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International Atomic Energy Agency

Inspection Methods and Inspector's Behavior

[M06.L02]

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

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Division of Nuclear Security
Department of Nuclear Safety and Security

Learning Objectives



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

1. List various methods for inspection
2. Understand appropriate use of various methods for inspection activities
3. Describe the basic rules for inspector's behavior during inspection

Inspection Methods

- The inspector may use various methods during inspection such as:
 - Examination / verification of operator's documents and records
 - Observations (Direct or Indirect)
 - Interviews / discussions with operators and contractors personnel
 - Field visits / test measurements

General Considerations for Conducting Inspection



- Observe how personnel execute procedures during normal operations
- Have personnel who usually work in the area demonstrate procedures (rather than supervisor)
- Take notes on areas that may require further review

General Considerations for Conducting Inspection



- Misuse of position
 - Inspectors represent the authority
 - They must not use their positions to gain or attempt to gain an advantage for themselves or others, or to disadvantage others
- Conflict of interests
 - Avoid any form of conflict of interests
 - Separate private friendships from professional duties
- Following facility procedures
 - Inspectors should follow facility procedures for:
 - Security
 - Access to and handling of confidential information
 - Safety and radiation protection
 - Emergency

Purpose of Document Review

- Determine how well a process or task is being accomplished
- Provide an audit trail necessary to validate findings i.e. logs, records, printouts, inventories
- Identify performance requirements that can be objectively tested and evaluated i.e. people, procedures and equipment

Pre-Inspection Document Review

Pre inspection review and preparation (high level)

- Legislative basis of regulations
- Regulations
- Facility security plan and other facility documentation such as contracts, agreements or procedures etc.
- Other relevant government regulations or requirements that may be referenced by the facility
- Previous inspection reports

Document Review during Inspection

Verify that documentary evidence exists that substantiates the requirements defined in approved documents.

- Policies and procedures
- Plans – emergency, contingency, information, computer
- Training records
- Maintenance logs
- Material inventories
- Key inventories
- Access control logs

Documentation may not be Equal to Implementation!

- Requirements may be reflected in facility/site plans and procedures; however, these requirements may not be actually performed on the job
- Records may exist indicating a requirement has been met; however, the record may not be accurate
- Documentation must be verified and validated

TRUST but VERIFY

Verification / Validation

- VERIFICATION

- Records, procedures, polices, processes, equipment or other documented requirements exist as described in the documentation (e.g., facility security plan, implementation procedures, etc.)

- VALIDATION

- Records, processes, procedures, polices, equipment or other documented requirements not only exist, but function as designed as confirmed through performance testing

Purpose of Observation

- A method used to evaluate work activities to confirm or disprove compliance with regulatory requirements and/or evaluate effectiveness of work performance:
 - Verify/Validate -
 - Facility complying with requirements or security plans and procedures
 - Effectiveness of the performance of personnel, equipment or procedures at facility

Types of Observations

- **Passive Observation**
 - Inspector merely observes (unobtrusive) work activities being performed without interruption or interference
 - The inspector should not talk or call attention to himself/herself. The idea is to minimize your presence as much as possible
- **Active Observation**
 - Inspector engages facility personnel during the observation by clarifying information and requesting demonstrations (e.g. facility tours).
 - Requires the inspector to ask questions during the observation

Observation Considerations

- Observations can be very time consuming
 - Have a clear understanding of information to be collected
 - Use work procedures, records and documentation as basis of observation
 - Select best time/location to obtain desired information
 - Establish time parameters for observation
- Be aware that your presence will alter behavior (Hawthorne Effect)

Minimizing the Hawthorne Effect

- Multi-Tasking
 - Conduct observations while performing other inspection tasks (e.g., while reviewing documentation observe access control procedures or while touring the facility observe physical protection measures)
- Length of Observation
 - After observing for an extended period personnel become less aware of your presence
 - Warning: Time is your most precious resource

Inspector's Behavior during Direct Observation

- When you are not sure what you are seeing – ask the operator
- When you are not competent to evaluate or understand something that doesn't look right– consult with colleagues
- Always discuss minor findings with the operator even if you do not intend to include them in the inspection report
- Always ask for permission to take photos, but remember your legal power and authority

Purpose of Interviewing

- Provide greater understanding of facility policies, procedures, and practices
- Clarify any arrangements in place that are not straightforward
- Identify conflicts between policies/procedures
- Identify inconsistencies between procedures and on-the-job practice
- Validate information
- Determine if facility personnel have essential job knowledge

Preparation for Interviewing

- The inspector must be thoroughly familiar with all of the background information relevant to the interview (regulations, security plans, procedures)
- Review regulatory requirements and facility level requirements (security plan, procedures, etc.)
- Determine the information to be obtained (why are you conducting the interview?)
- Develop questions designed to obtain required information
- Use systematic questioning (begin with general questions and move to more specific questions)
- Use suitable venue for interview

Considerations for Interviewing

- Non-adversarial approach
- Engage interviewee
- Active listening
- Demonstrate a good attitude
- Take Notes
- Other considerations:
 - Prepare thoroughly
 - Dress appropriately
 - Be on time
 - Establish rapport
 - Use systematic questioning
 - Engage in active listening
 - Summarize key points

Questions for Interviewing

- Each interview situation will require different types of questions in order to gain information
 - Closed-ended questions
 - Open-ended questions
 - Probing questions
 - Leading questions

Summarize after Interviewing

- At conclusion of interview, summarize main points
 - To ensure you heard what you thought you heard
 - Focus on information that may be a deficiency or may impact other inspection areas
- Allow interviewee opportunity for clarification or to add further information

Inspector's Behavior during Personnel Interviews

- Respect the operator's dignity / professional background
- Do not ask questions when uncertain of desired knowledge
- Avoid commenting on issues you are not competent or less competent than your counterpart
- When seeking additional information in areas where you are not an expert, ask for simplified explanations

Performance Testing

- Set of controlled events designed to answer specific questions about the effectiveness of:
 - Equipment (components function as designed)
 - Personnel (effectiveness of training, supervision, or equipment interface)
 - Procedures (comparison to personnel performance and training, implementable, etc.)
- All test results are validated and incorporated into other collected information

Scope of Performance Tests

- Limited Scope
 - Controlled and narrow scope focused on one or two components of PP system
 - Conducted during daily operations with minimal impact
- System-Wide
 - Performance test designed to test a complete physical protection system
 - Involves complex planning, resources and evaluation on a large scale
 - Rarely conducted as part of an inspection

Tests and Measurements

- In some States, the inspectors may conduct physical tests and measurements as part of the inspection programme
- These can serve as an independent verification of operator's tests and measurements
- Tests of the PPS should only be undertaken after consultation with the facility's management
- The conduct of these tests and measurements by the regulatory body shall not relieve the operator of its prime responsibility for security
- The regulatory body should not engage in the conduct of tests which may compromise the function of the PPS

Preparation for Performance Testing

- Steps to prepare for testing and documenting –
 - Review previous test results
 - Test objective
 - Test procedures
 - Test controls and conditions
 - Coordination and resource requirements
 - Evaluation criteria
 - Recording of results

Planning for Performance Testing (1/3)

- Test objective
 - What is to be tested and information to be obtained
 - Take into account the regulatory and facility-level requirements that establish the performance standard
- Test procedures
 - Describes the steps in conducting the test to obtain targeted information

Planning for Performance Testing (2/3)

- Evaluation criteria should stem from the specific performance requirements set forth in the facility security plan and procedures.
- Test controls and conditions
 - Measures applied to ensure the integrity of the test, ensure safety, and maintain physical security
- Coordination and resource requirements
 - Resources needed to successfully conduct the test (inspectors, special equipment, facility assistance, etc.)

Planning for Performance Testing (3/3)

- Test coordination requirements
 - List of those individuals at the facility who must approve/acknowledge the test (facility management, safety, etc.)
 - Equipment needed to perform tests
- Evaluation criteria
 - Clear observable and measurable criteria to determine pass/ fail determination
- Recording of results
 - Method of recording results against the evaluation criteria

Post Test Analysis

- Inspector / Team evaluates results of performance test (results, what was recorded and learned)
- Evaluation should consider related information obtained from document reviews, observations, etc
- Determine if need to conduct further tests in order to determine success or failure – is it an isolated incident or a system failure

CAUTION: Do not generalize status of overall physical protection system based on one test!

Summary (1/2)

- For an effective inspection, inspector may use different methods during inspection activities.
- Document review may include review of facility security plans, procedures, evidence logs and records
- Observation is a very effective technique to evaluate compliance and performance
- Presence of inspector may change behavior of operator staff
- Observations are time consuming and require proper planning.

Summary (2/2)

- Interview may be an effective tool to obtain greater understanding, identify conflicts and inconsistencies, verify information, and test job knowledge.
- Good interview requires to consider proper preparation, non-adversarial approach, active listening, and use appropriate questions.
- Performance testing is a good tool to answer specific questions about the effectiveness of equipment, personnel and procedures
- Performance testing requires effective planning, conduction of tests and interpretation results.



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Thank you!

