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November 19, 1979

Mr. Robert L. Ferguson
Plant Systems Branch
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Bob:

Attached is the Brookhaven National Laboratory input* to Three Mile Island, Unit 1 Design Review and Supplement Items:

Design Review	Supplement	Supplement
3.1.1*	3.2.1*	3.2.8*
3.1.3 unscheduled	3.2.2*	3.2.9*
3.1.4*	3.2.3 previously submitted	3.2.10*
3.1.9*		3.2.11*
3.1.10*	3.2.4*	3.2.12 previously submitted
3.1.11*	3.2.5*	
3.1.13*	3.2.6*	3.2.13*
	3.2.7*	3.2.14*
		3.2.15*

Very truly yours,

Edward A. MacDougall
Reactor Engineering Analysis

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attachment
cc.: R. Cerbone wo/att.
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THREE MILE ISLAND UNIT 1

FIRE PROTECTION REVIEW

3.1.1 FIRE DETECTORS

Safety Evaluation Report (SER) Section 3.1.1 indicates that the fire detectors will be installed on all levels of the reactor building, in several areas of the auxiliary building, in several areas of the intermediate building, in certain areas of the fuel handling building, and in safety-related control cabinets in the control room.

By letter dated March 16, 1979, the licensee provided six drawings which show the location of the proposed detectors in the reactor building, the auxiliary building, the intermediate building, diesel generator buildings, the fuel handling building, and the control room.

By letter dated May 18, 1979, the licensee indicated that Nuclear Instrument and Reactor Protection System cabinets A, B, C, and D will not be provided with fire detectors. The bases cited for taking such deviation from the earlier commitment are:

- There are no ionization type products of combustion detectors presently manufactured that could be installed inside the cabinets in such a manner that the normal air flow past a proposed detector location would be conducive to the detection of an incipient fire.

- The cabinets are located in an area that is continuously manned, precluding the possibility of fire in the cabinets going undetected.

In recommending this position, we are fully aware of the fact that the cabinets are located in a constantly manned area and that a fire in the cabinets will sooner or later be detected. However, it is the desire of the staff to limit possible fire damage to as little as practicable in these important and sensitive cabinets. Early detection of a fire will not only allow fire fighting activity to be initiated when the fire is in an incipient stage, but will also allow early operator action to limit the consequences of fire damage.

Also, the staff has previously evaluated and accepted proposals for installation of automatic fire detectors at similar equipment cabinets at other plants. These proposed installations utilized other detector types or installation of detectors at the ventilation air outlets of the cabinets.

We recommend that the licensee's request for the deviation from the earlier commitment should be unacceptable and we will require detectors to be provided for these cabinets. The fire detection system proposed in the May 18, 1979 submittal is recommended to be acceptable subject to satisfactory resolution of Item 3.2.4, Adequacy of Detector System Design.

3.1.3 AUTOMATIC WATER SPRAY SYSTEM

The licensee's design description has not been received. This is an unscheduled item at this time.

3.1.4 AUTOMATIC SPRINKLER SYSTEMS OR COATING OF ELECTRICAL CABLES

SER 3.1.4 indicates that the licensee will install automatic sprinkler systems or apply a flame retardant coating to protect electrical cables on Elevation 281 feet of the fuel handling building. This was the requirement in addition to verifying the adequacy of cable separation in preserving the safe shutdown capability.

On September 29, 1979, the licensee stated that these sprinkler systems or the cable coating would be provided only if the results of the proposed fire barrier test failed to establish the adequacy of cable separation.

Because of the uncertain nature of fire and because fire damage to a nuclear plant could pose a great danger to the public health, both BTP 9.5-1 and its Appendix A require a defense-in-depth approach for fire protection at nuclear power plants. In addition to fire prevention, detection and suppression, the defense-in-depth approach also calls for preservation of the safe shutdown capability of the plant in the event of an unmitigated fire. Cable separation, discussed in the staff's evaluation of SER Section 3.2.2, is just one facet of the defense-in-depth approach.

The area of concern contains a large concentration of irregularly stacked cable trays. Many of these are difficult to reach even under non-fire conditions. Manually fighting a fire in a cable tray obstructed by interposing cable trays and obscured by smoke is difficult. Cable coatings and/or automatic sprinklers can greatly reduce this difficulty. We, therefore, recommend that the staff not accept the licensee's request for deviation from the earlier commitment.

3.1.9 FIRE BARRIER PENETRATIONS

SER Section 3.1.9 indicates that various types of fire barrier penetrations, including cable and pipe penetrations and building construction joints, will be sealed in various areas of the plant to provide appropriate fire resistance.

By letter dated June 12, 1979, the licensee provided test reports and a NEL-PIA (now ANI) Certificate of Approval for the cable and pipe penetration seal design to be installed at the plant. The test procedure met the staff's criteria for penetration seal fire tests, except that no pressure differential was applied across the seal. The Licensee's letter stated that no significant pressure differentials exist between various plant areas where those seals would be installed.

The licensee has not provided any information on the sealing of building construction joints where the fuel handling building walls abut the reactor building.

We will require the Licensee to quantify the pressure differential between plant areas where the proposed penetration seals will be installed, and to demonstrate by analysis or tests that the proposed penetration will perform as required under such pressure differential and fire conditions. We will further require the licensee to verify that the proposed building construction joint seals have a fire resistance rating of three hours (ASTM E-119), and flame spread and smoke development ratings of 25 or less (ASTM E-84).

3.1.10 THERMAL INSULATION OF VALVES

SER Section 3.1.10 indicates that thermal insulation will be installed on decay heat valves in the reactor building. The purpose of this insulation is to protect the valves from a reactor coolant pump lubricating oil fire.

By letter of August 27, 1979, the licensee proposed to install lubricating oil splash shields on the reactor coolant pumps, contending that the installation of such shields would prevent a valve-disabling oil fire. The licensee further requested that the proposed modification of the decay heat valves in the reactor building be rescinded.

The staff is basically in agreement with the licensee's contention. However, the licensee has not shown that fires in other areas will not cause the loss of control of these valves. We request the licensee to verify that these decay heat valves are capable of, and accessible for, manual operation. Subject to a satisfactory resolution of the above stated staff concern, we recommend acceptance of the licensee's proposal.

3.1.11 FIRE BARRIERS AT REACTOR BUILDING EMERGENCY COOLING VALVES

SER Section 3.1.11 indicates that additional fire barriers will be installed to reduce the possibility of the loss of function of the reactor building emergency cooling valves due to a fire.

By letter dated August 27, 1979, the licensee stated that fire protection for this area had been reviewed and that the proposed barriers were found to be unnecessary because:

- Safe shutdown can be achieved using the normal reactor building cooling system.
- A fire detection system was to be installed in the area.

We agree that barriers will not be required if there is an alternate means to perform the same cooling functions. However, the licensee should verify the following to assure that the alternative system is equivalent:

- The equipment, components, and cables of the normal reactor building cooling system are independent of this fire area, and
- The normal reactor building cooling system can be operated on emergency on-site power.

Assuming the above is satisfactorily answered, we recommend acceptance of the licensee's request for waiving the requirement for the previously proposed fire barriers.

3.1.13 REACTOR COOLANT PUMP LUBRICATING OIL COLLECTION SYSTEM

SER Section 3.1.13 indicates that the existing lubricating oil splash guard on each reactor coolant pump will be modified to enclose the pump motor and to drain the collected oil in a drain tank located inside the secondary shield.

On August 27, 1979, the licensee submitted a drawing and several photographs of the proposed lubricating oil collection system for the staff's review and requested deletion of the requirement of SER Section 3.1.6 (curbs in reactor building) and 3.1.10 (thermal insulation on valves). We accepted the licensee's contention that a satisfactory lubricating oil collection system will obviate the necessity for curbs specified in Section 3.1.6 of the SER. The request to waive the requirement for insulating the valves was discussed earlier in the staff's review of Section 3.1.10. The submitted drawings and photographs of the lubricating oil collection system showed its outline and design. The submittal however, did not include the description of the system. We, therefore, cannot determine from the available information that all the potential leak points are enclosed by the system. Further, the seismic design criteria of the system are not known to the staff. We recommend approval of the design of the proposed lubricating oil collection system subject to the following assumptions:

- The proposed system provides a complete enclosure for all potential leakage points, including lift pump and piping, external oil cooler, flanged connections, drain plugs, fill points, upper and lower reservoirs, sight glasses, and overflow lines.

- During a design basis earthquake, the effects of the seismic event on the system will not adversely affect plant safety.

- The possibility that drain piping be clogged was taken into consideration.

- A stream of leaking oil from pressurized parts will not impinge on the ventilation louvers at an angle of free escape.

We approve the design of the proposed lubricating oil collection system subject to a satisfactory resolution of the staff's concerns identified above.

3.2.1 PROTECTION OF EMERGENCY FEEDWATER PUMPS

SER Section 3.2.1 indicates that the licensee will analyze the fire hazards in the emergency feedwater pump area and will propose additional modifications necessary to preserve the safe shutdown capability.

On December 28, 1978, the licensee stated in its submittal that fire protection in this area was evaluated and it was concluded that no additional protection is necessary for two reasons. First, because the motor-driven and turbine-driven pumps are separated by more than 35 feet of space and interposing partial barriers. Second, because the detection system, portable extinguishers, and fire hoses provide adequate protection for this area of low combustible loading.

The licensee has not provided any new information regarding protection of emergency feedwater pumps since the staff made its initial evaluation of fire protection at Three Mile Island Unit 1. Specifically, the licensee has not provided any new information concerning:

- The largest quantity of transient combustibles that can be brought into or through the area for routine maintenance and operational activities.
- The characteristics of the largest fire involving the fixed and transient combustibles in this area.
- Safe shutdown consequences of the exposure of redundant equipment in this area to postulated fires or fire fighting activities.

We conclude from our evaluation of information submitted to date that there is no positive evidence to justify the licensee's contention that at least one emergency feedwater pump would be available for shutdown in the event of a fire in this area. Therefore, we recommend that the NRC staff should require the licensee to separate the turbine-driven emergency feedwater pump from its redundant counterparts and from other plant areas by three hour rated fire barriers. This includes sealing the penetrations (piping, cable, and ventilation duct) protecting doorways by fire doors, and enclosing or rerouting related cables.

3.2.2 CABLE SEPARATION

SER Section 3.2.2 indicates that the licensee will perform a study and/or testing to verify the effectiveness of the asbestos board barrier design in preventing the spread of a tray fire to nearby trays with or without the presence of interposing non-safety-related cables, and in preventing damage to redundant cables from a possible exposure fire. Where the study indicates that the present design is inadequate, corrective modification will be proposed.

The licensee contracted with Southwest Research Institute of San Antonio, Texas to perform the proposed tests on July 5 and 6, 1979. NRC staff members were invited to comment on the test procedure and to witness the tests.

By letters dated July 13 and September 14, 1979, the licensee provided the results of these tests and concluded that the test results demonstrated that cable separation provided by the existing Marinite board barriers is adequate.

BNL and it's consultants did not witness the test, however, we have reviewed Mr. Tim Lee's comments on the test at a team meeting and concur with them. Mr. Lee's comments are as follows:

- The licensee's test procedure stated that two fire tests would be performed, and the results applied to all plant areas. The staff emphasized that the selected test configuration should represent the upper bound of all configurations in various areas of the plant, and that each test prarmeter should reflect the most conservative condition exisitng in the plant. The final test configuration and test conditions were not conservative on at least two accounts.

  Ventilation - In reviewing the photographs taken at the test site, the staff discovered that the test chamber was provided with a large opening at the top which allowed hot air to be vented from the test chamber rather than confined in it. Fire dampers in ventilation ducts serving fire areas in the plant would probably close when the upper room air temperature approached 200°F. Therefore, the air temperatures experienced in the upper part of the test chamber during the test are probably considerably lower than those which would be experienced in an area of the plant during an actual fire.

  Cable Trays - Section 4-5 on page 3 of the licensee's final test procedure stated that cables would be randomly laid in cable trays, but the actual tests were conducted with trays neatly packed solid with cables. Cables in the bottom layer were tied to the tray and cables in each layer were carefully laid side by side to leave no air gaps. Not only is this arrangement nonconservative with respect to maximizing the burning rate, but it accounted for only a small proportion of the cable tray arrangements observed during the staff's plant site visit. The tray fire test proceeded despite strong reservations expressed by staff members observing the test, and ended when the lower cable tray failed to be ignited.

  Subsequently, at the staff's request, the licensee conducted an additional improvised test using remnant cables to test the licensee's contention that their cables will not burn. The results of this test showed that a randomly laid cable tray, similar to those in the plant, will burn vigorously. Eleven minutes after ignition it was agreed that the fire would not self-extinguish, whereupon it was suppressed by water spray from a garden hose. Five minutes later the cables in this tray reignited due to the residual heat in the cables and the tray. This fire was extinguished by a complete wetting down of all cables in the entire tray.

Although multiple stacked trays above and/or below horizontal fire barriers is rather common in the plant, the licensee chose to test the barrier with only one tray above and one tray below. Stacked trays not only contained a larger number of combustible cables, but such an arrangement generally results in a more severe fire. The licensee has not provided any information to support the claim that the test configuration represents the most conservative condition found in the plant.

The staff also has reservations regarding the effect of the relative location of the test trays with respect to the floor and the ceiling. These test trays were located approximately ten feet above the floor and five feet below the ceiling. The licensee has not provided any information to confirm that all cable trays in the plant are at least ten feet from the floor and at least five feet below the ceiling.

- One of the staff's comments on the test procedure concerned the ignition source for the test fires. The staff requested that the proposed oil-soaked burlap be replaced by propane or heptane burners to assure a well-developed tray fire. The licensee agreed to use two methane burners, each with a 70,000 Btu per hour output, and assured the staff that a well-developed fire would be produced for these tests. However, the staff was not informed until the morning of the test that the burners were to be placed approximately 15 feet apart, essentially reducing the ignition heat input from 140,000 Btu per hour to 70,000. We believe that this contributed in some way to the failure to ignite the cable tray in the cable tray fire test and to the delay in igniting the cable tray in the subsequent improvised test. The staff cannot concur in the licensee's conclusion that the Marinite board barrier prevented the spread of a cable tray fire when, in fact, sustained ignition of the first cable tray was not achieved.

- The staff also has reservations about the verification and certification of the test results. The test method did not strictly comply with the proposed test procedures, and the effects of such deviations on the outcome of the tests were not discussed in the test report. Also, it appears that the test report did not include all of the relevant information regarding the improvised cable fire test. Specifically, the test report did not indicate that 27 minutes, after the tray had been burning for 11 minutes, the fire was suppressed by water spray from a garden hose in the test because the licensee's representative agreed that the fire was well developed and not likely to self-extinguish. Also, five minutes after the tray fire was suppressed using the garden hose, the cable tray reignited and within less than one minute was burning as vigourously as before. The fire was then extinguished by a complete wetdown of all cables in the entire tray.

Summarizing our evaluation, we cannot agree with the licensee's conclusion that these test results demonstrated that the existing Marinite board barriers provide adequate separation of redundant cables to preserve safe

shutdown capability of the plant in the event of a major cable tray or exposure fire. We recommend that the NRC staff require the licensee, in all fire areas containing redundant cables needed for safe shutdown, to provide an alternate shutdown capability independent of the fire area, postulating one fire at a time in these areas, or to enclose one division of these cables in a three hour fire barrier.

3.2.4 ADEQUACY OF THE DETECTOR SYSTEM DESIGN

SER Section 3.2.4 indicates that the licensee will perform a study and/or testing to verify the adequacy of existing and proposed fire detector placement and distribution.

On July 11, 1979, the licensee provided a submittal which indicated that a study had been done which concluded that the existing fire detection system, when supplemented with the proposed additions, would be adequate to detect a fire in a timely manner.

A summary of the results of the study was attached to the submittal. However, the method and details of the study were not included. Specifically, the submittal gave no information regarding the parameters which were considered in the study and the acceptance criteria by which conclusions were reached. The licensee is requested to provide this information.

It was also indicated in this submittal that the design for the proposed additions to the detection system was submitted to the NRC by a separate letter dated March 16, 1979. The drawings attached to this letter indicated that the criteria for installation of the proposed detectors were specified in the licensee's letter to Mr. R.M. Rogers from Mr. R.M. Klingaman dated February 16, 1979. We recommend that the licensee be requested to provide copies of this letter.

3.2.5 FIRE PROTECTION INSIDE THE REACTOR BUILDING

SER Section 3.2.5 indicates that the licensee will study the feasibility of providing manual hose stations inside the reactor building and propose modifications.

By letter dated October 5, 1978, the licensee indicated that their study showed that it is possible to install hose stations in the reactor building and proposed to install hose stations on all elevations. The designs were to be submitted for our review by February 16, 1979, but we have not yet received such information.

We recommend the acceptance of the licensee's proposal for the concept of installation of manual hose stations inside the reactor building.

3.2.6 and 3.1.8 UNLABELED FIRE DOORS

SER Sections 3.1.8 and 3.2.6 indicate that the licensee will establish the adequacy of the fire resistance of presently unlabeled fire doors and frame assemblies. If the adequacy of fire resistance of such assemblies cannot be establihsed, they will be replaced by properly rated fire door assemblies.

The licensee's response of December 1, 1978 (GOL1919) indicates that several doors and frames will be replaced with Glass A labeled doors and frames, and that some additional frames only will be replaced. However, the licensee proposes to retain many unlabeled doors on the basis that they are either oversize and identical in construction to Class A or B labeled fire doors, and therefore not tested and labeled, or that engineering drawings and purchase order documentation specify a labeled fire door in the particular doorway. The licensee also proposed to leave in place one door frame which is tack-welded to the three hour rated metal wall in which it is installed, and an oversize rolling steel door in which is installed a pedestrian door.

Fire door test furnaces can accommodate doors up to 12 feet in height or width and up to 120 square feet in area. Larger doors cannot be tested and are termed "oversize." Underwriters Laboratories can furnish a Certificate of Inspection stating that an oversize door, except for its size, otherwise complies with all requirements for design, materials, and construction of a labeled fire door. A label indicating that a certificate has been issued is attached to the door. This label is the only way to identify such "oversize" doors.

Engineering drawings and purchase order documentation, in and of themselves, only indicate that a door of certain design was to be procured for installation in a given doorway. They do not demonstrate that the intended door was, in fact, installed. The door should be uniquely identified in a way which associates it with the design drawings and test results. The UL or FM label on a door is the commonly accepted form of unique identification. Unless some other form of permanent identification is found on an otherwise unlabeled door, there is not obvious indication of the fire resistance rating of the door. Fire door frames should likewise be tested and labeled, except that frames constructed in accordance with the provisions of UL Standard 63 may be labeled without further testing. Again, a UL or FM label is an indication that the construction of the frame conforms to an acceptable design.

Subsequent to the January 29, 1979 telecon with the staff, the licensee conducted a field survey and provided another submittal on January 7, 1979 in which the ratings of several doors were corrected and the roll-up door was proposed to be replaced with a rated door and frame assembly and a suitably constructed wall. However, it did not propose to replace any of the other doors on which there were questions of fire resistance rating, nor did it provide the technical basis for permitting these doors to remain in place.

In view of the lack of information that can establish the fire resistance ratings of these doors, and the lack of bases to permit these doors to remain in place, we recommend that the licensee replace all unlabeled fire door and frame assemblies with properly rated fire door and frame assemblies.

3.2.7 ALARM CIRCUIT SUPERVISION

SER Section 3.2.7 indicates that the licensee will perform a study to insure that the signal initiating and alarm circuits for all fire detection

and suppression systems are supervised to detect circuit breaks, ground faults, and power supply failures, and to annunciate in the control room. Additional modification(s) will be proposed if the study determines the need for such.

By letter dated Decewmber 28, 1978, the licensee provided the results of such a study to confirm that the presently installed detection system circuits meet the requirements for Class B supervision as defined by NFPA 72D. The proposed detection system will be installed to meet the same supervision requirements. Additional modification is therefore unnecessary.

We recommend acceptance of the licensee's conclusion that there is not need for additional modification to the signal initiating and alarm circuits of the fire detection and suppression systems.

3.2.8 REMOTE SHUTDOWN STATIONS

Section 3.2.8 of our SER indicates that the licensee will perform an analysis to determine whether a single fire at any location could cause loss of both local control and control from the control room of any safe shutdown system. If the analysis indicates such loss could occur, appropriate corrective modification will be provided.

The Licensee's response of December 28, 1978 indicated that the results of such study revealed that the only location where a fire could simultaneously cause loss of local control and control from the control room of any safe shutdown system is the relay room.

Because the licensee has already committed to provide an alternate shutdown capability independent of this room, we recommend that the staff not require additional modification to preserve the shutdown capability from the fire in the relay room.

3.2.9 TRANSIENT COMBUSTIBLES

SER Section 3.2.9 indicates that the licensee will conduct a study to determine the effect of transporting transient combustibles through zones that were not previously analyzed for their presence. Corrective modifications will be provided as needed.

In their response dated November 1, 1979 the licensee indicated that a 55 gallon drum of oil or 1,000 pounds of Class A transient combustibles were postulated in each area, but the fire loading in each area still remained within the rating of the surrounding fire barriers.

The transient combustible study was intended to determine the maximum amounts of combustibles that could be brought into or through each plant area. The results of this study would provide bases for determining the size of an exposure fire to be postulated in each plant area. Since such a fire would be

concentrated and localized, it is meaningless to consider the increase in fire loading caused by the transient combustibles. The fire loading is the average heat content per square foot, and is equivalent to assuming that all combustibles are evenly distributed over the entire floor area of the fire area under consideration. It is not only unrealistic, but physically impossible, to distribute evenly 55 gallons of oil or 1,000 pounds of Class A combustibles over a large plant area such as the auxiliary building which has tens of thousands of square feet of floor area on each level.

Without additional information, we find that the licensee lacks justification in contending that at least one division of redundant safe shutdown equipment or cabling located in the same fire area would be preserved in the event of a major fire in that area. We therefore recommend that the licensee, in those plant areas that contain redundant equipment required for safe shutdown, provide an alternate means of performing the function of such equipment independent of the area containing the equipment, or to separate one division of such equipment from its redundant counterpart by a three hour fire barrier.

The areas in which these modifications should be required include, but are not limited to:

- The auxiliary feedwater pump area (see SER Section 3.2.1).
- Decay heat closed cycle cooling water pump and nuclear service closed cycle cooling water pump area.
- Engineered safeguard MCC area.

Protection of redundant cabling was discussed in the evaluation of SER Section 3.2.2, CABLE SEPARATION.

3.2.10 CONTROL BUILDING HVAC LOSS

Our SER, Section 3.2.10 indicates that the licensee will provide a study of the possible effects of a fire in the area containing the control building HVAC equipment and propose corrective measures if a fire in the area could adversely affect the safe shutdown.

On December 28, 1978, the licensee provided the results of a study which indicated that the only major redundant components that could be simultaneously affected by a single fire are ventilating exhaust fans. A test was run with these fans out of service but with doors open, and it was estimated that the control room temperature could reach 100°F. Since the plant's Architect-Engineer assured that they do not anticipate any equipment operating problem because of a 95°F-100°F control room temperature, the licensee does not believe any additional modification is necessary.

We recommend acceptance of the licensee's submittal for this item.

3.2.11 INTERIOR HOSE STATION STANDPIPE LESS THAN 4 INCH DIAMETER

SER Section 3.2.11 indicates that the licensee will deomonstrate, by test or calculation, that the subject standpipes are capable of delivering a water flow of at least 100 gpm at a residual pressure of at least 65 psig at the outlet of the hose station.

On July 5, 1979 the licensee provided a sumbittal indicating that calculations had been performed which confirmed the subject standpipes are capable of delivering 100 gpm at a residual pressure of at least 65 psig.

We recommend acceptance of the results of the licensee's calculations.

3.2.12 PROTECTION OF RELAY ROOM

SER Section 3.2.13 indicates that the licensee will identify those areas in the relay room where he proposes to provide a manually actuated fixed water suppression system or will coat the electrical cables with an appropriate flame retardant coating. This is in addition to the licensee's other commitment to:

- Replace unlabeled doors and upgrade barrier penetration seals to provide a three hour barrier enclosing the room.
- Provide manual hoses to reach all points of the room effectively.
- Provide a shutdown capability independent of cabling and equipment in this area.

By letter dated October 11, 1979, the licensee indicated that no additional protection for the room is planned because this area will be effectively covered by manual hoses.

The manual hose coverage is a separate requirement in the guideline documents which the licensee has committed to provide (Section 3.1.2 of the Fire Protection SER). We recommend that the staff does not accept manual hose coverage as an alternative to what was intended to be a concurrent commitment. We recommend that the staff reaffirm our position as described in the first two paragraphs of Section 5.11.6 of the SER dated September 19, 1978.

3.2.14 FIRE DOOR SUPERVISION

SER Section 3.2.14 indicates that the licensee will provide a proposal with regards to fire door supervision. The staff agreed to address the acceptability of the licensee;s proposal upon completion of our review of the submittal.

By letter dated November 1, 1978, the licensee provided a list identifying those fire doors that are electrically locked and alarmed, fire doors that are mechanically locked, and fire doors that are neither locked nor alarmed.

The licensee's submittal, however, did not include any justification of the decision not to supervise those fire doors which are neither locked nor alarmed. Specifically, the licensee did not describe the hazards (including combustibles and safety-related equipment or cabling) on both sides of each fire door that are not supervised, and the safety consequences of a fire communciating through these open doorways.

We, therefore, recommend that the licensee electrically supervise those fire doors that are presently neither locked nor alarmed, with a time delay alarm in a constantly occupied area, or lock closed these doors.

3.2.15 ENGINEERED SAFEGUARD CABINETS

Section 3.2.15 of the SER indicates that the licensee will perform a study to determine if safe shutdown of the reactor can be accomplished assuming loss of both engineered safeguards actuation (ESAS) cabinets in Fire Zone CB-3C. If the sutdy indicates that the capability for safe shutdown could be adversely affected the licensee will propose additional fire protection measures.

By letter dated September 29, 1978, the licensee provided the results of his study concluding that the capability to achieve safe shutdown is not adversely affected by the loss of both ESAS cabinets. The study is based on two major assumptions:

- The ESAS cabinets were totally disabled by an exposure fire such that they did not cause an equipment to start or stop, and
- A LOCA neither preceeded, occurred coincident with, nor followed the postulated fire.

The latter assumption should be acceptable because it is in general conformance with our guidance documents. We recommend, however, that the staff receive justification from the licensee to substantiate the first assumption. Until the information is available, we recommend that the licensee install additional fire protection as indicated in the SER.