant or TSO, who must thoroughly study the guidelines first. Some regulators prefer to train and reassign internal resources to perform this task.

Figure 1 depicts the process for TNA.

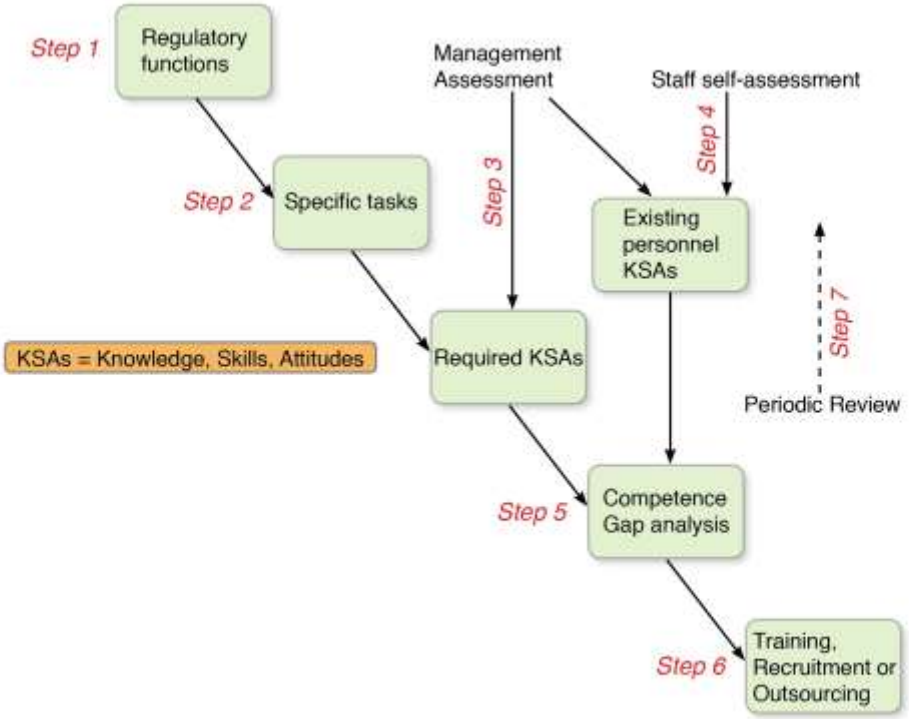

Fig. 1 - Flow chart of a Training Needs Assessment

7.2.2 Gap Analysis

The regulator usually has an organisational structure consisting of units, sections, divisions, departments, etc. Depending on this organisational structure, the process of determining the gap between existing and needed competences can be applied to the organisation in different ways. It is recommended to break down the task and conduct the gap analysis for each organisational unit, section, etc. that has specific regulatory functions. The results can then be added to get a whole picture of the gaps in the organisation and prioritise the needs.

The gap analysis has seven steps, as follows:

Step 1: Determine the Regulatory Functions of Each Unit and the Required Competences

The organizational mandate should take account of the present needs as well as the future aspirations of the organization arising from, for example, the strategic review. The list of units should be presented with corresponding functions even if the unit does not yet exist. All anticipated needs should be accounted for in development of the training programme, including the continuing development needs of established staff and managers.

The information about the functions of each unit should be available in the Management System documentation. The quadrant model represented in Table 1 of this document and Appendix II provide a general compilation of competences based on the regulatory functions, which can help identify what is needed for step 2 (see below).

All the staff of the Regulatory Body must have basic knowledge of all the four quadrants represented in Table 1. However, depending on the specific function of the unit under assessment i.e. drafting

regulations or conducting inspections, one of the quadrants i.e. quadrant 1 related to Legal basis or i.e. quadrant 3 related to Regulatory practices, might be more important and competence demanding for the unit.

Step 2: Determine Tasks Corresponding to the Regulatory Functions

Once the main regulatory functions of the unit have been identified, the next step is to describe the tasks that will be needed to perform the defined regulatory functions for each unit. Tables AI.1 and AI.2 provide sample competences for the main and secondary regulatory functions.

Step 3: Determine the KSA Levels Needed to Perform the Task

For each unit, the supervisor/manager of the unit should specify for each position the level (low, medium, high) of required KSAs. This is a time-consuming task that may be effectively done by a team. Appendix II of this guideline gives an example of a questionnaire that can be used for determining the levels of KSAs needed to perform the regulatory functions. It also suggests definitions of "high", "medium" and "low" for each competence. **The compilation of competences in Appendix II should be adapted to the particular situation of the regulatory body, and adjusted taking into account the main focus of the unit under evaluation.**

Step 4: Conduct the Assessment of Gaps

For each identified KSA the staff member of the unit should assess using definitions of the levels (High, Medium, Low) his/her existing level, with guidance but without knowing the required levels, to avoid bias. To facilitate the execution of Steps 2 and 3, questionnaires applicable for regulatory bodies are given in Appendix II. At the end of this process we will have data on all the required KSAs and available KSAs, and we can proceed to assessing the gaps.

NOTE: Currently in the EXCEL version, entering a zero for a competence is not allowed, Also the gap analysis chart produced by the EXCEL version (Figure 2, below) shows the Gaps as a graph, where a histogram would be more mathematically correct. Both these features are undergoing review. It should be remembered, however, that individual MSs may modify the EXCEL spreadsheet so as to meet their own particular requirements.

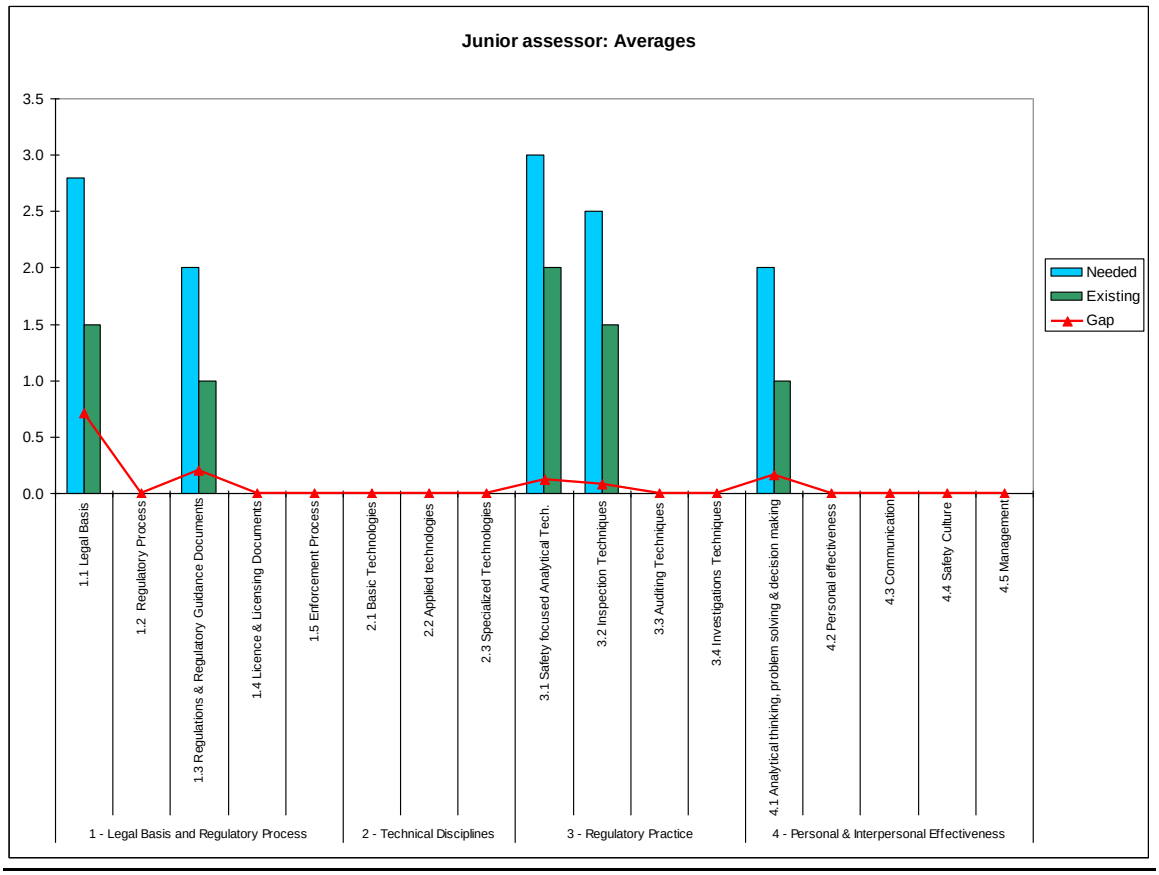

Figure 2. Chart of an example of gap analysis results

Step 5: Determine the Training Gaps

The TC and managers should analyse the gaps for each unit, determining how many people correspond to each gap. They would do this for each unit, and then produce a map of gaps for the whole organization.

An EXCEL version of the questionnaire is also available to gather the data for the gap analysis summarize the results and compile the results into charts for the organizational unit and higher levels in the organization. Figure 2 shows an example of the gap chart for each of the four quadrants.

Step 6: Prioritize the Gaps and Allocate Resources to Fill the Gaps

Management and the TC should prioritize the gaps according to their importance to the regulatory functions and allocate resources to fill some of the gaps by recruitment, training, and outsourcing, as shown in Figure 1. In many cases the gap can be filled through outsourcing, in such cases it is important that within the regulatory staff there is at least one senior expert well-trained in the subject matter to serve as an "intelligent customer".

Step 7: Repeat the TNA Process as Necessary

Circumstances, such as reorganization, assignment of new regulatory functions, recruitment of new staff, etc., may make it necessary to repeat the TNA process either for the whole organization or for affected parts. In addition, it is advisable to conduct a new TNA periodically to assess the effectiveness of the training programme, design new training cycles and foster continuous improvement.

8 Summary

These Guidelines for Training Needs Assessment (TNA) give guidance for analysis of required competences and associated training needs, for the regulatory body. The regulatory body appoints a Training Coordinator (TC) to analyze training needs and develop a training programme. The TC, management and support staff list the functions and tasks of each unit, and then determine what competences and associated knowledge, skills, and attitudes are required for those tasks, as illustrated in Figure 1. A self-assessment determines what competences are already available in the regulatory staff. The TC compares the available and required competences to identify the number of people associated with each competence "gap". Then the regulatory body prioritizes the gaps and allocates resources to recruitment, training, and outsourcing to fill as many of the gaps as possible. The TC, in consultation with others, devises a training programme, which may include classroom training, on-the-job training, distance learning, and structured self-study. Based on periodic evaluation of the on-going training programmes and assessment of new and/or remaining gaps identified using the proposed TNA process, future training cycles should be planned for continuous improvement.

9 Member States' experience on SARCoN:

Countries that received an IAEA Seminar on SARCoN or that reported having used SARCoN Model include: Bangladesh, Belarus, Belgium, China, Egypt, Finland, Germany, Indonesia, Iran, Japan, Jordan, Korea, Republic of, Malaysia, Morocco, Pakistan, Philippines, Romania, Spain, UK, Vietnam, Yemen

10 References:

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, *Training the Staff of the Regulatory Body for Nuclear Facilities: A Competency Framework,* IAEA-TECDOC-1254, (2001).

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, *The Management System for Facilities and Activities,* Safety Requirements No. GS-R-3, Vienna (2006).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, *Governmental, Legal and Regulatory Framework for Safety,* General Safety Requirements No. GSR Part 1, Vienna (2010)

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, *Organization and Staffing of the Regulatory Body for Nuclear Facilities,* Safety Guide No. GS-G-1.1, Vienna 2002.

[5] INTERNATIONAL ATOMIC ENERGY AGENCY, *Milestones in the Development of a National Infrastructure for Nuclear Power, No.* NG-G-3.1, Vienna (2007)

[6] INTERNATIONAL ATOMIC ENERGY AGENCY, *Application of the Management System for Facilities and Activities,* No. NS-G-3.1 (2007)

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12 Appendices

I. Comparison of Specific Competences Needed in Regulatory Functional Areas
II. Questionnaire for Developing Competence Profiles for Regulatory Bodies

Appendix I

Tables AI.1 and AI.2 of this Appendix (reproduced from TECDOC 1254) provide a correlation of the competences required to fulfil the main regulatory functions and the supplementary regulatory functions of a typical regulatory body. For each regulatory function, the required level of competence is indicated in the appropriate box. This information may be used to identify the relevant competences and KSAs in Appendix II given the regulatory function of the unit under consideration.

Table AI.1. Comparison of Specific Competences Needed in Main Regulatory Functional Areas

Functions / Competences	Authorization	Review & Assessment	Inspection & Enforcement	Development of Reg. Guides
Q1: Legal Basis and Regulatory Process				
1.1. Legal Basis	High	High	High	Medium
1.2. Regulatory Process	High	High	High	High
1.3. Regulations and Regulatory Guidance Documents	High	High	High	High
1.4. License and Licensing Documents	High	High	High	High
1.5. Enforcement Process	Medium	Low	High	Low
Q2: Technical Disciplines				
2.1. Basic Technologies	High	High	High	High
2.2. Applied Technologies	Low	High	High	Medium
2.3. Specialized Technologies	Low	High	Medium	Medium
Q3: Regulatory Practice				
3.1. Safety focused Analytical Techniques	Medium	High	High	High
3.2. Inspection Techniques	Low	Medium	High	Low
3.3. Assessment Techniques	Medium	Medium	High	Low
3.4. Investigation Techniques	Low	Medium	High	Low

Q4. Personal and Interpersonal Effectiveness				
4.1. Analytical thinking, problem solving and decision making	High	High	High	High
4.2. Personal effectiveness	High	High	High	High
4.3. Communication	High	Medium	High	High
4.4. Team work	High	High	High	High
4.5. Management	High	Medium	High	Medium

Table AI.2 Comparison of Specific Competences Needed in Regulatory Supplementary Functional Areas

Supplementary Functions / Competences	Co-ordinating and monitoring Research and Development	Emergency Preparedness	International Co-operation*
Q1: Legal Basis and Regulatory Process			
1.1. Legal Basis	Low	High	High
1.2. Regulatory Process	Low	Medium	Low
1.3. Regulations and Regulatory Guidance Documents	Low	Medium	Low
1.4. License and Licensing Documents	Low	High	Low
1.5. Enforcement Process	Low	Medium	Low
Q2: Technical Disciplines			
2.1. Basic Technologies	Medium	Medium	Medium
2.2. Applied Technologies	Low	Medium	Low
2.3. Specialized Technologies	Low	Low	Low
Q3: Regulatory Practice			
3.1. Safety focused Analytical Techniques.	Medium	Low	Medium
3.2. Inspection Techniques	Low	Medium	Medium
3.3. Assessment Techniques	Medium	Medium	Medium
3.4. Investigation Techniques	Low	Medium	Low
Q4. Personal and Interpersonal Effectiveness			
4.1. Analytical thinking, problem solving and decision making	High	High	High
4.2. Personal effectiveness	High	High	High
4.3. Communication	High	High	High
4.4. Team work	High	High	High
4.5. Management	High	High	Medium

* This function includes international safeguards commitments

Appendix II

Questionnaire for Developing Competence Profiles for Regulatory Bodies

Objective of this questionnaire

This questionnaire would help in determining competence gaps for Regulatory Bodies. The information will then be used in formulating training programmes and strategies to develop competent human resources.

To complete this questionnaire for a given position, please read the definitions of the relevant competences as indicated in Table 1, above, and the criteria for rating of the existing and required KSAs for each competence. Then, fill the right-most two columns of the matrix, indicating Needed Competence Level and Existing Competence Level by entering L for Low, M for Medium, H for High or NA for Not Applicable in the respective cells.

In general:

- Low means basic understanding of the subject;
- Medium means understanding of the subject matter and capability to apply the knowledge;
- High means an understanding at such a level and capability as to be able to coach or mentor others in the subject matter.

More detailed definition is given with each competence.

Competences: Competences are groups of related knowledge, skills and attitudes (KSAs) needed to perform a particular job. Competences are the mental, physical and behavioural tools needed for an activity or a task.

An EXCEL format of this questionnaire is available for facilitating the assessment of the gaps.

Quadrant 1: Competences Related to Legal Basis and Regulatory Processes

1.1. Legal Basis Competence: This competence is the ability to comprehend, interpret and use relevant documents that establish the legal requirements for obtaining a license, and the powers of the regulatory staff and the limits to these powers.

Low: Basic knowledge of national nuclear and non-nuclear legislation relevant/applicable to nuclear regulation (e.g.: acts, decrees regulations in nuclear/industrial safety, environmental regulations, applicable international commitments, etc.);
Medium: Full understanding of the basic relationship between the relevant/applicable legal requirements and one's own regulatory duties and those of subordinates;
High: In-depth knowledge and ability or work experience to factor in complex relevant legal considerations while performing own regulatory duties or supervising others in their duties.

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Legal Basis	1.1.1 Comprehension of the central government's nuclear laws and decrees as well as other laws and decrees that apply to a licensed nuclear facility		
	1.1.2 Comprehension of the applicability to the nuclear industry of the laws and decrees of the local jurisdictions and authorities		
	1.1.3 Comprehension and use of the regulatory body's regulations within limits as per interpretations offered by legal counsels and recorded experience		
	1.1.4 Comprehension of the rights of all stakeholders affected directly or indirectly by the provisions of the legal basis of the regulatory body		
	1.1.5 Ability to interpret legal texts for application in the field		
	1.1.6 Ability to relate legal requirements to routine tasks		

	1.1.7 Comprehension of the interrelationship between legal documents, regulatory guidance documents and licensing documents		
	1.1.8 Comprehension of the international guidance on the subject and its applicability to the jurisdiction of the regulatory body		

1.2. Regulatory Process Competence: This competence is the performance of work in accordance with rules, regulations, and established regulatory protocol to achieve the relevant regulatory objectives.

Low: Basic knowledge of the mandate, mission and objectives of the regulatory body; basic knowledge of policies, procedures, guidance documents and licensing documents; basic knowledge of regulatory processes (authorization, inspection and enforcement, development of regulations and guides, review and assessment). If a management system is in place, basic knowledge of the management system.
Medium: Thorough understanding and ability to relate policies, procedures, guidance documents and licensing documents to duties within the regulatory body. If a management system is in place, a full understanding of the system and its application to one's own work.
High: In-depth knowledge and ability in applying the regulatory body's policies, procedures, guidance documents and licensing documents in complex situations and in providing guidance to subordinates in their application. If a management system is in place, comprehensive understanding of the system and its application to own work and that of subordinates.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Regulatory Process	1.2.1 Comprehension of the mandate, mission and objectives of the organization		
	1.2.2 Comprehension of measures for implementing actions to achieve the regulatory short-term and long-term strategic objectives and goals of the regulatory body		
	1.2.3 Comprehension of the relevant policies, procedures, guidance documents and licensing documents that are used in carrying out specific regulatory tasks as defined in the legal basis		
	1.2.4 Comprehension of the processes used in making a permissioning or authorisation		

	1.2.5	Understanding of the principles of good regulations, i.e. that the regulatory body carries out its activities in independent, open efficient, clear, reliable and fair manner		
	1.2.6	Comprehension of the necessity of involving all stakeholders, particularly the licensees, in the licensing process and in the regulatory practice of the regulatory body		
	1.2.7	Ability to assimilate information and data gathered from several sources and to give written recommendations to the regulatory body management		

1.3. Regulatory Guidance Documents Competence: This competence is the capacity to produce regulations and guidance documents, including policies and procedures, containing practical steps on how regulatory requirements could be satisfied by the licensees and be adjudicated by the regulatory staff.

Low: Basic knowledge of the regulations and guidance documents with the ability to interpret, apply and revise existing documents within a specific area of expertise.
Medium: Ability to draft new regulations and guidance documents for satisfying regulatory requirements and guiding regulatory adjudications, keeping in mind responsibilities and commitments of all stakeholders.
High: ability and practical experience in producing regulations and guidance documents; ability to train others in their use; and monitor and guide their practical use in the relevant regulatory processes, taking into account legal implications. Awareness and knowledge of safety requirements applied in other countries in addition to national regulatory requirements.

COMPETENCE	**KSAs**		**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Regulatory Guidance Documents	1.3.1	Comprehension of the requirements and implications of international and national standards		
	1.3.2	Comprehension of the safety requirements applied in other countries		
	1.3.3	Comprehension of the safety objectives and criteria, as related to the facilities or devices being considered for licensing		

	1.3.4	Ability to define the format and contents of requirements for a license application		
	1.3.5	Ability to define technical safety requirements for siting, design, construction, commissioning, operation, decommissioning and waste management of nuclear facilities or devices		
	1.3.6	Ability to identify gaps and confirm needs for the production of new regulations and regulatory guidance documents, or modifications to existing regulatory documents		
	1.3.7	Proficiency in writing regulatory requirements in mandatory rules and regulations as well as in regulatory guidance documents		
	1.3.8	Ability to transfer legal requirements into forms that can easily become understandable and into practical guidance texts		
	1.3.9	Ability to produce regulations and regulatory guidance documents in accordance with established formats and formal textual styles		
	1.3.10	Ability to ensure consistency in terminology and format in regulatory documents		

1.4. License and Licensing Documents Competence: This competence is the capacity to ensure that the license and the associated licensing documents are in compliance in form and contents with the regulatory requirements.

Low: Basic understanding of the format and content of a license and licensing conditions for a nuclear facility.
Medium: Thorough knowledge of the format and content of a license and associated license conditions sufficient to synthesize various licensing condition recommendations into the licensing documents.
High: Comprehensive awareness, appreciation and comprehension of the format and content of a license and license conditions and the capability to make licensing decisions and to reflect those decisions in the licensing documents.

COMPETENCE	**KSAs**		**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
License & Licensing Documents	1.4.1	Comprehension of the format and contents of a license produced for a nuclear facility or a device		
	1.4.2	Comprehension of the possible options of a license		

	1.4.3 Ability to take licensing recommendations into consideration and include them in the body of the license or in the accompanying license conditions		
	1.4.4 Comprehension of how the terms of a license and the associated license conditions could be transferred into a licensee's operating safety envelope that will be guiding the inspection activities at a later stage		
	1.4.5 Comprehension and analysis of the licensee's documents submitted to receive a license and other relevant licensee's documents		

1.5. Enforcement Process Competence: This competence is the provision of a supportable recommendation of enforcement action in accordance with regulatory body policy.

Low: Basic awareness and knowledge of the national enforcement policy, program, procedures and the legal authority of an inspector; understanding of an event or issue; capability to assist experienced inspectors in conducting enforcement proceedings.
Medium: Thorough knowledge of the enforcement process and application of the regulator's enforcement policy. Ability in identifying non-compliant situations during an inspection. Ability to differentiate between minor and major violations and experience to undertake a range of enforcement challenges and actions.
High: Demonstrated in-depth knowledge and extensive practical experience in addressing unusual situations and complex challenges, evaluating corrective measures proposed by the licensee and dealing with identified items of non-compliance. Ability to ensure that enforcement actions are carried out properly and in accordance with due legal processes.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Enforcement Process	1.5.1 Comprehension of enforcement policy and guidance		
	1.5.2 Comprehension of events and associated issues, such as plant performance data		
	1.5.3 Comprehension of the regulatory body's enforcement procedures		
	1.5.4 Ability to determine what regulation and supporting documents apply to specific situations		
	1.5.5 Ability to identify non-compliant situations during an inspection		
	1.5.6 Ability to differentiate between minor and major violations		

	1.5.7 Ability to evaluate corrective measures proposed by the licensee and to determine if these will rectify identified items of non-compliance		
	1.5.8 Ability to secure corrective action by discussion and persuasion		
	1.5.9 Comprehension of the laws, regulations and bylaws that protect the rights of individuals		
	1.5.10 Understanding of how criminal law is applied in the nuclear field		
	1.5.11 Ability to apply enforcement powers or work with the law enforcement agencies in applying enforcement powers		

Quadrant 2: Competences Related to Technical Disciplines

NOTE: In consultation with various regulatory bodies, it was found that the subject matter relating to the technical competences in Quadrant 2 might be considered to include some or all of the technical disciplines listed below. **Note that the need for specific subject matter on this list will depend on the scope of the national nuclear programme and the specific responsibilities of the regulatory body and a particular regulatory body may require competences in other areas of science and engineering.**

2.1. Basic Technology Competence: This competence is the comprehension of science and engineering fundamentals in a particular field equivalent to a university degree.
Some typical science and engineering fields that are common to many regulatory bodies include:

- Engineering Mathematics
- Physics
- Chemistry, incl. Radiation Chemistry
- Earth Sciences, incl. Geology, Seismicity, Meteorology, Hydrology, etc.
- Computer Science
- Nuclear Engineering, incl. Nuclear Reactor Concepts, Nuclear Physics, Reactor Physics, etc.
- Chemical, Electrical, Environmental Engineering
- Civil, Mechanical, Materials, Metallurgical Engineering

Low: Basic knowledge of a field of science or engineering such as would be typical of a university graduate with a major in the field, but without practical experience.
Medium: Advanced knowledge of a field of science or engineering such as would be typical of a holder of an advanced degree in the field or of an experienced practitioner, preferably with some experience in nuclear applications.
High: Comprehensive knowledge of a field of science or engineering such as would be typical of a holder of an advanced degree with extensive practical experience, preferably with extensive experience in nuclear applications.

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Basic Technologies	2.1.1 Comprehension of one of the science fields at a basic level (Science field to be specified by the supervisor/manager when determining the tasks needed to perform the defined regulatory functions)		

	2.1.2 Comprehension of one of the engineering fields at a basic level (Engineering field to be specified by the supervisor/manager when determining the tasks needed to perform the defined regulatory functions)		

2.2. Applied Technology Competence: This competence is the additional comprehension and demonstrated ability to apply engineering and science concepts in relation to the nuclear industry. Training is usually provided to all regulatory body's staff members in areas other than their speciality to broaden their perspectives to all of the other areas for which the regulatory body has jurisdiction.
The main applied technology areas, for which such technical training for regulatory body staff is provided, include:

- Nuclear Reactor and Power Plant Technologies
- Nuclear Fuel Cycle Technologies
- Technologies regarding the application of radiation in industry, medicine and agriculture research
- Health Physics , Radiation Protection, naturally occurring radiation and environmental sciences
- Nuclear Safety Technology including safety and risk analysis
- Management Systems, including safety management, safety culture and quality management

A particular regulatory body may require additional competences in other nuclear related areas.

Low: Basic knowledge of a field of applied science or engineering such as would be typical of a university graduate with academic study in the field, but without practical experience.
Medium: Advanced knowledge of a field of science or engineering such as would be typical of a holder of an advanced degree in the field or of an experienced practitioner with some experience in the nuclear applications relating to that field.
High: Comprehensive knowledge of a field of science or engineering such as would be typical of a holder of an advanced degree in the field or with extensive practical experience in the nuclear applications relating to that field.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Applied Technology	2.2.1 Comprehension of nuclear reactor and power plant technology from a regulatory perspective		
	2.2.2 Comprehension of nuclear fuel cycle technology from a regulatory perspective		

	2.2.3 Comprehension and demonstrated ability in applying radiation protection principles at nuclear facilities		
	2.2.4 Comprehension of nuclear safety technology and associated risk assessment tools and techniques and how risk assessment is applied within the regulatory framework of the regulatory body		
	2.2.5 Comprehension of the application of management systems and safety management principles		
	2.2.6 Comprehension of environmental sciences as appropriate to the jurisdiction of the regulatory body		
	2.2.7 Comprehension of technologies regarding the application of radiation in industry, medicine and agriculture research as appropriate to the jurisdiction of the regulatory body		

2.3. Specialized Technology Competence: This competence is the comprehension and demonstrated ability to address and resolve issues in a specialized field.
Some typical scientific fields or specialized areas that are common to many regulatory bodies include:

- Analogue and Digital Instrumentation and Control Systems
- Electrical systems, electronics and communication
- Computer based systems, including Software Reliability
- Human and organizational factors and human performance
- Reliability Analysis
- Reactor Safety Technology
    - Deterministic Accident Analysis
    - Probabilistic Safety Analysis
    - Severe Accident Analysis
    - Passive Systems Analysis
- Thermal-hydraulics, incl. Computational Fluid Dynamics, Two-phase Flow, etc.
- Site Evaluation
- Mechanical Analysis, incl. Finite Element Methods, Fracture Mechanics, Seismic Analysis, etc.
- Confinement systems, radioactive releases
- Fire Analysis and Protection Systems
- Security, Nuclear materials Protection, Control and Accountability
- Transportation safety
- Management of Spent Fuel and Radioactive Waste
- Criticality Safety
- Ageing Management, incl. Radiation Effects on Materials, Corrosion, Corrosion chemistry, etc.
- Decommissioning
- Industrial Safety

A particular regulatory body may require specialized competences in other areas.

Low: Basic knowledge of a specialized technology such as would be typical of a university graduate with academic study in a related field, but without specific training or practical experience in the specialized technology
Medium: Advanced knowledge of a specialized technology such as would be typical of a holder of an advanced degree in a related field or of an experienced practitioner of the technology with some experience in nuclear technology applications.
High: Comprehension at a deep level of a specialised area such as to be noted as an expert of the specialised area within the regulatory body (and perhaps the country and rest of the world).

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)

Specialized Technologies	2.3.1 Comprehension of analogue and digital instrumentation and control systems and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.2 Comprehension of Electrical systems, electronics and communication and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.3 Comprehension of Computer based systems, including Software Reliability and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.4 Comprehension of Human and organizational factors and human performance and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.5 Comprehension of Reliability Analysis and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.6 Comprehension of Reactor Safety Technology and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.7 Comprehension of Deterministic Accident and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.8 Comprehension of Probabilistic Safety Analysis and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.9 Comprehension of Severe Accident Analysis and the ability to apply the knowledge to address and resolve regulatory technical issues.		

	2.3.10 Comprehension of Passive Systems Analysis and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.11 Comprehension of Thermal-hydraulics, incl. Computational Fluid Dynamics, Two-phase Flow, etc. and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.12 Comprehension of Criticality Safety and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.13 Comprehension of Site Evaluation and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.14 Comprehension of Mechanical Analysis, incl. Finite Element Methods, Fracture Mechanics, Seismic Analysis, etc. and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.15 Comprehension of Confinement systems, radioactive releases and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.16 Comprehension of Fire Analysis and Protection Systems and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.17 Comprehension of nuclear Security, and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.18 Comprehension of Nuclear materials Protection, Control and Accountability and the ability to apply the knowledge to address and resolve regulatory technical issues.		

	2.3.19 Comprehension of Transportation safety and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.20 Comprehension of the Management of Spent Fuel and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.21 Comprehension of the Management of Radioactive Waste and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.22 Comprehension of Ageing Management, incl. Radiation Effects on Materials, Corrosion, Corrosion chemistry, etc and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.23 Comprehension of Decommissioning and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.24 Comprehension of other scientific fields or specialised area that a particular regulatory body may require and the ability to apply the knowledge to address and resolve regulatory technical issues.		
	2.3.25 Comprehension of Industrial Safety as appropriate to the jurisdiction of the regulatory body		

Quadrant 3: Competences Related to Regulatory Practices

3.1. Safety-focused Analytical Techniques Competence: This competence is the objective (unbiased) analysis and integration of information using a safety focus to develop a supportable regulatory conclusion.

Low: Basic knowledge of regulatory practices and processes.
Medium: Thorough knowledge and practical experience in regulatory practices and processes and the capability to integrate information into a supportable regulatory conclusion.
High: Comprehensive knowledge and practical experience in regulatory practices and processes and the capability to synthesize information from many sources into regulatory decisions, and to exercise supervisory functions in the assigned areas.

COMPETENCE	KSAs		Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Safety- focused Analytical Techniques	3.1.1	Comprehension of inspection reports, license reports, self assessments, responses to generic communications, and third party reports		
	3.1.2	Comprehension of assessment procedures		
	3.1.3	Appreciation and comprehension of current regulatory body emphasis (sensitivity and priorities)		
	3.1.4	Comprehension of PSA/PRA concepts		
	3.1.5	Ability to analyze, integrate, and evaluate technical information		
	3.1.6	Ability to make recommendations that are supportable by reliable information		

3.2. Inspection Techniques Competence: This competence is the independent gathering of information through objective review, observation and open communications, and determining acceptability of information by comparing it to established criteria.

Low: Basic ability to gather information and determine its acceptability and to assist experienced inspectors in performing their duties.
Medium: Ability and practical experience in using inspection techniques to gather information and compare it to established criteria to ensure licensee compliance with license conditions and regulations.
High: Comprehensive ability and practical experience in developing inspection programs and using inspection techniques and the capability to supervise inspections and take appropriate actions to ensure that licensees rectify non-compliance with licensing conditions and regulations.

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Inspection Techniques	3.2.1 Comprehension of inspection procedures and techniques		
	3.2.2 Comprehension of industry codes and standards		
	3.2.3 Comprehension of regulations and regulatory guidance documents		
	3.2.4 Comprehension of regulatory body policies and standards used in nuclear facility inspection		
	3.2.5 Comprehension of plant specific or area specific technical information		
	3.2.6 Comprehension of PSA/PRA concepts and their relevance to Inspection		
	3.2.7 Comprehension of licensing documents, manuals and other reference material		
	3.2.8 Comprehension of licensee work schedule		
	3.2.9 Comprehension of licensees modification systems		
	3.2.10 Comprehension of licensees surveillance programs		
	3.2.11 Comprehension of licensees maintenance programs		

	3.2.12 Comprehension of emergency preparedness and response and in plant accident management		
	3.2.13 Comprehension of previous inspection reports, allegation reports, licensee event reports, self assessments, responses to generic communications, and third party reports		
	3.2.14 Comprehension of operational experience feedback		
	3.2.15 Comprehension of root cause analysis techniques		
	3.2.16 Comprehension of facilities status		
	3.2.17 Comprehension of regulatory body allegations procedures		
	3.2.18 Comprehension of guidance for inspection reports		
	3.2.19 Comprehension of procedures for control of information (such as draft and allegation)		
	3.2.20 Ability in assessing the regulatory significance of inspection findings		
	3.2.21 Ability to evaluate information		
	3.2.22 Ability in interviewing		
	3.2.23 Ability in resolution of issues		
	3.2.24 Ability in observation		
	3.2.21 Ability to plan and organize inspections		
	3.2.22 Ability to recognise and address unusual or abnormal conditions		
	3.2.23 Appreciation of critical thinking/questioning approach		
	3.2.24 Ability to maintain objectivity and independence		

3.3 Assessment Competence: This competence is the examination of safety cases and other documentation submitted by licensees in support of their justifications regarding installations and the forming of judgements on the adequacy of the documents and the processes used by the licensees in producing them.

Low: Basic knowledge and understanding of the purposes of licensee's submissions, the processes used by them to produce the submissions, the methodology for assessing them and the regulatory body's processes for administering and permissioning them.
Medium: Thorough knowledge, experience and understanding of the purposes of licensees submissions, the processes used by them to produce the submissions, the methodology for assessing them and the regulatory body's processes for administering and permissioning them.
High: Comprehensive knowledge, experience and understanding of the purposes of licensee's submissions, the processes used by them to produce the submissions, the methodology for assessing them and the regulatory body's processes for administering and permissioning them. The capability to supervise assessments, and to take responsibility for recommending the results to those making the permissioning activity.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Quality Auditing Techniques	3.3.1 Comprehension of the process of auditing and established standards and procedures		
	3.3.2 Comprehension of the technical aspects of the subject matter of the audits		
	3.3.3 Ability to review and analyse documents against current standards and procedures		
COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Assessment Techniques	3.3.4 Understand the purpose, scope and content of licensees' safety cases and other documents submitted from licensees; checking and judging that they: are and remain soundly based; conform to good practice; and define the operating envelope.		
	3.3.5 Understand how to make judgements on adequacy of submitted documents by establishing: completeness; clarity; rational; accuracy; objectivity; appropriateness; integrated; forward looking in to all of the life cycle etc.		

	3.3.6 Understand how licensees make modifications to their safety cases and other submitted documents to reflect plant, operational and organizational changes and judging the adequacy of those modifications.		
	3.3.7 Understanding and making judgements on the relationship between Safety Cases and: limiting conditions of operation; surveillance and maintenance programmes; technical specifications; operating instructions; emergency arrangements etc.		
	3.3.8 Understand the individual licensees' arrangements for producing, controlling, modifying, reviewing safety cases and other submitted documents and able to make judgements on whether these processes have been properly applied.		
	3.3.9 Understand and be able to make judgements on Periodic Reviews carried out by licensees on their safety documentation.		

3.4. Investigation Techniques Competence: This competence is the pursuit of the cause of events arising from notifications, incidents or information obtained during inspections and/or evaluations and gathering evidence in order to make regulatory decisions.

Low: Basic knowledge of procedures and techniques of investigation and gathering evidence.
Medium: Thorough knowledge and experience in techniques and procedures of investigation, capability to lead simple investigations and communicate the investigation approach, rationale and objectives to the stakeholders and prepare a recommendation for regulatory action.
High: Comprehensive knowledge and experience in techniques and procedures of investigation, capability to lead complex or sensitive investigations, to propose actions and inform stakeholders of the investigation progress, findings and potential serious regulatory actions.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Investigation Techniques	3.4.1 Ability to explain and interpret procedures that apply to investigations		
	3.4.2 Ability to decide when investigation is appropriate, based on receipt of information		

	3.4.3 Ability to evaluate information and circumstances and to decide if and when an inspection should become an investigation		
	3.4.4 Ability to identify a strategy appropriate to the circumstance and to provide advice on measures to mitigate the immediate risk		
	3.4.5 Comprehension of established procedures to conduct investigations including the ability to collect evidence to appropriate legal standards		
	3.4.6 Ability to collect information and to decide on relevance to legal obligations		
	3.4.7 Ability to investigate complaints, incidents, ill-health and accidents for regulatory purposes in external organizations		
	3.4.8 Ability to investigate work related accidents, causes of ill-health and incidents in external organizations for regulatory purposes		
	3.4.9 Ability to gather and evaluate evidence in external organizations to determine ill-health/accident/incident/complaint causation, appropriate enforcement action and any other action needed by the regulatory authority or duty holders		
	3.4.10 Ability to inform duty holders, employee/safety representatives and others of the outcome of the investigations and actions proposed or required		
	3.4.11 Ability to secure appropriate reductions in risk in work activities and compliance with health and safety legislation in external organizations		

Quadrant 4: Competences Related to Personal and Interpersonal Effectiveness

4.1. Analytical Thinking, Problem-solving and Decision-making Competence: This competence is approaching problems objectively, gathering and integrating information and developing a comprehensive understanding to reach conclusions.

Low: Basic capability equivalent to that of a university graduate to analyze and solve problems in a particular area of expertise, and to make decisions using guidance and criteria appropriate to the field of expertise.
Medium: Broad capability to analyze and solve problems involving multiple fields of expertise, and to select appropriate guidance and criteria and make decisions based on these criteria.
High: Broad capability to analyze and solve complex problems involving multiple fields of expertise, to integrate inputs from various sources, to select or develop appropriate guidance and criteria and make complex and difficult decisions.

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Analytical Thinking, Problem-solving and Decision-making	4.1.1 Ability to synthesize information, to analyze problems, and arrive at sound conclusions.		
	4.1.2 Ability to identify key issues, to analyze alternatives, and to recommend appropriate tactics and strategies.		

4.2. Personal Effectiveness Competences:

Information Technology	**Information Technology:** This competence is using technology to create, gather, manipulate, communicate and/or share information. **Low:** Basic understanding of the availability and use of the information technology resources of the organization. **Medium:** Comprehensive understanding of the availability and use of the information technology resources of the organization, and the capability to instruct and guide others in the use of these resources. **High:** Comprehensive understanding of the availability and use of the information technology resources of the organization, and the capability to understand current and future needs and to specify improved systems and procedures.

Planning and Organization of Work			
	4.2.1 Ability to use computer software for word processing, spreadsheets, internet communication, and data storage.		
	Planning and Organization of Work Competence: This competence is effective and efficient co-ordination of tasks to achieve a desired objective. **Low:** Basic ability to plan a limited number of tasks, to observe priorities, to meet schedules, and to produce results that meet the organization's quality standards. **Medium:** Ability to organize a work load consisting of multiple tasks, to set priorities and schedules based on guidance, to co-ordinate inputs from others, and to produce results that meet the organization's quality standards. **High:** Ability to organize a complex work load, to delegate responsibilities and tasks, to co-ordinate multiple contributions from others, to set priorities and schedules, and to produce integrated results that meet the organization's quality standards.		
	4.2.2 Ability to set priorities, organize work, and meet scheduled objectives.		
	4.2.3 Ability to find simpler, faster and less costly ways to achieve objectives.		
Self Management	**Self Management Competence:** This competence is working independently, exercising judgment and exhibiting flexibility in the completion of activities, especially during difficult or challenging situations. **Low:** Basic capability to perform a limited number of assigned tasks independently, with flexibility in response to priorities, to exercise good judgment, and to produce quality results. **Medium:** Capability to handle a workload of multiple tasks independently, with flexibility in setting priorities and schedules based on guidance, to obtain assistance as needed and integrate results, and to exercise good judgment in producing quality results, even in times of stress. **High:** Ability to organize a complex work load, to set priorities and schedules for oneself, and to produce high quality results, even in times of stress.		

	4.2.4 Ability to adapt behaviour to accommodate the sensitivities of others, to cope with stressful situations, and to sustain mental effort to achieve objectives.		
	4.2.5 Ability to recognise one's own strengths and weaknesses and to plan accordingly for personal training.		
	4.2.6 Ability to periodically assess one's own performance and to work for improvement.		

4.3. Communication Competence: This competence is engaging in effective dialogue, representation and interaction with others (i.e., licensees, colleagues and public) through committed listening, speaking, writing or delivery of presentations, understanding the true interests of people and delivering meaningful messages.

Low: Basic capability to communicate in speech and writing, primarily with colleagues and supervisors within the organization, with limited interactions outside the organization.
Medium: Ability to communicate clearly in speech and writing, both within and outside the organization, including interactions with colleagues, licensees and in public forums.
High: Ability to communicate clearly in speech and writing, both within and outside the organization, on technical, licensing and policy matters, including interactions with technical colleagues, licensees, the public, and leaders of industry and government.

COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
Communication skills	4.3.1 Ability to talk effectively in small groups and with large audiences.		
	4.3.2 Ability to listen effectively, to acquire information from others, and to determine the needs, interests and expectations of various groups.		
	4.3.3 Ability to write clear, concise, reports and to edit documents effectively.		
	4.3.4 Ability to respond appropriately to questions, and to provide factual answers consistent with the regulatory body's views.		
	4.3.5 Ability to communicate complex issues clearly. To adjust communications to the needs of an audience, and to be effectively persuasive.		
	4.3.6 Ability to communicate effectively in a foreign language.		

4.4. Teamwork Competence: This competence is working collaboratively with others to achieve common objectives.

Low: Capability to work collaboratively in a small team.
Medium: Capability to work collaboratively and lead a small team.
High: Capability to lead multiple teams or large teams and to work collaboratively with others on broad issues of the organization. Facilitates productivity and harmony within the team.

COMPETENCE	KSAs	Needed KSA Level (L, M, H, or NA)	Existing KSA Level (L, M, H, or NA)
Teamwork	4.4.1 Ability to cooperate well with other team members and to maintain a positive and productive atmosphere.		
	4.4.2 Ability to show flexibility in response to change, and to maintain commitment to team objectives even when one's own ideas are not supported.		

4.5. Management Competences

Management and Leadership	**Strategic management competence:** This competence is a deep understanding of an organization, its strategies and high-level goals, planning, work organization, follow-up activities, and decision making **Low:** Exhibits skills to set short term goals and monitor progress. **Medium:** Exhibits ability to communicate strategy; to develop objectives from goals; to organize work effectively; to monitor and improve processes. **High**: Exhibits ability to develop a vision and related strategy from the organization's mission, taking into account demands from society and possible future changes in the regulatory environment. Exhibits the ability to establish short term goals for the entire organization.		
	4.5.1 Ability to develop a viable strategic plan.		
	4.5.2 Ability to develop sound policies for the organization		

	4.5.3 Ability to recognize the need to change the policies and strategies, taking into account environmental and social issues.		
	4.5.4 Ability to establish goals and targets and to allocate resources appropriately.		
Leadership	**Leadership Competence:** This competence is exemplified by practice of tolerance, objectivity, openness, fairness, and inspiration... **Low:** Exhibits tolerance, objectivity, openness and fairness in dealing with a group of colleagues, and can lead such a group. **Medium:** Exhibits tolerance, objectivity, openness and fairness in dealing with colleagues, including subordinates and managers, and leads groups. **High:** Exhibits tolerance, objectivity, openness and fairness in dealing with colleagues, including subordinates and senior managers; leads multiple work groups; and inspires others to work enthusiastically.		
	4.5.5 Ability to adjust the level of authority and support to suit individual circumstances.		
	4.5.6 Ability to convey confidence in others' abilities, to give constructive feedback and coaching, and to inspire their enthusiasm.		
	4.5.7 Ability to be approachable and open to suggestions from others.		
	4.5.8 Ability to learn from past experience, to avoid future mistakes, and to ensure that commitments are met.		

Negotiation	**Negotiation Competence:** This competence is to reconcile different views and persuade others to accept a resolution. **Low:** Capability to participate effectively in negotiations... **Medium:** Capability to participate effectively in complex negotiations. **High:** Capability to participate in highly complex negotiations, including those on policy matters with senior leaders of external stakeholders. Persuades participants that the compromise is in their best interest.		
	4.5.9 Ability to resolve differences by encouraging alternative proposals, taking into account the positions of all interested parties, and facilitating open discussion.		

Project Management	**Project Management Competence:** This competence is completing a set of complex tasks in a co-ordinated manner to preset time, scope and budget. **Low:** Capability to co-ordinate and complete tasks of limited complexity within preset time, scope and budget. **Medium:** Capability to define, organize, co-ordinate and complete complex tasks within preset time, scope and budget. **High:** Capability to define, organize, co-ordinate and complete multiple complex tasks, and to set time, scope and budget for the tasks.		
COMPETENCE	**KSAs**	**Needed KSA Level (L, M, H, or NA)**	**Existing KSA Level (L, M, H, or NA)**
	4.5.11 Ability to develop project plans, establish deliverables and success criteria, and to schedule activities		
	4.5.12 Ability to identify potential problems, to allocate resources and identify alternative strategies		
	4.5.13 Ability to provide accurate, complete and timely project status reports		

[i] *In the case of countries "embarking" on nuclear power programmes, the guidelines are applicable to the regulator and are a means of developing the competence of regulators staff. In this context, the appendices need to be examined with regard to the process of establishment and building of the competence of their organizations. In the near future it is also recommended to read the Safety Report 'A Framework for Managing a Regulatory Body's Competence' which is currently under preparation by the IAEA and the Steering Committee on Competence of Regulatory Bodies. This safety report shall provide generic guidance in the development of a competence management system and contains an appendix giving detailed guidance on the development of competences in different phases of a nuclear power programme for those countries wishing to start a Nuclear Power Programme.*