

NRC INSPECTION MANUAL

PIPB

INSPECTION PROCEDURE 71707

PLANT OPERATIONS

PROGRAM APPLICABILITY: 2515

SALP FUNCTIONAL AREA: OPERATIONS (OPS)

71707-01 INSPECTION OBJECTIVE

To independently verify that:

01.01 The licensee operates the plant safely and reliably, and operational surveillance and other activities are performed in conformance with license conditions, regulatory requirements, and licensee commitments.

01.02 Effective controls are implemented to achieve continued safe operation of the plant.

01.03 Safety-related and risk significant systems are maintained in an operable condition.

71707-02 INSPECTION REQUIREMENTS

Inspectors are responsible for adhering to the requirements specified in this procedure to the extent that there is reasonable assurance that the inspection objectives are met. On occasion, there may be a need to deviate from this procedure due to plant conditions or performance in other areas. Also sustained superior licensee performance verified by inspection results may justify a temporary deviation from a certain inspection requirement to allow needed inspection focus on other areas or activities. Significant deviations from this inspection guidance should be discussed with the regional office branch chief to determine how the inspection objectives will be met and documented.

02.01 Conduct of Operations

- a. On a daily¹ basis tour the control room:

¹ For the purpose of this procedure, daily is defined to mean at least three times a week to cover the majority

1. Identify whether the plant is in any technical specification (TS) limiting conditions for operation (LCOs), whether the TS action statements are being met, and whether operability was appropriately determined prior to exiting the LCO(s). Also, verify that applicable license conditions governing daily plant operation are satisfied.
 2. Identify whether abnormal conditions, events, or significant issues that affect operations have occurred since the last review. Verify the licensee took or is taking appropriate corrective actions.
 3. Perform a control room panel walkdown and identify whether significant plant parameters and indications are at expected values for current plant conditions; whether any significant trends exist; and whether the safety and risk significant systems including their support systems are appropriately aligned and operable.
 4. Attend the licensee's plan of the day meeting, or other meetings as appropriate to obtain the overall status of the plant and of the licensee's activities that are planned or in progress. The frequency of this activity may be adjusted on an as needed basis.
- b. On a routine² basis (once in two weeks):
1. Evaluate the adequacy of control room shift turnovers.
 2. Evaluate the adequacy of control room communication and coordination of operational activities, including maintenance and surveillance activities, and resolution of problems affecting plant operation with appropriate disciplines.
- c. Perform the following activity during every resident inspection period³:

Observe the performance of a surveillance test by operations personnel in accordance with plant technical specifications (TSs) or licensee procedures, and verify whether the results

of business days, Monday through Friday, except holidays.

² For the purpose of this procedure, routine means that the observations may be made every time an opportunity arises, but at a frequency no less than indicated.

³ For the purpose of this procedure, resident inspection period means the time period of inspection that is documented in one inspection report, and is usually six weeks of duration.

comply with the requirements. Review the procedure to verify that it meets the objective.

02.02 Operational Status of Facilities and Equipment

- a. Tour portions of the plant on a daily basis, such that normally accessible areas containing safety and risk significant structures, systems, and components (SSCs) are toured within a two week period. Observe and independently assess:
 1. The overall status of plant SSCs, and whether any plant activities are taking place that may adversely affect the operability of the required SSCs. Verify that the degraded components have been identified by the licensee, and the required operability evaluation, compensatory action, and plan for repair are in place.
 2. General material and safety condition of plant SSCs.
 3. General plant housekeeping.
- b. During every resident inspection period:
 1. Observe one safety-related tagout in effect and determine whether:
 - (a) The tagout is properly prepared and authorized.
 - (b) The tagged components (breakers, switches, valves, etc.) are in the required positions with the appropriate tags in place.
 2. Select one tagout no longer in effect and verify that equipment was restored or returned to service appropriately, and that tags are removed.
- c. Periodically verify that a selected portion of the containment isolation lineup is in accordance with the plant operating procedures and the final safety analysis report (FSAR). This inspection may be performed as a part of item d below.
- d. During every resident inspection period, perform a general walkdown of a selected safety-related or risk significant system or train to independently verify its operability, and configuration appropriate to the mode of plant operation. Observe whether:
 1. Accessible valves in the main system flow path are in the correct positions by either visual observation of the valve; by flow indication; or by stem, local or remote position indication.
 2. Valves are positioned correctly; locked or sealed, if appropriate. Valves do not exhibit excessive packing or boron leakage, missing hand-wheels or bent stems. Local and remote position indications are functional and

indicate the same values. Remote manual operating devices are functional.

3. Power is available to the valves or has been removed from valves requiring de-energization as identified in the TSS or FSAR for the current plant configuration.
 4. Power supplies and breakers are correctly aligned, functional, and available for components that must activate on receipt of an initiation signal.
 5. Major system components are correctly labeled, lubricated, cooled, ventilated, and free of leakage to ensure fulfillment of their functional requirements.
 6. Selected instrumentation, essential to system actuation, isolation, and performance, is correctly installed and functioning, correctly calibrated, and displaying indication consistent with expected values.
 7. Existence of actual or potential adverse environmental condition(s), and adequacy of licensee's control and compensatory measures.
 8. The components inspected for the system are consistent with the FSAR description. Determine whether a 10 CFR 50.59 safety evaluation was performed for any items that differ from the FSAR description.
- e. Approximately once every six months, perform a detailed walkdown of a selected safety-related or risk significant system or train to independently verify its operability as follows:
1. Review the licensee's system lineup procedure, system drawings, the FSAR, TSS, system design basis documents, and 10 CFR Part 50 Appendix A for consistency, and determine whether the documents comply with the as-built plant configuration. Note, for those plants designed and constructed prior to 10 CFR 50 Appendix A, relevant SEP topics should be reviewed.
 2. Observe the items stated in Section 02.02.d.
 3. Inspect the interior of breakers and electrical or instrumentation cabinets for debris, loose material, jumpers. Request licensee personnel to open any cabinets.
 4. Identify additional equipment conditions and items that might degrade plant performance by verifying whether:
 - (a) Freeze protection, such as insulation, heaters, heat tracing, temperature monitoring, and other equipment, is installed and operational.

- (b) Hangers and supports are made up and aligned correctly, and have sufficient hydraulic fluid levels.
- (c) No ignition sources or flammable materials are present in the vicinity of the system being inspected unless otherwise authorized.
- (d) Cleanliness is being maintained.
- (e) Support systems essential to system actuation or performance are operational, such as cooling water, ventilation, lubrication, compressed air.
- (f) Ancillary equipment such as scaffolding, ladders, electrical cords, portable air samplers, or tape does not interfere with system performance.

02.03 Operations Procedures and Documentation

a. On a daily basis:

- 1. Review control room logs, standing and night orders to understand the activities that occurred, and any operational problems encountered by the licensee since the previous review. Verify control room log keeping is in accordance with the licensee's administrative procedures and QA program requirements.
- 2. Review equipment out-of-service or tagout logs to identify whether they comply with current plant conditions and TS requirements, and if their status is clearly marked.

b. On a routine basis (once in two weeks):

- 1. Determine whether operators are adhering to approved procedures for ongoing activities. The procedures should be of correct revision, and provided with the appropriate instruction and acceptance criteria to accomplish the task being observed. Observation of operators use of procedures made under other inspection requirements e.g., periodic operations surveillance observation, may be credited towards completion of this inspection activity.
- 2. Review the jumper/bypass/temporary modification logs and identify whether the logs comply with current plant conditions, TS requirements, and plant procedures. Review the temporary modifications for compliance with the design/licensing basis of the plant, and evaluate the adequacy of the 10 CFR 50.59 evaluations, when necessary. Frequency of this inspection may be modified based on plant activity level.

02.04 Operator Knowledge and Performance

a. On a routine basis (once per week):

1. Evaluate control room operators' attentiveness and responsiveness to plant conditions. Assess the operators' understanding of the issues resulting from items 02.01.a through 02.01.b and 02.03.a, focusing on overall risk and safety significance.
 2. Identify whether control room operators are knowledgeable on the status of annunciators, and whether adequate compensatory actions or administrative controls have been implemented for annunciators removed from service. Verify whether operators are adhering to approved operating and alarm response procedures for normal and abnormal plant conditions. Review the alarm summary printout, on an as needed basis, to verify appropriate operator response.
 3. Verify that control room operators are aware of activities in progress that could influence safe operation of the plant, and are implementing needed contingency/compensatory actions.
 4. Evaluate adequacy of communication between control room operators.
 5. Observe whether the shift supervisor(s) is providing adequate supervisory oversight, and command and control of the control room.
- b. Once in two weeks, observe a non-licensed or auxiliary operator (AO) performing portions of a plant tour or a critical evolution/activity. Verify whether the AO is adhering to the applicable procedures, and understands the activities involved. Note if plant deficiencies are being identified by the AO, adequately communicated to the control room or supervision, and follow-up actions are taken. Observation of activities of other operational personnel (e.g., touring with operations field supervisor or radwaste supervisor) may replace the above observation from time to time.

02.05 Operator Training and Qualification

Twice per SALP period, observe simulator training for licensed senior and reactor operators, note deficiencies and discrepancies in the training, and assess operator performance. Determine if previous lessons learned items or plant experience are incorporated in simulator training.

02.06 Operations Organization and Administration

- a. On a daily basis, verify whether control room staffing is maintained in accordance with TS requirements and the licensing basis.
- b. Once per SALP period, verify that the licensee's use of overtime for licensed reactor operators and others who are engaged in safety-related activities are consistent with

regulatory requirements and licensee administrative procedures.

- c. As scheduled, keep informed of the results of all site-specific Institute of Nuclear Power Operations (INPO) evaluations and accreditation reviews, or third party reviews to identify any safety significant issues. Review significant site specific INPO and third party evaluation reports. Document completion of such review, but not specific findings, in the inspection report.

02.07 Quality Assurance in Operations

- a. On a routine basis (at least once per inspection period), review the licensee's deficiency or non-conformance reports to assess the licensee's program for deficiency identification and resolution. Verify whether:
 - 1. Effects on plant safety and equipment reliability are evaluated.
 - 2. Operability and reportability are appropriately considered.
 - 3. Appropriate root cause determination was performed, and corrective actions were broad enough to prevent recurrence.
 - 4. Permanent corrective actions are taken rather than relying on an "Operator work-around" to fix the problem.
 - 5. The deficiencies are within the limits of the FSAR or result in deviations from plant licensing/design basis.
 - 6. A 10 CFR 50.59 safety evaluation was performed and documented for deficiencies that differ from the FSAR and that were not readily corrected.

Based on availability of information from other sources, this activity could be performed on a sample basis. Document the above assessment of the licensee's corrective action process in the residents' inspection report for input to the IP 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems" inspection, but inspection hours spent on this activity should not be supplemented towards the completion of IP 40500.

- b. Twice per SALP period, observe scheduled QA/QC activities related to plant operations required under the licensee's quality assurance program to assess their effectiveness, and review the qualifications of the QA/QC personnel performing the activities.
- c. Review offsite review committee activities at least once per SALP period, and onsite review committee activities on a more frequent basis, to verify their effectiveness in identifying and resolving problems and improving plant operations.

- d. Twice per SALP cycle, review the licensee's self-assessment in the operations area, and determine its effectiveness.

02.08 Miscellaneous Operations Issues

Refer to IP 92901, "Plant Operations- Follow-up," to determine whether the licensee addressed and/or implemented adequate corrective actions for violations and deviations, root causes, and generic implications, and to follow-up on unresolved and inspection follow-up items. Refer to IP 92700, "Onsite Follow-Up of Written Reports of Non-routine Events at Power Reactor Facilities," for review of Licensee Event Reports.

71707-03 INSPECTION GUIDANCE

General Guidance

The inspector should review and be reasonably familiar with the plant design and regulatory basis specified in the facility FSAR, operating license, TS, and the operating and performance history of the plant, and with the plant-specific probabilistic risk analysis (PRA) results to be able to factor risk considerations in the selection and prioritization of inspection samples (refer to IMC 2515, Appendix C on the use of PRA insights). If necessary, contact the NRC PRA specialist (e.g., Senior Reactor Analyst or the NRR Probabilistic Safety Assessment Branch) for assistance.

Specific Guidance

03.01 Conduct of Operations

- a.1. Determine the reason for entry into the LCO action statements, what the affected indicators and applicable annunciators are, the overall effect on plant operation, and the status of the activities taking place for exiting the LCO action statements. A control room panel walkdown, local verification of equipment status, or review of completed surveillance may be required to verify licensee compliance with the LCO action statements. Review any documents used to track the limiting conditions, such as LCO log books, or control room logs. The inspector should also review planned maintenance, surveillance or modification activities to ensure that the remaining operable systems and trains, providing the same safety function, will not be compromised and further degrade the plant condition. The inspectors may tailor their review based on the safety/risk significance of the condition, prior review results, and knowledge of corrective actions being taken by the licensee. Items removed from the TS and placed under licensee's administrative control (e.g., fire protection systems and components), and any TS interpretation document used by the licensee should be included in this review. The TS interpretation document must not conflict with the approved TS.

It is expected that a qualified inspector will have a working knowledge of license conditions that govern daily plant operation.

- a.2. Question operators, review control room logs and plant computer printouts for events or transients that might have occurred. Verify whether an operability evaluation was performed, compensatory measures were taken, and deficiency reports have been initiated to determine root cause and corrective actions for the identified deficiencies, when needed. Verify whether the licensee has initiated an investigation as required by plant procedures. If any reportable events occurred, verify if a report was made to the NRC Operations Center. Compare the details of the report made to the actual event to determine if the report was accurate. The inspector may select events/issues for review based on the safety/risk significance. Refer to IP 93702, "Prompt Onsite Response to Events at Operating Power Reactors," for additional guidance.

Also, refer to Generic Letter 91-18, "Resolution of Degraded and Non-conforming Conditions and on Operability," and Inspection Manual Part 9900, "Resolution of Degraded and Non-conforming Conditions", "Operable/Operability, Ensuring the Functional Capability of a System or Component", and "10 CFR 50.59 Clarification of the Requirements Related to Changes to Facilities, Procedures and Tests (or Experiments)" for guidance on degraded and nonconforming conditions and operability issues.

- a.3. Items to check may include (but are not limited to) TS safety limits, core thermal/power distribution limits, reactivity controls, RPS switch positions and indicating lights, electrical systems (both ac and dc including station blackout equipment), containment integrity, channel abnormalities (significant deviation between channels reading the same parameter) in TS related instrumentation and recorder traces, and the status of annunciators. Inoperable instrument channels should be clearly marked to prevent inadvertent use. Discussions with control room operators or the Shift Technical Advisor may be needed to identify/ confirm trends.

Verify the ESF, other risk significant, and ESF support systems lineup from component position (including the front panel bypasses like the mode, knife and test switches), status indications on the panel, and status of annunciators. The system configuration/status should be in accordance with the plant TSs and FSAR for the applicable plant operational mode. Ensure that the safety parameter display system (SPDS) information is displayed or easily available to operators. Modify the walkdown to emphasize potentially affected parameters and components depending on the risk significance of ongoing activities, and plant mode of operation. For example: verification of proper core cooling and shutdown cooling system operability becomes important during cold

shutdown conditions; the reactor coolant and spent fuel pool level maintenance is an important function during refueling; verification of entry of proper constants in the plant computer for core physics calculations may be appropriate prior to startup from a refueling outage.

The inspectors may develop site specific checklists for different operational modes, or use the licensee's list for the walkdown after it has been verified with the licensing basis of the plant. However, the accuracy of such lists needs to be continually ensured against TS and instrument setpoint changes, plant modifications, and changes in operational conditions.

- a.4. Evaluate the adequacy of the licensee's communications, on an ongoing basis, between the various departments, their approaches to resolving issues, and the overall conduct of plant operations. Note the level of management awareness of problems, and participation and involvement in providing guidance and direction for problem resolution.

- b.1. Assess whether the turnover environment is adequate for clear communication; whether on-coming operators are walking down panels with current operators or independently; whether the turnover process is proceduralized and procedures are being followed; and whether the operators exhibit attentiveness and a questioning attitude. Assess whether necessary plant status information is identified, and equipment/operational problems are discussed in enough detail for the oncoming shift to understand. After turnovers, verify that the operators have sufficient knowledge of the plant conditions and activities in progress. Inspectors should try to observe at least two different shifts, including a back-shift during one inspection period.

- b.2. Review ongoing and planned work activities and verify that the licensee is assessing the impact on plant safety and risk, and whether there is appropriate communication and coordination between operations and other disciplines. Licensees typically plan and coordinate maintenance, surveillance and test activities with a "rolling window" approach, where specific systems are designated to certain work weeks in order to minimize out-of-service time and maximize equipment availability. For on-line maintenance work windows, complex surveillance and tests, verify that the activities are coordinated with the control room, the shift supervision is maintaining effective control of plant operations, and the control room is implementing the compensatory measures required by the risk/safety evaluation (Refer to IP 62707). Observe pre-evolution briefings and communication between operations and other disciplines to verify that effect on safety and risk is being considered. Question the control room operators to

verify that they are fully aware of ongoing activities that could affect plant operations, and the priorities in resolving plant issues and equipment problems.

- c. Surveillance tests include (but are not limited to) control rod exercises, recirculation pump flow, instrument channel check/calibrations, and boron concentration or shutdown margin determinations. Refer to IP 61726, "Surveillance Observations," for guidance on conducting the observation. Also, review the procedure to verify its adequacy to meet the objective, e.g., a TS requirement or a design/licensing basis function. Note that this requirement addresses observation of surveillance tests performed by operations personnel in addition to those performed by other plant personnel, and the inspection hours should be reported under IP 61726.

03.02 Operational Status of Facilities and Equipment

- a. The purpose of the plant tour is to verify, to the extent possible, that the accessible portions of the risk and safety significant SSCs are in their appropriate positions/configuration for the plant operational mode that meets the licensing and design basis of the plant, are operable and not degraded, and that the required plant parameters are available and within their specified range. Focus on safety-related and risk significant SSCs specified in the FSAR and the plant-specific IPE. There may be a need to pay specific attention to infrequently operated systems and equipment, e.g., hydrogen analyzers/recombiners, post accident sampling system, remote shutdown panel, to ensure that they are adequately maintained. The inspectors may develop a list of critical components and attributes to look for during the plant walkdowns. Licensee's list can only be used if it is verified prior to use. The entire plant need not be toured all at one time, it can be a series of shorter tours.

Evidence of steam, water and oil leaks; excessive corrosion; cracking; hardening or sign of aging; heat damage; operator work-arounds (e.g., special operating instructions) to compensate for a deficiency or needed repair; and bypassed components could indicate weaknesses in the licensee's maintenance and corrective action program. See guidance in Section 03.07.a for a definition of "operator work-around."

The plant tour should also verify (1) whether the licensee is controlling ignition sources, hazardous material, transient material, scaffolding, spills and leaks in accordance with plant procedures; (2) that scaffolding, transient and ancillary equipment including portable gas cylinders that could cause missile hazards, ongoing activities, and adverse environmental conditions are not affecting the SSCs in an adverse manner; (3) adequate control being applied to prevent foreign material from entering safety systems; and (4) local conditions (e.g., lighting level, environmental, radiological and other hazards) will not adversely impact the licensee's ability to manipulate or actuate equipment required by

abnormal or emergency operating procedures. Areas of the plant that are not normally accessible during plant operation should be toured during outages when they become accessible.

The plant tour requirements specified in IP 71750, "Plant Support Activities," for radiological controls and effluent, physical security, emergency preparedness, fire protection, and chemistry may be simultaneously performed during above tour, and inspection hours charged against the appropriate procedure. These tours may also satisfy other inspection procedures simultaneously. Discuss any concerns or insights with the applicable regional specialist.

Report to the control room any unacceptable plant conditions or degraded components identified during the tour.

Refer to Inspection Manual Part 9900, "Resolution of Degraded and Non-conforming Conditions," and "Operable/Operability, Ensuring the Functional Capability of a System or Component."

The Maintenance Rule became effective on July 10, 1996. The inspector should note that any insights obtained from the above inspection may be factored into the performance of the core inspection procedure IP 62707, "Maintenance Observations."

- b. Focus inspection on whether the licensee might inadvertently remove redundant components from service by such actions as placing a control switch in the lockout position, then closing the suction valve on the redundant pump. Note whether the appropriate train and unit are tagged out. This inspection activity may be integrated with maintenance work observation to verify proper system component removal and restoration.
- c. Observe a selected portion of the containment isolation lineup and independently verify whether valves, dampers and airlock doors are in their required positions, shut, capped and locked if required. Where possible confirm control room valve position indication by direct observation of valve mechanism. For valves that isolate on a containment isolation signal verify proper breaker position and availability of power supply. Also, for motor and air-operated valves, verify they are not mechanically blocked and power is available, unless it is required to be otherwise. Inspect piping and the associated test, vent and drain valves, if any, for possible leakage paths. Alternate which items are inspected so that all accessible containment penetrations are periodically inspected. Prioritize the selected items based on safety significance and performance history. Based on good performance history the inspection frequency may be reduced by including this inspection as a part of item d below.
- d. Create a system walkdown list and prioritize it with systems important to safety, plant-specific PRA results and by whether previous system configuration, equipment or operational problems were experienced in the systems. Refer to MC 2515, Appendix C, for assistance in focusing on risk-significant

systems. Pay specific attention to infrequently operated systems, e.g., hydrogen analyzer/recombiners, post accident sampling system, station black-out equipment, and remote shutdown panel, to ensure that the licensee is adequately maintaining them.

Licensee walkdown/surveillance list, as-built prints, or system lineup procedures may be used only if its accuracy is verified prior to use. Rotate the selected systems and trains to ensure that all trains are periodically verified. Focus on components in the major flow paths, and not every valve and breaker. If the valve appears to be out of position or its positions can not be positively verified, report it to the control room. Inspect selected ESF and risk-significant system components, that are not normally accessible, e.g., suppression pool and ECCS strainers, during plant outages when they become accessible.

Note indications of operator work-arounds or conditions that might require work-arounds. Such indications and conditions include unapproved job aids and marking or other indications that (1) equipment is not labeled adequately; (2) maintenance, surveillance, or operating procedures are inadequate; or (3) the equipment is not performing as designed.

Note the potential for adverse environmental condition(s), e.g., insulation removed from high energy lines, doors left open that are required for area isolation during a high energy line break in an adjacent area, and open doors that may render blowout panels and back-draft dampers inoperable.

For 50.59 issues, refer to Inspection Manual part 9900, "10 CFR 50.59 Changes to Facilities, Procedures and Tests (or Experiments)," and IP 37001, "10 CFR 50.59 Safety Evaluation Program," for additional guidance.

- e. Focus in more detail than the general system walkdown requirement and guidance discussed above. When performed, this requirement fulfills the general system walkdown for the inspection period. Review logic drawings of a function to determine the switch settings required by the procedure are correct. Create a list of inaccessible valves and rooms, and inspect these portions of the systems during plant shutdowns. For electrical components, look for signs of overheating; solder joints should be shiny to indicate a good connection; and pins should not be loose or bent. Comply with licensee's safety requirements while inspecting energized electrical components. Report identified problems to the control room or other licensee management as applicable, and verify the licensee is taking appropriate corrective actions.

For additional guidance on freeze protection items, refer to IP 71714, "Cold Weather Preparations." For additional guidance on hangers, refer to IP 70370, "Testing Piping Support and Restraint Systems."

03.03 Operations Procedures and Documentation

- a.1. Identify any indications where the plant does not or did not meet the minimum TS requirements for equipment and instrumentation availability. Review the control room logs to verify that immediate actions taken by the licensee in response to events or problems were consistent with the plant TS, FSAR and licensee's procedures. Information obtained from this activity may be factored into inspection performed under section 02.01.a.1 and a.2. Control room logs may include the control and auxiliary operators' logs, completed daily/shift surveillance logs, Shift Supervisor and Shift Technical Advisor's logs, reactor physics and chemistry directives, and the directives and night orders issued by management. The inspector's judgement may be used in determining the depth and frequency of review of other operational logs (e.g., chemistry lab log, emergency diesel test logs).

Be attentive to any indications of incomplete or inaccurate records. For additional guidance refer to Information Notice 92-30, "Falsification of Plant Records," and Generic Letter 93-03, "Verification of Plant Records."

- a.2. Visually inspect tags on the control panels to determine whether they are consistent with the tagout log, how they impact plant operations, and if the required TS action or compensatory measures are in place. The length of time tags have been in place should be assessed. This could give an indication about effectiveness of licensee's corrective action program, and if operator work-arounds are relied upon excessively. Question the operators to verify their understanding of the reasons for and the actions related to the tagouts. Information obtained from this review may be factored into the inspection performed under section 02.01.a.1. The above review may be performed on a sample basis by considering the safety/risk significance of the tagouts, and the inspector's prior knowledge about the tags.
- b.1. For additional guidance refer to IP 42700, "Plant Procedures." Valuable data on procedure adherence may be obtained by observing operators perform evolutions (e.g., startup, shutdown, or a mode change) and tests, and responding to transients or plant events. Verify that TS and/or procedure prerequisites were satisfied prior to execution of the procedure. Note, if operator actions or compensatory measures were required due to degraded equipment or plant conditions resulting in an operator work-around. Include approved directives and night orders in this procedure adherence inspection. Directives and night orders are often issued by plant management, and disciplines like chemistry, reactor engineering, and systems engineering. As for example, the inspector may verify that the operators are adhering to approved control rod patterns, and withdrawal or insertion sequence as specified in a reactor engineering directive while moving control rods.

- b.2. Jumpers, bypasses and lifted leads are temporary modifications that may result in the inoperability of safety systems. Identify whether temporary modifications are appropriately evaluated for their impact on plant safety, and whether necessary compensatory actions have been implemented for the affected system(s). Inspector's actions can include determining whether a 50.59 safety evaluation was performed, and whether appropriate status indication is available in the control room for the bypassed components, and whether the operators are aware of the plant limitations for the length of time of the inoperable condition. For any temporary modification left in place for an extended period, verify whether they have been evaluated for inclusion as a permanent change, and what plan if any exists for its removal. For additional guidance refer to IP 37828, "Installation and Testing of Modifications." The inspectors may sample the temporary modifications to focus on safety and risk significance for this review. During subsequent reviews, the inspector may only review changes, instead of reviewing the entire logs. The frequency of this inspection may be modified based on plant activity level (e.g., more temporary modification activities occur during outages).

03.04 Operator Knowledge and Performance

While performing control room observations, meaningful insights regarding procedure adherence, communication, team work, and supervisory oversight may be gained during infrequent evolutions such as shutdown, startup, and transients. Also, include the Shift Supervisors and the Shift Technical Advisors while observing operators' performance in the control room,.

When questioning, use caution not to distract operators involved in an ongoing evolution or interfere with it. For further guidance on observing control room operators performance, consult IP 71715, "Sustained Control Room and Plant Observation."

- a.1. Determine if there are significant distractions in the control room to prevent the operators from performing their duties. Refer to the licensee's administrative procedure for control room operator conduct and duties. Also, refer to Information Notice 85-53, "Performance of NRC-Licensed Individuals While on Duty," for additional guidance. Question control room operators on plant and equipment status including critical out of service equipment, and their understanding of operational issues including any operability issues and compensatory measures implemented. Use information gained from inspection 02.01 and 02.03.a to assess control room operators' understanding of plant conditions and ongoing activities. Verify the operators are monitoring the appropriate plant parameters based on operational mode and ongoing activities.

- a.2. Question operators as to why annunciators are in alarm conditions, what operator response was required by the procedure(s) and if taken, if continuously lit annunciator windows prevent annunciation of new alarm conditions, and why and how they are removed from service. For control room and local annunciators that cause operator distractions, determine if a controlled process for their removal is in place that includes an assessment of operational impact, compensatory actions, authorization, and corrective actions for restoration. Also, review the alarm summary printout to determine if any significant alarms occurred that were not documented in the control room logs, and whether the operators were aware of and had taken appropriate action. Review of the alarm summary printout may lead to important operator performance indication during and after a transient. Inspector's judgement may be used to sample annunciators based on safety and risk significance, and when to review the alarm summary printout.
- a.3. The intent here is for the inspector to verify that control room personnel are appropriately aware of ongoing activities, such as maintenance, surveillance and testing, plant equipment taken out of service, and their impact on plant operation; and are implementing the necessary actions.
- a.4. Communication between control room operators should be clear, concise, formal, prompt, and in compliance with licensee administrative procedures. Observe operator communication during plant events if possible, and while critical/special operational evolutions are in progress, as well as during routine operations. Discuss observations with regional NRC operator examiners.
- a.5 Review the licensee's administrative procedure for shift supervisor's conduct, and duties. Look for weaknesses in Shift Supervisor's command and control.
- b. Review licensee expectations for AOs, plant procedure governing AO duties and the AO logs. Determine whether AOs are knowledgeable about the SSCs and equipment performance in their assigned area of the plant, and understand the work activities at hand. Determine how AOs identify and communicate deficiencies to control room or supervision, and whether the AOs understand when to generate a deficiency report or work request. Verify that AOs generate deficiency reports rather than implementing their own work-arounds. Observing an AO involved in a plant evolution or critical activity may lead to an important assessment of AO performance. Time to be spent on observing an AO activity will depend on inspector's judgement and the activity involved. It may not be necessary for the inspector to accompany an AO in tour in its entirety to derive a meaningful conclusion on AO's performance.

03.05 Operator Training and Qualification

Review simulator evaluations for previously identified weaknesses, and observe those areas during control room activities. Suggested observation areas are: crew performance in terms of clarity and formality of communication; ability to take timely action in the safe direction; prioritizing, interpreting and verifying alarms; correct use and implementation of procedures including the alarm response procedures; timely control board operation and manipulation; oversight and direction provided by the Shift Supervisor including ability to identify and implement appropriate TS action; and the group dynamics involved in crew performance. The inspector may observe different crews to understand differences in personality, performance, and group dynamics involved. The inspector may factor this experience in daily observation of control room operation to draw conclusion on the effectiveness of simulator training. The inspector should discuss any concerns, findings or insights with the applicable regional specialist. For additional guidance refer to IP 41500, "Training and Qualification Effectiveness," IP 42001, "Emergency Operating Procedures," and NUREG 1021, "Operator Licensing Examiners Standards," ES 604.

Compare simulator board configuration with actual control room board configuration for consistency, especially with recent modifications implemented in the control room.

03.06 Operations Organization and Administration

- a. Refer to 10 CFR 50.54 and applicable technical specification for control room staffing.
- b. Refer to facility TSSs, and in some cases license conditions for maximum overtime limits. Ensure that deviations from these limits are documented and authorized by the designated manager. Periods of excess activities like refueling, other outages, and plant events should be emphasized. Refer to NUREG-0737, Item I.A.1.3, or GL 82-12 dated June 15, 1982 for additional guidance.
- c. The resident inspector will read INPO evaluation and accreditation reports to determine if the INPO evaluation results are generally consistent with results of NRC evaluations. The inspector will document that an INPO review was completed. This documentation should not include a recounting or listing of INPO findings. No inquiries of the INPO final rating should be made of the licensee. The specifics of any significant differences between NRC and INPO perceptions should be discussed with regional management.

Licensees are still responsible for all applicable reporting requirements should a reportable condition or event be discovered. The NRC will not systematically follow-up on the timeliness and adequacy of licensee actions taken in response to specific findings. However, if NRC review of the documents does present the reviewer with specific information that could substantially affect nuclear safety in the short term, then these matters should be pursued by the resident inspector. Given the general nature of most INPO findings and INPO's

review and acceptance of most corrective actions as described in evaluation reports, it is expected that NRC will rarely need to conduct specific follow-up activities. However, if NRC review of INPO documentation raises such immediate questions, the resident inspector or regional supervisor, with agreement of the regional administrator, should request the licensee to describe what follow-up has been performed. All specific follow-up actions and the results of any licensee information requests should be documented in a memorandum to the Deputy Executive Director for Regulatory Programs.

NRC personnel should not take possession of INPO evaluation documents, make copies for distribution, or use these documents to form a basis for regulatory actions. To limit the distribution of INPO documents and information, visiting inspectors should not request INPO reports for review, but should obtain this information from the resident inspectors. Refer to Field Policy Manual No. 9, "NRC Review of INPO Documents," for additional guidance.

03.07 Quality Assurance in Operations

- a. Inspectors may review a sample of the deficiency reports based on safety and risk significance and use information available from other sources in selecting the sample. Inspectors may verify that deficiencies known to the inspector through other inspection activities are properly included in licensee's problem identification system. Inspection of the deficiency reports may best be performed on a continuous basis as the licensee identifies and resolves plant problems.

An "operator work-around" is a degraded or non-conforming condition that complicates the normal operation of plant equipment and is compensated for by operator action. While the total number of "operator work-arounds" may be important, the staff should focus on their overall safety significance, and the potential impact of the collective deficient conditions on plant performance. In addition, the inspector should assess the level of licensee support (e.g., plans and schedules) for resolving the underlying deficient condition(s).

Refer to IP 40500, "Effectiveness of Licensee Controls in Identifying, Resolving, and Preventing Problems," and IP 92700, "Onsite Follow-Up of Written Reports of Non-routine Events at Power Reactor Facilities," for additional guidance. Inspection hours spent on this activity should not be supplemented towards the completion of IP 40500. See guidance in section 03.01.a.2 regarding degraded/nonconforming components and operability. IP 92720, "Corrective Action," may be used for general guidance on inspecting licensee's corrective actions.

- b. Evaluate the scope, findings, and status of the QA audit or QC surveillance and determine whether the objectives were met and whether the corrective actions were implemented. Consult licensee's QA program for required qualification of the QA/QC

inspectors performing certain activities. The scope of the observations should be broad enough to enable the inspector make meaningful assessment of QA/QC oversight.

- c. Review onsite and offsite review committee activities that involve assessment of operations. This should involve attending selected on-site and offsite operations safety review committee meetings to identify what issues are reviewed, and what actions are taken to resolve the issues. Check a few actions to see if the licensee followed up on the recommendations by the safety committees. Refer to plant TS, licensee's administrative procedures that govern safety committee activities, and IP 40301, "Safety Committee Activity," for additional guidance. The recommended frequencies for observation are the minimum envisioned. The inspectors should keep informed of issues being reviewed by these committees, and select meetings for observation. In most cases, increased attendance frequency for at least the onsite review committee meetings will be beneficial.
- d. Keep informed of, and review licensee self-assessments in operations to generally understand the issues that the licensee identifies, and what actions are planned to address the issues.

03.08 Miscellaneous Operations Issues

Time spent on operations follow-up and LER review should be charged against those respective IPs noted in section 02.08.

END

Appendix: Inspection Requirements and Frequency

Appendix

Inspection Requirements and Frequency

Daily

O2.01.a
O2.02.a
O2.03.a (may be performed simultaneously with O2.01.a)
O2.06.a (may be performed simultaneously with O2.01.a)

Once per Week

O2.04.a (may be performed simultaneously with O2.01.a)

Once in Two Weeks

O2.01.b (may be performed simultaneously with O2.01.a)
O2.03.b (may be performed simultaneously with O2.01.a)
O2.04.b

Every Resident Inspection Period

O2.01.c
O2.02.b
O2.02.c (may be performed as a part of O2.02.d)
O2.02.d
O2.07.a (may be performed on a continuous basis)

Once Every Six Months

O2.02.e

Twice per SALP Period

O2.05
O2.07.b
O2.07.d

Once per SALP Period

O2.06.b
O2.07.c

As Scheduled

O2.06.c

END