

**NIGERIAN NUCLEAR REGULATORY AUTHORITY**



**DRAFT**

**DRAFT NIGERIAN REGULATIONS ON LICENSING AND QUALIFICATIONS  
OF NUCLEAR POWER PLANT OPERATORS, 2019**

**2019**

**NUCLEAR SAFETY AND RADIATION PROTECTION ACT (1995 No. 19)**

**Nigerian Specific Nuclear Safety Regulation on Licensing and Qualifications  
of Nuclear Power Plant Operators Regulations, 2019**

# ARRANGEMENT OF REGULATIONS

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S. I. of 2018

**NUCLEAR SAFETY AND RADIATION PROTECTION ACT (1995 No. 19)**

**Nigerian Nuclear Safety on Licensing and Qualification of Nuclear Power Plant Operators Regulations, 2019**

Commencement:

**In exercise of the powers conferred on it by section 47 of the Nuclear Safety and Radiation Protection Act 1995 and of all other powers enabling it in that behalf, THE NIGERIAN NUCLEAR REGULATORY AUTHORITY, with the approval of the President, hereby makes the following Regulations:**

**PART I – GENERAL**

**1. Interpretation**

In these Regulations, unless the context otherwise requires –

**“the Act”** means the Nuclear Safety and Radiation Protection Act 1995;

**“the Authority”** means the Nigerian Nuclear Regulatory Authority established under Section 1 of the Act;

**“authorization”** means a permission granted in a document issued by the Authority to a legal person who has submitted an application to possess, produce, process, manufacture, purchase, sell, import, export, handle, use, transform, transfer, trade, assign, transport, store or dispose of radioactive material, nuclear material, radioactive waste, prescribed substances or any apparatus emitting ionizing radiation and the authorization may take the form of a registration or a licence;

**“certification”** means a written attestation from the Authority that a person is competent to carry out the duties of a given position referred to in an NPP licence.

**“control room shift supervisor”** is the person in a multi-unit NPP who is responsible to the plant shift supervisor for ensuring that the main control room staff functions safely within their authority limits, and that the conduct of operations within the main

control room is performed in accordance with the NPP licence, policies and procedures.

**“full scope simulator”** means a simulator capable of performing detailed modeling of the response of the systems of a given NPP under normal, abnormal and accident conditions. The simulator is equipped with a replica of the NPP main control room panels where operators can interface with the simulated plant systems in the control room environment.

**“licensee”** means the holder of a licence issued by the Authority to construct, operate or decommission a given NPP.

**“nuclear power plant (NPP)”** means any fission reactor installation that has been constructed to generate electricity on a commercial scale. An NPP is a Class IA nuclear facility, as defined in the Class I Nuclear Facility Regulations. Where a licence is issued for multiple reactors, NPP means all the reactors identified in the licence.

**“On-the-job Training”** means the training undertaken in the actual work environment to obtain required job-related knowledge and skills.

**“plant experience”** means the experience gained in an NPP during commissioning, start-up testing or operation that is relevant to the position for which a person seeks certification.

**“plant shift supervisor”** means the person in an NPP who is responsible for the direct supervision of the operation of the NPP and for ensuring that operations and maintenance are conducted in accordance with the NPP licence, policies and procedures, and with the applicable requirements specified in the Acts and Regulations, and in other relevant standards and codes. The plant shift supervisor is the NPP management’s representative on shift.

**“reactor operator”** means the person in an NPP plant who is responsible for operating and monitoring the systems of a reactor unit from the main control room, in accordance with the NPP licence, policies and procedures.

**“recognized university”** means a Nigerian university with a federal charter, or a foreign university whose degrees are accepted by a recognized Nigerian university.

**“related experience”** means the experience gained in performing duties related to those of the position for which a person seeks certification.

**“senior health physicist”** means the person in a nuclear power plant who is responsible for interpreting the regulations, policies and procedures applicable to radiation protection, and for providing procedure-related approvals where required.

**“unit 0 operator”** means the person in a multi-unit NPP who is responsible for operating and monitoring a group of safety and process systems common to all reactor units from the main control room unit 0 panels, in accordance with the NPP licence, policies and procedures.

## **2. Objective**

The objective of these Regulations is to outline the requirements that shall be complied in order to ensure that the operating organization has a sufficient number of qualified personnel for safe operation of a Nuclear Power Plant (NPP). In particular, this Regulations is to provide general requirements on the qualifications and licensing criteria for the NPP Operators. In addition, this Regulations seeks to establish a framework for ensuring that NPP operators employed demonstrate their commitment to the management of safety to high professional standards.

## **3. Scope**

This Regulations deals specifically with those aspects of qualifications and licensing of NPP Operators which are important to the safe operation of NPP. It provides requirements on qualifications and licensing criteria for NPP Operators.

## **4. Relevant Legislation**

The provisions of the NNRA Act and its Regulations relevant to this document are as follows:

1. The section 47 of the NNRA act 1995 states that, the Authority make regulations prescribing anything required to be prescribed under the Act without prejudice.
2. Section 21 (2) of the Act states that the Authority may issue a license to a person if, in its opinion, the person has sufficient knowledge to use nuclear

material, ionizing radiation sources or radioactive materials in compliance with the general principles and conditions of radiation protection and nuclear safety.

3. Section 2.10. "C" of Nigeria Draft Regulations on the Safety of Research Reactor states that;
  - a. "The operating organization shall define the qualifications and experience necessary for personnel performing duties that may affect safety".
  - b. Regulation 3.3, 'D' "the management aspect of quality assurance program shall include requirement for training qualification and certification".
  - c. Regulation 6.4. The operating organization shall determine the Staff positions that requires a licence or certificate and shall provide for adequate training.
  - d. Regulation 6.35 training, retraining and qualification.

## **5. Application**

The application of these Regulations shall be in addition to all other Nuclear Safety Regulations issued by the Authority.

## **6. Resolution of Conflict**

Where a conflict exists or appears to exist between the requirements of these regulations and the Terms and Conditions in the licence, the licensee shall notify the Authority of such real or apparent conflict in order to initiate steps towards its resolutions.

## **PART II – COMPETENCE REQUIREMENTS**

### **6. Competence Requirements**

6.1. The operating organization shall ensure that NPP Operators who are required to perform duties that affect safety have a sufficient understanding of the plant and its safety features and other competences, such as management and supervisory skills, to perform their duties safely.

6.2. All NPP Operators shall be trained in safety management in a graded approach in accordance to their assigned duties and tasks.

6.3. NPP Operators shall demonstrate appropriate knowledge, skills and attitudes to ensure safety under a variety of conditions relating to their duties.

6.4. NPP Operators shall demonstrate safety culture in terms of attitudes, as well as skills in communication, teamwork, management and supervision, leadership, appreciation and use of analytical methods, and other soft skills.

6.5. When NPP Operators are to be replaced, a reasonable amount of time overlap shall be provided for, so that new operators can acquire an understanding of their new duties and responsibilities and of ongoing activities prior to assuming their positions.

6.6. Appropriate records of assessments against competence and qualification shall be established and maintained for each NPP operator at the plant.

6.7. Only qualified operators shall be entrusted with functions important to the safe supervision and operation of NPP. These functions and the related duties and responsibilities shall be clearly indicated in the schedule of duties of the operating organization.

6.8. The operating organization shall have the responsibility to ensure appropriate qualification of NPP operators irrespective of any formal authorization issued by other bodies.

6.9. The operating organization shall have the responsibility to ensure that qualification requirements are established for NPP Operators.

6.10. Medical fitness requirements shall be specified and certified for NPP Operators.

6.11. A formal notification shall be required before an NPP operator assumes duty in a designated NPP.

6.12. A formal Security Clearance/ Background checks shall be required before an NPP operator assumes duty in a designated NPP.

### **PART III – QUALIFICATION AND TRAINING REQUIREMENTS**

#### **7. Qualification Requirements**

7.1. Education shall be taken into consideration in the application for licensing of NPP operators.

7.2. NPP operator shall be a graduate of a recognized higher institution in Science and Engineering.

7.3. For all categories of operators, technical disciplines in NPP operations shall include mechanical, electrical, instrumentation and control (I&C) engineering, Chemistry or chemical engineering, nuclear engineering, and physics.



7.4. Training programmes shall be used to complement formal education with practical and job related knowledge and skills.

7.5. The operator involved in plant operating functions shall be sufficiently knowledgeable on the basis of a graded approach, about the basics of all the disciplines affecting plant operation, including radiation protection and nuclear safety.

7.6. The plant manager, deputy plant manager, operations manager, shall have a range of experience in positions of increasing responsibility. The requirements for these positions and for the shift supervisors shall include demonstration of leadership ability in relation to plant personnel and, on occasion, to contractors for whose activities they may become responsible.

7.7. An operator shall have a minimum of two years of plant experience at the NPP where certification is sought or an alternative to this experience.

7.8. Plant managers shall have experience in several key areas of plant activity such as operation, maintenance or technical support. This experience should be gained over a period of ten (10) years. Plant managers shall also have appropriate management experience.

7.9. Shift supervisors shall have operational shift experience in reactor operations at an NPP, with team and leadership experience. This experience should be gained over a period of between four and six years, with a minimum of two to three years at an operating plant, of which 12 months shall be at the site concerned (or a similar site).

7.10. Control room operators shall have operational shift experience in nuclear or conventional power plants. Sufficient experience should be gained over a period of between three and four years, of which a minimum of two years shall be at a nuclear power plant, with six months at the site concerned (or a similar site).

7.11. All other operators shall have the experience appropriate to their duties and responsibilities. In general, one year of experience shall be considered a minimum prerequisite for the field operator's position.

## **8. Training Requirements**

8.1. The Operating organization shall establish and document policies and procedures for training and qualifying persons seeking certification for the positions listed below that are applicable to its NPPs:

- Reactor operator;
- Unit 0 operator;
- Control room shift supervisor; and
- Plant shift supervisor.

8.2. The operating organization shall establish and document policies and procedures for training and maintaining the qualification of persons holding a certification for the applicable positions listed in paragraph 8.1

8.3. The operating organization shall establish and document initial training programs, specific to each applicable position listed in paragraph 8.1, to address the training requirements.

8.4. The operating organization shall establish and document continuing training programs, specific to each applicable position listed in paragraph 8.1, to address the training requirements.

8.5. The operating organization shall administer the formal evaluations specified under Education qualification requirements of this regulatory document in accordance with a documented process covering:

- i. The requirements applicable to the different types of evaluations;
- ii. The number and scope of the evaluations associated with the different segments of training;
- iii. The procedures covering the preparation, conduct and grading of:
  - a) the written and oral evaluations associated with initial training;
  - b) the simulator-based evaluations associated with initial training;
  - c) the performance evaluations associated with initial on-the-job training;
  - d) the knowledge evaluations associated with continuing training; and
  - e) the performance evaluations associated with continuing training.
- iv. The requirements and procedures for ensuring the security of the evaluations; and
- v. The qualification requirements of the persons responsible for the preparation, conduct and grading of:
  - a) the written and oral evaluations associated with initial training;
  - b) the simulator-based evaluations associated with initial training;
  - c) the performance evaluations associated with initial on-the-job training;
  - d) the knowledge evaluations associated with continuing training; and
  - e) the performance evaluations associated with continuing training.

8.6. The operating organization shall establish and document, for each applicable shift personnel position listed in paragraph 8.1, procedures regarding the performance of the duties of the position under the supervision of a certified incumbent of that position, prior to certification.

8.7. The operating organization shall establish and document procedures for preparing and conducting the various NPP management interviews specified under the education qualification requirements of this document.

8.8. The operating organization shall prepare, conduct and grade the certification examinations specified under the education qualification requirements of this document in accordance with the conditions referred to in the NPP licence.

8.9 The operating organization shall ensure that reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall complete, on a regular basis, refresher training appropriate to the knowledge and skill requirements of the applicable position, covering:

- i. A review of the knowledge acquired during initial training that is not maintained through the day-to-day operation of the NPP and that is required to work competently in the applicable position;
- ii. Simulator-based exercises that cover infrequent normal NPP manoeuvres;
- iii. Simulator-based exercises that cover a varied number of situations that challenge the diagnostic and decision-making abilities of the person and ensure the person is, at all times, proficient in selecting and using abnormal and emergency operating procedures; and
- iv. Exercises and drills conducted at the NPP on a regular basis to ensure the person is, at all times, ready to respond to accidents and emergencies.

8.10. Each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall complete update training appropriate to the knowledge and skill requirements of the applicable position, covering:

- i. Changes to NPP systems;
- ii. Changes to licensee's and NPP policies, standards and procedures;
- iii. Changes to regulatory requirements;
- iv. Changes to the NPP licence or to documents referenced in the licence; and
- v. NPP and industry experience and operating events.

8.11. Each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall complete, on a regular basis, formal knowledge and performance evaluations that confirm and document that the person possesses the knowledge and the skills covered during continuing training.

8.12. During the period of certification, each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor shall complete the written and simulator-based requalification tests referred to in the NPP licence.

8.13. The operating organization shall prepare, conduct and grade the written and simulator-based requalification tests for certification of reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor in accordance with the conditions referred to in the NPP licence.

8.14. The operating organization shall have in place a documented fitness-for-duty program that provides confirmation that any person seeking a certification, holding a certification or seeking renewal of a certification does not have a physical or a mental limitation that would make the person incapable of performing the duties of the applicable position.

8.15. The operating organization shall establish and document policies and procedures controlling the use of the personal information related to fitness-for-duty and the access to that information.

8.16. The operating organization shall immediately remove a person from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor under the conditions specified below:

- i. The person has failed any of the requalification tests required in section 8.12 and 8.13
- ii. The person, while temporarily assigned to another position at the NPP, has not acted as a responsible operator or supervisor in the position for which the person holds a certification for the minimum number of complete shifts specified in paragraph 8.1. as appropriate, for two consecutive calendar quarters.
- iii. In the opinion of the licensee, the person is not capable, for any reason, of performing the duties of the position for which the person holds a certification, including a limitation identified by the fitness-for-duty program referred to in section 8.14
- iv. The person and the licensee have been informed in writing that the NNRA has initiated procedures for the decertification of the person.

8.17. The operating organization shall reinstate a person who has been absent from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor for more than two shift cycles, due to sickness, injury, pregnancy or other family-related responsibilities or a leave of absence, to the duties of that position if the person meets the requirements specified in paragraphs below:

- a. The person must have completed update training, appropriate to the knowledge and skill requirements of the position, covering changes or events that have occurred during the absence of the person from the position, including:
  - i. Changes to NPP systems;
  - ii. Changes to licensee and NPP policies, standards and procedures;
  - iii. Changes to regulatory requirements;
  - iv. Changes to the NPP licence or to documents referenced in the licence; and
  - v. NPP and industry experience and operating events.

This training shall include formal knowledge and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

- b. The person must have completed refresher training covering the topics from the initial training that must be reviewed and practiced to ensure that the person continues to have the knowledge and the skills required to work competently in the position. The selection of topics shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal written and performance evaluations that confirm and document that, at the completion of the training, the person has the required knowledge and skills to perform the duties of the position.

- c. The person must have completed simulator-based exercises that cover a sufficient number of varied situations that challenge the diagnostic and decision-making abilities of the person to ensure that the person has the knowledge and the skills required to work competently in the position. The selection of exercises shall be based on a documented assessment, performed by the licensee, of the impact of the absence from the position on the person's competence.

This training shall include formal simulator-based evaluations that confirm and document that, at the completion of the training, the person has the required diagnostic and decision-making abilities to perform the duties of the position.

- d. The training requirements specified in paragraphs a, b, c must be met within the one-year period prior to the person being reinstated to the duties of the position by the licensee.
- e. The person must have successfully completed simulator-based requalification tests equivalent in types and number to those referred to in the NPP licence that the person would have had to take during the period of absence, if the person had continued to work in the position.
- f. The person must have successfully completed, within the two-year period prior to being reinstated to the duties of the position, one written requalification test that meets the conditions referred to in the NPP licence.
- g. The person must have performed the duties of the position under the supervision of a certified incumbent of the position for the number of shifts that the licensee considers necessary to confirm and document that the person can perform those duties competently and safely.

The person must have completed an interview administered by NPP management that confirms and documents the person's competence to perform the duties of the position. The person must complete this interview after having met the requirements specified in paragraphs a, b, c, d, e, f, g

8.18. The operating organization may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 8.12 to the duties of the position if the person has met the applicable conditions referred to in the NPP licence.

8.19. The operating organization may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 8.16, to the duties of the position if:

- i. The circumstances that prevented the person from performing the duties of the position for which the person holds a certification for the applicable minimum number of shifts no longer exist; and
- ii. The person meets the requirements specified in paragraphs 8.17a to 8.17h.

8.20. The operating organization may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 8.16c to the duties of the position if:

- i. The condition or limitation why the person was not capable of performing the duties of the position for which the person holds a certification has been rectified; and
- ii. The person meets the requirements specified in paragraphs 8.17a to 8.17h.

8.21. The operating organization may reinstate a person who has been removed from the duties of reactor operator, unit 0 operator, control room shift supervisor or plant shift supervisor, under subsection 8.16iv to the duties of the position upon being informed in writing on the NNRA decision not to decertify the person.

8.22. The licensee shall ensure that each reactor operator, unit 0 operator, control room shift supervisor and plant shift supervisor, who is temporarily assigned to another position at the NPP, maintains the competence necessary to perform the duties of the position for which the person holds a certification by confirming the person meets the requirements specified in subsections (A or B) as appropriate, during the period of temporary assignment.

A. The licensee shall ensure that each certified operator or shift supervisor temporarily assigned to perform one of the activities listed below meets the requirements specified in paragraphs (a1 to a2) :

1. Development and delivery of station-specific training for shift personnel seeking certification;
2. Development and delivery of continuing training for shift personnel holding a certification;
3. Preparation, conduct and grading of certification examinations and requalification tests for shift personnel seeking or holding a certification;
4. Preparation and review of NPP operating documentation for use by certified shift personnel;
5. Coordination or supervision of NPP operation and maintenance activities; or
6. Coordination or supervision of commissioning activities or outages of reactor units or unit 0.

a (1) The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification for a minimum of three complete shifts per calendar quarter.

a (2) The licensee shall ensure that the person acts as a responsible operator or shift supervisor in the position for which the person holds a certification for a minimum of 50

complete shifts over a three-year period. This requirement does not apply to persons assigned as:

1. Simulator instructor for shift personnel seeking or holding a certification; or
2. Examiner for simulator-based certification examinations and simulator-based requalification tests for shift personnel seeking or holding a certification.

a (3) The licensee shall ensure that the person completes the continuing training applicable to the position for which the person holds a certification and successfully completes the corresponding knowledge and performance evaluations.

a (4) The licensee shall ensure that the person successfully completes all the requalification tests applicable to the position for which the person holds a certification.

## **PART IV – OFFENCES, PENALTIES AND APPEAL**

### **9. Offences and Penalties**

(1) Any person or corporate body who contravenes any of the provisions of these regulations has committed an offence.

(2) Where a person or corporate body commits an offence, the Authority may impose penalties such as suspension, revocation of licence, administrative fine, closure of facility or any combination of these or prosecution in a court of competent jurisdiction.

### **10. Appeal**

Any person or corporate body may appeal to the Board of the Authority against any decision made by the Authority pursuant to these Regulations.

### **11. Citation**

These Regulations may be cited as the Nigerian Nuclear Safety on Licensing and Qualifications of Nuclear Power Plant Operators Regulations, 2019.

Made at Abuja this

day of

2019



Dr Idris Yau Usman  
Acting Director General/Chief Executive Officer  
Nigerian Nuclear Regulatory Authority