INSPECTION PROCEDURE 93806

OPERATIONS READINESS ASSESSMENT TEAM INSPECTIONS

PROGRAM APPLICABILITY: 2514 & 2515

SALP FUNCTIONAL AREA: PLANT OPERATIONS (OPS)

93806-01 INSPECTION OBJECTIVE

The objective of this procedure is to provide guidance on conducting Operational Readiness Assessment Team (ORAT) inspections for new plants and plants restarting after extended outages. Results from these inspections will provide a major input for NRC decisions regarding plant operational readiness.

93806-02 INSPECTION REQUIREMENTS

02.01 Inspection Planning. Conduct one Operational Readiness Assessment either before issuance of the low-power license, before issuance of the full-power license, or during power escalation. The inspection schedule and scope are to be tailored to the individual plant circumstances, past performance and experience level of the licensee. The inspection should concentrate on perceived weaknesses and areas important to plant operations. The ORAT inspection procedure may be utilized to ensure readiness for a plant restart following an extended outage (i.e., implementation of Manual Chapter MC 0350).

During the planning phase, operating experience of team members should be a primary consideration for selection, especially for the control room observations. The use of resident inspectors from similar sites and experienced regional/Nuclear Reactor Regulation inspectors should be emphasized. Project managers and appropriate NRR technical reviewers should be included. The inclusion of a licensing examiner may also be beneficial in evaluating operational readiness. Consideration should also be given to including a team member with expertise in management and organizational theory and/or human factors engineering, if applicable to the inspection scope. The size of the team will vary depending on the scope and duration of the inspection. Attachment 1 provides an outline of the areas that may be covered during the ORAT inspection. Attachment 2 provides a standard form to manage the identification and tracking of inspection observations.

02.02 Plant Inspection. The following items, in addition to those in Attachment 1, should be considered during ORAT inspections:

a. Focus the inspection on safety-significant activities such as fuel loading, reactor startup, heatup/cooldown, and surveillance. Utilize a performance-based, risk-informed approach to conducting the inspection. If possible, the inspection of restart activities selected should be associated with SSCs identified as having poor performance by the licensee's monitoring program established to comply with the requirements of the maintenance rule, 10 CFR 50.65 (see inspection procedures IP 62706 and IP 62707). Systems should be selected for walkdown and inspection on the basis of their risk significance. The results of similar unit design, site-specific, or generic probabilistic risk assessment studies should be used, if available. Refer to IMC 2515, Appendix C for guidance on the use of risk insights to help in the selection and prioritization of items to inspect.

b. Evaluate licensee management transitional controls. Verify that construction deficiency "punch" list items transferred to the operations organization for completion are either subject to contractor disposition or are converted to maintenance work order items. Assess the status of items which constitute incomplete construction phase or outage work for which management controls are required to ensure operational readiness. Evaluate management oversight of and involvement in daily work and preparation activities. Based on the ORAT's charter being an input to the NRC's decision regarding plant operational readiness a new baseline maintenance rule inspection (IP 62706) should be considered by NRC management to be performed in parallel or prior to the ORAT. NRC management should consider the following options: either perform a new baseline IP 62706 inspection before or in parallel with an ORAT, or perform appropriate portions of IP 62706 as a part of the ORAT to establish and evaluate changes in the maintenance monitoring program since the maintenance rule went into effect. In addition, the inspectors should identify performance issues as they relate to the lack of preventive and corrective maintenance activities, weak controls over deferred maintenance activities, or poor maintenance prioritization process and existing large backlogs. If possible, the inspection should emphasize reviewing those activities associated with structures, systems, or components (SSCs) identified as having poor performance by the licensee's monitoring program established to comply with the requirements of the maintenance rule, 10 CFR 50.65. High safety significant or risk significant SSCs identified with poor performance should receive the highest priority. With existing performance issues and related causes identified, review the licensee's affected maintenance programs and process for identified weaknesses.

c. Review the licensee's program for the use of industry operating experience and verify implementation. Assess

whether controls exist that continually implement lessons learned and that research the safety significance of problems that have developed during the startup of similarly designed plants. Determine if the licensee has reviewed NUREG-1275, Operating Experience Feedback Report-New Plants, and applied lessons learned. Select and review, several operational problems experienced by the licensee during the preoperational, startup test, or power escalation phase and assess whether the problem was fully reviewed and understood prior to further testing. Evaluate whether procedural problems related to operations are being effectively identified and expeditiously corrected.

d. Examine the licensee's self-assessment capability as it relates to readiness for operation, including the effectiveness of root cause analysis, corrective actions, and the trending and generic applicability review of self-identified problems. Determine the adequacy of the deficiency reporting system, including thresholds, and evaluate the effectiveness of prioritization of the identified problems. Review the root cause analysis training program. Assess the involvement of Quality Assurance (QA) and engineering in problem resolution.

e. Determine whether operator training, including simulator usage, incorporates beginning-of-life core characteristics and system response. Through control room observations, operator interviews, and the review of alarm response procedure implementation, determine whether shift personnel are prepared to respond to abnormal plant conditions, instrumentation and control setpoint and display anomalies, and the potential for a high number of challenges to safety systems during testing.

f. Evaluate whether there is any change in the Quality Assurance (QA) program effectiveness due to the differences in the QA organizational interactions with other station departments under operational controls versus those controls that existed when under construction controls. Verify whether program requirements exist for quality assurance/quality control (QA/QC) personnel to support the assessment purpose related to work activities accomplished during back shifts, and assess the adequacy of the oversight function implementation.

g. Evaluate operator knowledge of Technical Specifications (TS). Determine whether the licensee has implemented an effective TS appraisal process. Verify that plant procedures accurately reflect the applicable TS sections. Verify the adequacy of administrative controls for startup testing activities under TS constraints, as opposed to those controls implemented for "troubleshooting" problems.

h. Evaluate the licensee's program to review balance-of-plant (BOP) operations to reduce the frequency and severity of plant transients.

i. Evaluate the adequacy of licensee controls for material and personnel access and work control problems once the radiologically controlled areas (RCAs) and protected/vital areas are established.

j. Evaluate operator response to control room annunciators, alarms, and recorders. Verify the adequacy of the licensee's methodology for compensatory measures for those indications not operating properly. Evaluate the adequacy of control room documentation in characterizing operating experience. Review operator log keeping practices and controls, including implementation outside the control room.

| k. Evaluate the effectiveness of the licensee's maintenance program. Based on implementation of the maintenance rule, 10 CFR 50.65 "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants", the inspectors should evaluate the maintenance area by concentrating on performance examples that have shown to be a product of poor maintenance programs. Performance issues should be identified by the inspectors during the review of non-conformance reports, machinery history results, plant tours, observation of maintenance work activities, LER reviews, and NRC and licensee's assessments. Risk significant SSCs identified with poor performance should receive the highest priority. After identifying the performance issue, the inspectors should attempt to determine its cause and use this performance example as a means to establish issues in any of the maintenance related programs. The inspectors should also see if the licensee appropriately implemented the maintenance rule in correcting the performance issue. Additional areas that could indicate a failed maintenance program are as follows: the relatively large maintenance work request backlog on operational readiness, related maintenance work not being accomplished in accordance with written administrative and procedural controls which leads to equipment failure, and poor personnel attitudes regarding procedural adherence and the processing of procedures for needed changes during field implementation which also leads to system, structure, or component (SSC) failures. Also determine if the licensee is achieving an appropriate balance between SSC availability and reliability.

l. Review the qualifications and commercial operating experience of key managers and operators. Evaluate organizational responsibilities and interfaces that support the operating unit. Determine whether the licensee has staffed the organization to levels which are capable of successfully operating and supporting the unit. Evaluate management oversight and involvement in the implementation of operations evolutions and work controls. Review and assess licensee plans for augmented shift staffing during the initial plant startup.

m. Review the startup testing schedule and completion status to ensure that the startup testing committed to in the final safety analysis report (FSAR) is, or will be, actually

performed. If tests are deleted or modified, ensure that an adequate 10 CFR 50.59 review was performed and forwarded to NRC for review.

n. Review the method for keeping track of entry into and exit from Technical Specification action statements including consideration of risk significant configurations. Ensure that operators are aware of all action statements in effect and their cumulative implications. Verify that shift turnovers adequately cover off-normal equipment conditions and LCOs. Evaluate the licensee's safety perspective relative to operability determinations and TS requirements.

o. Verify the adequacy of separation of operating and non-operating units. Ensure system dependencies are defined in programs and procedures. Assess personnel knowledge of unit separation dependencies and limitations.

Twenty-four hour inspection coverage of shift operations is necessary at various times during the startup sequence. Such coverage is routinely provided during initial criticality and other periods of startup testing by regional/resident personnel in the conduct of the NRC Inspection Manual Chapter 2514 inspection program. Judgment must be exercised in balancing such benefits against the requirement for additional inspection resources to conduct around-the-clock shift coverage.

02.03 Management Meetings. Frequent NRC management meetings with licensees are recommended before and after the ORAT inspection to maximize the effectiveness of the Operational Readiness Review process. Throughout the first few months of initial commercial operation, the NRC should review with the plant management and staff the root causes of reportable events and planned licensee corrective actions at such periodic meetings. The ORAT exit meeting should emphasize the continuing nature of the NRC readiness review process.

93806-03 INSPECTION GUIDANCE

General Guidance

Previous NRC evaluations and Office for Analysis and Evaluation of Operational Data (AEOD) studies have shown that effective management of the transition from construction to operations and of the feedback of operating experience from other plants (and similar plants) can significantly enhance early performance. This inspection procedure provides general guidance on the scope, content, potential problem areas, and verifications relevant to the conduct of ORAT inspections.
ORAT inspections will emphasize the effectiveness of management oversight, corrective action programs, root cause analysis, and the readiness to support operations. The following major points should be assessed: the establishment of a basic framework of management programs to support the operation of the unit; the establishment and implementation of a program to gather and apply lessons learned from industry experience; the ability of the management team to

establish a proper working atmosphere in which to operate the unit; the involvement of both site and corporate engineering in the operation of the unit; and the depth of independent oversight and QA involvement in plant operations and problems.

For new plants it is essential that the licensee identify lessons learned from previous new plant operating experience and communicate these lessons learned to senior management of the new plant. New plants that have come on line have shown significant improvement after establishing effective root cause analysis and corrective action programs. Effective station goals and actions that result from self-assessment demonstrate the readiness of the plant for safe operation and the readiness of its personnel for the conduct of the plant's safe operation.

It is essential that the Operational Readiness Reviews verify the establishment of an appropriate operating safety attitude. Programs that control construction completion should be phased out or merged with operational control programs in order to minimize the confusion associated with duplicate systems of controlling work. The same is also true for procedural use and personnel work assignments. Operational controls should be implemented as early as possible to allow for personnel acclimation and training.

It is also important that operational controls, particularly in the areas of maintenance and modifications, be consistent with the plant design bases.

Specific Guidance

03.01 Inspection Planning. The scheduling of the ORAT inspection shall be based upon the previous licensee experience and operating history as may be applied to the specific plant. An inspection of the first nuclear unit for a utility may require more lead time before the projected fuel load date than is needed for inspections of subsequent nuclear units. The timing of the inspection must be well coordinated with other NRC and third party inspection activities, such as:

1. Inspection Procedure 94300, "Status of Plant Readiness for an Operating Licensee."

2. Issuance of the proof and review copy of the Technical Specifications.

3. Regional Office conduct of a team inspection for a Technical Specification Review in accordance with Inspection Procedure 71301.

4. Conduct of the INPO Preoperational Assistance visit at the site.

5. Conduct of utility self-assessment activities and availability of the resulting report(s).

Prior licensing and plant restart experience indicates that ORAT inspections can be optimally conducted about 3 months

before issuance of the initial license. In the case of full-power operation for a new plant, another evaluation should be conducted 3 to 6 months after receipt of the full-power license to observe actual operational activities.

The areas of review should also be based on the previous experience of the licensee. For example, the inspection plan for the third unit in a three-unit station will differ considerably from the inspection plan for the station's first unit.

03.02 Plant Inspection. For newly licensed plants, the status of the operational preparedness phase of the Preoperational Testing Program (NRC Inspection Manual Chapter 2513, Appendix B) should be reviewed to determine which inspections are incomplete and whether problems have been identified in the areas previously inspected. The NRC Inspection Manual Chapter 2513 Program Inspection Procedures that are incomplete or that resulted in identification of problems can be utilized to develop areas for review during the operational readiness team inspection. Current procedures exist in the following inspection areas, as listed in the NRC Inspection Manual Chapter 2513, Appendix B:

1. Operations

2. Maintenance

3. Fuel Receipt and Storage

4. Fire Protection

5. Surveillance

6. Plant Water Chemistry Controls

7. Radiological Controls

8. Security and Safeguards

9. Quality Assurance

The operations phase inspection program (NRC Inspection Manual Chapter 2515) also contains inspection procedures that can be used to develop areas for further review of operational readiness. The following represent current, applicable procedures listed under the respective inspection functional areas that they support:

Plant Operations

42700 Plant Procedures
64704 Fire Protection/Prevention Program
71500 Balance of Plant
71707 Operational Safety Verification
71715 Sustained Control Room and Plant Observation

Maintenance/Surveillance

| Based on implementation of the Maintenance Rule, remain cognizant of this performance- based, risk-informed rule and, as such, first identify performance issues in the maintenance area which can be traced to any of the noted programs and follow the specific IP accordingly.

61700 Surveillance Procedures and Records
61702 Surveillance of Core Power Distribution Limits
61706 Core Thermal Power Evaluation
61707 Determination of Reactor Shutdown Margin
61710 Control Rod Worth Measurement
61725 Surveillance Testing and Calibration Control Program
61726 Surveillance Observations
62700 Maintenance Program Implementation
62702 Maintenance Program
62703 Maintenance Observation
62704 Instrumentation Maintenance
62705 Electrical Maintenance
| 62706 Maintenance Rule
| 62707 Maintenance Observation
72700 Startup Testing - Refueling

Engineering and Technical Support

| 37550 Engineering
| 37551 Onsight Engineering
37700 Design, Design Changes, and Modifications
37701 Facility Modifications
37828 Installation and Testing of Modifications
41701 Licensed Operator Training
72701 Modification Testing

| Plant Support - Safety Assessment/Quality Verification

35701 QA Program - Annual Review
| 40500 Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems
92720 Corrective Action

| Plant Support - Security

81XXX Physical Security (81000 series procedures)
81018 Security Plan and Implementing Procedures
81020 Management Effectiveness - Security Programs
8107X Access Control (81070 series procedures)
81088 Communications

| Plant Support - Emergency Preparedness

82701 Operational Status of the Emergency Preparedness Program

| Plant Support - Radiation Controls

83750 Occupational Exposure, Shipping, and Transportation

84750 Radioactive Waste Systems; Water Chemistry; Confirmatory Measurements and Radiological Environmental Monitoring

03.03 Management Meetings. The scope of the ORAT inspection must be flexible enough to accommodate both the unique plant design and the plant inspection history, including systematic assessment of licensee performance (SALP). Thus, departures from standard nuclear steam supply system (NSSS) designs and first-of-a-kind plant features may provide areas for specific review at a new plant. Both the NRC Open Items List and the licensee's internal "punch" lists should be reviewed for planning input and to identify areas in which work may not be completed before criticality is achieved. Also, the results of past NRC inspections at the plant and at other similar units should be considered not only to understand past problem areas, but also to review the effectiveness of licensee corrective action programs. The licensee's responsiveness to previously identified problems and issues provides one indicator of the licensee's progress toward developing a proper operating attitude and ensuring a high degree of readiness for conducting criticality and power operations.

Just as the scope of any Operational Readiness Review must be flexible, so must the ORAT inspection be adaptable to changes in direction and emphasis. Frequent team meetings are essential not only to identify any generic problems or concerns that may exist in the different inspection areas, but also to redirect inspection resources away from areas in which no problems are evident. Identification of acceptable areas should be made to allow the inspectors the latitude and time to thoroughly investigate the causes of identified problems. The ORAT inspection should be flexibly structured to adapt to the necessary changes in direction and scope that occur through the use of performance-based inspection techniques.

93806-04 RESOURCE ESTIMATE

This inspection is estimated to require 560 direct inspection hours of regional and headquarters resources. Actual inspections at a specific plant may require substantially more or fewer resources, depending on the inspection scope.

93806-05 REFERENCES

NUREG-1275, "Operating Experience Feedback Report - New Plants," July 1987

NUREG/CR-5151, "Performance-Based Inspections," June 1988

NRC Inspection Manual Chapters 2513 and 2515

Memorandum, J. Sniezek to Regional Administrators, dated April 23, 1987 (NUDOCS 8704290318; Micro-fiche 68863/046).

SECY-88-118, Initiatives Regarding New Plant Performance

SECY-88-188, Initiatives Regarding New Plant Performance

END

Attachments:
1. Operational Readiness Reviews
2. Inspection Observation Form

OPERATIONAL READINESS REVIEWS

I. Facility Management

A. Organization and staffing
B. Site and Corporate Management Interface
C. Management Oversight and Involvement
D. Operational Readiness Self-Assessment
E. Operational Conservatism and Awareness of Risk Significance
F. On-site Safety Review Committees

II. Plant Operations

A. System Status Control and Logs
B. Organization and Staffing
C. Shift Routine and Turnover
D. Training
E. Response to annunciators and Off-normal Conditions
F. Technical Specification LCO Tracking and Control
G. Housekeeping and Material Condition
H. Control Room Decorum and Professionalism
I. Reportability Requirements and Implementation
J. Communications with Interfacing Departments
K. Overtime Controls
L. Procedure Adequacy/Adherence
M. Event Reporting

III. Power Ascension Test Program

A. Organization and Staffing
B. Power Ascension Schedule
C. Procedure Adequacy/Adherence
D. Approvals for Mode Changes

IV. Maintenance/Surveillance

Note: Based on implementation of the Maintenance Rule, the inspectors should remain cognizant of this performance-based, risk-informed rule and, as such, first identify performance issues in the maintenance area which can be traced to any of the noted programs listed below. After the performance issues are identified, the section (maintenance area) should be reviewed and incorporated into the inspection plan using appropriate risk insight considerations.

A. Maintenance Management and Organization
B. Work Control/Configuration Management
C. Maintenance Work Backlog
D. Work Prioritization and Scheduling
E. Temporary Modifications
F. Preventive Maintenance Program
G. Failure Trending and Predictive Maintenance

H. Post-Maintenance Testing
I. Work Planning and Prioritization Processes
J. Training
K. Communications with Interfacing Departments
L. Rework Identification and Control
M. Implementation of TS Surveillance Requirements
N. Observation of Surveillance Activities
O. Procedure Adequacy/Adherence

V. Engineering and Technical Support

A. Modification Controls
B. Support to Operations and Maintenance
C. Configuration Controls
D. System Engineering
E. Drawing Control
F. Interface with ALARA Program
G. Licensing Activities and Technical Specifications Management

VI. Safety Assessment/Quality Verification

A. Management Oversight Activities and Goals
B. Self-Assessment Capabilities (PORC, SORC, ISEG)
C. Quality Assurance/Quality Control Involvement
D. Performance of 10 CFR 50.59 Safety Evaluations
E. Root Cause and Failure Analysis
F. Corrective Action Programs
G. Post-Trip Review Process
H. Operating Experience Feedback
I. Independent Verification Policies
J. Licensee Readiness Assessment
K. Control of Documentation

VII. Radiation Protection

A. Health Physics Organization and Staffing
B. Radiological Controls
C. Effluent/Waste Controls
D. ALARA
E. Materials and Contamination Control
F. Surveys and Monitoring
G. Respiratory Protection
F. Training

VIII. Security

A. Organization and Staffing
B. Security Plan Implementation
C. Access Controls
D. Alarm Response
E. Communications
F. Training
G. Fitness for Duty Program

IX. Emergency Preparedness

A. Emergency Plan and Implementing Procedures
B. Emergency Facilities, Equipment, Instrumentation, and Supplies
C. Organization and Management Control
D. Training
E. Independent Reviews/Audit

END

INSPECTION OBSERVATION FORM

Subject: Observation No.:

Revision:

References:

Discussion:

Significance:

Required Actions:

Additional information needed: