



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Licensee Submittals and Review and Assessment for Commissioning

[M05.L05]

International Training Course on Regulatory Functions for Security of Nuclear Material, Nuclear Facilities and Associated Activities

20 Nov. – 01 Dec. 2023
NSTDC, Seibersdorf, Austria

Division of Nuclear Security
Department of Nuclear Safety and Security

Learning Objectives



Upon completion of this lesson, participants should be able to:

1. Identify various submittals that may be required from licensees during commissioning of a nuclear facility, and
2. Understand the review and assessment activities that may need to be performed by the regulatory body during commissioning and prior to commencement of nuclear facility operation.

Nuclear Security Considerations during Commissioning



- After completion of facility construction work, the licensee may be required to submit a request for permission to begin commissioning of the facility.
- Commissioning of the PPS should be done prior to arrival of NM on-site
 - At that time, PPS should be fully functional (i.e., provide protection against unauthorized removal and sabotage).
- All training for nuclear security personnel should be completed prior to PPS commissioning.

Licensing Submittals during Commissioning (1/3)



- The licensee should establish and submit a PPS commissioning programme to the CA.
 - The PPS commissioning programme may be a part of the entire commissioning programme for the nuclear facility
 - Completed SSCs related to the PPS, as identified in the design, must be part of the commissioning programme
 - One of the aims of the commissioning programme is to test (through exercises) the validity of operational plans and procedures and provide an opportunity for security personnel to learn skills and to acquire experience in operating the PPS (including feedback that may result in improvements to the PPS design and procedures).
- The licensee should be required to submit the PPS commissioning programme for regulatory approval well before starting the commissioning activities for the PPS.

Licensing Submittals during Commissioning (2/3)



- PPS commissioning programme may include:
 - Testing of PPS against established acceptance criteria to confirm acceptable performance
 - Results of PPS monitoring and measurement tests performed by the licensee should meet licensee and regulatory requirements
 - Testing of instructions and procedures needed to implement the security plan
 - Testing of arrangements for on-site contingency planning response and off-site liaison

Licensing Submittals during Commissioning (3/3)

Before introducing NM into the facility, the licensee should submit the final security plan (updated to reflect results from PPS commissioning) along with needed updates to the following sub-plans and documents:

- a. Training and qualification plan
- b. Insider mitigation plan (NSS No. 8-G (Rev.1))
- c. Information security plan (NSS No. 23-G)
- d. Computer security plan (NSS No. 17-T (Rev.1))
- e. Contingency plan (NSS-39-T)
- f. PPS evaluation and performance testing programme/procedures
- g. List of all implementing procedures for all plans
- h. Management system and QA programme for operation
- i. Sustainability programme, including preventive maintenance programme, configuration management programme, staff succession plan

Review and Assessment of PPS Commissioning Programme (1/2)



- The regulatory body should conduct a review and assessment to determine whether:
 - the PPS commissioning programme is complete and contains a set of well-defined operational limits, test acceptance criteria, conditions and procedures; and
 - the commissioning tests can be safely conducted as proposed by the licensee.
 - the PPS commissioning programme includes necessary tests and procedures in order to confirm that SSCs are in compliance with design requirements.
- At this step and assuming no significant issues were identified during review and assessment, the regulatory body may authorize (per national requirements) the PPS commissioning work to begin.

Review and Assessment of PPS Commissioning Programme (2/2)



- The regulatory body should track and confirm the satisfactory completion of PPS commissioning work at agreed-upon hold points with the licensee.
 - Any deficiency identified by the regulatory body should be communicated to the licensee. If a deficiency is considered to have a significant impact on the approved physical protection system design, the regulatory body may decide to withhold or suspend authorization until the deficiencies are corrected and verification of corrections made are found acceptable.
 - However, if an identified deficiency is not considered significant, the regulatory body may also allow the licensee to continue the commissioning process after an agreement is made with the licensee to correct deficiencies within a specified time and intent.

Review and Assessment during Commissioning (1/6)



General Considerations and Hold Points

- The regulatory body should track and confirm the satisfactory completion of work at agreed-upon hold points with the licensee.
- The regulatory body should pay special attention in the assessment of results from commissioning tests of the PPS (both the main sub-systems of PPS and the entire PPS as a whole). These may include:
 - Access control system
 - Perimeter alarm system
 - Response
- The regulatory body may decide to be present at some of the tests discussed above.

Review and Assessment during Commissioning (2/6)



Introduction of Nuclear Material On-Site

The regulatory body should complete in advance the review and assessment of:

- Status of the PPS
- Management aspects
- Operational provisions

The regulatory body should also plan and conduct inspections throughout the commissioning stage

PPS: Physical Protection System

Review and Assessment during Commissioning (3/6)



Status of the physical protection system

- Is the PPS built as-designed?
- Do the results of individual sub-system tests meet performance criteria?
- Did the full functionality test of the PPS satisfy the requirements specified in the security plan?

Review and Assessment during Commissioning (4/6)



Management aspects

The regulatory body should focus its review & assessment efforts on:

- NF security plan and associated sub-plans
- Nuclear security management system, including QA programme and procedures that implement security plan
- Nuclear security organizational structure of the licensee, including training and qualification of security personnel
- Arrangements for periodic testing, maintenance and inspection of the physical protection system
- Recording and reporting systems, including those for physical protection system operational data, maintenance and test results, and reporting of deviations and security events
- Access control/trustworthiness programme (as part of an overall insider mitigation programme) and security culture

Review and Assessment during Commissioning (5/6)



Operational provisions

The regulatory body should focus its review & assessment efforts on:

- Adequacy of operating instructions and procedures needed to implement the security plan
- Arrangements for on-site contingency planning and off-site liaison
- Interface between safety and security
- Measures for accounting for and control of nuclear and other radioactive material

Review and Assessment during Commissioning (6/6)



Final Security Plan

The updated security plan (submitted after completion of the commissioning programme) should be reviewed to confirm:

- The plan meets regulatory requirements (both structure and content)
- The plan demonstrates that the PPS is able to withstand the threat identified in the threat assessment or DBT.

The sub-plans and supporting procedures should also be reviewed.

Summary

- During the Commissioning stage of a NF, the components and systems of the PPS should be verified to have been constructed or installed in accordance with the design and functioning effectively in accordance with approved performance criteria.
- The PPS commissioning programme should be reviewed, assessed and approved by the regulatory body in advance.
- The results of PPS commissioning should be reviewed and assessed by the regulatory body.
- Commissioning of the PPS should be done prior to arrival of NM on-site and, at that time, PPS should be fully functional.



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

Thank you!

