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RECIP.NAME RECIPIENT AFFILIATION
FERGUSON,R.L. Plant Systems Branch

SUBJECT: Forwards final inputs for six month period re util fire protection review,Recommends acceptance of plans for fire detection sys & proposal for screen wash pump as backup. Mod necessary on water suppression sys.

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MAY

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January 22, 1980

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

RE: Turkey Point Nuclear Power Plant, Fire Protection Review Items 3.1.1, 3.1.2, 3.1.6, 3.1.7, and 3.1.15

Dear Bob:

Attached hereto are the final Brookhaven National Laboratory inputs scheduled for this 6 month period:

3.1.1 Fire Detection System

3.1.2 Fire Water Supplies

3.1.6 Water Suppression System

3.1.7 Foam Suppression

3.1.15 Hydrogen Supply Lines

Respectfully yours,

R. E. Hall

R. E. Hall, Group Leader
Reactor Engineering Analysis

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TURKEY POINT

Fire Protection Review

Item 3.1.1 Fire Detection System

The SER states early warning automatic fire detection systems will be provided in the switchgear rooms and in the charging pump rooms.

The licensee's submittal with a cover letter dated December 20, 1979 provided design details for asterisked items 3.1.1(4) and 3.1.1(5) as noted in the SER. The information is in the form of layout drawings and manufacturers equipment descriptions. The areas addressed by this submittal are the diesel generator rooms and the switchgear rooms.

The majority of fire detection heads are of the ionization high voltage type. A flame detector will be installed in the diesel generator room and a heat detector in the diesel day tank room. The diesel generator rooms are zoned on a single zone with remote lamps at a zone control panel. The remote lamps divide the diesel generator building into two mirror images with a diesel generator and its associated day tank on a single remote lamp. The zone control panel is located between the Rod Control Drive Rooms.

The switchgear rooms are divided by elevation and division. Each switchgear room associated with a unit (either Unit 3 or 4) has its own zone. The zone is then divided into three remote lamp annunciation at the zone panel.

On drawing 5177-100-E-12, the plan view shows detector 16-1 and 16-6 as DFS-10 Pyrotronics flame detectors while the electrical systematic at the top of the page labels these detectors as DTF136P Pyrotronics Thermal detectors. The flame detector should be installed in the diesel generator room.

Based on the above review and comment, we recommend that the preliminary plans and equipment be accepted. Any significant changes in the preliminary submittal should be reviewed and approval obtained.

Item 3.2.2 Fire Water Supply (3.2.3)

The SER dated March 21, 1979, Item No. 3.1.2 "Fire Water Supply" requires the licensee to provide an analysis of the fire water demand at the plant. This analysis would demonstrate the adequacy of the screen wash pumps to provide adequate back-up to the fire pumps. The SER also required, if the analysis proved favorable, that the spool piece connection between the screen wash pump and the fire protection system be permanent.

An analysis submitted under cover letter dated May 21, 1979 is inadequate. No substantiating calculations have been submitted to verify numbers given.

A revisit to the plant in October, 1979 verified that the curb would prevent oil from entering the condensate pit and the heat from the postulated fire would not actuate sprinklers in the pit. Also during our visit various deluge

systems for the hydrogen seal oil unit, for the auxiliary transformer and for the main transformer were noted in the area where a common fire could create the maximum fire water demand. All these deluge systems have to be taken into consideration when calculating the fire water demand because they could be set off by a common fire. With the addition of these deluge systems to the fire water demand, the screen wash pump rated at 1680 gpm at 84.4 psi cannot meet this requirement.

The plant's proposal to use the screen wash pump as a backup to the fire pumps is unacceptable. If the pumps could meet the demand, the connection between the screen wash system and fire protection system would have to be permanent.

Based upon the above review, the evaluation documented in the May 21, 1979 letter and the proposed modification documented in the October 8, 1979 letter are unacceptable. Please refer to Section 3.2.3 (Fire Water Supply).

3.1.6 Water Suppression Systems

The SER states that fixed automatic water spray protection will be provided for the door and ventilation openings of the switchgear rooms which face main and auxiliary transformers.

The licensee submittal dated October 8, 1979 provided design details for asterisked item 3.1.6 "Water Suppression Systems" as noted in the SER. The areas addressed by this submittal are the water curtains for Unit 3 Switchgear Room Door and Vent and for Unit 4 Switchgear Door and Vent.

Two sidewall heads protect the louvered opening while one head protects the door opening. The basic design criteria appears adequate but we recommend that the following changes be made.

1. Minimum pipe size should be 1 inch.
2. No bushings should be used.
3. Heat collectors should be provided on sprinkler heads.
4. A waterflow switch should be provided on feed with annunciation in the control room.
5. The feed for these sprinkler heads should be independent of the feeds for the deluge systems.

Based upon the above review, the general criteria is acceptable but we recommend that the design be modified as indicated above. Overall approval is based on the acceptance of these modifications.

3.1.7 Foam Suppression

The SER states that portable foam suppression equipment will be provided and that a means will be provided for introducing foam from a portable foam system into the diesel generator rooms and diesel fuel oil day tank rooms.

The licensee under cover letter dated October 8, 1979, submitted the design details for the implementation of SER item 3.1.7 "Foam Suppression." The SER requires the utility to provide access for introducing foam into the diesel generator rooms and diesel generator day tank rooms without opening doors to expose fire brigade personnel to a fire atmosphere.

The design consists of two (2) four-inch sleeves through the wall and one four-inch opening in the door for each diesel generator room. The location of openings appear to be placed to provide complete coverage of the diesel generator area. We recommend that the utility confirm that the penetrations are of sufficient size to accommodate the portable foam equipment purchased by the plant.

The drawings submitted do not show the penetrations into the diesel day tank room. We recommend that final approval for 3.1.7 "Foam Sppression" be withheld until the penetrations for the diesel day tank room have been submitted and reviewed.

3.1.15 Hydrogen Supply Lines

The SER states that the use of the hydrogen supply lines in the auxiliary building corridor will be discontinued and new lines will be provided for use outside of this area.

The licensee submittal, with a cover letter dated October 8, 1979, provided design criteria for asterisked item 3.1.15 concerning the rerouting of the hydrogen supply line. Presently this supply line is routed through the auxiliary building corridor thus exposing safety related equipment.

The licensee has indicated that the existing supply line will be removed and the new hydrogen line will run on the roof of the Auxiliary Building to a point near the Units 3 and 4 volume control tanks. At this point the lines will penetrate the roof and be routed to the respective tanks.

Based on the review of the above criteria, the rerouting of the hydrogen supply line outside the Auxiliary Building corridor is acceptable.