ATTACHMENT 71111.05T

INSPECTABLE AREA: Fire Protection (Triennial)

CORNERSTONES: Initiating Events (10%)
Mitigating Systems (90%)

INSPECTION BASES: Fire can be a significant contributor to reactor plant risk. In many cases, the risk posed by fires is comparable to or exceeds the risk from internal events. The fire protection program shall extend the concept of defense in depth (DID) to fire protection in plant areas important to safety by:

(1) preventing fires from starting,
(2) rapidly detecting, controlling, and extinguishing those fires that do occur, and
(3) providing protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by fire suppression activities will not prevent the safe shutdown of the reactor plant.

LEVEL OF EFFORT: Triennial Inspection: Every 3 years, an inspection team that should include a fire protection specialist, a reactor operations engineer, and an electrical engineer will conduct a design-based, plant specific, risk-informed, onsite inspection of the DID elements used to mitigate the consequences of a fire. Effort will include a review of licensee's problem identification and resolution of fire protection program.

CHANGES IN SCOPE: For triennial inspections starting November 2002, the scope of this procedure was changed to integrate inspection guidance for operator manual actions associated with licensee commitment to 10 CFR 50, Appendix R, Section III.G.2 (hence referred to as Section III.G.2). The background, objectives, and specific guidance are provided in Enclosure 2 to this document.

The NRC temporarily suspended the associated circuit portion of the triennial fire protection inspections in November 2000. Circuit inspections are scheduled to resume in January 2005.

71111.05-01 INSPECTION OBJECTIVES

01.01 The inspection team will evaluate the licensee's fire protection program from design, operational status, and material condition points of view by verifying that the

licensee's program includes:

- adequate controls for combustibles and ignition sources within the plant;
- adequate fire detection and suppression capability;
- passive fire protection features in good material condition;
- adequate compensatory measures in place for out-of-service, degraded or inoperable fire protection equipment, systems or features;
- procedures, equipment, fire barriers, and systems so that the post-fire capability to safely shut down the plant is ensured; and
- feasible and reliable manual actions to achieve safe shutdown.

Inspection Procedure 71111.05AQ, Fire Protection (Annual /Quarterly) is designed to complement the triennial inspection specifically in the areas of fire brigade capability and water supply and delivery system maintenance and adequacy. However, the team should consider the need for additional evaluations in these areas based on previous assessments and potential issues.

71111.05-02 INSPECTION REQUIREMENTS

02.01 Inspection Preparation. Every three years, an inspection team will select three to five risk-significant fire areas/zones (considering team makeup, scope, and resources) and conduct risk-informed inspection of selected aspects of the licensee's fire protection program. The number of fire areas inspected can be adjusted during the course of the inspection based on the complexity of developing issues being worked by the inspection team.

The initial selection of areas to be inspected should be based on inputs from a senior reactor analyst (SRA), a fire protection specialist and an electrical/instrumentation and control specialist. For each area the selection process will consider but will not be limited to the following:

- review of the fire risk analyses;
- potential ignition sources;
- configuration and characteristics of combustible materials;
- routing of circuits important to accomplish and maintain safe shutdown condition;
- licensee's fire protection and fire fighting capability;
- licensee's use of operator manual actions.

The inspection should focus on post-fire safe shutdown capability and should include alternative or dedicated shutdown capability, as applicable.

02.02 Inspection Activities. The inspection guidance is designed to demonstrate that the systems required to achieve and maintain post-fire safe shutdown (SSD) are capable of controlling reactivity, reactor coolant makeup, reactor heat removal, process monitoring and support system functions; and that licensees' engineering and/or licensing justifications (e.g., NRC guidance documents, license amendments, technical specifications, SERs, exemptions, deviations) support the appropriate selection of the designated systems/equipment and associated support functions.

The verification of fixed fire protection systems including installation, design, testing, and adequacy to control and/or suppress fires associated with the hazards of each selected area will be done against the code of record.

If a fire brigade drill is observed, consider the lines of inspection inquiry of IP71111.05QA.

Manual actions which are integral to the licensees postfire SSD plan will be evaluated using guidance provided in Enclosure 2 to this procedure.

1. Shutdown From Outside Main Control Room.

   Verify that hot and cold shutdown can be achieved and maintained from outside the control room with or without the availability of offsite power for fires in areas where post-fire SSD relies on shutdown from outside the control room.

2. Protection of Safe Shutdown Capabilities.

   Verify that the fire protection features in place to protect safe shutdown capability, including power, control, and instrumentation cables, satisfy the separation and design requirements of Section III.G of Appendix R (or, for reactor plants reviewed under the Standard Review Plan, license specific separation requirements).

3 Passive Fire Protection.

   Verify through observation of material conditions that the fire ratings of fire area boundaries, raceway fire barriers, and equipment fire barriers appear to be appropriate for the fire hazards in the area.

   Verify through review of installation/repair records that material of an appropriate fire rating (equal to the overall rating of the barrier itself) has been used to fill openings and penetrations and that the installation meets engineering design.

   Verify through review of installation/repair records that material of an appropriate fire rating has been used as fire protection wraps and that the installation meets engineering design.

   For unusual installation configurations and/or application of unusual materials verify appropriate fire test data.

4. Active Fire Protection.

Verify and review the material condition, operational lineup, operational effectiveness, and design of fire detection systems, fire suppression systems, manual fire fighting equipment, and fire brigade capabilities.

Verify automatic and manual detection and suppression systems are installed, tested, and maintained in accordance with the code of record and would adequately control and/or extinguish fires associated with the hazards of each selected area.

Verify that the design capability of suppression agent delivery systems meet the requirements of the fire hazards.

5. Protection From Damage From Fire Suppression Activities.

Verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems, and that the licensee has addressed each of the following:

(A) A fire in a single location that may, indirectly, through the production of smoke, heat, or hot gases, cause activation of automatic fire suppression that could potentially damage all redundant trains;

(B) A fire in a single location (or inadvertent manual or automatic actuation, or rupture of a fire suppression system) that may indirectly cause damage to all redundant trains (e.g., sprinkler-caused flooding of other than the locally affected train).

(C) Adequate drainage is provided in areas protected by water suppression systems.

6. Alternative Shutdown Capability.

(A) Methodology

Verify that the licensee's alternative shutdown methodology has properly identified the components and systems necessary to achieve and maintain safe shutdown conditions for each fire area, room and/or zone selected for review. Specifically determine the adequacy of the systems selected for reactivity control, reactor coolant makeup, reactor heat removal, process monitoring and support system functions.

If the above high level performance criteria are not met, review the licensee’s engineering and/or licensing justifications (e.g., NRC guidance documents, license amendments, technical specifications, SERs, exemptions, deviations).

Verify that hot and cold shutdown from outside the control room can be

achieved and maintained with off-site power available or not available.

Verify that the transfer of control from the control room to the alternative location has been demonstrated to not be affected by fire-induced circuit faults (e.g. by the provision of separate fuses and power supplies for alternative shutdown control circuits).

(B) Operational Implementation

Verify that the training program for licensed and non-licensed personnel includes alternative or dedicated safe shutdown capability.

Verify that personnel required to achieve and maintain the plant in hot shutdown following a fire using the alternative shutdown system are properly trained and are available at all times from normal onsite staff, exclusive of the fire brigade.

Verify that adequate procedures for use of the alternative shutdown system exist.

Verify the implementation and human factors adequacy of the alternative shutdown procedures by independently "walking through" the procedural steps.

Verify that the operators can reasonably be expected to perform the procedures within applicable shutdown time requirements.

Verify that the licensee conducts periodic operational tests of the alternative shutdown transfer capability and instrumentation and control functions, and the tests are adequate to prove the functionality of the alternative shutdown capability.

7. Circuit Analyses.

Verify that the licensee has identified structures, systems, and components (SSCs) important to SSD and that they are protected per 10 CFR Part 50, Appendix R, Section III.G 3.

Verify for the selected areas that the licensee has performed a post-fire safe shutdown (SSD) analysis.

Verify that the licensee's analysis identified circuits that may impact safe shutdown and has shown that hot shorts, shorts to ground or other failures that would result in a spurious actuation will not prevent SSD.

Verify that the circuit analysis considered the following for the areas being evaluated:

(A) Fire and Cable Attributes:

(i) Fire frequency for the specific area(s).

(ii) Potential size and location of fire (credible fire threat).

(iii) Potential modes of heat transfer from fire to target cables.

(iv) Cable insulation attributes (e.g., thermoplastic or thermoset).

(v) Cable failure modes.

(a) For any single thermoplastic or thermoset multiconductor cable (including armored), review any combination of conductors within the cable (e.g. intra-cable) for which a short will cause spurious actuation(s). Inspectors should review 3 or 4 of the most critical combinations.

(b) For any thermoplastic cable with at least 1 other thermoplastic cable adjacent, review any combination of conductors between the two cables for which a short will cause spurious actuation(s). Inspectors should review 3 or 4 of the most critical combinations.

(vi) A maximum of two cables should be evaluated for cases where multiple cables may be damaged by the same fire. Multiple spurious actuations may be evaluated, depending on the number of conductors, and the circuit configuration.

(vii) For cases involving direct current (DC) control circuits, consider the potential spurious operation due to failures of the control cables (even if the spurious operation requires two concurrent hot shorts of the proper polarity, e.g., plus-to-plus and minus-to-minus). Consider potential spurious actuations when the source and the target conductors are in two independent multiconductor cables.

(viii) For cases involving decay heat removal (DHR) system isolation valves at high-pressure/low-pressure interfaces verify that the three-phase power cables to the valves (either thermoset or thermoplastic jacketed) are not vulnerable to three-phase proper polarity hot shorts.

(B) Undesired Consequences

Determine the potential consequence(s) of cable failures in the area being evaluated. The inspector should review the specific NPP process and instrumentation diagrams (P&ID) for flow diversions, loss of coolant, or other scenarios that could significantly impair the NPP's ability to achieve and maintain hot shutdown. When considering the potential consequence of such failures, the inspector should consider the time at which the prevented operation or maloperation occurs.

(C) Common Power Supply/Bus Concern

Verify, on a sample basis, that circuit breaker coordination and fuse protection have been analyzed, and are acceptable as means of protecting the power source of the designated redundant or alternative safe shutdown.

8. Communications

Verify through inspection of the contents of designated emergency storage lockers and review of emergency control station alternative shutdown procedures, that portable radio communications and/or fixed emergency communications systems are available, operable, and adequate for the performance. Assess the capability of the communication systems to support the operators in the conduct and coordination of their required actions (e.g., consider ambient noise levels, clarity of reception, reliability, and coverage patterns). If specific, issues arise relating to alternative shutdown communications adequacy, then, observe a licensee conducted communications tests in the subject plant area or areas.

Verify that communication equipment such as repeaters, transmitters etc. would not be affected by a fire.

9. Emergency Lighting.

Review emergency lighting provided, either in fixed or portable form, along access routes and egress routes, at control stations, plant parameter monitoring locations, and at manual operating stations:

(A) If emergency lights are powered from a central battery or batteries, verify that the distribution system contains protective devices so that a fire in the area will not cause loss of emergency lighting in any unaffected area needed for safe shutdown operations.

(B) Verify that battery power supplies are rated with at least an 8-hour capacity.

(C) Verify the operability testing and maintenance of the lighting units follow licensee procedures and accepted industry practice.

(D) Verify that sufficient illumination is provided to permit access to and verification of components for the monitoring of safe shutdown indications and/or the proper operation of safe shutdown equipment.

(E) Verify that emergency lighting unit batteries are being maintained consistent with the manufacturers recommendations.

10. Cold Shutdown Repairs.

Verify that the licensee has dedicated repair procedures, equipment, and materials to accomplish repairs of components required for cold shutdown which might be damaged, that these components can be made operable, and that cold shutdown

can be achieved within time frames specified by Appendix R to 10 CFR Part 50 (or, for reactor plants reviewed under the Standard Review Plan, license specific requirements). Verify that the repair equipment, components, tools, and materials (e.g., pre-cut cable connectors with prepared attachment lugs) are available and accessible on site.

11. Compensatory Measures.

Verify that compensatory measures are in place for out-of-service, degraded, or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). Short term compensatory measures should compensate for the degraded function or feature until appropriate corrective action can be taken. Review licensee effectiveness in returning the equipment to service in a reasonable period of time (typically days or weeks).

02.0.3 Identification and Resolution of Problems. The team should verify that the licensee is identifying issues related to this inspection area at an appropriate threshold and entering them in the corrective action program. For a sample of selected issues documented in the corrective action program, verify that the corrective actions are appropriate. See Inspection Procedure 71152, “Identification and Resolution of Problems,” for additional guidance.

71111.05-03 INSPECTION GUIDANCE

03.01 Inspection Preparation.

Inspection Team and Responsibilities. The team assigned to conduct the multi-disciplinary triennial fire protection inspection would include a fire protection inspector, an electrical inspector, and a reactor systems/mechanical systems inspector.

1. Reactor Operations Inspector (ROI). The reactor systems/mechanical systems inspector (RSI) will assess the capability of reactor and balance-of-plant systems, equipment, operating personnel, and procedures to achieve and maintain post-fire safe shutdown and minimize the release of radioactivity to the environment in the event of fire. Therefore, the inspection team leader will ensure that he is knowledgeable regarding integrated plant operations, maintenance, testing, surveillance and quality assurance, reactor normal and off-normal operating procedures, and BWR and/or PWR nuclear and balance-of-plant systems design.

2. Electrical Inspector (EI). The EI will identify electrical separation requirements for redundant train power, control, and instrumentation cables. He will review alternative shutdown panel electrical isolation design to establish the panels’ electrical independence from postulated fire areas. Therefore, the inspection team leader will ensure that he is knowledgeable regarding reactor plant electrical and instrumentation and control (I&C) design and is familiar with industry ampacity derating standards.

3. Fire Protection Inspector (FPI). The FPI will work with other team members in determining the effectiveness of the fire barriers and systems that establish the reactor plant's post-fire safe shutdown configuration and maintain it free of fire damage. He will determine whether suitable fire protection features (suppression, separation distance, fire barriers, etc.) are provided for the separation of equipment and cables required to ensure plant safety. Therefore, the inspection team leader will ensure he is knowledgeable regarding reactor plant fire protection systems, features and procedures.

Regulatory Requirements and Licensing Bases. The regulatory requirements and licensing bases against which post-fire safe shutdown capability is assessed are as follows:

1. Part 10 of the Code of Federal Regulations. 10 CFR 50.48(a), Fire Protection, requires each operating nuclear power plant to have a fire protection plan which satisfies the requirements of Criterion 3 of Appendix A (GDC3) to 10 CFR 50. The NRC has identified that an acceptable plan is one that meets the requirements of Appendix R to 10 CFR 50, or a plan that satisfies the requirements of standard review plan (SRP) Section 9.5-1.

2. Plants licensed before January 1, 1979. These plants are subject to the requirements of 10 CFR Section 50.48 and Appendix R to 10 CFR Part 50. Appendix R, Sections III.G, III.J, III.L, and III.O were backfit on plants licensed before January 1, 1979. Licensees were required to meet the separation requirements of Section III.G.2, the alternative or dedicated shutdown capability requirements of Sections III.G.3 and III.L, or to request an exemption in accordance with 10 CFR 50.48. Alternative or dedicated safe shutdown capabilities were required to be submitted to the Office of Nuclear Reactor Regulation (NRR) for review. NRR approvals are documented in SERs.

3. Plants licensed after January 1, 1979. These plants are subject to requirements as specified in the conditions of their facility operating license, in commitments made to the NRC, or in deviations exemptions or licensee amendments granted by the NRC. These requirements are generally similar to those in 10 CFR Part 50 Appendix R.

4. Changes to the fire protection program. The licensee may make changes to the approved fire protection program without prior approval by the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. In addition the licensees are required to retain the fire protection plan and each change to the plan as a record pursuant to paragraph 50.48(a).

Inspection Process.

1. Licensee Notification Letter. The licensee should be notified of the triennial inspection in writing at least three months in advance of the onsite week. The information gathering visit shall be conducted no fewer than three weeks in advance of the onsite inspection week. The letter should discuss the scope of the inspection, request an information-gathering visit to the licensee reactor site/engineering offices, discuss documentation and licensee personnel

availability needs during the onsite inspection week, and request a pre-inspection conference call to discuss administrative matters and finalize inspection activity plans and schedules. A template for an NRC to licensee triennial fire protection baseline inspection notification letter is provided as Attachment 1.

2. Information-gathering Site Visit. The inspection team leader should conduct a two to three day information gathering site visit. The purposes of the information gathering site visit are to (1) gather site-specific information important to inspection planning, and (2) conduct initial discussions with licensee representatives regarding administrative items and inspection activity plans and schedules. In advance of the information-gathering site visit, the team leader should provide the licensee with a list of information and documents that may be needed for the team to prepare for and conduct the triennial inspection, as well as a list of any planned requests for licensee conducted evolutions (e.g., emergency lighting tests, communication tests, fire drills, shutdown walkthroughs, etc.).

   Prior to the inspection information gathering trip, the team leader should contact the regional senior reactor analyst (SRA) to obtain summary of plant specific fire risk insights (e.g., fire risk ranking of the rooms/plant fire areas, conditional core damage probabilities (CCDPs) for those rooms and areas, and transient sequences for these rooms). After considering the focus of past fire protection and post-fire safe shutdown inspections, the team leader should select three to five fire areas important to risk for inspection.

   After the information gathering site visit, the team leader should use the SRA developed fire risk insights, as well as technical input from the other team members, to develop an inspection plan addressing (for the selected three to five fire areas, zones, as applicable) post-fire safe shutdown capability and the fire protection features for maintaining one success path of this capability free of fire damage.

3. Information Required/Preparation. The team members should gather sufficient information to become familiar with the following during preparation period:

   (a) The reactor plant's design, layout, and equipment configuration.

   (b) The reactor plant's current post-fire safe shutdown licensing basis through review of 10 CFR 50.48, 10 CFR Part 50 Appendix R (if applicable), NRC safety evaluation reports (SERs) on fire protection, the plant's operating license, updated final safety analysis report (UFSAR), and approved exemptions or deviations.

   (c) The licensee’s strategy and methodology, and derivative procedures, for accomplishing post-fire safe shutdown conditions. Among the sources of information are the updated final safety analysis report (UFSAR), the latest version of the fire hazards analysis (FHA), the latest version of the post-fire safe shutdown analysis (SSA), fire

protection/post-fire safe-shutdown related changes that used 10 CFR 50.59, 50.48(a) or other criteria, and Generic Letter 86-10 review documentation and modification packages, plant drawings, emergency/abnormal operating procedures, and the results of licensee internal audits (e.g., self assessments and quality assurance (QA) audits in the fire protection and post-fire safe shutdown areas).

(d) The historical record of plant-specific fire protection issues through review of plant-specific documents such as previous NRC inspection results, internal audits performed by the reactor licensee (e.g., self-assessments and quality assurance audits), corrective action system records, event notifications submitted in accordance with 10 CFR 50.72, and licensee event reports (LERs) submitted in accordance with 10 CFR 50.73.

(e) The safe shutdown systems and support systems credited by the licensee's analysis for each fire area, room, or zone for accomplishing of the required shutdown functions (e.g., reactivity control, reactor coolant makeup, reactor heat removal, and process monitoring and support functions) as necessary to comply with the safe shutdown requirements of 10 CFR 50.48(a) and plant-specific licensing requirements. The shutdown logic for each area, room, or zone to be inspected must be thoroughly understood by the team members.

(f) The licensee's analytical approach for electrical circuits separation analyses, and the licensee's methodology for identification and resolution of circuits of concern. The team's electrical review should include addressing the assumptions and boundary conditions used in the performance of the licensee's analyses.

03.02 Inspection Activities. For those fire protection structures, systems, and components installed to satisfy NRC requirements designed to NFPA codes and standards, the code edition in force at the time of the design and installation is the code of record to which the design is evaluated.

Deviations from the codes should be identified and justified in the FSAR or FHA. A licensee may apply the equivalency concept in meeting the provisions of the NFPA codes and standards. When the licensee states that its design "meets the NFPA code(s)" or "meets the intent of the NFPA code(s)" and does not identify any deviations from such codes, the NRC expects that the design conforms to the codes and the design is subject to inspection against the NFPA codes. The "Authority Having Jurisdiction" as described in NFPA documents refers to the Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, or designee, consistent with the authority specified in 10 CFR 1.43.

If the inspectors determine that the operator manual actions are not reasonably accomplishable and therefore implementation may not lead to a safe plant condition, the preliminary finding will be identified and entered into the SDP.

03.03 Identification and Resolution of Problems. No specific guidance is provided.

71111.05-04 RESOURCE ESTIMATE

The resource to perform this inspection procedure is estimated to be 200 hours every 3 years for the triennial inspection regardless of the number of reactor units at the site.

71111.05-05 PROCEDURE COMPLETION

Inspection of the minimum sample size will constitute completion of this procedure in the Reactor Programs System (RPS). The minimum sample size is defined as 3 samples (inspection of three fire areas) regardless of the number of reactor units at that site:

71111.05-06 REFERENCES

The SDP Guideline "Appendix 4 - Determining Potential Risk Significance of Fire Protection and Post-fire Safe Shutdown Inspection Findings."

Appendix H of the Fire Protection Supplemental Inspection Procedure (FPSI) "Guidance for Making a Qualitative Assessment of Fire Protection Inspection Findings, Fire Protection Risk Significance Screening Methodology" [FPRSSM])

Inspection Procedure 71152, "Identification and Resolution of Problems."

Generic Letter 91-18 "Information to Licensees Regarding Two NRC Inspection Manual Sections on Resolution of Degraded and Non-conforming Conditions and on Operability."

Information Notice 97-48 "Inadequate or Inappropriate Interim Fire Protection Compensatory Measures," July 9, 1997

NRC Internal Memorandum dated August 17, 1998, from John N. Hannon to Arthur T. Howell titled "Response to Region IV Task Interface Agreement (TIA) (96TIA008) - Evaluation of Definition of Continuous Fire Watch (TAC No. M96550).

Individual Plant Examination of Externally Initiated Events(IPEEE)

Regulatory Guide 1.189 "Fire Protection for Nuclear Power Plants."

Regulatory Issue Summary, Risk-Informed Inspection Guidance for Post-Fire Safe-Shutdown Inspections.

END

ATTACHMENT 1

Mr. President
Licensee Nuclear Department
Licensee Corporation or Company
Address

SUBJECT: SELECTED NUCLEAR POWER STATION, UNITS 1 AND 2 - NOTIFICATION OF CONDUCT OF A TRIENNIAL FIRE PROTECTION BASELINE INSPECTION

Dear Mr. :

The purpose of this letter is to notify you that the U.S. Nuclear Regulatory Commission (NRC) Region # staff will conduct a triennial fire protection baseline inspection at Selected Nuclear Power Station, Units 1 and 2 in Month, 20##. The inspection team will be lead by First Last, a fire protection specialist from the NRC Region # Office. The team will be composed of personnel from NRC Region #, and Contracted National Laboratory. The inspection will be conducted in accordance with IP 71111.05, the NRC's baseline fire protection inspection procedure.

The schedule for the inspection is as follows:

Information gathering visit - Month ##-##, 20## [Note - this date is pre-coordinated with the licensee]
Week of onsite inspection - Month ##, 20##.

The purposes of the information gathering visit are to obtain information and documentation needed to support the inspection, to become familiar with the Selected Nuclear Power Station, Units 1 and 2 fire protection programs, fire protection features, and post-fire safe shutdown capabilities and plant layout, and, as necessary, obtain plant specific site access training and badging for unescorted site access. A list of the types of documents the team may be interested in reviewing, and possibly obtaining, are listed in Enclosure 1.

During the information gathering visit, the team will also discuss the following inspection support administrative details: office space size and location; specific documents requested to be made available to the team in their office spaces; arrangements for reactor site access (including radiation protection training, security, safety and fitness for duty requirements); and the availability of knowledgeable plant engineering and licensing organization personnel to serve as points of contact during the inspection.

We request that during the onsite inspection week you ensure that copies of analyses, evaluations or documentation regarding the implementation and maintenance of the Selected Nuclear Generating Station, Units 1 and 2 fire protection program, including

post-fire safe shutdown capability, be readily accessible to the team for their review. Of specific interest are those documents which establish that your fire protection program satisfies NRC regulatory requirements and conforms to applicable NRC and industry fire protection guidance. Also, personnel should be available at the site during the inspection who are knowledgeable regarding those plant systems required to achieve and maintain safe shutdown conditions from inside and outside the control room (including the electrical aspects of the relevant post-fire safe shutdown analyses), reactor plant fire protection systems and features, and the Selected Nuclear Power Station fire protection program and its implementation.

Your cooperation and support during this inspection will be appreciated. If you have questions concerning this inspection, or the inspection team's information or logistical needs, please contact First Last, the team leader, in the Region # Office at ###-###-####.

Sincerely,

Docket Nos.: 50-###
and 50-###

Enclosure: As stated (1)

Reactor Fire Protection Program Supporting Documentation

[Note: This is a broad list of the documents the NRC inspection team may be interested in reviewing, and possibly obtaining, during the information gathering site visit.]

1. The current version of the Fire Protection Program and Fire Hazards Analysis.

2. Current versions of the fire protection program implementing procedures (e.g., administrative controls, surveillance testing, fire brigade).

3. Fire brigade training program and pre-fire plans.

4. Post-fire safe shutdown systems and separation analysis.

5. Post-fire alternative shutdown analysis.

6. Piping and instrumentation (flow) diagrams showing the components used to achieve and maintain hot standby and cold shutdown for fires outside the control room and those components used for those areas requiring alternative shutdown capability.

7. Plant layout and equipment drawings which identify the physical plant locations of hot standby and cold shutdown equipment.

8. Plant layout drawings which identify plant fire area delineation, areas protected by automatic fire suppression and detection, and the locations of fire protection equipment.

9. Plant layout drawings which identify the general location of the post-fire emergency lighting units.

10. Plant operating procedures which would be used and describe shutdown from inside the control room with a postulated fire occurring in any plant area outside the control room, procedures which would be used to implement alternative shutdown capability in the event of a fire in either the control or cable spreading room.

11. Maintenance and surveillance testing procedures for alternative shutdown capability and fire barriers, detectors, pumps and suppression systems.

12. Maintenance procedures which routinely verify fuse breaker coordination in accordance with the post-fire safe shutdown coordination analysis.

13. A sample of significant fire protection and post-fire safe shutdown related design change packages and Generic Letter 86-10 evaluations.

14. The reactor plant's IPEEE, results of any post-IPEEE reviews, and listings of actions taken/plant modifications conducted in response to IPEEE information.

15. Temporary modification procedures.

16. Organization charts of site personnel down to the level of fire protection staff personnel.

17. If applicable, layout/arrangement drawings of potential reactor coolant/recirculation pump lube oil system leakage points and associated lube oil collection systems.

18. A listing of the SERs which form the licensing basis for the reactor plant's post-fire safe shutdown configuration.

19. Procedures/instructions that control the configuration of the reactor plant's fire protection program, features, and post-fire safe shutdown methodology and system design.

22. A list of applicable codes and standards related to the design of plant fire protection features and evaluations of code deviations.

23. Procedures/instructions that govern the implementation of plant modifications, maintenance, and special operations, and their impact on fire protection.

24. The three most recent fire protection QA audits and/or fire protection self-assessments.

25. Recent QA surveillances of fire protection activities.

26. A listing of open and closed fire protection condition reports (problem reports/NCRs/EARs/problem identification and resolution reports).

27. Listing of plant fire protection licensing basis documents.

28. A listing of the NFPA code versions committed to (NFPA codes of record).

29. A listing of plant deviations from code commitments.

30. Actual copies of Generic Letter 86-10 evaluations.

END

INSPECTION CRITERIA FOR FIRE PROTECTION MANUAL ACTIONS

BACKGROUND

Three acceptable methods are given in 10 CFR Part 50 Appendix R, Section III.G.2 for protecting at least one safe shutdown train during a fire when redundant trains are located in the same fire area. The Section III.G.2 requirements are based on the combination of physical barriers, spacial separation, fire detection and automatic suppression systems. Manual actions to respond to maloperations that may result from the failure to meet one or more of the requirements are not identified as an acceptable method for satisfying the code. However, the NRC, after considering the engineering merits of manual actions, has accepted plant-specific manual actions in formal exemption or deviation requests.

Based on inspection results and industry comments, the NRC determined that licensees have, without requesting exemption or deviation from the code, implemented manual actions where the requirements of Section III.G.2 cannot be met. The staff concluded that rulemaking would be required to allow licensees to use manual actions in lieu of fully complying with current Section III.G2 when formal exemption or deviation requests are not submitted. For an interim period, while rulemaking is in progress, manual actions without an approved exemption or deviation may be acceptable if the manual actions are feasible based on the criteria provided below. Authority to approve a licensee methodology that does not meet NRC regulations is not delegated to the inspectors. However, inspectors will ensure that plant-specific manual actions at least meet the criteria provided in this enclosure.

If the inspectors determine that manual actions are reasonable and meet the criteria outlined in this enclosure, then the inspection report will identify this issue as a Green finding pending the Commission's acceptance of the proposed staff initiative to incorporate the use of manual actions into Section III.G.2.of the code. (The Green finding indicates that while compensatory measures in the form of manual actions have been implemented and are acceptable, the licensee continues to be in violation of the code requirements.)

If the inspectors determine that the manual actions cannot reasonably be accomplished and therefore implementation may not lead to a safe plant condition, the preliminary finding will be identified as potentially greater than Green and entered into the SDP.

APPLICABILITY

This guidance is provided for assessing of manual actions implemented in conjunction with a licensee commitment to Section III.G.2.

Verify that the licensee is committed to meet the requirements of Section III.G.2. Determine whether the requirements are met with or without the use of manual actions. If manual action are not invoked, this guidance is not applicable.

If manual actions were previously approved by the staff and an exemption or deviation has been issued, verify that the licensee continues to meet the terms of the exemption or deviation.

DIAGNOSTIC INSTRUMENTATION

Verify that adequate diagnostic instrumentation, unaffected by the postulated fire, is provided for the operator to detect the specific spurious operation that occurred. Some licensees may have protected only the circuits specified in Information Notice 84-09. Additional instrumentation may be needed to properly assess a spurious operation. Annunciators, indicating lights, pressure gages, and flow indicators are among the instruments typically not protected from the effects of a fire. Instrumentation should also be available to verify that the manual action accomplished the intended objective.

ENVIRONMENTAL CONSIDERATIONS

Evaluate environmental conditions the operators may encounter while traveling to the area where the manual action will be performed and within the area where the manual action will take place. The conditions to be verified may include the following:

Radiation levels should not exceed normal 10 CFR Part 20 limits.

Emergency lighting is provided as required in Appendix R, Section III.J, or by the licensee's approved fire protection program.

Temperature and humidity conditions are such that they do not affect the operators' capability to perform the manual action.

Fire effects such as smoke and toxic gases do not affect the operators' capability to perform the manual action.

STAFFING

Evaluate licensee shift staffing to determine whether enough qualified personnel are available to perform the required manual actions and to safely operate the reactor.

COMMUNICATIONS

Verify that manual action coordination with other plant operations can be accomplished, and that communications capability is protected from effects of a postulated fire.

SPECIAL TOOLS

Evaluate the need for special tools and verify that such tools are dedicated and readily available.

TRAINING

Verify that operator training on the manual actions and the associated procedure(s) is adequate and current.

ACCESSABILITY

Evaluate the accessability of tools and equipment. If special access equipment such as ladders are needed, verify the availability of the equipment. Verify that an operator can reach the required location without personal hazard.

PROCEDURES

Review procedural guidance to ensure that it is adequate and given in an emergency procedure. Operators should not rely on having time to study normal plant procedures to find a method of operating plant equipment that is seldom used.

VERIFICATION AND VALIDATION

Determine whether the manual actions have been verified and validated by plant walkdowns using the current procedure. Ensure that the licensee has adequately evaluated the capability of operators to perform the manual action in the time available before the plant will be placed in an unrecoverable condition.

END