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Module 14

SURVEILLANCE

OBJECTIVES:

After completing this module you will be able to:

14.1 State the purpose of a surveillance program and describe five surveillance activities performed by Operating and Maintenance staff. ⇔ *Page 1*

14.2 Describe the contributions of the following work groups to the station surveillance program: ⇔ *Page 3*

a) Operating staff

b) Maintenance staff

c) Technical Support staff.

14.3 Describe the specific responsibilities of a Shift Supervisor with respect to surveillance.

STATION SURVEILLANCE PROGRAM

Definition: *Surveillance* is the act of observing real-time activities or reviewing documentation to verify conformance with specified requirements and industry good practices, and to evaluate their adequacy and effectiveness.

The purpose of a surveillance program to obtain feedback on the extent to which station design, operation and maintenance meet the following objectives: ⇔ *Obj. 14.1*

1. To satisfy the terms and conditions of the Reactor Operating License

2. To optimize plant reliability, while remaining cost effective in terms of manpower and material consumption

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A station's surveillance program is administered primarily by the following three groups:

- Operating Staff
- Maintenance Staff
- Technical Support Staff

Each group's contribution is important to achieving the surveillance program objectives. Support groups such as Planning, Quality Assurance, Training and Business facilitate the execution of the surveillance program by these three primary groups—see Figure 14.1.

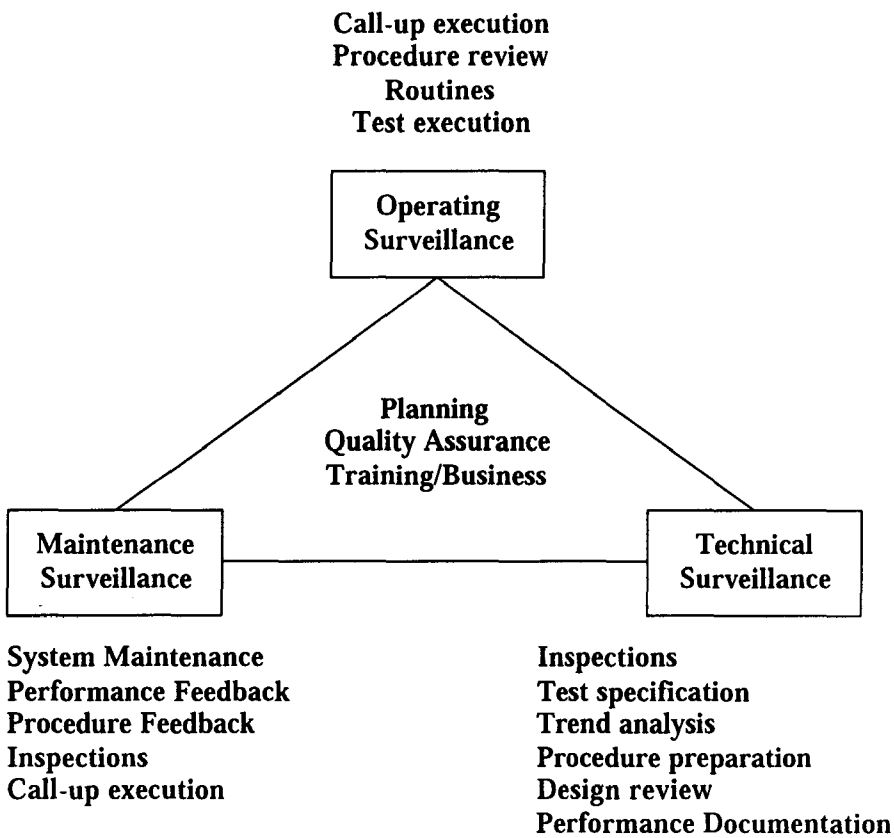

Figure 14.1: System Surveillance

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Operating & Maintenance Surveillance Program

The following five surveillance activities are performed by Production staff:

⇔ *Obj. 14.2*

1. Routines

Routines are frequently executed surveillance activities such as field monitoring rounds, control room panel checks, periodic operations, and equipment status checks.

2. Call-ups

Call-ups are similar to routines but are formally scheduled at a specific frequency, are completed in a specified and approved manner, and their completion is documented. Whereas routines are performed exclusively by Operators, call-ups are performed by all work groups, including Operators, Maintainers and Technical Support staff. The Production organization is responsible for timely completion and documentation of routines and O&M call-ups. Technical Support staff specify the call-ups and routines, including the execution procedures and frequency.

3. Tests

Tests are performed on poised safety systems to validate safety analysis assumptions regarding safety system availability. Execution of tests is primarily the responsibility of Operators; however, the preparation of test procedures, scheduling of tests, and analysis of test results are the responsibility of Technical Support and Nuclear Safety staff. The Operations Department is responsible for timely execution of tests, for reporting of any missed tests, for reporting failures of test results to meet acceptance criteria, and for taking appropriate actions to mitigate any system failures revealed by tests. Testing of non safety related systems is often administered via the call-up system.

4. Inspections

Equipment is regularly inspected by maintenance staff. These inspections may be required to satisfy regulations, to detect equipment deficiencies, or to gauge equipment wear rates or aging effects. The nature and frequency of inspections are specified by Technical Support staff. The Operations Department is required to execute or facilitate the inspections and provide accurate feedback.

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5. Preventive Maintenance

Preventive maintenance activities (lubrication, inspections, routine overhauls, component replacement prior to wear-out) are scheduled via the call-up system. The objective is to perpetuate component operation in the "useful life" era, and thus to optimize system reliability.

Technical Support staff are responsible for specifying the frequency and nature of Preventive Maintenance activities. The Operations Department is responsible for completing preventive maintenance as scheduled, and for reporting on "as found" conditions and repairs completed. Production staff are also responsible to identify to Technical Support staff any deficiencies noted in procedures for routines, call-ups, tests, inspections and preventive maintenance.

Technical Surveillance Program

The technical surveillance program consists of activities performed by Technical Support staff, including the following:

- Specification of tests and call-ups
- Systematic review of surveillance results to detect any deterioration in system performance.
- Specification and initiation of corrective action to improve system performance.
- Routine inspection and monitoring of equipment, systems and plant conditions.
- System performance reporting, using information gleaned from work reports, logs, deficiency reports, test results, significant event reports, completed work plans, shift summary reports, recorder charts, and personal communications.

Shift Supervisor's Surveillance Role

The Shift Supervisor has both a supervisory and personal surveillance role. As the senior supervisor on shift, the SS monitors surveillance activities executed by others on the shift crew, and takes corrective action in the event of untimely or substandard work. The SS observes and verifies completion of such activities as panel checks, routines, tests, and call-ups, and in some cases signs off the completion records.

The SS personally monitors shift operations for compliance with the terms and conditions of the Reactor Operating License and with station objectives. This includes

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monitoring for procedural compliance, good housekeeping, and safe work practices at the work face.

The SS reports abnormal conditions uncovered via the surveillance program, via Significant Event Reports, Event Reports, and the shift summary report. These reports are reviewed by Managers and Technical Support staff. With input from Managers and support staff as required, the SS ensures that corrective action is taken to remedy such abnormalities.

SUMMARY OF THE KEY CONCEPTS

- A surveillance program provides feedback on the success or adequacy of design, operating and maintenance activities. The following five surveillance activities are performed by Operations Department staff:
  - — routines
  - — call-ups
  - — tests
  - — inspections
  - — maintenance
- Operators do routines, call-ups, and safety system tests.
- Maintenance staff do inspection and preventive maintenance call-ups.
- All Operating and Maintenance work groups review and comment on procedures, and document surveillance results by such means as work reports, test forms, panel check sheets, and log entries.
- Technical Support staff specify and prepare procedures for the required call-ups, routines, and tests, analyze the results for performance trends, and initiate corrective action as required.
- The Shift Supervisor monitors the effectiveness of the crew's surveillance activities, and performs certain surveillance activities personally, such as panel checks, housekeeping tours, visits to the work face, and review of test results. The SS also reports abnormal events.

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ASSIGNMENT

1. Carefully prepare detailed answers to the Module 14 learning objectives.

2. Describe the Nuclear Operator role in the station surveillance program, and how this role contributes to nuclear safety.

3. Explain how a station's surveillance program affects the nuclear safety key effectiveness areas of Module 2.

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Date: January 1997