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INTEGRATED REGULATORY REVIEW SERVICE (IRRS)

FOLLOW-UP MISSION

TO

THE REPUBLIC OF CAMEROON

Yaoundé, Cameroon

15 to 19 November 2021

DEPARTMENT OF NUCLEAR SAFETY AND SECURITY

Integrated Regulatory Review Service
IRRS

INTEGRATED REGULATORY REVIEW SERVICE (IRRS)
FOLLOW-UP REPORT
TO
REPUBLIC CAMEROON

Mission date:	*15 November to 19 November 2021*
Regulatory body:	*National Radiation Protection Agency (NRPA)*
Location:	*Yaoundé*
Regulated facilities and activities:	*Radiation Sources in industrial and medical facilities, emergency preparedness and response, medical exposure, occupational exposure*
Organized by:	*International Atomic Energy Agency (IAEA)*

IRRS REVIEW TEAM	
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IAEA – November 2021

The number of recommendations, suggestions and good practices is in no way a measure of the status of the regulatory body. Comparisons of such numbers between IRRS reports from different countries should not be attempted.

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EXECUTIVE SUMMARY

At the request of the Government of the Republic of Cameroon, an international team of senior safety experts met with representatives of the National Radiation Protection Agency (NRPA) from 15 to 19 November 2021 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission. The purpose of the IRRS follow-up mission was to review Cameroon's progress against the recommendations and suggestions identified in the initial IRRS mission, which was carried out from 12 to 21 October 2014. The follow-up mission took place at the headquarters of NRPA in Yaoundé. The scope of the IRRS follow-up mission was the same as the scope of the initial mission in 2014, namely the regulatory framework for all facilities and activities in Cameroon.

The IRRS team consisted of four senior regulatory experts from four IAEA Member States, and two IAEA staff members.

The IRRS team carried out a review of the progress made on each recommendation and suggestion that was documented in the 2014 IRRS mission report. These recommendations and suggestions cover the following areas: responsibilities and functions of the government; the global safety regime; responsibilities and functions of the regulatory body; the management system of the regulatory body; the activities of the regulatory body, including authorization, review and assessment, inspection, enforcement and the development and content of regulations and guides; emergency preparedness and response; control of medical exposure and occupational radiation protection.

To assess progress, the IRRS team conducted a series of interviews and discussions with NRPA staff and reviewed the advance reference material provided by NRPA. The IRRS team also had a courtesy visit to Mr Gilbert Taguem Fah, the representative of the Ministry of Scientific Research and Innovation.

The IRRS team concluded that Cameroon has been responsive to each recommendation and suggestion made in 2014, and continues to place appropriate focus on implementing a framework that provides for effective radiation protection and safety for workers, patients, the public and the environment. 29 out of 46 recommendations and 9 out of 12 suggestions identified in 2014 have been closed. During the follow-up mission, the IRRS team formulated 3 new recommendations.

The IRRS team noted that considerable improvement of the national legal and regulatory infrastructure for radiation safety has been made since the initial mission; in particular, the strengthening of the legal framework for radiation safety in the country. Significant achievements were also noted in other safety areas.

Since 2014, Cameroon has taken positive steps and has made a number of achievements in the following areas:

- Enacting of a nuclear and radiation safety law in 2019;
- Establishment of a central waste storage facility;
- Establishment of a communication strategy by NRPA for effective communication with interested parties;
- Establishment of a comprehensive authorization system by NRPA to regulate all facilities and activities in Cameroon;

- Enhancement of the regulatory framework for occupational radiation protection and medical exposure.

The IRRS team identified areas, including new findings, warranting attention or need improvement that would enhance the legal, governmental and regulatory framework for radiation safety in Cameroon.

Cameroon is encouraged to continue its efforts and take further action for:

- Promulgation of the draft decrees including for establishment of the authority in accordance with the provisions of new law;
- Allocation of resources to the regulatory body and its optimization;
- Avoiding potential conflict of interest between the regulatory functions and technical services provided by the NRPA;
- Ensuring consistency in the enforcement of the provisions of the law and regulatory requirements;
- Completing the development of the Integrated Management System of the NRPA.

The specific findings of the follow-up mission are summarized in Appendices IV and V.

A press release was issued by the IAEA and a press conference was held at the end of the mission.

I. INTRODUCTION

At the request of the Government of the Republic of Cameroon, an international team of senior safety experts met representatives from the National Radiation Protection Agency (NRPA) from 15 to 19 November 2021 to conduct an Integrated Regulatory Review Service (IRRS) follow-up mission.

The purpose of the IRRS follow-up mission was to review the implementation of the recommendations and suggestions given to the Government of Cameroon during the IRRS Mission in October 2014. The IRRS follow-up mission was formally requested by the Government of Cameroon in May 2018. A virtual preparatory meeting was conducted from 1 to 3 December 2020 to discuss the purpose, objectives and detailed preparations of the review in connection with regulated facilities and activities in Cameroon and their related safety aspects.

The IRRS team consisted of 4 senior regulatory experts from 4 IAEA Member States, and 2 IAEA staff members. The IRRS team carried out the review in the areas covered by the main mission in 2014.

The IRRS follow-up self-assessment report and supporting documentation were provided to the IRRS team as advance reference material (ARM) for the mission. During the mission, the IRRS team performed a systematic review of all topics by reviewing the advance reference material, additional information, and by conducting interviews with management and staff of the NRPA.

All through the mission, the IRRS team received support and cooperation from NRPA.

II. OBJECTIVE AND SCOPE

The purpose of this IRRS follow-up mission was to conduct a review of the implementation of the recommendations and suggestions given to the Government of Cameroon during the IRRS Mission in October 2014 and to exchange information and experience in the areas covered by the IRRS. The IRRS review scope included facilities and activities regulated by NRPA. The review was carried out by comparison of existing arrangements against the IAEA safety standards.

It is expected that the IRRS follow-up mission will facilitate regulatory improvements in Cameroon and other Member States from the knowledge gained and experiences shared between the NRPA and IRRS team and through the evaluation of the effectiveness of Cameroon's regulatory framework for radiation safety.

III. BASIS FOR THE REVIEW

A) PREPARATORY WORK AND IAEA REVIEW TEAM

At the request of the Government of Cameroon, a virtual preparatory meeting for the Integrated Regulatory Review Service (IRRS) was conducted from 1 to 3 December 2020. The preparatory meeting was carried out by the Team Leader Mr Faradally Ollite, and IAEA Team Coordinator Mr Teodros Hailu and representatives of NRPA.

The IRRS follow-up mission preparatory team had discussions regarding regulatory programmes and policy issues with the senior management of the NRPA represented by Mr Augustin Simo, the Director General, and senior staff of NRPA. The discussions resulted in agreement that the regulatory functions covering the following facilities and activities were to be reviewed by the IRRS follow-up mission:

- Radiation sources facilities and activities;
- Control of medical exposure;
- Occupational radiation protection;
- Selected policy issues.

Mr Augustin Simo made presentations on the national context, the current status of NRPA and the progress made since the initial mission in October 2014.

IAEA staff presented the process and methodology of conducting an IRRS follow-up mission. This was followed by a discussion on the tentative work plan for the implementation of the IRRS follow-up mission in Yaoundé in November 2021.

The proposed IRRS team composition (senior regulators from Member States to be involved in the review) was discussed and the size of the IRRS follow-up team was tentatively confirmed. Logistics including meeting and work space, counterparts and Liaison Officer, lodging and transport arrangements were also addressed.

The Liaison Officer for the IRRS follow-up mission was Mr Maurice Moyo Ndontchueng.

NRPA provided the IAEA (and the review team) with the advance reference material for the review in September 2021 and additional materials. In preparation for the mission, the IRRS team members conducted a review of the advance reference material and provided their initial review comments to the IRRS Team Coordinator and Team Leader prior to the follow-up mission.

B) REFERENCES FOR THE REVIEW

The relevant IAEA safety standards and the Code of Conduct on the Safety and Security of Radioactive Sources were used as review criteria. The complete list of IAEA publications used as the reference for this mission is provided in Appendix VII.

C) CONDUCT OF THE REVIEW

An initial IRRS team meeting was conducted on Sunday 14 November by the IRRS Team Leader and IAEA Team Coordinator to discuss the general overview, the focus areas and the specific issues to the mission; to clarify the basis for the review and the background and

objectives of the IRRS; and to agree on the methodology for the review. The agenda for the mission was also presented.

The Liaison Officer, Dr Maurice Moyo Ndontchueng was present at the initial IRRS team meeting in accordance with the IRRS guidelines, and presented logistical arrangements planned for the mission.

The IRRS follow-up mission entrance meeting was held on Monday, 15 November 2021 with the participation of government officials and senior management and staff of NRPA. Opening remarks were made by Mr Taguem Fah Gilbert Lamblin, Inspector General of the Ministry of Scientific Research and Innovation, and the Team Leader, Mr Faradally Ollite gave a presentation on the expectations of the IRRS follow-up mission. Mr Augustin Simo gave an overview of NRPA activities and response to the 2014 intial mission findings.

During the mission, a review was conducted for all the mission scope areas with the objective of reviewing the Government and NRPA's response to the recommendations and suggestons identified during the initial mission. The review was conducted through meetings, interviews and discussions regarding the national practices and activities.

The IRRS team performed its activities based on the mission programme given in Appendix III.

The IRRS follow-up mission exit meeting was held on Friday 19 November 2021 where the IRRS Team Leader Mr Faradally Ollite presented the results of the IRRS follow-up mission highlighting the main findings. This was followed by a statement of Mr Peter Johnston, Director of the Division of Radiation, Transport and Waste Safety, Department of Nuclear Safety and Security. Closing remarks were made Mr Taguem Fah Gilbert Lamblin, Inspector General of the Ministry of Scientific Research and Innovation.

An IAEA press release was issued and a press conference was held at the end of the mission.

1. RESPONSIBILITIES AND FUNCTIONS OF THE GOVERNMENT

1.1. NATIONAL POLICY AND STRATEGY FOR SAFETY

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Fundamental safety principles such as responsibility for safety, priority for safety, leadership and management for safety, and the protection of present and future generations are not covered by the existing safety legislation. A documented strategy for the implementation of the safety policy does not exist.
(1)	**BASIS: GSR Part 1 Requirement 1 states that:** "*The government shall establish a national policy and strategy for safety, the implementation of which shall be subject to a graded approach in accordance with national circumstances and with the radiation risks associated with facilities and activities, to achieve the fundamental safety objective and to apply the fundamental safety principles established in the Safety Fundamentals"*
(2)	**BASIS: GSR Part 1 Requirement 1 para 2.3 states that:** "*National policy and strategy for safety shall express a long term commitment to safety. The national policy shall be promulgated as a statement of the government's intent. The strategy shall set out the mechanisms for implementing national policy"*
(3)	**BASIS: GSR Part 1 Requirement 1 para 2.3 (a) states that:** "*In the national policy and strategy, account shall be taken of […] (a)The fundamental safety objective and the fundamental safety principles established in the Fundamental Safety Principles"*
R1	**Recommendation: The Government should ensure that all fundamental safety principles are incorporated in the Cameroon's national policy and that a documented strategy for the implementation of the safety principles is established.**

Changes since the original IRRS mission

Recommendation 1: The fundamental safety principles such as primary responsibility for safety, leadership and management for safety, and the protection of present and future generations have been incorporated in the *Law 2019/012 "to lay down the general framework for radiological and nuclear safety, nuclear security, civil liability and safeguards enforcement*." The Law and the draft decree on radiation safety also elaborate the strategy for the implementation of the safety principles.

Status of Recommendation 1

Recommendation (R1): is closed as *Law 2019/012* and the draft decree incorporate the fundamental safety principles.

1.2. ESTABLISHMENT OF A FRAMEWORK FOR SAFETY

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: A legal and regulatory framework exists but important issues such as the prime responsibility for safety, involvement of interested parties, appeal against regulatory decision, use of graded approach in review and assessment, inspection, and enforcement provisions, are not covered.
(1)	**BASIS: GSR Part 1 Requirement 2 states that:** "*The government shall establish and maintain an appropriate governmental, legal and regulatory framework for safety within which responsibilities are clearly allocated.*"
(2)	**BASIS: GSR Part 1 Requirement 2 para. 2.5 states that:** "*The government shall promulgate laws and statutes to make provision for an effective governmental, legal and regulatory framework for safety. This framework for safety shall set out the following: …(1) – (19)*"
R2	**Recommendation: The Government should revise the legal and regulatory framework so that all provisions of the international safety standards are addressed in the laws and statutes.**

Changes since the original IRRS mission

Recommendation 2: Cameroon has promulgated *Law 2019/012,* and a decree for implementation of the law has been drafted. The IRRS team was informed that the draft decree will be finalized and promulgated by 2022. The law and draft decree address the issues identified during the initial IRRS mission, such as the prime responsibility for safety, involvement of interested parties, and appeal against regulatory decisions.

However, the requirement for the application of the graded approach in the review and assessment of authorization, inspection and enforcement is not well defined. The NRPA plans to include in the draft decree some additional provisions on the application of the graded approach. The IRRS team observed that NPRA applies graded approach in the conduct of its regulatory functions, and the application of graded approach is already part of the management system of NRPA.

Status of Recommendation 2

Recommendation (R2): is closed on the basis of progress and confidence in effective completion in due time, *as Law 2019/012* has been promulgated and the draft decree for the implementation of the law will be consolidated and promulgated.

1.3. ESTABLISHMENT OF A REGULATORY BODY AND ITS INDEPENDENCE

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The Radiation Protection Act and the current decree do not empower NRPA with the legal rights and authority to carry out all main regulatory functions of an independent regulatory body. Furthermore, it is not evident that sufficient resources for carrying out the activities of the Regulatory Body are allocated. It was established that NRPA finances some inspection

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	activities by alternative resources.
(1)	**BASIS: GSR Part 1 Requirement 4 states that:** *"The Government shall ensure that the regulatory Body is effectively independent in its safety related decision making and that it has functional separation from entities having responsibilities or interest that could unduly influence its decision making"*
R3	**Recommendation: The Government should revise the existing legislation in order to assign and authorize the NRPA to carry out main regulatory functions of an independent safety authority such as establishing safety criteria, granting authorization, suspension or revoking authorization, review and assessment of safety matters, inspection and enforcement activities.**
(1)	**BASIS: GSR Part 1 Requirement 3 states that:** *"The government, through the legal system, shall establish and maintain a regulatory body, and shall confer on it the legal authority and provide it with the competence and the resources necessary to fulfil its statutory obligation for the regulatory control of facilities and activities"*
R4	**Recommendation: The Government should ensure that financial resources allocated to NRPA are sufficient to fulfil its statutory obligations in a timely and adequate fashion.**

Changes since the original IRRS mission

Recommendation 3: *Law 2019/012* was promulgated and makes provisions for the establishment of an effectively independent regulatory authority in charge of regulation and regulatory control. The draft decree for establishing the authority has not been issued and the mandates of this authority have not been formally transferred to NRPA. Therefore, NRPA does not currently have the full legal mandate to carry out the regulatory functions as provided by the new law and regulatory functions are being carried out using provisions of Decree 2002_250 that established NRPA.

Status of Recommendation 3

Recommendation (R3): remains open as the decree that establishes the authority in charge of regulation and regulatory control provided under *Law 2019/012* has not been promulgated yet.

Changes since the original IRRS mission

Recommendation 4: The draft decree on establishing an authority in charge of regulation and regulatory control makes provisions for the financial resources of the regulatory body including funding from Government, fees from services and through other means. The IRRS team observed that NRPA does not have sufficient financial resources to fulfil its statutory obligations and regulatory responsibilities, in particular for inspection of radiation facilities.

Status of Recommendation 4

Recommendation (R4): remains open as NRPA does not have sufficient financial resources to carry out all its regulatory activities adequately.

Policy discussion on the "Independence of the regulatory body"

NRPA delivered a short presentation on the its independence and the challenges it faces in ensuring its effective independence. Law 2019/012 gives independence to the authority in charge of regulation and regulatory control, to be established in accordance with the law, and a decree has been drafted to rename and reorganize the NRPA to be the new regulatory body. NRPA has in the past faced some undue pressure in carrying out its regulatory activities in a public facility.

The IRRS team noted that a legal basis that establishes the regulatory authority effectively independent from government entities that have responsibilities or interests that could unduly influence its regulatory decisions is crucial. The IRRS team shared that in some countries arrangements which enable the regulatory body to report directly to a higher government office (such as the President' or Prime Minister's office) has minimized the pressure from other government entities.

The IRRS team noted that since undue pressure mostly occurs when taking enforcement actions, a graded approach to enforcement needs to be applied and properly communicated to the authorization holder to have an effective implementation of enforcement actions. Applying enforcement tools in steps, based on the severity of the non-compliance, has been helpful in some countries. The IRRS team noted that the best approach for taking effective enforcement actions would also be through engagement of the higher-level government officials and making them aware on the particular issue of their concern. The IRRS team shared that in some countries, engagement of the Ministry to which the regulatory body is reporting has been made when an issue of interference from other government entities is faced.

The IRRS team noted that regulatory activities and decisions should be credible and transparent in order for enforcement actions to be trusted and considered fair. Consistent implementation of the enforcement policy and procedures in all facilities and activities, both public and private, comprehensively would significantly reduce the resistance or undue governmental pressure when enforcement actions are taken.

The IRRS team noted that a clear separation of the technical services provided by NRPA from its regulatory functions would strongly contribute to the effective implementation of the regulatory requirements including for enforcing regulatory requirements and decisions.

Policy discussion on the "Financial resources for the regulatory body"

This policy issue discussion focused on how to ensure adequate financial resources for the regulatory body. NRPA made a presentation a short presentation on the challenges of getting sufficient budget and getting it on time. The budget of NRPA is reviewed and approved by the Board of NRPA biannually; however, it is challenging to get the budget approved by the Board from the government. In some cases, there is also a delay in release of approved finances that creates a challenge for the regulatory body to carry out is activities in accordance with its plan.

The IRRS team noted that governments provide finances to the regulatory body or other public entities based on priorities. The most important aspect to be considered as a priority area is ensuring visibility of the legal and regulatory functions and responsibilities of the regulatory body, and promotion of its contribution to the overall national development. The IRRS team shared that this could be developed through different sensitization activities on the impact of the work of the organization.

The IRRS team noted that it is usually similar and challenging in many countries to get the requested amount of annual budget from governments. However, sometimes continuous and stretched budget request has shown encouraging results. The IRRS team noted that financial resources provided by the government must be used effectively within the organization, to ensure that the core functions of the regulatory body are carried out effectively without financial constraint. In some case, the support functions of organization consume more resources than the core functions of the organization, which needs attention and resources need to be prioritized. The IRRS team shared that due care has to be taken not to lose focus of the objective and responsibilities of the regulatory body, while using the revenue generated from services provided by the regulatory directly to compensate for any lack of financial resources.

1.4. COMPLIANCE WITH REGULATIONS AND RESPONSIBILITY FOR SAFETY

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The existing legal framework does not include provisions on the prime responsibility for safety and compliance with stipulated regulatory requirements.
(1)	**BASIS: GSR Part 1 Requirement 5 states that** *"The government shall expressly assign the prime responsibility for safety to the person or organization responsible for a facility or an activity, and shall confer on the regulatory body the authority to require such persons or organizations to comply with stipulated regulatory requirements, as well as to demonstrate such compliance."*
(2)	**BASIS: GSR Part 1 requirement 6 states that** *"The government shall stipulate that compliance with regulations and requirements established or adopted by the regulatory body does not relieve the person or organization responsible for a facility or an activity of its prime responsibility for safety."*
R5	**Recommendation: The Government should include provisions on the prime responsibility for safety in the legal framework and that it should not be delegated. It should be ensured that compliance with regulations and stipulated requirements does not relieve the authorized party of its responsibility for safety.**

Changes since the original IRRS mission

Recommendation 5: The *Law 2019/012* explicitly assigns the prime responsibility for safety to the person or organization responsible for a facility or an activity.

Status of Recommendation 5

Recommendation (R5): is closed as *Law 2019/012* assigns the primary responsibility for safety to the person responsible for a facility or an activity.

1.5. COORDINATION OF AUTHORITIES WITH RESPONSIBILITIES FOR SAFETY WITHIN THE REGULATORY FRAMEWORK

There were no findings in this area in the original IRRS mission.

1.6 SYSTEM FOR PROTECTIVE ACTIONS TO REDUCE UNREGULATED RADIATION RISKS

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: A system to carry out protective actions to reduce undue radiation risks associated with unregulated sources and contamination from past activities or events does not exist.
(1)	**BASIS: GSR Part 1 Requirement 9 states that:** *"The government shall establish an effective system for protective actions to reduce undue radiation risks associated with unregulated sources (of natural or artificial origin) and contamination from past activities or events, consistent with the principles of justification and optimization."*
(2)	**BASIS: GSR Part 1 Requirement 9 para. 2.26 states that:***"The regulatory body shall provide any necessary inputs for the protective action, including advising the government or exercising regulatory control over protective actions. It shall establish the regulatory requirements and criteria for protective actions in cooperation with the other authorities involved, and in consultation with interested parties, as appropriate."*
R6	**Recommendation: The Government should designate responsible organizations and create a system to ensure that protective actions to reduce risks with unregulated sources and past contamination can be carried out.**

Changes since the original IRRS mission

Recommendation 6: *Law 2019/012* makes provisions for the management of orphan sources. The IRRS team was informed that there was no radiation risk associated with contamination from past activities in Cameroon. Provisions have been made in the draft decree on radiation safety for NRPA to be the designated organization that ensures protective actions are carried out to reduce the risk of unregulated sources. The draft decree is expected to be finalized and issued in 2022.

Status of Recommendation 6

Recommendation (R6): is closed on the basis of progress and confidence in effective completion in due time as *Law 2019/012* and the draft decree have provisions for NRPA to ensure protective actions to reduce the risk of unregulated sources are carried out, and the draft decree will be finalized and promulged.

1.7. PROVISIONS FOR DECOMMISSIONING AND MANAGEMENT OF RADIOACTIVE WASTE AND SPENT FUEL

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The decommissioning of facilities and the management of the radioactive waste from the facilities have not been addressed in the framework for safety.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 1, Requirement 10, para. 2.28 states that** *"Decommissioning of facilities and the safe management and disposal of radioactive waste shall constitute essential elements of the governmental policy and the corresponding strategy over the lifetime of facilities and the duration of activities.[…]"*
(2)	**BASIS: GSR Part 1, Requirement 10, para. 2.33 states that** "*Appropriate financial provision shall be made for:* *(a) Decommissioning of facilities;* *(b) Management of radioactive waste, including its storage and disposal;* *(c) Management of disused radioactive sources and radiation generators;* *(d) Management of spent fuel."*
R7	**Recommendation: The Government should establish policy and strategy for the decommissioning of facilities, the safe management and disposal of radioactive waste and establish mechanisms to ensure the necessary financial provision for the decommissioning of facilities and management of radioactive waste, disused radioactive sources and radiation generators.**

Changes since the original IRRS mission

Recommendation 7: A draft policy and strategy for the safe management of radioactive waste has been developed by NRPA. However, the document had not been finalized, in consultation with all other relevant national stakeholders and is not approved.

Law 2019/012 and the draft decree on radiation safety include provisions for the management of radioactive waste and decommissioning of facilities. The IRRS team was informed that there is also a draft decree on radioactive waste management currently under development that would include necessary financial provision for the decommissioning of facilities and management of radioactive waste and disused radioactive sources.

Status of Recommendation 7

Recommendation (R7): remains open as the policy and strategy for the decommissioning of facilities and safe management of radioactive waste has not yet been finalized and approved, and regulatory requirements for the financial provision for decommissioning of facilities and management of radioactive waste and disused radioactive sources are not established.

1.8. COMPETENCE FOR SAFETY

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The IRRS team could not verify that the government has analyzed if available academic programmes, existing technical centres and various national or international arrangements for education and training are sufficient to build and maintain the competence needed by all Cameroon parties having responsibilities in relation to safety of facilities and activities.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 1 Requirement 11, states that:** *"The government shall make provisions for building and maintaining the competence of all parties having responsibilities in relation to the safety of facilities and activities."*
R8	**Recommendation: The Government should analyze the competence needs and the existing available national and international arrangements for education and training. Based on the results of this analysis the government should ensure that mechanisms are put in place to ensure sufficient national competence in relation to safety.**

Changes since the original IRRS mission

Recommendation 8: NRPA has initiated conduct of a national training needs assessment to identify the training needs in radiation safety. However, the assessment is still not completed. There are no arrangements in place to ensure sufficient national competence in relation to safety since there are no sufficient programmes and institutions to adequately cover the national need in competence in radiation safety.

Status of Recommendation 8

Recommendation (R8): remains open as a comprehensive assessment of the national competence needs has not yet been carried out and there are no arrangements in place to ensure sufficient national competence in safety.

1.9. PROVISION OF TECHNICAL SERVICES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The service for calibration of equipment is not yet operational and calibrations are not traceable.
(1)	**BASIS: GSR Part 1 Requirement 13 states that:** *"The government shall make provisions, where necessary, for technical services in relation to safety, such as for personal dosimetry, environmental monitoring and the calibration of equipment."*
R9	**Recommendation:The Government, with the technical support of NRPA, should ensure that, as appropriate, calibration of equipment as well as quality control and traceability to standards, is available.**

Changes since the original IRRS mission

Recommendation 9: The Government has initiated arrangements to ensure that technical services in relation to safety, such as for personal dosimetry, environmental monitoring and the calibration of equipment are made available. *Law 2019/012* assigns the regulatory body the responsibility to provide to authorization holders services in individual dosimetry, environmental monitoring, and radiation monitoring equipment calibration.

NRPA has established a technical services department and, with the support of IAEA, managed to procure calibration equipment enabling it to calibrate its own survey meters used during inspections. The IRRS team was informed that the currently available calibration equipment is however not suitable for calibrating survey meters and gamma probes used for high dose rate measurements.

Further, with funding from the Government, NRPA is in process of setting up an SSDL for the calibration of radiation detecting equipment. Currently, 2 bunkers are under construction and projected to be completed before end of 2021.

Status of Recommendation 9

Recommendation (R9): is closed as the government has provided for technical services such as calibration and provided resources for establishing an SSDL facility.

2. GLOBAL NUCLEAR SAFETY REGIME

2.1. INTERNATIONAL OBLIGATIONS AND ARRANGEMENTS FOR INTERNATIONAL COOPERATION

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The Republic of Cameroon is not a party to the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.
(1)	**BASIS: GSR Part 1 Requirement 14states that** *"The Government shall fulfill its respective international obligations, participate in the relevant international arrangements, including international peer reviews, and promote international cooperation to enhance safety globally"*
S1	**Suggestion: The Government should consider becoming a party to the relevant safety conventions.**

Changes since the original IRRS mission

Suggestion 1: Cameroon is not party to the Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. However, the IRRS team was informed that NRPA had written to the Ministry of Foreign Affairs recommending the commencement of internal processes of becoming a state party to the conventions.

Status of Suggestion 1

Suggestion (S1): remains open as Cameroon is not yet a party to the Convention on Nuclear Safety and Joint Convention.

2.2. SHARING OF OPERATING EXPERIENCE AND REGULATORY EXPERIENCE

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: NRPA gave examples of how actions are taken to ensure that operating experience is reflected in the authorities review, assessment and decisions. It is however not evident that the gained experience is analyzed and that relevant lessons learned are distributed to authorized parties in a systematic way.
(1)	**BASIS: GSR Part 1 Requirement 15 states that:** *"The regulatory body shall make arrangements for analysis to be carried out to identify lessons learned from operating experience, including experience in other States, and for the dissemination of the lessons learned and for their use by authorized parties, the regulatory body and other relevant authorities".*
S2	**Suggestion: NRPA should consider to systematically evaluate operational experience including from other States, and to establish a procedure for the**

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	dissemination of all significant operating experience to relevant authorized parties.

Changes since the original IRRS mission

Suggestion 2: The IRRS team observed that NRPA had good communication with its stakeholders coordinated by its communications and public relations section. However, NRPA has not established systematic means to evaluate operational experience nor developed a procedure for the dissemination of operating experience. The existing communication mechanism is generic and does not include specific areas related to sharing of operational and regulatory experience.

Status of Suggestion 2

Suggestion (S2): remains open as NRPA does not systematically evaluate operational experience including from other States, and a procedure for the dissemination of significant operating experience to relevant authorized parties has not been established.

3. RESPONSIBILITIES AND FUNCTIONS OF THE REGULATORY BODY

3.1. ORGANIZATIONAL STRUCTURE OF THE REGULATORY BODY AND ALLOCATION OF RESOURCES

There were no findings in this area in the original IRRS mission.

3.2. EFFECTIVE INDEPENDENCE IN THE PERFORMANCE OF REGULATORY ACTIVITIES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are currently no procedures or strategies to resolve or manage situations where conflicts of interests could occur in the work of NRPA and its interface with external parties.
(1)	**BASIS: GSR Part 1, Requirement 17, para. 4.7 states that** *"The regulatory body shall prevent or duly resolve any conflicts of interests or, where this is not possible, shall seek a resolution of conflicts within the governmental and legal framework."*
R10	**Recommendation: The regulatory body should develop a strategy and documented procedures to prevent or resolve any conflicts of interest in its work or in the interface with external parties.**

Changes since the original IRRS mission

Recommendation 10: The draft decree on establishing the authority in charge of regulation and regulatory control makes a provision prohibiting any of its staff from being renumerated in any form from other organizations, as well as from having direct interest in any operations financed by the Authority.

Status of Recommendation 10

Recommendation (R10): is closed on the basis of progress and confidence in effective completion in due time as conduct of NRPA staff with external parties will be regulated by a decree.

3.3. STAFFING AND COMPETENCE OF THE REGULATORY BODY

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: NRPA does not have a human resources plan or a documented process for developing and maintaining the needed human resources.
(1)	**BASIS: GSR Part 1, Requirement 17, para. 4.13 states that** *"A process shall be established to develop and maintain the necessary competence and skills of staff of the regulatory body, as an element of knowledge management. This process shall include the development of a specific training programme on the basis of an analysis of the necessary competence and skills. The training programme shall cover principles, concepts and technological aspects, as well as*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	the procedures followed by the regulatory body for assessing applications for authorization, for inspecting facilities and activities, and for enforcing regulatory requirements."
R11	**Recommendation: NRPA should perform a human resources needs assessment and establish and implement a specific programme on the basis of the analysis in order to recruit sufficient staff, and develop and maintain necessary competence and skills.**

Changes since the original IRRS mission

Recommendation 11: The IRRS team was informed that NRPA has initiated the needs and competence analysis of its staff but it has not been completed. There is no programme established to develop and maintain the necessary skills and competences in the regulatory body. The training of NRPA staff is coordinated by a team established by the Director General and most training activities are conducted through IAEA organized activities. After attending any training course, staff of NRPA are required to share the acquired knowledge with other staff.

Status of Recommendation 11

Recommendation (R11): remains open as a human resource needs assessment and programme for developing and maintaining competence has not been established in NRPA.

3.4. LIAISON WITH ADVISORY BODIES AND SUPPORT ORGANIZATIONS

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: NRPA does not have any advisory body and there is no technical support organization.
(1)	**BASIS: GSR Part 1 Requirement 20 states that** *"The regulatory body shall obtain technical or other expert professional advice as necessary in support of its regulatory functions, but this shall not relieve the regulatory body of its assigned responsibilities."*
S3	**Suggestion: NRPA should consider making arrangementsto obtain technical or other expert professional advice as necessary in support of its regulatory functions.**

Changes since the original IRRS mission

Suggestion 3: NRPA has established provision of technical services in its organizational structure which also provides services such as calibration to the regulatory body. NRPA also makes use of technical and expert advice from the IAEA when such advice is needed. The IRRS team was informed that the review of draft decrees and other regulatory documents have been made by the IAEA or with the help of IAEA experts. Further, the IRRS team was informed that NRPA approaches from time to time national experts outside the organization as available.

Status of Suggestion 3

Suggestion (S3): is closed as NRPA utilizes the services of IAEA and other national expertise.

3.5. LIAISON BETWEEN THE REGULATORY BODY AND AUTHORIZED PARTIES

There were no findings in this area in the original IRRS mission.

3.6. STABILITY AND CONSISTENCY OF REGULATORY CONTROL

There were no findings in this area in the original IRRS mission.

3.7. SAFETY RELATED RECORDS

There were no findings in this area in the original IRRS mission.

3.8. COMMUNICATION AND CONSULTATION WITH INTERESTED PARTIES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The team found little evidence for sufficient information having been given to the public about the authority's work, radiation risks associated with facilities and activities, and the requirements for the protection of the people and the environment. The information dissemination is not open and inclusive and is restricted to selected parties. There are also no requirements from NRPA that oblige the authorized parties to carry out such communication.
(1)	**BASIS: GSR Part 1, Requirement 36, para 4.67 states that** *"The regulatory body, in its public informational activities and consultation, shall set up appropriate means of informing interested parties, the public and the news media about the radiation risks associated with facilities and activities, the requirements for protection of people and the environment, and the processes of the regulatory body. In particular, there shall be consultation by means of an open and inclusive process with interested parties residing in the vicinity of authorized facilities and activities."*
R12	**Recommendation: NRPA should establish appropriate means of informing interested parties, the public and the news media about its activities and radiation risks associated with facilities and activities.**
(1)	**BASIS: GSR Part 1, Requirement 36, para 4.68 states that** *"The authorized party has an obligation to inform the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity, and this obligation shall be specified in the regulations promulgated by the regulatory body, in the authorization or by other legal means.*"
R13	**Recommendation: NRPA should ensure that the authorized party informs the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity and that this obligation is specified in the regulations issued by the regulatory body.**

Changes since the original IRRS mission

Recommendation 12: NRPA has a communication and public relations section which has

developed a communication strategy for effective communication with its stakeholders. Several communication strategies are implemented which include a semi-annual newsletter "ANRP News" that is distributed free of charge; taking part in exhibition fairs and other major events to raise awareness among the public and the media; as well as communication using TV, Radio, Newspaper, or any available Web channels.

Status of Recommendation 12

Recommendation (R12): is closed as NRPA has developed a communication strategy and is disseminating information to the public.

Changes since the original IRRS mission

Recommendation 13: NRPA informs the public about radiation risk and safety through different mechanisms including through a biannual magazine it publishes. Currently there are no provisions in the law or draft regulations requiring an authorized party to inform the public about the possible radiation risks associated with the operation of a facility or the conduct of activities.

Status of Recommendation 13

Recommendation (R13): remains open as there are no requirements for the authorized party to inform the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity.

4. MANAGEMENT SYSTEM OF THE REGULATORY BODY

4.1. IMPLEMENTATION AND DOCUMENTATION OF THE MANAGEMENT SYSTEM

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: NRPA does not currently have a management system consistent with the latest internationally established standards.
(1)	**BASIS: GSR part 1, Requirement 19 states *that*** *"The regulatory body shall establish, implement, and assess and improve a management system that is aligned with its safety goals and contributes to their achievement."*
(2)	**BASIS: GS-R-3 para 2.5 states that "***The management system shall be used to promote and support a strong safety culture by […]"*
(3)	**BASIS: GS-R-3 para 2.6 states that** *"The application of management system requirements shall be graded so as to deploy appropriate resources, on the basis of the consideration of…"*
(4)	**BASIS: GS-R-3 para 2.8 states that "***The documentation of the management system shall include the following:* ▪ *The policy statements of the organization;* ▪ *A description of the management system;* ▪ *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*.
(5)	**BASIS: GS-R-3 para 3.1 states that** *"Management at all levels shall demonstrate its commitment to the establishment, implementation, assessment and continual improvement of the management system and shall allocate adequate resources to carry out these activities."*
(6)	**BASIS: GS-R-3 para 3.7 states that** *"Senior management shall develop the policies of the organization. The policies shall be appropriate to the activities and facilities of the organization.*"
(7)	**BASIS: GS-R-3 para 4.1 states that** *"Senior management shall determine the amount of resources necessary and shall provide the resources to carry out the activities of the organization and to establish, implement, assess and continually improve the management system."*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
(8)	**BASIS: GS-R-3 para 5.1 states that** *"The processes of the management system that are needed to achieve the goals, provide the means to meet all requirements and deliver the products of the organization shall be identified, and their development shall be planned, implemented, assessed and continually improved.*
(9)	**BASIS: GS-R-3 para 6.1 states that** *"The effectiveness of the management system shall be monitored and measured to confirm the ability of the processes to achieve the intended results and to identify opportunities for improvement."*
(10)	**BASIS: GS-R-3 para 6.2 states that** *"Senior management and management at all other levels in the organization shall carry out self-assessment to evaluate the performance of work and the improvement of the safety culture."*
R14	**Recommendation: NRPA should establish and implement an integrated management system. The management system should include and address the following elements:** ▪ **The mission of NRPA, its vision and core values, policy statements, goals and strategies;** ▪ **Responsibilities, accountabilities, levels of authority and interactions among those managing, performing and assessing work;** ▪ **Management commitment to safety;** ▪ **Safety culture;** ▪ **Resources management;** ▪ **Training programme;** ▪ **A graded approach in the regulatory work;** ▪ **Core and support processes to achieve the mission and goals of NRPA;** ▪ **Monitoring and evaluation of the effectiveness of the management processes;** ▪ **Self-assessment, independent assessment, external audit and improvements.**

Changes since the original IRRS mission

Recommendation 14: NRPA has made considerable efforts for the development of its management system. An officer was designated to document the Integrated management System (IMS). NRPA has established a draft IMS manual and the manual documents the core processes of the NRPA. However, the IMS manual is still not developed fully to ensure its comprehensiveness and is not currently approved and implemented. The IRRS team also noted that a mechanism for the regular review and update of the IMS manual has not been established.

The IRRS team noted that NRPA has technical services department that provides services, such as quality control checks, dosimetry and safety assessments for the licensees and applicants. This practice may potentially create a conflict of interest with its regulatory responsibility. The IRRS team was informed that due to technical staff shortage in NRPA, staff of the technical services at

times may be involved in regulatory duties. NRPA did not have a code of ethics to ensure the ethical behaviour of inspectors and authorization officers. As such, this needs to be taken into consideration in the development of the management system to ensure that there is no conflict of interest between the regulatory responsibilities of NRPA and service provisions.

Status of Recommendation 14

Recommendation (R14): remains open as NRPA has not completed the development and approval of its IMS.

4.2. MANAGEMENT RESPONSIBILITY

There were no findings in this area in the original IRRS mission.

4.3. RESOURCE MANAGEMENT

There were no findings in this area in the original IRRS mission.

4.4. PROCESS IMPLEMENTATION

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There is no process, to control documents including the preparation and revision to assure preservation of the information and retention, in place, which presents a potential vulnerability of information related to the regulatory basis for licensing and related basis for decision.
(1)	**BASIS: GS-R-3 para. 5.11 states that** *"[…] generic processes shall be developed in the management system such as […]' control of documents' and 'control of records'."*
(2)	**BASIS: GS-R-3 para. 5.21 states that** "*Records shall be specified in the process documentation and shall be controlled. All records shall be readable, complete, identifiable and easily retrievable".*
S4	**Suggestion: The regulatory body should consider establishing control of documents and control of records to assure preservation of information and records.**

Changes since the original IRRS mission

Suggestion 4: NRPA has established a policy on the management and control of documents and records to ensure protection and control of access to information and records. An officer responsible for the management of records and information has been designated.

Status of Suggestion 4

Suggestion (S4): is closed as NRPA has established a policy on the management and control of documents.

4.5. MEASUREMENT, ASSESSMENT AND IMPROVEMENT

There were no findings in this area in the original IRRS mission.

5. AUTHORIZATION

5.1. GENERIC ISSUES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Neither the law, nor the decree, clearly give the NRPA the responsibility to issue, amend, suspend or revoke authorizations. As a consequence there are facilities being operated without an authorization.
(1)	**BASIS: GSR Part 1 Requirement 23 states that** *"Authorization by the regulatory body, including specification of the conditions necessary for safety, shall be a prerequisite for all those facilities and activities that are not either explicitly exempted or approved by means of a notification process."*
R15	**Recommendation: The Government should empower the regulatory body to authorize facilities, and the regulatory body should develop an action plan to have all facilities and activities covered by an authorization.**

Changes since the original IRRS mission

Recommendation 15: *Law 2019/012* stipulates that facilities, activities or practices involving ionization radiation should not be undertaken unless prior authorization is obtained from the authority responsible for regulation and regulatory control.

An annual plan for renewal of authorizations is made based on the validity of authorizations of facilities and activates that would expire in that specific year, and notification is sent to the concerned licensees to apply for authorizations.

Law 2019/012 gives a grace period of one year for all facilities and activities to obtain an authorization in accordance with the provisions of the law. The IRRS team was informed that all facilities in the industrial sector have got an authorization in accordance with the new law. For new medical facilities, an authorization from NRPA is required before the health authorities issue an authorization of the facility in accordance with an MoU signed between the health authorities and NRPA.

Status of Recommendation 15

Recommendation (R15): is closed as *Law 2019/12* empowers the NRPA to issue authorizations and NRPA develops an annual plan for renewal of authorizations based on their validity.

5.2. AUTHORIZATION OF RADIATION SOURCES FACILITIES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There is no hierarchy and continuity in the licensing system. Import licenses are issued even though the applicant does not have an operation license.
(1)	**BASIS: GSR Part 1, requirement 24, para. 4.29 states that** "*Different types of authorization shall be obtained for the different stages in the lifetime of a facility or the duration of an activity. The regulatory body shall be able to modify authorizations for safety related purposes. For a facility, the stages in the lifetime*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	usually include: site evaluation, design, construction, commissioning, operation, shutdown and decommissioning (or closure). This includes, as appropriate, the management of radioactive waste and the management of spent fuel, and the remediation of contaminated areas. For radioactive sources and radiation generators, the regulatory process shall continue over their entire lifetime."
(2)	**BASIS: GSR Part 3 para. 3.5 states that** "*No person or organization shall adopt, introduce, conduct, discontinue or cease a practice, or shall, as applicable, mine, extract, process, design, manufacture, construct, assemble, install, acquire, import, export, supply, provide, distribute, loan, hire, receive, site, locate, commission, possess, use, operate, maintain, repair, transfer, decommission, disassemble, transport, store or dispose of a source within a practice other than in accordance with the requirements of these Standards.*"
R16	**Recommendation: The regulatory body should apply a comprehensive approach to authorization, and ensure that the authorization system covers the entire lifetime of a facility and activity.**

Changes since the original IRRS mission

Recommendation 16: *Law 2019/012* states that facilities, activities, and practices involving ionization radiation require authorization from the regulatory body.

NRPA issues authorizations for facilities and activities for import, export, use, transport, and storage of radiation sources. Authorization is also issued for closure of a facility. Transfer of a source is possible only with authorization from NRPA following a pre-authorization safety assessment of the facility through inspection. NRPA also conducts assessment of the qualification and training, for relevance to the specific activity, of all radiation workers during the authorization process. A temporary permit of one year would be issued if the worker has the necessary qualification but no training in radiation protection, such as for workers using a Nuclear Density Gauges for road construction, and the worker is expected to get training in radiation protection and submit a certificate to NRPA before the expiry of the temporary permit.

Import permits are only issued to applicants that have NRPA authorizations to open a facility (use the source) and have a proper and safe storage for the radioactive source when imported. Once the source is in the country, pre-authorization safety assessment inspection is performed and authorization issued by NRPA before commissioning a facility or starting any activity.

Status of Recommendation 16

Recommendation (R16): is closed as the authorization system established by NRPA following the promulgation of *Law 2019/012* covers from import of a radioactive sources to closure of a facility or cessation of an activity.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The safety assessment report to be submitted by an authorization applicant is not done independently, but with the help of the regulatory body.
(1)	**BASIS: GSR Part 4, Requirement 21 states that** *"The operating organization*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	shall carry out an independent verification of the safety assessment before it is used by the operating organization or submitted to the regulatory body."
(2)	**BASIS: GSR Part 3 Requirement 13 states that** *"The regulatory body shall establish and enforce requirements for safety assessment and the person or organization responsible for a facility or activity that gives rise to radiation risks shall conduct an appropriate safety assessment of this facility or activity."*
(3)	**BASIS: GSR Part 4 Requirement 3 states that** *"The responsibility for carrying out the safety assessment shall rest with the responsible legal person; that is, the person or organization responsible for the facility or activity."*
R17	**Recommendation: The regulatory body should review its system of providing safety assessments for applicants for authorization and should encourage the applicants to have an independent verification of the safety assessment realized through different mechanisms.**

Changes since the original IRRS mission

Recommendation 17: NRPA conducts verification of documents submitted in applications for issuing or renewing authorizations. Technical assessments are made for the verification of radiation protection aspects such as the availability of protective equipment, qualified personnel relevant for the practice, a radiation protection officer (RPO) and other safety aspects of the installation.

A safety assessment report is one of the requirements of NRPA for authorization of a facility or an activity. There are no private or public providers of technical service in radiation protection and safety in Cameroon. The Directorate of Technical Services of NRPA provides technical services, such as individual dosimetry, and these services currently also include conducting of safety assessment service upon a request from the facility or activity. The Directorate of Regulation and Regulatory Control of NRPA oversees implementation of regulatory functions of authorization, inspection and enforcement; conducts review and assessment of applications for authorization; and decides whether to issue or deny an authorization.

Status of Recommendation 17

Recommendation (R17): remains open as safety assessment service is being provided by NRPA and there are no mechanisms for independent verification of safety assessment in place.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The NRPA is the only authority involved in the authorization procedure. No stakeholder, other than the licensee and the NRPA, are involved in the process, neither through consultation nor through provision of information.
(1)	**BASIS: GSR Part 3 para. 2.30 states that** *"The regulatory body shall establish a regulatory system for protection and safety that includes (...)* *(f) Provision of information to, and consultation with, parties affected by its decisions and, as appropriate, the public and other interested parties."*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
R18	**Recommendation: The regulatory body should involve relevant interested parties in the authorization process, through information or consultation, in accordance with a graded approach.**

Changes since the original IRRS mission

Recommendation 18: Licensees are informed and consulted as necessary during the authorization process. Meetings are organized with licensees to elaborate the authorization process of NRPA, and to find a strategy to facilitate communication and issuance of authorization. A consultation meeting with three licensees was organized in September 2021 to present a new online platform, using a google drive, developed for application of authorization and document transfer to NRPA, and was pilot tested with these licensees. The first application for a license has been received from one of the companies that have been familiarized with this platform.

NRPA publishes a magazine, biannually on its activities of the past six months. The magazine is distributed during inspection to facilities, and it is also made available to the public in different forums. *Law 2019/012* was also printed in one of the editions of this magazine and made available to different stakeholders and to the public. During an 'open day' annually organized by the Ministry of Scientific Research and Innovation, NRPA also has a dedicated stand where it informs the public about its activities including its authorization system.

Status of Recommendation 18

Recommendation (R18): is closed as NRPA is providing information related to regulatory activities to both licensees and other interested parties including the public.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The NRPA is confronted with disused sources for which no agreement has been made to send them back to the supplier, and there is no waste management facility in Cameroon.
(1)	**BASIS: GSR Part 3 para. 2.29 states that** *"The government shall ensure that arrangements are in place for the safe decommissioning of facilities, the safe management of radioactive waste and the safe management of spent fuel."*
R19	**Recommendation: The Government and regulatory body should ensure that a safe storage of disused sources is guaranteed, and find arrangements for their final disposal, including also orphan sources.**

Changes since the original IRRS mission

Recommendation 19: A national radioactive waste storage facility, including for storage of disused radioactive sources, has been constructed in 2020 with the support of the US Department of Energy. The IRRS team was informed the storage facility has been equipped with the necessary instruments. Legacy disused radioactive sources before the establishment of the NRPA and any discovered orphan sources are placed in the storage facility.

Currently there are radioactive sources placed in the storage, mainly Nuclear Density Gauges (NDGs), that were used by a public organization involved in the construction sector. There are

currently 16 radioactive sources in the storage. The IRRS team was informed that NRPA has a plan to conduct conditioning of the sources in the future with the support of the IAEA.

NRPA requires that disused radioactive sources be returned to the supplier and assurance should be given by the applicant. This is verified during the authorization process for import of radioactive sources.

Status of Recommendation 19

Recommendation (R19): is closed as a safe storage for disused sources have been established and is being used for storing disused sources or any discovered orphan sources.

6. REVIEW AND ASSESSMENT

6.1. MANAGEMENT OF REVIEW AND ASSESSMENT

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no documented review and assessment policies and procedures.
(1)	**BASIS: GSR Part 1 Requirement 22 states that** *"The regulatory body shall ensure that regulatory control is stable and consistent."*
(2)	**BASIS: GSR Part 1 Paragraph 4.26 states that** *"The regulatory process shall be a formal process that is based on specified policies, principles and associated criteria, and that follows specified procedures as established in the management system. The process shall ensure the stability and consistency of regulatory control and shall prevent subjectivity in decision making by the individual staff members of the regulatory body. The regulatory body shall be able to justify its decisions if they are challenged. In connection with its reviews and assessments and its inspections, the regulatory body shall inform applicants of the objectives, principles and associated criteria for safety on which its requirements, judgements and decisions are based."*
R20	**Recommendation: The regulatory body should develop and implement procedures for the review and assessment that it conducts.**

Changes since the original IRRS mission

Recommendation 20: NRPA has developed two review and assessment internal guidance documents:

1- safety assessment review for diagnostic radiology practices; and
2- safety assessment review for CT scanner practices.

NRPA is currently using these documents during review and assessment of application for authorization and during renewal of authorizations. The IRRS team was informed that NRPA has a plan to develop additional procedures for review and assessment for radiotherapy and industrial practices in 2022.

Status of Recommendation 20

Recommendation (R20): is closed on the basis of progress and confidence in effective completion in due time as NRPA has developed two review and assessment procedures and has planned to draft additional procedures.

6.2. ORGANIZATION AND TECHNICAL RESOURCES FOR REVIEW AND ASSESSMENT

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There is insufficient resources to carry out necessary review and assessment activities within the regulatory body, and the majority of licensees do not have capacity to carry out safety assessments neither do they have access to technical services for safety assessment.
(1)	**BASIS: GSR Part 1 Requirement 11, paragraph 2.35 states that** *"The building of competence shall be required for all parties with responsibilities for the safety of facilities and activities, including authorized parties, the regulatory body and organizations providing services or expert advice on matters relating to safety.*
R21	**Recommendation: The Government should make arrangements to ensure the availability of the necessary professional training programs for maintaining competence and availability of a sufficient number of suitably qualified staff for all parties with responsibilities for the safety of facilities and activities.** **The regulatory body should develop a training programmes to enhance the capacity of its staff in review and assessment.**

Changes since the original IRRS mission

Recommendation 21: NRPA conducts awareness promotion and training for the staff of facilities and activities. The training programmes are specific to the responsibilities of the personnel within the facilities and activities and are different in content and duration. At present, NRPA organizes three types of training and awareness promotion events upon request mainly:

1. A one-day awareness programme for sensitizing people, including workers with potentially low exposure, such as drivers during transport of a radioactive source;
2. A three-day training programme for radiation workers in medical and industrial facilities;
3. A five-day training programme for Radiation Protection Officers (RPOs) of medical and industrial facilities.

Radiation workers have to take either of the training programmes for radiation workers and/or RPOs before starting work as a radiation worker and the commencement of individual monitoring to the worker. NRPA requires that radiation workers be trained on radiation protection and have to either submit a training certificate accepted by NRPA or participate in one of the NRPA's training events.

The IRRS team was informed that MSc programmes on dosimetry and radiation protection are provided by the University of Douala, University of Yaoundé, and University of Ngaoundere. These programmes are validated and approved by the Ministry of Higher Education.

NRPA organizes internal technical and scientific seminars to enhance the capacities of its staff. These seminars are mainly for sharing knowledge and experience gained by its staff through their participation in international training events such as those organized by the IAEA, including any trainings in review and assessment. Capacity building programmes for the staff of NRPA are mainly through the training and fellowship programmes arranged by the IAEA technical cooperation (TC) programme.

There are 8 technical staff in the directorate of regulation and regulatory control and four staff are conducting review and assessment. These staff have participated in the PGEC training

courses and in a two-week scientific visit in review and assessment of radiotherapy organized by the IAEA. NRPA recognizes the need for training more staff for conducting review and assessment as IAEA organized training opportunities become available.

Status of Recommendation 21

Recommendation (R21): is closed on the basis of progress and confidence in effective completion in due time as four staff have been trained in conducting review and assessment and there is a plan to train more staff.

6.3. BASES FOR REVIEW AND ASSESSMENT

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no relevant regulations for review and assessment, as well as regulations and guidance for safety assessment by the licensees.
(1)	**BASIS: GSR Part 1 Requirement 25 states that** *"[…] review and assessment of information shall be performed prior to authorization and again over the lifetime of the facility or the duration of the activity, as specified in regulations promulgated by the regulatory body or in the authorization."*
(2)	**BASIS: GSR Part 1 Paragraph 4.26 states that** *"The regulatory process shall be a formal process that is based on specified policies, principles and associated criteria, and that follows specified procedures as established in the management system. The process shall ensure the stability and consistency of regulatory control and shall prevent subjectivity in decision making by the individual staff members of the regulatory body. The regulatory body shall be able to justify its decisions if they are challenged. In connection with its reviews and assessments and its inspections, the regulatory body shall inform applicants of the objectives, principles and associated criteria for safety on which its requirements, judgements and decisions are based."*
(3)	***BASIS: GSR Part 3 Requirement 13 states that*** *"The regulatory body shall establish and enforce requirements for safety assessment and the person or organization responsible for a facility or activity that gives rise to radiation risks shall conduct an appropriate safety assessment of this facility or activity."*
R22	**Recommendation: The regulatory body should develop relevant regulations and/or guidance for review and assessment and for safety assessment by the licensees.**

Changes since the original IRRS mission

Recommendation 22: NRPA requires that safety assessment should be conducted by facilities and activities, and a safety assessment report should be submitted as part of the application for authorization. However, at the moment safety assessment for the licensees is conducted by the Directorate of Technical Services of NRPA. As a result, there are no guides developed for conducting safety assessment by the licensees.

Status of Recommendation 22

Recommendation (R22): remains open as there are no guides developed for conducting safety assessment and safety assessment is conducted for the licensees by NRPA.

7. INSPECTION

7.1 GENERIC ISSUES

7.1.1. INSPECTION APPROACHES, METHODS AND PLANS

There were no findings in this area in the original IRRS mission.

7.1.2. INSPECTION PROCESSES AND PRACTICES

There were no findings in this area in the original IRRS mission.

7.1.3 INSPECTORS

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The inspectors from the NRPA currently are not officially appointed and do not have the formal authority to access facilities and carry out inspections. The inspectors only carry out a few inspections per year.
(1)	**BASIS: GSR Part 1, Requirement 29, Para 4.52 states that** *"Regulatory inspections shall cover all areas of responsibility of the regulatory body, and the regulatory body shall have the authority to carry out independent inspections. Provision shall be made for free access by regulatory inspectors to any facility or activity at any time, within the constraints of ensuring operational safety at all times and other constraints associated with the potential for harmful consequences […]."*
R23	**Recommendation: The regulatory body should make arrangements to ensure that all inspectors undergo training, and are officially appointed to carry out their duties. The inspectors should also be organized in a way that they make inspections regularly in order to benefit from continuous experience.**

Changes since the original IRRS mission

Recommendation 23: *Law 2019/012* gives the authority to the regulatory body to conduct inspection on facilities, activities and practices involving exposure to ionizing radiation. According to the law, inspection of facilities and activities should be conducted by sworn inspectors of the regulatory authority and the powers of these inspectors and inspection arrangements should be defined by regulations. The law also states that inspectors could request the assistance of law enforcement bodies to ensure smooth performance of their duties.

NRPA inspections include planned and announced as well as reactive and unannounced. NRPA also conducts follow-up inspections to verify the amendments made in response to any corrective actions requested by the regulatory body.

Inspectors of NRPA have been trained in the framework of IAEA training programmes and other arrangements. Currently there are about 22 staff, including in the 4 regional offices, involved in inspections and they have been trained in different training activities, including participation of 4 staff in a one-month training course on authorization and inspection of radiation sources organized by the IAEA in 2017. All inspectors are regularly involved in the different types of inspections conducted by NRPA namely regular inspection, pre-authorization inspection and inspection for verification of corrective actions taken by a licensee.

Status of Recommendation 23

Recommendation (R23): is closed as NRPA has trained inspectors and are regularly involved in all types of inspections conducted by the regulatory body.

New Finding:

Law 2019/012 requires the inspectors of the regulatory authority be sworn inspectors but currently there are no inspectors sworn in a court of law in NRPA. NRPA inspectors can access a facility and conduct inspections using a letter issued by the Director General, but they cannot take any corrective actions on site if they find that safety is compromised without seeking assistance of law enforcement agencies. since they are not sworn inspectors in accordance with the provisions of *Law 2019/012*.

NRPA's plan for inspections is to carry out inspection at least one inspection during the validity of the authorization of each facility. Low risk facilities have an authorization valid for 3 years while the validity of authorization for high-risk facilities is one year. The IRRS team was informed that NRPA has conducted 66 inspections in 2018 and 23 out of the 80 inspections planned in 2019. During the initial IRRS mission in 2014, the IRRS team observed that NRPA conducted 60 inspections per year on average which was not sufficient to cover all facilities and activities comprehensively in accordance with its plan of inspection.

FU MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: NRPA inspectors are not sworn in accordance with the provisions of *Law 2019/012*. NRPA does not conduct inspection in all facilities and activities in accordance with its plan comprehensively.	
(1)	**BASIS: GSR Part 1 (Rev. 1) requirement 31 para. states that** *"The regulatory body shall carry out inspections of facilities and activities to verify that the authorized party is in compliance with the regulatory requirements and with the conditions specified in the authorization."*
(2)	**BASIS: GSR Part 1 (Rev. 1) requirement 31 para. 4.58 states that** *"…On-site inspectors, if any, shall be authorized to take corrective action if there is an imminent likelihood of safety significant events."*
RF1	**Recommendation: The Government should ensure that inspectors are sworn in as required in the Law and inspection should be conducted comprehensively in all facilities and activities in accordance with NRPA's plan of inspection.**

7.2. INSPECTION OF RADIATION SOURCES FACILITIES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The NRPA currently has a draft inspection guidance. It is however not finalized and does not include clear procedures for common standards. There is a checklist covering the aspects to be addressed during an inspection, but no clear criteria is included on operational actions to be taken for non-compliances.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GSR Part 1 Paragraph 4.26 states that** *"The regulatory process shall be a formal process that is based on specified policies, principles and associated criteria, and that follows specified procedures […]"*
R24	**Recommendation: The regulatory body should finalize and approve the inspection guidelines and include criteria as a guidance to ensure that all the inspections are carried out according to common standards.**

Changes since the original IRRS mission

Recommendation 24: NRPA has developed a *Guidance for Radiation Protection Inspectors,* which provides guidelines for planning inspections, the expected behaviours and attitudes of inspectors, methodology for conducting inspections and writing inspection reports. This guideline has been approved and implemented since 2020.

The following practice specific inspection guidelines, which also contain checklists, have been approved and implemented:

1. Industrial radiography inspection guidance;
2. Well Logging inspection guidance;
3. CT scan inspection guidance;
4. Conventional radiology inspection guidance;
5. Interventional radiography inspection guidance.

Status of Recommendation 24

Recommendation (R24): is closed as NRPA has developed guidance for inspectors and practice specific procedures which also include checklists.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The currently used measurement devices by the regulatory body are not calibrated and are not clearly marked.
(1)	**BASIS: Code of Conduct para 9 states that** *"Every State should ensure that appropriate facilities and services for radiation protection, safety and security are available to, and used by, the persons who are authorized to manage radioactive sources. Such facilities and services should include, but are not limited to, those needed for: […]* *(d) the calibration of radiation monitoring equipment."*
R25	**Recommendation: The regulatory body should make arrangements for periodic calibration of their measurement equipment, including the marking of the calibration validity.**

Changes since the original IRRS mission

Recommendation 25: NRPA, with the support of the IAEA, has acquired a calibration equipment in 2019 to calibrate its radiation survey meters used for inspections of facilities and

activities. Calibration of survey meters and alpha/beta probes is currently being conducted using a small calibrator. Alpha and beta sources are also available to calibrate the alpha/beta probes.

The IRRS team was informed the survey meters currently in NRPA are not high dose measurements and has been calibrated by the available calibration equipment, but NRPA had identified a need for building an SSDL laboratory to be able to provide a full range of calibration capabilities. The calibration service of NRPA is also being extended to facilities upon request and a survey meter from one facility has been calibrated in NRPA. The IRRS team was informed that 13 survey meters and alpha/beta probes have been calibrated in 2021.

NRPA has got funding from the Government to build the SSDL facility. Two bunkers are being built in the underground of NRPA premises and are expected to be ready by the end of 2021. The IRRS team was informed that Cameroon is planning to have a TC project for capacity building both in training and provision of equipment to make the SSDL laboratory operational by 2023.

Status of Recommendation 25

Recommendation (R25): is closed on the basis of progress and confidence in effective completion in due time as calibration is being conducted and SSDL is being set up in Cameroon**.**

8. ENFORCEMENT

8.1. ENFORCEMENT POLICY AND PROCESSES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory body has not initiated a process to have regulations for enforcement in place, in accordance with the existing law.
(1)	**BASIS: GSR Part 1 Requirement 30 states that** *"The regulatory body shall establish and implement an enforcement policy within the legal framework for responding to non-compliance by authorized parties with regulatory requirements or with any conditions specified in the authorization."*
(2)	**BASIS: GSR Part 1 Requirement 32 states that** *"The regulatory body shall establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based."*
S5	**Suggestion: The regulatory body should consider taking the necessary steps to establish an enforcement regulation as provided for under section 14 of Law No. 95/08.**

Changes since the original IRRS mission

Suggestion 5: Law 95/08 has been replaced by *Law 2019/012* and NRPA has developed an enforcement policy and procedures for taking enforcement actions as necessary in response to any non-compliance identified.

Status of Suggestion 5

Suggestion (S5): is closed as Law 95/08 has been repealed by *Law 2019/012*.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory body is requesting authorized parties to take corrective actions when risks are identified. However, the licensees are reluctant to carry out the corrective actions citing that the regulatory body has no such powers.
(1)	**BASIS: GSR Part 1 Requirement 31 states that** *"In the event that risks are identified, including risks unforeseen in the authorization process, the regulatory body shall require corrective actions to be taken by authorized parties."*
R26	**Recommendation: The government should provide necessary provisions in the legislation for the regulatory body to require for corrective actions when necessary. The regulatory body should establish criteria for taking such corrective actions.**

Changes since the original IRRS mission

Recommendation 26: *Law 2019/012* empowers the regulatory authority to take enforcement action to respond to any non-compliance with the provisions of the law.

When a non-compliance is identified, including during inspection, NRPA sends an enforcement letter indicating the time frame within which the non-compliance should be addressed. If the facility does not report with the corrective actions taken to rectify the non-compliance in the time provided, other enforcement actions such as suspension of the authorization are taken by NRPA. NRPA has developed criteria for taking corrective actions in its draft enforcement policy and procedures.

Status of Recommendation 26

Recommendation (R26): is closed as *Law 2019/012* empowers the regulatory authority to take corrective actions and NRPA has established criteria for corrective action.

8.2. ENFORCEMENT IMPLEMENTATION

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The existing enforcement provisions in the law are not comprehensive and the regulatory body is not using the existing enforcement provisions to enforce its regulatory decisions. Hence, a number of facilities continue to operate without prior authorization or do not follow decisions of the regulatory body.
(1)	**BASIS: GSR Part 1 Requirement 30 states that** *"The regulatory body shall establish and implement an enforcement policy within the legal framework for responding to non-compliance by authorized parties with regulatory requirements or with any conditions specified in the authorization."*
R27	**Recommendation: The Government should revise the legislation and provide the regulatory body with comprehensive enforcement tools in the legal framework. The regulatory body should establish and implement an enforcement policy within the existing legal framework and revise it accordingly when the legislation is revised.**

Changes since the original IRRS mission

Recommendation 27: *Law 2019/012* establishes administrative and criminal penalties that the regulatory body may apply as necessary for any non-compliance with the provisions of the law and regulatory requirements. These enforcement actions could include administrative and criminal penalties such as:

- suspension of the authorization;
- withdrawal of the authorization;
- instruction to change the workplace;
- affixing seals at the facility which violates the above mentioned sanctions;
- Imprisonment and/or payment of fines.

However, NRPA is taking only some of the enforcement tools provided in the law, such as written warning and suspension of an authorization, and is working towards comprehensive implementation of the enforcement tools.

NRPA has established a draft enforcement policy and procedures for responding to any non-compliance with the provisions of the law. This enforcement policy defines the guiding principles of enforcement and its implementation is supported by a procedure which defines the non-conformities and the process to follow during the application of enforcement measures.

Status of Recommendation 27

Recommendation (R27): is closed on the basis of progress and confidence in effective completion in due time as the government has provided the regulatory body enforcement tools and NPRA has draft enforcement policy and procedures.

New Finding:

Law 2019/012 provides for a transition period of one year after it was issued for all facilities and activities to get a proper authorization from the regulatory authority. NRPA has taken enforcement action by sending a warning letter to some facilities in the medical sector that have not obtained an authorization during the transition period. NRPA also writes warning letters to those facilities and activities that do not renew their authorizations on time. However, the IRRS team has noted that there are facilities and activities that continue to operate without a proper authorization from NRPA.

FU MISSION RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: Some facilities and activities continue to work without a proper authorization from NRPA.	
(1)	**BASIS: GSR Part 1 (Rev. 1) Requirement 30 states that** *"The regulatory body shall establish and implement an enforcement policy within the legal framework for responding to non-compliance by authorized parties with regulatory requirements or with any conditions specified in the authorization."*
RF2	**Recommendation: NRPA should enforce its regulatory requirements comprehensively and consistently in all facilities and activities.**

9. REGULATIONS AND GUIDES

9.1. EXISTING REGULATIONS AND GUIDES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: A number of practices do not have regulations and guides that specify the principles, requirements and associated criteria for safety upon which the regulatory judgements, decisions and actions are based.
(1)	**BASIS: GSR Part 1 Requirement 32 states that** *"The regulatory body shall establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based."*
R28	**Recommendation: The regulatory body should establish or adopt regulations and guides to cover all aspects for all facilities and activities.**

Changes since the original IRRS mission

Recommendation 28: NRPA has developed draft regulations for implementing *Law 2019/012* on radiation safety, radioactive waste management and transport of radioactive material. The draft regulations on radiation safety and transport of radioactive material have been sent to the IAEA for review and comments have been provided. The IRRS review team was informed the draft regulations are planned to be finalized, issued and implemented in 2022.

NRPA has developed guides for diagnostic radiology practices and transport of radioactive sources. NRPA also has drafted a guide for industrial radiography practices and for radiotherapy practices, which are planned to be finalized and approved in 2022. However, the guides do not cover all facilities and activities in Cameroon.

Status of Recommendation 28

Recommendation (R28): remains open as all radiation safety regulations and some guides are still in draft.

9.2. PROCESSES FOR DEVELOPING REGULATIONS AND GUIDES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Regulations and guides are not being reviewed and revised to keep them up to date.
(1)	**BASIS: GSR Part 1 Requirement 33 states that** *"Regulations and guides shall be reviewed and revised as necessary to keep them up to date, with due consideration taken of relevant international safety standards and technical standards and of relevant experience gained."*
R29	**Recommendation: The regulatory body should review and revise regulations and guides as necessary to keep them up to date.**

Changes since the original IRRS mission

Recommendation 29: Following the promulgation of *Law 2019/012,* NRPA has drafted implementation regulations in line with the provisions of the law and the IAEA safety standards. These draft regulations are in review process before they are finalized and implemented. Two practice specific guides are developed and made available to applicants and licensees, and there is a plan to develop more guides. NRPA has established in its management system a process for review and revision of its regulations and guides.

Status of Recommendation 29

Recommendation (R29): is closed on the basis of progress and confidence in effective completion in due time as draft regulations and guides are being reviewed and revised and planned to be finalized and implemented.

2014 Original mission RECOMMENDATIONSAND SUGGESTIONS	
	Observation: Regulations and guides are not being sufficiently promoted to interested parties.
(1)	**BASIS: GSR Part 1 Requirement 34 states that** *"The regulatory body shall notify interested parties and the public of the principles and associated criteria for safety established in its regulations and guides, and shall make its regulations and guides available."*
R30	**Recommendation: The regulatory body should actively promote its regulations and guides to all interested parties and make the regulations available.**

Changes since the original IRRS mission

Recommendation 30: NRPA has published *Law 2019/012* in one of its biannual magazines and distributed to stakeholders and the public. The IRRS review team was informed that it plans to similarly publish and distribute the radiation safety regulations when finalized and approved.

At present, new applicants visit NRPA headquarters in person or contact by email to get information related to regulatory requirements and are provided relevant guidance as appropriate. However, NRPA does not have an established mechanism for promoting its regulations and guides to applicants, licensees and interested parties, and any issued regulations and guides are not readily available such as on a website. The IRRS team was informed that NRPA had a website that it used to provide information to interested parties and the public in relation to its regulatory activities, but the website is not available any more due to financial constraints for its regular maintenance.

Status of Recommendation 30

Recommendation (R30): remains open as the website of the NRPA is no longer available and other established mechanisms to sufficiently promote and make available its regulations and guides are not in place.

10. EMERGENCY PREPAREDNESS AND RESPONSE

10.1. GENERALEPR REGULATORY REQUIREMENTS

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Although it seems to be a common understanding of the regulator and the applicants/licensees of radiological practices that the prime responsibility for on-site EPR arrangements are with the licensee, this requirement is not explicitly expressed in a regulatory document.
(1)	**BASIS: GS-R-2 para. 3.8 states that** *"The regulatory body shall require that arrangements for preparedness and response be in place for the on-site area for any practice or source that could necessitate an emergency intervention.[…]"*
R31	**Recommendation: The regulatory body should develop regulations that clearly define the licensee's responsibility to establish emergency preparedness and response capabilities commensurate with the hazards of the given practice.**

Changes since the original IRRS mission

Recommendation 31: *Law 2019/12* includes provisions requiring the licensees to establish on-site emergency plan commensurate with the nature and the potential consequences of an emergency. The law also requires licensees to update their on-site emergency plan when necessary, but at least once a year.

Additionally, the draft decree on radiation safety requires licensees to provide theoretical and practical training on Emergency Preparedness and Response (EPR), and to conduct an annual exercise to test their on-site EPR arrangements and to update them as necessary.

To facilitate the implementation of the legislative and regulatory provisions on EPR by the operating organizations, NRPA has developed six model emergency plans to serve as guides for the licensees to develop their on-site emergency plan. These guides cover all types of existing facilities in Cameroon.

Status of Recommendation 31

Recommendation (R31): is closed on the basis of progress and confidence in effective completion in due time as *Law 2019/012* and draft decree provides for establishment of emergency preparedness and response capabilities.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Decree No. 98/31 is the basic legal document regulating planning for management of national emergencies, which lists all the national agencies that are members of the National Crisis Committee. NRPA, as the regulatory body in nuclear and radiological matters, is not mentioned in this decree.
(1)	**BASIS: GS-R-2 para. 3.10 states that** *"In planning for, and in the event of [a nuclear or radiological emergency], the regulatory body shall act as an adviser to the government and [response organizations] in respect of nuclear safety and*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	radiation protection."
S6	**Suggestion: The regulatory body should consider initiating the amendment of Decree 98/31, to include NRPA in the list of the National Crisis Committee members, as the main government organization responsible for radiation emergency preparedness and response.**

Changes since the original IRRS mission

Suggestion 6: NRPA had initiated action for the amendment of the Decree 98/31 to include NRPA in the list of members of the National Crisis Committee. This amendment procedure was still ongoing when *Law 2019/012* was promulgated in 2019. *Law 2019/012* gives the responsibilities for EPR to the regulatory authority and includes provisions for the authority to develop a national plan for nuclear and radiological emergency in cooperation with other relevant national stakeholders.

Status of Suggestion 6

Suggestion (S6): is closed as *Law 2019/012* establishes the regulatory authority as the main government organization responsible for radiological emergency preparedness and response.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no regulatory requirements and no guidance for the licensees to develop threat assessment, to be the basis of their EPR planning.
(1)	**BASIS: GS-R-2 para. 3.15 states that** *"The nature and extent of emergency arrangements [for preparedness and response] shall be commensurate with the potential magnitude and nature of the [threat]… associated with the facility or activity." (Ref. [10], para. 6.4.) The full range of postulated events shall be considered in the threat assessment. In the threat assessment, emergencies involving a combination of a nuclear or radiological emergency and a conventional emergency such as an earthquake shall be considered […]"*
R32	**Recommendation: The regulatory body should develop regulatory and guidance documents for the applicants/licensees to perform threat assessment, on which their EPR arrangements will be based.**

Changes since the original IRRS mission

Recommendation 32: Both *Law 2019/012* and the draft decree on radiation safety make provisions for licensees to develop EPR plans that include the results of their threat assessment. NRPA has also developed model of emergency plans to serve as guide for the licensee to develop their on-site EPR plan, including the threat assessment.

Status of Recommendation 32

Recommendation (R32): is closed on the basis of progress and confidence in effective completion in due time as *Law 2019/012* and the draft decree make provisions for development of EPR plans and NRPA has developed guidance.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The assessment of radiation emergency hazard on the national level is limited to assigning the threat categories defined in GS-R-2 to the radiation sources registered in RAIS, but it does not cover many other scenarios that would warrant emergency response.
(1)	**BASIS: GS-R-2 para. 3.15 states that** *"The full range of postulated events shall be considered in the threat assessment. In the threat assessment, emergencies involving a combination of a nuclear or radiological emergency and a conventional emergency such as an earthquake shall be considered. Any threat associated with nuclear facilities in other States shall also be considered […]"*
S7	**Suggestion: The regulatory body should extend its threat assessment beyond the threat categorization of sources registered in RAIS, to cover all possible radiation emergency scenarios.**

Changes since the original IRRS mission

Suggestion 7: In the process of developing National Radiological Emergency Plan, NRPA has performed a hazard assessment in Cameroon based on the inventory of radiation sources registered in RAIS. The hazard assessment was updated taking into consideration threat associated with the sources beyond those registered in RAIS to cover all possible radiation scenarios in the country that would warrant radiation emergency response (for example, satellite re-entry, illicit trafficking of radioactive material, nuclear emergency abroad, radioactive dispersion device, etc) in accordance with the GSR Part 7 requirements. However, the updated hazard assessment is not approved and is expected to be approved by 2022.

Status of Suggestion 7

Suggestion (S7): is closed on the basis of progress and confidence in effective completion in due time as the revised hazard assessment in Cameroon takes into consideration categories of radiation sources beyond those registered in RAIS and is planned to be approved.

10.2. FUNCTIONAL REGULATORY REQUIREMENTS

Establishing emergency management and operations

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no regulatory requirements and no guidance for the licensees to establish emergency management and operations.
(1)	**BASIS: GS-R-2 para. 4.2 states that** *"The on-site emergency response shall be promptly executed and managed without impairing the performance of the continuing operational safety functions."*
(2)	**BASIS: GS-R-2 para. 4.3 states that** *"The off-site emergency response shall be effectively managed and co-ordinated with the on-site response."*
(3)	**BASIS: GS-R-2 para. 4.4 states that** *"The emergency response shall be co-ordinated between all responding organizations."*
(4)	**BASIS: GS-R-2 para. 4.5 states that** *"Information necessary for making*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	decisions on the allocation of resources shall be appraised throughout the emergency."
R33	**Recommendation: The regulatory body should develop regulatory and guidance documents for the applicants/licensees to establish appropriate emergency management and operations.**

Changes since the original IRRS mission

Recommendation 33: *Law 2019/012* requires the establishment of a quality assurance programme for facilities or a management system, where applicable, as well as a radiological emergency plan approved by the authority.

NRPA has developed model emergency plans to serve as guides for all types of radiation facilities available in Cameroon including emergency operations for different scenarios, but these guides do not include any guidance for emergency management.

Status of Recommendation 33

Recommendation (R33): remains open as the guides developed by the NRPA for EPR do not address emergency management, although emergency operations are well defined in these guides.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no regulatory requirements and no guidance for the licensees to identify a situation that warrants emergency response and the emergency classification is not consistent with GS-R-2, paragraph 4.19.
(1)	**BASIS: GS-R-2 para. 4.19 states that** *"The operator of a facility or practice in threat category I, II, III or IV shall make arrangements for the prompt identification of an actual or potential nuclear or radiological emergency and determination of the appropriate level of response. This shall include a system for classifying all potential nuclear and radiological emergencies that warrant an emergency intervention to protect workers and the public, in accordance with international standards[…]"*
R34	**Recommendation: The regulatory body should develop regulatory and guidance documents for the applicants/licensees to classify the emergency in consistency with GS-R-2, and to notify the regulatory body within a well-defined time period.**

Changes since the original IRRS mission

Recommendation 34: The draft decree on radiation safety establishes provisions related to the notification of any radiological incident or accident to concerned competent authorities as well as to the regulatory authority. In accordance with the provisions of the draft decree, NRPA has developed a declaration form for notification of any incident or accident.

The declaration form specifies 15 minutes as the time for the notification any incident or accident; however, there is no provision in the draft decree for such specific regulatory requirement.

Through the declaration form, NRPA requests information on the current and foreseeable evolution of the situation, the measures taken for the protection of workers and members of the public, and the exposures occurred or likely to be suffered, during each class of the emergency.

There is also no regulatory requirement to classify the emergency in accordance with GSR Part 7.

Status of Recommendation 34

Recommendation (R34): remains open as there are no regulatory provisions to notify the regulatory body within a well-defined time and for the establishment of a system of classification of nuclear and radiological emergency.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There are no generic and operational intervention and action levels available in Cameroon.
(1)	**BASIS: GS-R-2 para. 4.45 states that** *"Optimized [national] intervention levels [for taking urgent protective actions] shall be [established that are in accordance with international standards[…]"*
(2)	**BASIS: GS-R-2 para. 4.71 states that** *"[…]arrangements shall be made for promptly assessing the results of environmental monitoring and monitoring for contamination on people in order to decide on or to adapt urgent protective actions to protect workers and the public, including the application of operational intervention levels (OILs) with arrangements to revise the OILs as appropriate to take into account the conditions prevailing during the emergency."*
R35	**Recommendation: The regulatory body should develop generic and operational intervention and action levels, in accordance with the international standards.**

Changes since the original IRRS mission

Recommendation 35: The draft decree includes provisions on radiation safety dedicated to Preparedness and Response to a Nuclear or Radiological Emergency. It includes provisions for, inter alia, the regulatory body to establish generic criteria and operational intervention levels and emergency action levels. The IRRS team was informed that NRPA has planned to develop and establish, in accordance with GSR Part 7, these generic criteria and operational intervention levels and emergency action levels in 2022.

Status of Recommendation 35

Recommendation (R35): remains open as NRPA has not yet developed and established the generic criteria, operational intervention levels and emergency action levels.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation*:* Although Article 4 of Decree 2002/250 obliges NRPA to develop regulations regarding the protection of emergency workers (both on-site and off-site), these regulations are not yet available.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
(1)	**BASIS: GS-R-2 para. 4.56 states that** *"Arrangements shall be made to protect emergency workers, in accordance with international standards"*
(2)	**BASIS: GS-R-2 para. 4.60 states that** *"National guidance that is in accordance with international standards55 shall be adopted for managing, controlling and recording the doses received by emergency workers. This guidance shall include default operational levels of dose for emergency workers for different types of response activities, which are set in quantities that can be directly monitored during the performance of these activities (such as the integrated dose from external penetrating radiation). In setting the default operational levels of dose for emergency workers the contribution to doses via all exposure pathways shall be taken into account."*
R36	**Recommendation: The regulatory body should develop regulations for the protection of emergency workers (both on-site and off-site), in accordance with the international standards.**

Changes since the original IRRS mission

Recommendation 36: The draft decree on radiation safety includes provisions for the protection of emergency workers, in accordance with the relevant IAEA safety standards, as well as for other workers and volunteers. These provisions are also well established on the guide related to response to an emergency for each type of facilities and activities.

Status of Recommendation 36

Recommendation (R36): is closed on the basis of progress and confidence in effective completion in due time as the draft decree establishing the provisions on the protection of emergency workers will be promulgated and a guide has been developed.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory body has regulatory responsibility in the recovery operations (e.g. transition threshold, workers protection, response criteria etc.) but has not yet been developed.
(1)	**BASIS: GS-R-2 para. 4.100 states that** *"Decisions to cancel restrictions and other arrangements imposed in response to a nuclear or radiological emergency shall be made by a formal process that is in accordance with international guidance [15]. "The regulatory body shall provide any necessary input to the intervention process. Such input may be advice to the government or regulatory control of intervention activities. […]"*
R37	**Recommendation: The regulatory body should develop the necessary requirement regulating the recovery operation and facilitating the smooth transition to normal social and economic conditions.**

Changes since the original IRRS mission

Recommendation 37: *Law 2019/012* provides for the implementation of the national strategy for finding, recovery, control, and management of orphan sources by the regulatory body.

NRPA has developed a manual of procedures for response to a radiological emergency, especially for recovery operations and for facilitating the transition to normal situation in accordance with the draft decree on radiation safety. However, the manual of procedures for response to a radiological emergency is yet to be approved and is expected in 2022.

Status of Recommendation 37

Recommendation (R37): is closed on the basis of progress and confidence in effective completion in due time as the draft decree on radiation safety that addresses the main provisions on recovery operations and transition to a normal situation will be promulgated and the manual of procedures will be approved in 2022.

10.3. REGULATORY REQUIREMENTS FOR INFRASTRUCTURE

Authority, organization and coordination of emergency response

There were no findings in this area in the original IRRS mission.

Plans and procedures

There were no findings in this area in the original IRRS mission.

Logistical support and facilities

There were no findings in this area in the original IRRS mission.

Training, drills and exercises

There were no findings in this area in the original IRRS mission.

Quality assurance programme

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory body does not have regulations regarding quality assurance in EPR
(1)	**BASIS: GS-R-2 para. 5.37 states that** *"The operator of a facility, practice or source in threat category I, II, III or IV and the off-site response organizations shall establish a quality assurance programme, in accordance with international standards, to ensure a high degree of availability and reliability of all the supplies, equipment, communication systems and facilities necessary to perform the functions specified in Section 4 in an emergency (see para. 5.25)…"*
(2)	**BASIS: GS-R-2 para. 5.39 states that** *"The operator of a facility, practice or source in threat category I, II, III or IV and the off-site response organizations shall make arrangements to review and evaluate responses in emergencies and in drills and exercises, to record the areas in which improvements are necessary and to ensure that the necessary improvements are made."*
R38	**Recommendation: The regulatory body should develop regulatory requirements for EPR quality assurance programme to be established and maintained by the licensees.**

Changes since the original IRRS mission

Recommendation 38: *Law 2019/012* requires the licensees to set up a quality assurance programme for its facilities or a management system, where applicable, as well as a radiological emergency plan approved by the authority in charge of regulation and regulatory control.

The draft decree on radiation safety establishes the provisions on quality assurance programme. However, the decree does not provide for EPR quality assurance programmes.

Status of Recommendation 38

Recommendation (R38): remains open, as there is no regulatory requirement in place for EPR quality assurance programme.

10.4. ROLE OF REGULATORY BODY DURING RESPONSE

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Proper response to a radiation emergency response on the national level requires planning and coordination. NRPA has an important role in this planning process. The national radiation emergency plan is in draft form, which is incomplete and is not yet in effect.
(1)	**BASIS: GS-R-2 para. 3.13 states that** *"Plans or other arrangements shall be made for co-ordinating the national response to the range of potential nuclear and radiological emergencies. These arrangements for a co-ordinated national response shall specify the organization responsible for the development and maintenance of the arrangements; shall describe the responsibilities of the operators and other response organizations; and shall describe the co-ordination effected between these arrangements and the arrangements for response to a conventional emergency. The arrangements should include provisions that can be used to formulate in detail a response to situations such as: a serious exposure or contamination resulting from contact with a source by a member of the public; the notification of a potential transboundary release of radioactive material; the discovery of a shipment containing a dangerous source that is not under control; the notification of the potential re-entry of a satellite; public concern or rumours about a threat; and other unanticipated situations warranting a response."*
S8	**Suggestion: The regulatory body should consider finalizing the draft national radiation emergency plan and forward it to the relevant national authorities for review and approval.**

Changes since the original IRRS mission

Suggestion 8: NRPA has developed the draft national emergency plan that was submitted to the IAEA for review in 2020. The IAEA has provided comments and suggestions for improvement on the draft document to the NRPA. However, the draft national emergency plan has not yet been finalized and approved, with due consideration to the IAEA comments.

Status of Suggestion 8

Suggestion (S8): remains open, as the national emergency plan is not yet finalized and approved.

New observation from follow-up mission

The IRRS team noted that the draft decree on radiation safety provides for the establishment by the licensee on-site emergency plan and response plan for security events in accordance with GSR Part 7. However, the draft decree does not specify that on-site emergency arrangements be integrated with other existing arrangements for response to a conventional emergency and with the response measures for a nuclear security event.

Furthermore, the requirements on emergency preparedness and response established on the draft decree address generic criteria and operational intervention levels but do not cover all criteria for initiating the different parts of an emergency plan and for taking protective actions and other response actions.

FU Mission RECOMMENDATIONS, SUGGESTIONS AND GOOD PRACTICES	
Observation: The draft decree does not cover all criteria for emergency preparedness and response upon which its regulatory judgements, decisions and actions are based for operating organizations to effectively implement their on-site emergency arrangements in case of emergency events, including nuclear security events and conventional events. The on-site emergency arrangements are not integrated with others emergency plans such as plans for firefighters or response plan for security events.	
(1)	**BASIS: GSR part 7 para. 1.5. states that** *"… the response to a nuclear or radiological emergency has to be well coordinated, and emergency arrangements have to be appropriately integrated with arrangements for the response to a conventional emergency and with the response measures for a nuclear security event."*
(2)	**BASIS : GSR part 7 para. 4.12. states that** *"The regulatory body is required to establish or adopt regulations and guides to specify the principles, requirements and associated criteria for safety upon which its regulatory judgements, decisions and actions are based. These regulations and guides shall include principles, requirements and associated criteria for emergency preparedness and response for the operating organization."*
RF3	**Recommendation: The draft decree should be amended to include provisions:** • **that on-site emergency arrangements be integrated with other emergency plans such as response plan for security event and plans for firefighters;** • **criteria for emergency preparedness and response for operating organizations with associated protective actions and other response actions.**

11. ADDITIONAL AREAS

11.1. CONTROL OF MEDICAL EXPOSURES

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory framework regarding patient protection is incomplete since areas such as justification, optimization, responsibilities of licensees, criteria regarding the sufficiency of medical and paramedical personnel, training, calibration, reporting of unintended exposures are not addressed.
(1)	**BASIS:** *GSR Part 3 para. 3.145 to 3.185 define the requirements for patient protection in medical exposure.*
R39	**Recommendation: NRPA should complete the regulatory requirements on medical exposure, making sure that they are compliant with GSR Part 3. Some of this framework should be developed in consultation with the Ministry of Health and relevant professional bodies.**
	Observation: Maximal skin entry doses have been defined in the Arrêté 1152. How those values should be used is not explained in the current regulation, and NRPA has not yet started applying this requirement.
(1)	**BASIS: GSR Part 3, Requirement 34** states that *"The government shall ensure that […]diagnostic reference levels […]are established".*
(2)	**GSR Part 3, Requirement 38, Para 3.169**states that*"[…]licencees shall ensure[…]whether the optimization of protection and safety for patients is adequate[…]"*
R40	**Recommendation: The Government should revise Arrêté 1152 and replace the maximal skin entry doses with diagnostic reference levels. NRPA should also define how to use these values as optimization tools and control the implementation of this requirement.**

Changes since the original IRRS mission

Recommendation 39: *Law 2019/012* lays down the general framework for radiological safety, including for medical exposure and radiation protection for workers, patients, the public and the environment.

The draft decree on radiation safety contains various requirements for patient protection that address the areas of justification, optimization, responsibilities of licensees, criteria regarding the sufficiency of medical and paramedical personnel, training, calibration, reporting of unintended exposures and other requirements. This draft decree is currently being reviewed for finalization.

However, there are some inconsistencies in the draft decree that need to be addressed in accordance with GSR Part 3 for medical medical exposure, such as:

- Justification in medical exposure is not fully addressed; the only provisions related to justification in medical exposure mentioned in the draft decree are those related to the justification of exposure for pregnant and breast-feeding women;

- Optimization of protection and safety in medical exposure is not fully addressed; for example, there are no provisions related to operational considerations. Optimization is only mentioned in several sections of the draft decree in the context describing the role of medical physicists;
- Dose constraints in medical exposure usually used in the optimization of protection for carer or comforter are not addressed in the draft decree;
- There are some inconsistent terminologies used such as "guideline medical exposure levels", "indicative medical exposure levels", and "diagnostic reference levels".

Status of Recommendation 39

Recommendation (R39): remain open as the draft decree has some inconsistencies with GSR Part 3 in medical exposure and needs to be reviewed**.**

Changes since the original IRRS mission

Recommendation 40: The draft decree on radiation safety contains specific requirements for Diagnostic Reference Levels. In 2015 a national project was created for the establishment and utilization of National Diagnostic Reference Levels (NDRLs). Ad hoc committee for the establishment of DRLs was created under this project, consisting of health practitioners from the Ministry of Health (MoH), experts and NRPA staff trained in medical fields.

In 2016, the DRL Ad Hoc committee developed a National Policy that contains various protocols to establish the DRL; the work methodology and the action plan of activities to be carried out; to investigate different radiological examinations; to determine the target populations, and to define the beneficiaries of the project.

In 2018 and 2019, two members of the Ad Hoc committee (one radiologist and one NRPA physicist) attended an IAEA training courses on medical exposure including the establishment and use of DRL.

In 2019 to 2020, staff training on data collection was conducted; data was collected and needs to be analyzed.

One group lead by a member of the Ad Hoc committee in Duala collected data for 1775 CT patients, amongst which 10 different types of common CT examinations for adults and children and managed to establish local DRL. This work was published in 2020.

Status of Recommendation 40

Recommendation (R40): is closed, as the diagnostic reference levels are included in the draft decree on radiation safety and NRPA has included DRL as optimization tools in the draft decree and built competence on the national level for its establishment and implementation.

- Optimization of medical exposure

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Treatment Planning System (TPS)is not available during the preparation of radiotherapy treatments. Therefore, the exposure of volumes other than the planning target volume is not optimized.
(1)	**BASIS: GSR Part 3 para. 2.29 states that** *"The regulatory body shall establish requirements for the application of the principles of radiation protection specified in*

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	paras 2.8–2.12 for all exposure situations and shall establish or adopt regulations and guides for protection and safety"
(2)	**BASIS: GSR Part 3 para. 3.164states that** *"For therapeutic radiological procedures, the radiological medical practitioner, in cooperation with the medical physicist and the medical radiation technologist, shall ensure that for each patient the exposure of volumes other than the planning target volume is kept as low as reasonably achievable consistent with delivery of the prescribed dose to the planning target volume within the required tolerances."*
R41	**Recommendation: NRPA should formalize the requirements for optimization of doses delivered to radiotherapy patients and enforce them.**

Changes since the original IRRS mission

Recommendation 41: The draft decree on radiation safety contains specific requirements for the usage of a Treatment Planning System (TPS) for preparation of radiotherapy treatments. According to the draft decree, the TPS and all related software have to be checked and verified by the license holder. The NRPA authorization system and license conditions contain requirements to ensure that patient doses are optimized in radiotherapy practices. The IRRS team was informed that these requirements and license conditions are checked during inspections.

There are only two functional radiotherapy centres in Cameroon; in Douala General Hospital using Co-60 and in Cameroon Oncology Center (COC) using LINAC. The Co-60 source has been recently replaced and a TPS system is being procured. The treatment plans for the LINAC for all patients are done abroad with a TPS located in USA, while the treatment is carried out in COC accordingly. NRPA has instructed the COC to obtain their own TPS. The IRRS team has observed that NRPA inspection report of October 2020 identified one of the non-compliances in the COC as the lack of TPS in the facility.

Status of Recommendation 41

Recommendation (R41): is closed on the basis of progress and confidence in effective completion in due time as the requirements for optimization of doses delivered to radiotherapy patients is already included in the draft decree and NRPA is enforcing this requirement.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Quality Control requirements are currently not determined using a graded approach in accordance to the risks associated with the different activities.
(1)	**BASIS: GSR Part 3 para. 3.172 states that** *"Registranst and licensees shall ensure that […] quality assurance […] frequency is in accordance with the complexity of the radiological procedures being performed and the associated risks."*
S9	**Suggestion: NRPA should consider ensuring that graded frequencies are applied for quality control, in accordance with the complexity of the radiological procedures being performed and the associated risks.**

Changes since the original IRRS mission

Suggestion 9: The draft decree on radiation safety contains specific requirements for quality control. NRPA's "Methodological Guide of Quality Control in Medical Radiology", approved by the NRPA Board of Administrators, includes graded frequencies for quality control in accordance with the complexity of the radiological procedures being performed and the associated risks as shown below:

- CT Scanner — once a year
- Interventional radiology — once a year
- Conventional radiology — once or twice per year depending on the workload
- Mammography — once every three years
- Dental X-ray — once every three years

Status of Suggestion 9

Suggestion (S9): is closed as graded frequencies are applied for the implementation of quality control in accordance with the associated risks.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Acceptance criteria for quality control have been elaborated, but not been validated or published yet. On the basis of the draft criteria, nearly half of the X-ray devices controlled by NRPA do not comply, and a third of them do not comply but still remain acceptable. The enforcement policy to address this issue is not defined.
(1)	**BASIS: GSR Part 3 Para. 3.171 states that** *"Registrants and licensees shall ensure that programmes of quality assurance for medical exposure include as appropriate[…](b) implementation of corrective actions if performed if measured values of the physical parameters […] are outside established tolerance limits."*
R42	**Recommendation: NRPA should formalize its acceptance criteria for quality control results and define and implement an enforcement policy for devices that are outside tolerance limits.**

Changes since the original IRRS mission

Recommendation 42: The draft decree on radiation safety contains specific requirements for enforcement actions for X-ray devices that are outside tolerance limits.

The "Methodological Guide of Quality Control in Medical Radiology" contains all the QC procedures for various X-ray devices including the tolerance limits at the end of each procedure. These tolerance limits are also stated in each QC report.

NRPA takes enforcement measures on authorization holders if the QC reports show that the recommendations of NRPA are not complied with.

Status of Recommendation 42

Recommendation (R42): is closed as acceptance criteria for quality control results are defined and enforcement action is taken for devices that are outside tolerance limits.

11.2. OCCUPATIONAL RADIATION PROTECTION

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: The regulatory framework for occupational radiation protection is not complete and contains inconsistencies. In particular, many requirements apply only to workers in medical radiation applications while these requirements would as well be relevant to workers in other areas.
(1)	**BASIS: GSR Part 3, Requirement 19 states that** *"The government or the regulatory body shall establish and enforce requirements to ensure that protection and safety is optimized, and the regulatory body shall enforce compliance with dose limits for occupational exposure."*
R43	**Recommendation: NRPA should revise the regulatory framework for occupational exposure for consistency and completeness with respect to GSR Part 3, in particular making it consistent in the medical and non-medical fields so that all workers are entitled to the same level of protection. The dose limit to the lens of the eye should be updated accordingly.**
	Observation: A survey of radon in houses has been performed in Cameroon. For one region, the mean concentration is 1280 Bq /m^3. There may be a radon exposure for workers in this region, but this has not been investigated.
(1)	**BASIS: GSR Part 3 Para 3.68 to 3.116** *define the requirements for occupational exposure.*
(2)	**GSR Part 3 Para 5.27 states that** "*The regulatory body or other relevant authority shall establish a strategy for protection against exposure due to 222Rn in workplaces[...]*"
S10	**Suggestion: NRPA should consider performing further studies to determine radon concentrations, especially in workplaces.**

Changes since the original IRRS mission

Recommendation 43: The regulatory framework for occupational exposure was revised. The provisions in *Law 2019/012* and draft decree on radiation safety are consistent for workers in the medical and non-medical fields so that all workers are entitled to the same level of protection. The dose limit to the lens of the eye was updated in the draft decree in line with the GSR Part 3 and is being implemented and enforced by the NRPA.

Status of Recommendation 43

Recommendation (R43): is closed as the law and draft decree are consistent for workers in the medical and non-medical fields and dose limit to the lens of the eye was updated to in the draft decree.

Changes since the original IRRS mission

Suggestion 10: A National Radon Action Plan for monitoring of exposures due to radon, including for workplace monitoring, was drafted, and approved by other stakeholders, namely one research institute and 11 Ministries.

Surveys of radon in houses and workplaces have been performed in Cameroon between 2019-2020 in accordance with the National Radon Action Plan, with the support of the IAEA. 1,500 RADTRAK dosimeters for measuring radon in homes were provided by IAEA under a TC project and were distributed in all regions of Cameroon. The measurement of radon in homes in the northwest and southwest part of Cameroon are still in progress, but analyses of available data, shows that the national arithmetic mean is 108 Bq/m3 which is much lower than previously published results.

Status of Suggestion 10

Suggestion (S10): is closed as further studies to determine radon concentrations have been carried out including in workplaces.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Although Arrêté 1151 requires that health surveillance be performed every year for medical workers, it was explained that it is not applicable to workers in the public hospitals.
(1)	**BASIS: GSR Part 3 para 3.76 states that** "*The government or the regulatory body shall establish and enforce requirements to ensure that protection and safety is optimized for occupational exposure."*
(2)	**BASIS: GSR Part 3 para 3.76 states that "***Employers, registrants and licensees shall ensure, for all workers engaged in activities in which they are or could be subject to occupational exposure, that […](f)Necessary workers' health surveillance and health services for workers are provided.*"
R44	**Recommendation: The Government should make the necessary arrangements so that necessary health surveillance is provided to all occupationally exposed workers.**

Changes since the original IRRS mission

Recommendation 44: The draft decree on radiation safety contains specific requirements for health surveillance of "Category A worker". Although Category A worker is not defined in the draft decree, it indicates that only a certain category of workers would get health surveillance and will not include other workers occupationally exposed to radiation.

Furthermore, the draft decree includes provisions that require the licensee to subject exposed workers to appropriate medical examinations if their occupational exposure reaches effective doses in excess of 3mSv per year. The IRRS team noted that such provision will exclude occupationally exposed workers from medical examinations if their dose is less than 3mSv per year.

Status of Recommendation 44

Recommendation (R44): remains open as there are no arrangements to ensure that all occupationally exposed workers are covered by a health surveillance programme.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: There is no periodic specialized training course available for radiation protection officers in Cameroon. NRPA has given a RPO course once in 2011. Re-training by the RPO is not explicitly included in the radiation protection regulatory framework, and no information of the contents of the radiation protection training to be delivered is available.
(1)	**BASIS: GSR Part 3 para. 2.22 states that** *"The government shall ensure that arrangements are in place for the provision of the education and training services required for building and maintaining the competence of persons and organizations that have responsibilities relating to protection and safety"*
(2)	**BASIS: RS-G-1.4 Part 3 para. 2.6 states that** "*The regulatory body should provide guidance on qualification requirements for each category of job found in particular practices or intervention situations. This guidance should address the minimum educational level, minimum training and retraining requirements and minimum experience for each job category. In addition, the regulatory body should enforce regulations concerning the recognition of qualifications or authorization processes relating to certain duties and/or responsibilities, such as those of radiation protection officers. Alternatively, the regulatory body should review and approve, if appropriate, proposals regarding training requirements made by employers, registrants and licensees"*
(3)	**BASIS: RS-G-1.4 para. 3.37 states that:** "*Training of workers in protection and safety should be a well established part of the overall programme on radiation protection. The training should be tailored to the particular radiation application and the type of work performed and should be designed so that a worker develops the necessary skills to work safely. The training programme should ensure that all workers receive adequate and up to date information on the health risks associated with their occupational exposure […]. It should also include local rules, safety and warning systems, and emergency procedures […]*"
(4)	**BASIS: RS-G-1.1 para. 5.100 states that:** "*[…]Periodic retraining should be provided to ensure that workers have the most up to date knowledge relevant to their work, and that they do not become complacent about workplace hazards. Retraining should also be undertaken when there are significant changes in policy or procedures. Training should be updated at regular intervals"*
S11	**Suggestion: NRPA should consider, in consultation with the relevant training course providers and possibly at the international level, establishing arrangements to support the availability of authorized radiation protection training courses for Radiation Protection Officers.** **The radiation protection framework should also include more clear provisions for the re-training of occupationally exposed workers by the Radiation Protection Officers. NRPA should consider providing guidance on the contents of this training.**

Changes since the original IRRS mission

Suggestion 11: The draft decree on radiation safety contains provisions for the training and re-training of occupationally exposed workers. NRPA conducts training for the staff of facilities and activities. The training programme have been developed according to the workplace of the workers. They are three types of programmes:

- A programme for training peoples (for very low exposed workers such as drivers passing through scanner with trucks), which comprises three modules;
- A programme for workers under ionizing radiation (in medical and industrial facilities), which comprises 10 modules;
- A programme for Radiation Protection Officers (in medical and industrial facilities). This five-day training comprises 12 modules.

The IRRS team was informed that the training programme for Radiation Protection Officers was established based on relevant IAEA safety guides and PGEC syllabus.

The IRRS team was informed that NRPA plans to develop a guidance document on training in radiation protection that includes the training of all personnel working with radiation sources in various facilities and activities, including radiation protection offices, radiation workers, health professionals, and operators among others. Furthermore the IRRS team was informed that NRPA may consider inviting the IAEA's Education and Training Appraisal (EduTA) mission to help it with this activity.

Status of Suggestion 11

Suggestion (S11): is closed as radiation protection training course for RPO is designed and implemented, and continuous training requirement is included in the draft decree**.**

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: It was explained that a license can be issued even though individual monitoring service is not available to the radiation workers. On the contrary, it is required to have a license to obtain individual dosimeters from NRPA.
(1)	**BASIS: GSR Part 3 Para 3.72 states that** "*Before authorization of a new or modified practice, the regulatory body shall require, as appropriate, and review supporting documents from the responsible parties that state (b)[…] programmes for monitoring of workers for occupational exposure in all operational states and in accident conditions.*"
(2)	**BASIS: GSR Part 3 Para 3.73 states that** "*The regulatory body shall be responsible, as appropriate, for (a) establishment and enforcement of requirements for the monitoring, recording and control of occupational exposures in planned exposure situations in accordance with the requirements of these Standards."*
R45	**Recommendation: NRPA should review supporting documents from the responsible parties describing programmes for monitoring of workers before granting authorizations and make sure that requirements for the monitoring of occupational exposures are applied in all facilities.**

Changes since the original IRRS mission

Recommendation 45: Before granting an authorization, NRPA ensures that the requirements for monitoring of occupational exposures are applied in all facilities and activities, and that occupationally exposed workers are receiving individual monitoring services. These requirements are established in the "Notification and Authorization Guide for Practices Using Ionizing Radiation Sources" developed by NRPA. The guide contains an application form where the applicant should state the number of monitored workers and submit a copy of the contract with the individual monitoring service provider.

Status of Recommendation 45

Recommendation (R45): is closed as NRPA ensures that the requirement on individual monitoring is met before granting the license.

2014 Original mission RECOMMENDATIONS AND SUGGESTIONS	
	Observation: Some licensees choose to contract with foreign dosimetry service providers. The regulations do not define the approval process of such services and how the dosimetric results should then be forwarded to NRPA, which is in charge of keeping dose records.
(1)	**BASIS: GSR Part 3 para 3.73 states that** "*The regulatory body shall be responsible, as appropriate, for […] (c) authorization or approval of service providers for individual monitoring and calibration services; […] (e) provision for maintaining exposure records[…]"*
R46	**Recommendation: NRPA should define the process for approval of dosimetry service providers as well as the requirements regarding transmission of dosimetry results to the national record.**

Changes since the original IRRS mission

Recommendation 46: The draft decree on radiation safety states that individual monitoring of occupationally exposed personnel should be carried out by a facility approved by the regulatory authority. NRPA's guide on "Notification and Authorization Guide for Practices Using Ionizing Radiation Sources" describes the approval process of dosimetry services.

The draft decree on radiation safety includes requirements for the licensee to transmit statements of registered doses of its personnel to the regulatory authority which maintains the national dose register.

Status of Recommendation 46

Recommendation (R46): is closed as NRPA has defined the process for approval of dosimetry service providers and included a requirement regarding transmission of dosimetry results to the national record in the draft decree on radiation safety.

2014 Original missionRECOMMENDATIONS ANDSUGGESTIONS	
	Observation: The frequency of dosimeter exchange is not consistently related to the risks associated with the activities performed.
(1)	**BASIS: RS-G-1.3 para. 3.16 states that "**[…]*The frequency of dosimeter exchange should be established by the dosimetry service depending on the type of work being performed and the anticipated exposure associated with the work, and the characteristics of the dosimeters and the overall limit of detection of the dosimetry system. […]Exchange frequencies can range from daily, in special operations, to every six months, if the exposure is expected to be very low, but exchange periods of one to three months are typical.[…]"*
S12	**Suggestion: NRPA should consider defining and applying precise rules and procedures regarding the frequency of dosimeter exchange, for each type of activity.**

Changes since the original IRRS mission

Suggestion 12: NRPA has defined the frequency of the dosimeter exchange in its "Dosimetry monitoring guide" as one month for all facilities. This frequency is also included in the dosimetry contract signed between the licensee and the service provider. According to the guide, this frequency may be increased to three months for very low risk facilities after a safety assessment.

Status of Suggestion 12

Suggestion (S12): is closed as NRPA has defined the frequency of dosimeter exchange, for each type of activity.

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GROUP PHOTO

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REGULATIONS AND GUIDES	
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Mohammad Hassan KHARITA	Mr NJIKI Calvin Didier Mme MVOUFO FOKOU Annie

APPENDIX III MISSION PROGRAMME

AGENDA

IRRS FOLLOW-UP MISSION PROGRAMME		
Sunday 14 November 2021		
IRRS Initial Team Meeting		
10:00 - 13:00	Opening remarks by the IRRS Team Leader • Introduction by IAEA • Self-introduction of all attendees • IRRS Process and report writing (IAEA) • Schedule (TL, IAEA) • First impression from team members arising from the Advanced Reference Material (ARM) (all Team members): Presentations • Administrative arrangements (NRPA Liaison Officer, IAEA): Detailed Mission Programme	Location: Hotel Mont Febe Participants: IRRS Team, Liaison Officer
13:00 – 14:00	Lunch	
14:00 -17:00	Groups prepare for interviews; Module Leaders prepare TL presentation for the Entrance Meeting (as necessary)	Participants: the IRRS Team
Monday 15 November 2021		
IRRS Entrance Meeting		
09:00 – 11:00	09:00 Arrival, registration, 09:30 (Welcoming Address by Mr Gilbert Taguem Fah, Inspector General Ministry of Scientific Research and Innovation 9:45 Self-introduction of IRRS Team Members and Staff NRPA 10:00 Opening remarks by IRRS Team Leader. Expectations for the Mission 10:30 Presentation – Overview of the Cameroon regulatory approach since 2014 by Mr Augustin Simo 10:50 Photo session 10:50: Coffee	Location: Ministry of Scientific Research and Innovation Participants: High Level Government Official, NRPAManagement, Liaison Officer and staff, Official from relevant organizations, the IRRS Team
11:00 – 12:00	Interviews and Discussions with Counterparts (parallel discussions)	Location: NRPA Participants: the IRRS Team
12:00 – 13:00	Lunch	
13:00 – 17:00	Interviews and Discussions with Counterparts (parallel discussions)	Location: NRPA Participants: the IRRS Team

IRRS FOLLOW-UP MISSION PROGRAMME		
17:00 – 18:00	Daily IRRS Review Team meeting	Location: NRPA Participants: the IRRS Team + the LO
19:00 –	Team writes report	IRRS Team
Tuesday 16 November 2021		
Daily Discussions / Interviews		
09:00 – 12:00	Interviews and discussions with counterparts	Location: NRPA Participants: the IRRS Team
12:00 – 13:00	Lunch	
13:00 – 16:00	Interviews and discussions with counterparts	Location: NRPA IRRS Team
16:00 – 17:00	Written preliminary findings delivered	Location: NRPA IRRS Team
17:00 – 18:00	Daily IRRS team meeting/ Discussion of the preliminary findings (conclusions)	Location: Hotel Mont Febe Participants: the IRRS Team + the LO
20:00 – 24:00	Secretariat edits Report Team writes Report	Location: Hotel Mont Febe Participants: IRRS Team
Wednesday 17 November 2021		
Daily Discussions / Interviews		
09:00 – 11:00	Team finalize report TL and TC review introductory part	Location: NRPA Participants: the IRRS Team
11:00 – 12:00	Written preliminary (conclusions) delivered to the Team Leader copied to IAEA Coordinator	Location: NRPA IRRS Team
12:00 – 13:00	Lunch	
13:00 – 15:00	Policy issue Discussions	Location: NRPA Participants: IRRS Team and NRPA Management
15:00 – 16:00	Secretariat edits reports Cross reading	Location: NRPA Participants: IRRS Team
16:00 – 17:00	Preliminary Draft Report Ready	Location: NRPA Participants: IRRS Team
17:00 – 18:00	Daily Team Meeting	Location: Hotel Mont Febe Participants: IRRS Team
19:00 – 24:00	TM read Draft	Location: Hotel Mont Febe Participants: IRRS Team
Thursday 18 November 2021		
Daily Discussions / Interviews		
09:00 – 11:00	Team finalize report Courtesy visit to Ministry	Location: NRPA Participants: the IRRS Team
11:00 – 12:00	Submission of draft report to NRPA	Location: NRPA

IRRS FOLLOW-UP MISSION PROGRAMME		
		Participants: the IRRS Team
12:00 – 13:00	Lunch	
13:00 – 17:00	NRPA reviews the report	Location: NRPA Participants:NRPA Management, LO and staff,
13:00 – 17:00	TL finalizes presentation IAEA Press officer coordinates Press conference with NRPA	Location: NRPA Participants: the IRRS Team
17:00 – 18:00	Written comments provided by NRPA	Location: NRPA Participants: the IRRS Team and NRPA
19:00	Team reviews NRPA comments	Location: Hotel Participants: IRRS Team
Friday 19 November 2021		
09:00 – 10:00	Team discussions	Location: NRPA Participants: the IRRS Team
10:00 – 12:00	Discussion with the NRPA	Location: NRPA Participants: the IRRS Team and NRPA Management, LO and staff,
EXIT MEETING		
14:00 – 15:00	Arrival and Coffee	Location: Ministry of Scientific Research and Innovation Participants: Government Officials, NRPA Management, LO and staff, the IRRS Team
	Main findings of the IRRS mission (Team Leader)	
	Remarks by NRPA in response to the Mission findings.	
	IAEA Official Closing remarks delivered by Mr Peter Johnston Director Division of Radiation, Transport and Waste Safety	
	Cameroon Official Closing remaks delivered by Mr Gilbert Taguem Fah, Inspector General of the Ministry of Scientific Research and Innovation	
	Press conference	
17:00		IRRS Team Members Departure

APPENDIX IV RECOMMENDATIONS (R) AND SUGGESTIONS (S) FROM THE 2015 IRRS MISSION THAT REMAIN OPEN

Section	Module	R/S	Recommendations/Suggestions
1.3	1	R3	The Government should revise the existing legislation in order to assign and authorize the NRPA to carry out main regulatory functions of an independent safety authority such as establishing safety criteria, granting authorization, suspension or revoking authorization, review and assessment of safety matters, inspection and enforcement activities.
1.3	1	R4	The Government should ensure that financial resources allocated to NRPA are sufficient to fulfil its statutory obligations in a timely and adequate fashion.
1.7	1	R7	The Government should establish policy and strategy for the decommissioning of facilities, the safe management and disposal of radioactive waste and establish mechanisms to ensure the necessary financial provision for the decommissioning of facilities and management of radioactive waste, disused radioactive sources and radiation generators.
1.8	1	R8	The Government should analyze the competence needs and the existing available national and international arrangements for education and training. Based on the results of this analysis the government should ensure that mechanisms are put in place to ensure sufficient national competence in relation to safety.
2.1	2	S1	The Government should consider becoming a party to the relevant safety conventions.
2.2	2	S2	NRPA should consider to systematically evaluate operational experience including from other States, and to establish a procedure for the dissemination of all significant operating experience to relevant authorized parties
3.3	3	R11	NRPA should perform a human resources needs assessment and establish and implement a specific programme on the basis of the analysis in order to recruit sufficient staff, and develop and maintain necessary competence and skills.
3.8	3	R13	NRPA should ensure that the authorized party informs

Section	Module	R/S	Recommendations/Suggestions
			the public about the possible radiation risks associated with the operation of a facility or the conduct of an activity and that this obligation is specified in the regulations issued by the regulatory body.
4.1	4	R14	NRPA should establish and implement an integrated management system. The management system should include and address the following elements: • The mission of NRPA, its vision and core values, policy statements, goals and strategies; • Responsibilities, accountabilities, levels of authority and interactions among those managing, performing and assessing work; • Management commitment to safety; • Safety culture; • Resources management; • Training programme; • A graded approach in the regulatory work; • Core and support processes to achieve the mission and goals of NRPA; • Monitoring and evaluation of the effectiveness of the management processes; • Self-assessment, independent assessment, external audit and improvements
5.2	5	R17	The regulatory body should review its system of providing safety assessments for applicants for authorization and should encourage the applicants to have an independent verification of the safety assessment realized through different mechanisms.
6.3	6	R22	The regulatory body should develop relevant regulations and/or guidance for review and assessement and for safety assessment by the licensees.
9.1	9	R28	The regulatory body should establish or adopt regulations and guides to cover all aspects for all facilities and activities.
9.2	9	R30	The regulatory body should actively promote its regulations and guides to all interested parties and make the regulations available

Section	Module	R/S	Recommendations/Suggestions
10.2	10	R33	The regulatory body should develop regulatory and guidance documents for the applicants/licensees to establish appropriate emergency management and operations.
10.2	10	R34	The regulatory body should develop regulatory and guidance documents for the applicants/licensees to classify the emergency in consistency with GS-R-2, and to notify the regulatory body within a well-defined time period.
10.2	10	R35	The regulatory body should develop generic and operational intervention and action levels, in accordance with the international standards.
10.3	10	R38	The regulatory body should develop regulatory requirements for EPR quality assurance programme to be established and maintained by the licensees
10.4	10	S8	The regulatory body should consider finalizing the draft national radiation emergency plan and forward it to the relevant national authorities for review and approval.
11.1	11	R39	Remains open as the draft decree has some inconsistencies with GSR Part 3 in medical exposure.
11.2	11	R44	The Government should make the necessary arrangements so that necessary health surveillance is provided to all occupationally exposed workers.

APPENDIX V RECOMMENDATIONS (RF) SUGGESTIONS (SF) AND GOOD PRACTICES (GPF) FROM THE 2021 IRRS FOLLOWUP MISSION

Section	Module	RF/SF/GPF	Recommendations, Suggestions or Good Practices
7.1.3	7	RF1	The Government should ensure that inspectors are sworn in as required in the Law and inspection should be conducted comprehensively in all facilities and activities in accordance with NRPA's plan of inspection.
8.2	8	RF2	NRPA should enforce its regulatory requirements comprehensively and consistently in all facilities and activities.
10.4	10	RF3	The draft decree should be amended to include provision: • that on-site emergency arrangements be integrated with other emergency plans such as response plan for security event and plans for firefighters; • on criteria for emergency preparedness and response for operating organizations with associated protective actions and other response actions.

APPENDIX VI REFERENCE MATERIAL USED FOR THE REVIEW

ARM Cameroon List

1.	Draft decree reorganization of NRPA.doc Conditions for issuing an authorization to open radiotherpy.pdf
2.	Inventory of facilites using radiation sources n teh Littoral Region (2018).pdf
3.	License to open an industrial guaging .pdf
4.	License to stop storage of rdioactive sources (for the same company as guaging).pdf
5.	Notice for renewal of authorizations.pdf
6.	PROCEDURE AUTORISATION .docx
7.	Request for a list of disused radioactive sources.pdf
8.	Authorization schedule for 2020.pdf
9.	Board approval of the guide on authorization and notification.pdf
10.	Safety eveluation sheet for a computed tomodensitometry.docx
11.	Rapport d_impregnation .pdf
12.	Safety Assessment sheet for Human diagnostic radiology.docx
13.	DDE d_impregnation plate forme autorisations.pdf
14.	lettre DG planning inspection.pdf
15.	planing annuel Inspection 2020 .pdf
16.	planning annuel insp 20 AR-LT.pdf
17.	Prog insp AOUT 2020.pdf
18.	Rapport de preparation Centre d'Imagerie Médicale de l'Axe Lourd Juin 2021.doc
19.	Calibration des équipements de mesure.pdf
20.	Chronogramme restitution.pdf
21.	Correspondances insp Aout 2020_ Industriel.doc

22.	Correspondances insp Aout 2020_Medical.doc
23.	fiche remplie contabilité matiere p2.pdf
24.	LETTRE DG-BV.pdf
25.	Nuclear material Accounting BV2019.pdf
26.	Courier Gestion Sources Radioactives.pdf
27.	fiche remplie contabilité matiere p1.pdf
28.	Procedure Etalonnage Calibrator Model 773-Rev_Validé.docx
29.	Procedure Régération-du-gel-de-silice_Rev_Validé.docx
30.	PROCEDURE SARAD non validé.docx
31.	PROTOCOLE BALANCE non validé.docx
32.	Protocole d_étuve MOV-212 REV (2) validé.docx
33.	pHmeter procedure_ Rev02 validé.docx
34.	Procedure de mise en marche spectro gamma_validé.docx
35.	Rapports etalonnage Module 7 .pdf
36.	Procedure Etalonnage Calibrator Model 773-Rev_Validé.docx
37.	LETTRE MINSANTE.pdf
38.	PV pose sceles.pdf
39.	requisition a force publique signée.pdf
40.	lettre DG Mesure coercitives (1).pdf
41.	Guide Inspecteur ANRP Experiementer2020.pdf
42.	guide sur la transport des matières radioactives Rev 06 aout 2020-DRC(1).pdf
43.	guide sur la transport des matières radioactives Rev 06 aout 2020-DRC.pdf
44.	Guide d_autorisation de la pratique de radiodiagnostic Final DG.pdf
45.	Guide d_autorisation de la pratique de radiodiagnostic Final DG-2-1.pdf
46.	Guide de mesures de sûreté et de sécurité en radiographie industrielle.docx

47.	Guide demandes autorisation et Notification ANRP.doc
48.	Guide evaluation surete radiodiagnostic.docx
49.	Decret d_application_Loi Nucléaire_Version du 08 février 2018.doc
50.	Decret 98-31 sur Plans d_urgences.pdf
51.	law 2019-012 of July 19.pdf
52.	loi 2019_012 du 19 jul 2019.pdf
53.	Decret 2002-250.pdf
54.	CMR Decret d_application_ Français 12-07-21 MAPEL.doc
55.	DECISION RADIOTHERAPIE.pdf
56.	law-n2019-012-of-19-07.pdf
57.	loi-n-2019-012-du-19-07.pdf
58.	CMR Decret d_application_ Anglais 12-07-21 MAPEL.doc
59.	Guide to Radiological Emergencies.pdf
60.	Modele validé PUI en radiographie industriel.pdf
61.	Modele validé PUI médecine nucléaire.pdf
62.	Modele validé PUI radiodiagnostic.pdf
63.	Modele validé PUI Radiothérapie.pdf
64.	National Radiological Emergency Plan.pdf
65.	Threat Assessment.pdf
66.	Threats_Category_2021-vf.pdf
67.	Decret 98-31 sur Plans d_urgences.pdf
68.	Emergency plan template for nuclear guages.pdf
69.	Emergency plan template for oil exploration.pdf
70.	Guide on Dosimetry .doc
71.	Guide on on Authorization.doc

72.	Cameroon DRLs National Policy.pdf
73.	Guide for notification and authorization.doc
74.	Guide on dosimetric monitoring.doc
75.	Draft decree reorganization of NRPA.doc
76.	law 2019.pdf
77.	Decree 2002_250.pdf
78.	Draft decree on laying down modalities for the application of the law 2019.doc
79.	Record classification.doc
80.	record retention schedule.doc
81.	Draft integrated management system.docx
82.	Content of training.doc
83.	Interim storage facility.jpg
84.	Internal training participation.pdf
85.	Plan_action_radon_final_10112020.docx
86.	Radiotherapy Inspection report.PDF
87.	Radiotherapy License.pdf
88.	Analysis of E_T needs for RPO and QE.doc
89.	ANRP News 2018 N°14 FR_Ang .pdf
90.	Calibration reports.pdf
91.	IRRS Follow -up self-assessment report 2021 v3.doc

APPENDIX VII IAEA REFERENCE MATERIAL USED FOR THE REVIEW

[1] INTERNATIONAL ATOMIC ENERGY AGENCY, Fundamental Safety Principles, IAEA Safety Standards Series No. SF-1, IAEA, Vienna (2006)

[2] INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), IAEA, Vienna (2016).

[3] INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, IAEA Safety Standards Series No. GSR Part 2, IAEA, Vienna (2016).

[4] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014).

[5] INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4 (Rev. 1), IAEA, Vienna (2016).

[6] INTERNATIONAL ATOMIC ENERGY AGENCY, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015).

[7] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR OFFICE, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSG-2, IAEA, Vienna (2011).

[8] INTERNATIONAL ATOMIC ENERGY AGENCY, Communication and Consultation with Interested Parties by the Regulatory Body, IAEA Safety Standards Series No. GSG-6, IAEA, Vienna (2017)

[9] INTERNATIONAL ATOMIC ENERGY AGENCY, Organization, Management and Staffing of the Regulatory Body for Safety, IAEA Safety Standards Series No. GSG-12, IAEA, Vienna (2018)

[10] INTERNATIONAL ATOMIC ENERGY AGENCY, Functions and Processes of the Regulatory Body for Safety, IAEA Safety Standards Series No. GSG-13, IAEA, Vienna (2018).

[11] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR OFFICE, Arrangements for Preparedness for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GS-G-2.1, IAEA, Vienna (2007).

[12] ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, Arrangements for the Termination of a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSG-11, IAEA, Vienna (2017).

[13] INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR OFFICE, Occupational Radiation Protection, IAEA Safety Standards Series No. GSG-7, IAEA, Vienna (2018).

[14] INTERNATIONAL ATOMIC ENERGY AGENCY, Establishing the Infrastructure for Radiation Safety, IAEA Safety Standards Series No. SSG-44, IAEA, Vienna (2018)

[15] INTERNATIONAL ATOMIC ENERGY AGENCY, WORLD HEALTH ORGANIZATION, PAN AMERICAN HEALTH ORGANIZATION AND INTERNATIONAL LABOUR

OFFICE, Radiation Protection and Safety in Medical Uses of Ionizing Radiation, IAEA Safety Standards Series No. SSG-46, IAEA, Vienna (2018)

[16] INTERNATIONAL ATOMIC ENERGY AGENCY, Environmental and Source Monitoring for Purposes of Radiation Protection, IAEA Safety Standards Series RS-G-1.8, IAEA, Vienna (2005)

[17] INTERNATIONAL ATOMIC ENERGY AGENCY, Categorization of Radioactive Sources, IAEA Safety Standards Series No. RS-G-1.9, IAEA, Vienna (2005)

[18] INTERNATIONAL ATOMIC ENERGY AGENCY, Regulatory Control of Radioactive Discharges to the Environment, IAEA Safety Standards Series No. GSG-9, IAEA, Vienna (2018).

[19] INTERNATIONAL ATOMIC ENERGY AGENCY, Code of Conduct on the Safety and Security of Radioactive Sources, IAEA/CODEOC/2004, IAEA, Vienna (2004).

[20] INTERNATIONAL ATOMIC ENERGY AGENCY, Guidance on the Import and Export of Radioactive Sources, IAEA, Vienna (2012).

[21] INTERNATIONAL ATOMIC ENERGY AGENCY, Guidance on the Management of Disused Radioactive Sources, IAEA, Vienna (2018)

[22] INTERNATIONAL ATOMIC ENERGY AGENCY, SARIS Guidelines, IAEA Services Series No. 27, IAEA, Vienna (2014).

APPENDIX VIII ORGANIZATION CHART

ORGANIGRAMME DE L'AGENCE NATIONALE DE RADIOPROTECTION (ANRP)