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Docket File

(19)

MAR 28 1984

MEMORANDUM FOR: Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing

FROM: William V. Johnston, Assistant Director
Materials, Chemical & Environmental Technology
Division of Engineering

SUBJECT: SUPPLEMENTAL SAFETY EVALUATION REPORT ON FIRE PROTECTION
WOLF CREEK NUCLEAR POWER PLANT, CALLAWAY NUCLEAR POWER PLANT

Plant Name: Wolf Creek Nuclear Power Plant/Callaway Nuclear Power Plant
Docket Nos.: 50-482/483
Licensing Stage: OL
Responsible Branch & Project Managers: J. Holonich, P. O'Connor
CMEB Reviewer: R. Eberly
Requested Completion Date: ASAP
Review Status: Complete

In our SERS, we stated that there were six unresolved items. Two of these were concerned with our on-going review of the fire protection for safe shutdown capability and of the alternate shutdown system for the control room.

The enclosed Fire Protection Supplemental Safety Evaluation Report, prepared by ASB, provides our evaluation of the two safe shutdown items.

Between October 17 and 20, 1983, we conducted our fire protection site audit. As a result, we reached several agreements with the applicant concerning the adequacy of the fire protection program. We also expressed a number of concerns pertaining to previous applicant commitments and the degree of compliance with our fire protection criteria. These issues were delineated in our trip report of December 21, 1983.

By letters dated February 1, 24 and March 14, 1984, and FSAR Revisions 12 & 14, the applicant provided additional information in response to our concerns. Based on our evaluation, we conclude that the fire protection program, with the accepted deviations, meets the guidelines of BTP CMEB 9.5-1, Sections III.G, III.J, and III.O of Appendix R to 10 CFR 50, and GDC-3 and is, therefore, acceptable.

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Attached is our evaluation, the proposed license condition for the fire protection program, and our SALP input per Office Letter No. 44.

William V. Johnston, Assistant Director
Materials, Chemical & Environmental
Technology
Division of Engineering

Enclosure: As stated

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Chemical Engineering Branch/Fire Protection Section
Supplemental Safety Evaluation Report
Wolf Creek Nuclear Generating Station,
Callaway Nuclear Power Plant
Docket Nos. 50-482/483

VI. Fire Protection For Safe Shutdown Capability

VI.A Safe Shutdown Capability

Our review of the SNUPPS fire protection of safe shutdown capability included the list of equipment and components identified in Section 3.11(B) of the SNUPPS Final Safety Analysis Report (FSAR) as being necessary for hot and/or cold shutdown, the safe cold shutdown analysis in FSAR Section 5.4A, the remote shutdown capability described in FSAR Section 7.4, the cable separation discussed in FSAR Section 8.3 and the fire hazards analysis and design comparison with Appendix R in FSAR Section 9.5. We also reviewed the control room fire hazards analysis submitted by letter dated November 15, 1982.

The applicant's safe shutdown analysis and fire hazards analysis demonstrated that redundancy exists for systems needed for hot and cold shutdown. The safe shutdown analysis included components, cabling and support equipment needed to achieve hot and cold shutdown. Thus, in the event of a fire anywhere in the plant, at least one train of systems would be available to achieve and maintain hot shutdown and proceed to cold shutdown.

For hot shutdown at least one train of the following safe shutdown systems would be available: Auxiliary feedwater (AFW) system, steam generator atomspheric dump valves, reactor coolant system, and the chemical and volume control system. For cold shutdown at least one train of the residual heat removal (RHR) system would be available. The RHR system would be used for long-term decay heat removal and provides the capability to achieve cold shutdown within 72 hours after a fire. The availability of these systems includes the components, cabling and support equipment necessary to achieve cold shutdown. The support equipment includes the diesel generators, emergency service water system, components cooling water system, and the necessary ventilation systems.

The applicant's fire hazards analysis demonstrated that except for inside containment and inside the control room, redundant systems and cabling needed for safe shutdown are separated in accordance with III.G.2.a, b, or c of Appendix R. For the control room, the applicant has provided alternate shutdown capability outside the control room in accordance with III.G.3 of Appendix R. Inside the containment there is at least 20 feet between redundant safe shutdown divisions or between diverse systems such as the letdown isolation valves and the power operated relief and block-valves. Thus, the requirements of III.G.2.d are met for separation inside containment.

The applicant performed an electrical train separation study in order to ensure that at least one train of the above equipment is available in the event of a fire in areas which might affect these components. Safe shutdown equipment and cabling was identified and traced through each fire area from the components to the power source. Additional equipment and cabling considered as associated either because of a shared common power source or common enclosure or whose fire induced spurious operation could affect shutdown were also identified. Extensive use of computer program checks were used to ensure separation. Each circuit and raceway is identified in the computer program, and the identification includes the applicable separation group. The program is used to check that cables of a particular separation group are routed through the appropriate raceways.

We have reviewed the applicant's method of determining that the separation criteria of Appendix R are met and have reviewed the associated circuits identified by the applicant and the actions necessary or modifications made to prevent spurious operation that wc [illegible] affect safe plant shutdown. Based on our review we conclude that the app[illegible]t has adequately addressed the effects of associated circuit interaction and that the necessary isolation devices and procedures are adequate to ensure that such circuit interactions will not prevent safe shutdown. We further conclude that the applicant's methodology for verifying that separation is in accordance with Appendix R, Item III.G.2 is, therefore, acceptable.

The applicant's analysis indicated that the only area outside containment where redundant divisions are not separated by barriers in accordance with III.G.2 is the control room. Alternate shutdown measures were required for the control room in order to assure the availability of the safe shutdown systems. In the event that a fire disables the control room the remote shutdown panel associated with train B equipment located in a separate fire area of the auxiliary building provides an alternative to fire protection separation within the control room. The control functions and indications provided at the remote shutdown panel are electrically isolated or otherwise separate and independent from the control room. Refer to Section VI.B of this SER for further discussion of alternate shutdown capability.

Based on the above, the systems identified for achieving and maintaining safe shutdown in the event of a fire are acceptable and the methodology used to assure adequate protection of safe shutdown systems is in accordance with Section III.G of Appendix R and, therefore, is acceptable.

VI.B Alternative Shutdown Capability

Section 7.4 of the SNUPPS FSAR describes the remote shutdown panel's capability. Section 5A of the FSAR and the control room fire hazard analysis dated November 15, 1982, describe remote shutdown capability for equipment not on the remote shutdown panel. The design objective of the remote shutdown system for the purposes of this evaluation is to achieve and maintain cold shutdown in the event of a fire in the control room. The train B remote shutdown panel will be the primary alternative shutdown panel since the necessary instruments and control on this panel are isolated or isolable from the control room.

The turbine driven AFW pump, train B motor driven AFW pump, associated AFW controls, the atmospheric dump valves for steam generators B and D, the group B pressurizer backup heaters, and the train B letdown isolation valve can be controlled at the train B alternate shutdown panel for maintaining hot standby. Separate isolation switches provided at local stations for control of support systems and cold shutdown systems will be used in conjunction with a procedural approach using pre-planning operator actions to maintan hot standby and to achieve and maintain cold shutdown within 72 hours.

The design of the remote shutdown system complies with the performance goals outlined in Section III.L of Appendix R. Reactivity control is accomplished by manual scram before the operator leaves the control room and boron addition via the chemical and volume control system using the refueling water stroage tank (RWST) and the charging pumps. The reactor coolant makeup function is also performed by the charging pumps and RWST. Reactor coolant inventory is assured by maintaining reactor coolant pump seal cooling and seal injection, and by isolating all possible paths of inventory loss such as PORVs, RHR suction lines, normal and excess letdown lines and the reactor vessel head vent. All these operations including reactor scram can be accomplished from outside the control room. Reactor decay heat removal to hot shutdown is accomplished by the AFW system through the steam generators and atmospheric dump valves. Decay heat removal to cold shutdown is achieved by the residual heat removal system. The following instruments on the alternate shutdown panel will be used to monitor process variables:

Pressurizer level
Reactor coolant system pressure (wide range)
Steam generator level (wide range)
AFW flow
Reactor coolant cold leg temperature (T_C)
Reactor coolant hot leg temperature (T_H)
Source range nuclear instrument

The above instrumentation will all be isolated from the control room on the train B alternate shutdown panel. Isolated valve position indication for the AFW system, letdown isolation valve, and the atmospheric dump valves are also located on the train B panel.

We have reviewed actions required by the procedures for achieving and maintaining safe plant shutdown following a fire. For hot standby the immediate actions are mainly precautionary measures to assure no spurious operations occur due to the control room fire. Some operations require cutting a control power cable at the equipment to ensure that a fault in the control room does not prevent certain equipment operation. Such actions may be required for the fuel oil transfer pumps, fuel pool cooling system and some ventilation dampers that are not immediately necessary for or detrimental to maintaining hot standby conditions. These actions will be described in the procedures. For achieving and maintaining cold shutdown local operation of RHR isolation valves, letdown valves and certain CCW system valves may be required and will be in the cold shutdown procedures. We have reviewed the proposed actions and manpower requirements and conclude they are in accordance with III.L.4 and III.L.5 to Appendix R since they can be accomplished exclusive of fire brigade members and are straightforward and uncomplicated such that cold shutdown can be achieved within 72 hours.

Based on our review, we conclude that the alternative shutdown capability for the control room meets the requirements of Appendix R, Section III.1, and is therefore acceptable.

Reactor Coolant Pumps

The system is designed to collect and contain lubricating oil for each reactor coolant pump. The collection systems are piped to two collection tanks. Each tank serves two RCPs. Each collection tank has a capacity of approximately 300 gallons. Each RCP motor contains approximately 265 gallons of oil. The

collection tanks are provided with level indication and high level alarm in the control room.

Should the leakage exceed the collection tank capacity before corrective actions are completed, the tank would overflow onto the containment sumps. This oil would not come into contact with hot surfaces and would not pose a significant fire hazard.

The tanks are constructed to the requirements of ASME Section VIII and have flame arrestors on the vents. The drain piping is ANSI B 31.1. The tanks and piping are seismically supported in accordance with the requirements of Paragraph C.2 of Regulatory Guide 1.29.

By letter dated March 14, 1984, the applicant committed to provide an oil collection system that has been seismically analyzed and qualified to remain functional after the SSE. Based on this commitment, we conclude that protection provided for the reactor coolant pumps will meet the guidelines of Section C.7.a of BTP CMEB 9.5-1 (Section III.O of Appendix R to 10 CFR 50), and is, therefore, acceptable.

9.5.1.1 Fire Protection System Description and Evaluation (Wolf Creek Only)

Water Supply System

The water supply system consists of two fire pumps separately connected to a buried, 12-inch pipe loop around the plant. There are two 100 percent capacity fire pumps. One pump is electric motor driven and the other is diesel engine driven. The fire pumps are located in circulating water screen house with the electric-fire pump separated by a fire-rated wall from the diesel pump. The fire pump and controllers are Underwriter's Laboratory Listed. Controllers and pumps will be installed and tested in accordance with National Fire Protection Standard (NFPA) 20.

A separate jockey pump maintains the yard fire main pressure. If the fire main pressure drops, the electric motor driven fire pump will automatically start. The diesel engine driven fire pump will start automatically if the pressure drops to below the settings of the electric pump. Separate audible and visual alarms are provided in the control room for each pump to monitor pump operation, drive motor availability, power failure, and failure of a fire pump to start.

The pumps take suction from a common wet pit sump in the circulating water screen house. Two traveling water screens and bar grill are located at the inlet to the sump serving the fire pumps. The greatest water demand for the fixed fire suppression systems is 2300 gpm that, coupled with 1000 gpm for hose streams, creates a total water demand of 3300 gpm at a residual pressure of 80 psig. The staff finds that the water supply system can deliver the required water demand with one pump out of service.

By letter dated February 24, 1984, the applicant committed to either electrically supervise all essential valves in the fire water supply system or to lock them in the open position under a periodic visual supervision program conforming to the Standard Technical Specifications.

Based on this commitment, we conclude the Fire Protection Water Supply System will meet Section C.5.a of BTP CMEB 9.5-1 (Section III.A of Appendix R to 10 CFR 50), and is, acceptable.

Fire Barriers and Fire Barrier Penetrations

Where safe shutdown equipment is enclosed by a fire barrier, all walls, ceilings, floors, and associated penetration which enclose the equipment have a minimum fire rating of 3 hours with the following exceptions: 1-1/2-hour elevator doors, pressure, watertight, and missile-resistant doors, and equipment hatches in the auxiliary building. For fire areas that do not have a 3-hour-fire-rated

assembly, due to the installation of the preceding doors, each individual area was evaluated with respect to its fuel load, fire suppression and detection systems, and proximity to safe shutdown equipment to determine if fire-rated assemblies provided are adequate for the areas affected and meet the guidelines in Section D.1.j of Appendix A to BTP ASB 9.5-1. Based on this evaluation, we found the 1-1/2-hour fire barriers for these areas acceptable.

The applicant has agreed to provide 3-hour UL designs for all fire penetration seals used in the penetation cable trays, conduits, and piping which pass the penetration qualification tests including the time-temperature exposure fire curve specified by ASTM E-119, "Fire Test of Building Construction and Materials."

By letter dated February 1, 1984, the applicant stated that the acceptance criteria for the penetration qualification test was in excess of the 325°F maximum temperature permitted on the unexposed side by ASTM E-119, "Fire Test of Building Construction and Materials." The applicant stated that the acceptance criteria used was a maximum temperature rise on the unexposed surface of the fire stop of 325°F above ambient.

In addition, at no time during the test period did any visible flaming occur on the unexposed side of the test assembly, and no openings developed that permitted the hose stream test to penetrate the seals.

Although the penetration seals do not meet the specific ASTM E-119 temperature rise limitations, the test results showed that fire would not spread to the unexposed side of a protected fire barrier during a 3-hour test period. Few, if any areas in the plant contain a 3-hour combustible loading. We, therefore, have reasonable assurance that the integrity and temperature transmission through the penetration assembly will not affect the capability to achieve and maintain safe shutdown considering the effects of a fire involving fixed and potential transient combustibles in the plant.

By letter dated February 24, 1984, the applicant committed to protect cable tray or conduit supports to achieve the same rating as the protected cable tray or conduit. We find this acceptable.

Based on our evaluation, we conclude the protection provided for fire barriers and fire barrier penetrations is an acceptable deviation from our guidelines in Section C.5 of BTP CMEB 9.5-1, and is, therefore, acceptable.

Fire Protection for Safe Shutdown

1. Component Cooling Pumps

The component cooling water pumps are located on the 2026' elevation of the auxiliary building. Partial sprinkler systems are provided for the corridor area around the pumps, however, there is a non-sprinklered area between the pumps which contains intervening combustibles, i.e., balance-of-plant (BOP) cable trays. This configuration is not in accordance with Section C.5.b of BTP CMEB 9.5-1. The applicant, by letters dated February 1 and 24, 1984, committed to provide fire stops in the intervening cable trays, adjacent to one of the sprinklered zones by October 1, 1984 at the Callaway Plant and by fuel load at Wolf Creek. Due to the nature and configuration of combustibles in this area, the fire stops would effectively prevent a fire from spreading to redundant trains. Based on this commitment, we find that the protection provided for the component cooling water pumps meets our guidelines in Section C.5.b of BTP CMEB 9.5-1, and is, therefore, acceptable.

2. Hatchways - The auxiliary building is provided with two sets of equipment hatchways in the northern and southern ends of the auxiliary building corridors. A monorail hoist serves each set of hatchways to allow equipment to be moved from one location to another. Steel hatch covers and automatic sprinkler water curtains are provided for each hatchway at elevations 2000'-0", 2026'-0", and 2047'-0" to separate the corridor fire areas.

   At elevation 2000'-0" in the center of the auxiliary building, two adjacent hatchways are provided above the RHR and containment spray valve encapsulation tanks located on elevation 1988'-0". These two hatchways are covered with a 3-hour rated material.

   Due to the low fuel loading and configuration of equipment in these areas, we find the water curtains and steel covers provide a level of safety equivalent to the technical requirements of Section III.G.

3. Containment Penetrations - The reactor containment walls are penetrated by numerous mechanical and electrical penetrations, as well as a personnel hatch, and a fuel transfer tube.

   The containment wall is four feet thick reinforced concrete with a continuous 1/4 inch thick steel liner. The construction is capable of withstanding a 60 psig overpressure without failure.

   Due to the construction of the containment wall and the special nuclear safety-related purposes these penetrations serve, we consider them equivalent to the technical requirements of Section III.G.

4. Fuel Building Roof - No fireproofing is provided on the underside of the fuel building roof. The roof is missile proof, 2 feet thick reinforced concrete.

   Due to the low fuel loadng in this area, we find the level of fire protection acceptable.

5. Trench Cover - In the fuel building Fire Area F-2, the floor is on grade with the exception of a small pipe trench which opens into the room and connects with the radwaste tunnel. The trench opening in this room is closed by a heavy steel cover plate approximately 4 feet x 8 feet. This area is separated by over 50 feet with no intervening combustibles. Due to the separation distance and low combustible loading, we find the level of protection acceptable.

6. Main Steam and Feedwater Valve Compartment - (Fire Area A-23)

   This fire area is separated from all adjoining areas and buildings by 3-hour-rated fire barriers. The fire area is divided into two compartments by a 2-foot-thick concrete wall. A 9-foot x 24-foot vent opening is located at the ceiling of each compartment. The barrier wall between the two compartments has a 27-foot wide x 23-foot high vent opening located approximately 34 feet above the floor. These vent openings are required to prevent overpressurization of the compartment in the event of a postulated break of main steam piping. Due to the existence of the vent opening, the barrier wall cannot be fire rated.

   All other penetrations through the fire barriers are fitted with 3-hour-rated penetrations seals. Three-hour-rated fire dampers are installed in all HVAC ducts penetrating the fire barriers.

   Due to the low combustible loading and configuration of valves in this area, we find this level of protection acceptable.

7. Partial Suppression & Detection Systems - Tables 9.5B-3 and 9.5B-4 list the plant areas where automatic suppression and detection systems are not provided throughout the entire fire area.

   The in-situ and potential transient fire hazards for these areas of the plant have been assessed against the requirements for automatic sprinkler protection stipulated in Section III.G of Appendix R. The fire hazards in most of these areas are minimal.

Partial suppression and detecton systems are provided in areas where potential fire hazards exist.

Because of these conditions, plus availability of manual fire fighting equipment, we conclude that the installation of additional automatic sprinkler and detection systems is not necessary. The existing fire protection provides us with reasonable assurance that one shutdown-related division will remain free of fire damage, and therefore, is acceptable.

Based on our review, we conclude the fire protection provided for safe shutdown with the approved deviations meets our guidelines in Section C.5.b of BTP CMEB 9.5-1 (Section III.G of Appendix R to 10 CFR 50), and is, therefore, acceptable.

Fire Detection System

In our SER, we stated that the plant fire detection system is installed in accordance with NFPA Standard 72D. During the site visit, we noted that the back-up power supply may not meet the recommendations of NFPA Standard 72D. The applicant was unable to show compliance, and verbally agreed to prepare an analysis showing how the existing primary/back-up power supply circuitry compares to the requirements of NFPA Standard 72D.

By letter dated February 1, 1984, the applicant provided the comparison. The applicant's comparison indicated that the primary and secondary power supplies comply with the provisions of NFPA STD 72D. In the event of loss of power to the remote panels, loss of automatic activation of some pre-action sprinkler would occur. Because the pre-action systems are continuously supervised, any loss of power would be alarmed in the control room. Plant Technical Specifications would then require the establishment of a continuous fire watch. Because of the fire watch and the fact that the sprinkler systems remain manually operable, we find this to be an acceptable deviation from our guidelines. Based on our review, we conclude that the fire detection system power supply is an acceptable deviation from our guidelines in Section C.6.a of BTP CMEB 9.5-1, and is, therefore, acceptable.

Sprinkler Systems

In our SER, we stated that the automatic sprinkler would be designed to the recommendations of NFPA Standard 13. During the site visit, we noted that in some corridor area (e.g., Aux. Building corridor, elevation 1974' west side) the sprinkler heads are located at the ceiling, and there are a large number of cable trays, conduits, pipes, and vent duct beneath the sprinkler heads. These obstructions may render the sprinkler system ineffective against a floor level exposure fire, and are not in accordance with NFPA Standard 13, which is recommended by Section C.6c of BTP CMEB 9.5-1.

By letter dated February 24, 1984, the applicant committed to perform the following modifications by October, 1984 at the Callaway Plant and by fuel load at Wolf Creek:

> Additional sprinkler heads will be added in the Auxiliary Building on the 2000' elevation west corridor (3 tray area) and 2026' elevation north end of east corridor to protect against postulated fires in transient combustibles.
>
> Sprinkler heads on the 1974' elevation of the Auxiliary Building west corridor which are partially obstructed by structural steel beams will be lowered to avoid spray obstructions.

Based on this commitment, we conclude the sprinkler system will meet our guidelines in Section C.6.c of BTP CMEB 9.5-1, and are, therefore, acceptable.

Control Room

In our SER, we stated that ionization type smoke detectors would be installed in all control room cabinets and consoles containing redundant equipment. During our site visit, we noted that no smoke detectors are provided for safety-related cabinets in accordance with Section C.7.b of BTP CMEB 9.5-1.

By letter dated February 1, 1984, the applicant committed to provide detectors in the control room cabinets containing redundant safe-shutdown equipment by fuel load. We find this acceptable.

In the rear of the control room complex, smoke detection is provided at the ceiling level. During our site visits, it was our concern that due to the ceiling height, a substantial time delay could occur in detecting an incipient fire.

By letter dated February 1, 1984, the applicant committed to provide a duct detector in the control room HVAC exhaust duct by October 1, 1984 at the Callaway Plant and by fuel load at Wolf Creek. The duct detector will provide enhanced detection capability and compensate for the lack of low level detectors, because the HVAC exhaust inlets are near the floor level. Based on these commitments, we find the detection for the control room will meet our guidelines in Section C.7.a of BTP CMEB 9.5-1, and is, therefore, acceptable.

Diesel Generator Rooms

In our SER, we stated that sprinkler systems would be installed in accordance with NFPA Standard 13. During our site visit, we noted that a pre-action sprinkler system is provided for the protection of the diesel generators. A large vent duct passes directly beneath many of the sprinkler heads. The sprinkler piping arrangement is not in accordance with NFPA Standard 13, and BTP CMEB 9.5-1, Section C.6.c.

By letter dated February 1, 1984, the applicant committed to change the layout of the sprinkler piping to bypass the HVAC duct work. Based on this commitment, we conclude that the sprinkler systems in the diesel generator rooms will comply with our guidelines in Section C.6.c of BTP CMEB 9.5-1, and are, therefore, acceptable.

The diesel fuel oil day tanks are located in each diesel generator room. In our SER, we stated that a containment dike would be provided beneath each day tank to contain 110% of the fuel oil, however, during our visit, we noted that the top of the dike is beneath the tank. It was our concern that not all leaks would be contained by this configuration and that the applicant should modify the dike to provide a more positive collection ability, such as by completely surrounding the day tank, in accordance with Section C.7.1 of BTP CMEB 9.5-1.

By letter dated February 1, 1984, the applicant indicated that: The existing fuel tank and all piping is Seismic Category 1. The fuel oil system is a gravity feed type system, therefore, no pressurized sprays will occur from a leak. The floor area adjacent to the dike is provided with floor drains. The day tank is provided with level indication which alarms in the control room if more than 3 gallons of leakage occur.

Based on this information, it is the applicant's opinion that the current design of the tank is adequate. We agree with the licensee that the current design is adequate. If any leaks should occur, they would be promptly detected, and the floor chains would collect the majority of the leakage.

Based on our review, we conclude that the diesel fuel day tank and dike assembly meets our guidelines in Section C.7.1 of BTP CMEB 9.5-1, and is, therefore, acceptable.

Summary of Deviations:

(1) Penetration Seals acceptance criteria - BTP CMEB 9.5-1, Section C.5
(2) Unrated, missile-resistant doors - BTP CMEB 9.5-1, Section C.5.a
(3) Fire Detection Power Supplies - BTP CMEB 9.5-1, Section C.6.a.

Conclusion

Based on our evaluation, we conclude that the fire protection program with the accepted deviations meets the guidelines of BTP CMEB 9.5-1 and GDC-3 and is, therefore, acceptable.

Fire Protection License Condition

The licensee shall fully implement and maintain all provisions of the approved fire protection program. (PM should list all the NUREG documents where the approved fire protection program is described, including those sections issued by CMEB, ASB, EPLB, LQB and QAB).

Input to the SALP Process

A. Functional Area: Fire Protection

1. Management involvement in assuring quality: Throughout the review process, the applicant's activities exhibited evidence of prior planning and assignment of priorities. Decisions which were made were usually at a level that ensured adequate management review. Management was aware of the importance of fire protection and took steps to see that our review and site audit went well, including making contractor representatives available as needed.

Rating Category 2

2. Approach to resolution of technical issues: During the various meetings, telecons, and in the several documents submitted in conjunction with the resolution of our site audit issues, the applicant's representatives displayed a clear understanding of our concerns with the level of fire protection. The applicant's additional fire protection commitments revealed a conservative approach toward providing an adequate level of safety. The justification provided in support of the applicant's fire protection program were based on sound fire protection engineering principles.

Rating Category 2

3. Responsiveness to NRC Initiatives: With few exceptions, the applicant provided timely oral responses to our requests for information. Although most of the proposals offered to resolve our fire protection concerns could be construed as viable, our effort to resolve some issues required a number of written submittals before acceptable resolution was achieved.

Rating Category 3