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October 11, 1984

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Byron Generating Station Units 1 and 2
Braidwood Generating Station Units 1 and 2
Fire Protection
NRC Docket No. 50-454/455 and 50-456/457

Dear Mr. Denton:

This is to provide additional information regarding fire protection at Byron and Braidwood Stations. Changes to the Byron Unit 1 safe shutdown analysis and FSAR question 10.65 are in response to additional NRC concerns. Also included are voluntary changes to update design information regarding fire detection and fire suppression systems.

This is an advanced transmittal of changes which will be included in future Fire Protection Report and FSAR amendments.

Please address further questions regarding this matter to this office.

One signed original and fifteen copies of this letter are provided for NRC review.

Very truly yours,

D. L. Farrar
Director of Nuclear Licensing

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All of the equipment and cables are associated with electrical Division 12. Therefore, a fire in this zone will not affect the ability to safely shut down the plant since the redundant components in the other division will still be available.

2.4.2.30 Diesel Fuel Oil Storage Room 1A (Fire Zone 10.2-1)

Safe shutdown equipment located in this zone and safe shutdown power cables routed through this zone are listed in Table 2.4-39.

A fire in this zone could disable the Division 11 diesel generator and also the long term fuel supply to the 1B auxiliary feedwater pump day tank. The fuel supply in the 500 gallon day tank is sufficient for approximately 7 hours of operation of the diesel driven AFW pump at 100% load, and will supply the condensate storage tank inventory (Tech Spec limit) to the steam generators. The day tank can be refilled by opening two manual valves and gravity feeding from the 125,000 gallon outdoor storage tank.

2.4.2.31 Unit 1 Auxiliary Building Basement (Fire Zone 11.1A-0)

Safe shutdown equipment located in this zone and safe shutdown power and control cables routed through this zone are listed on Table 2.4-40.

The equipment and cables are all associated with electrical Division 11, therefore, a fire in this zone would not affect the ability to safely shut down the plant.

2.4.2.32 Unit 2 Auxiliary Building Basement (Fire Zone 11.1B-0)

Safe shutdown equipment located in this zone and safe shutdown power and control cables routed through this zone are listed on Table 2.4-41.

The equipment and cables are all associated with electrical Division 12, therefore, a fire in this zone would not affect the ability to safely shut down the plant.

2.4.2.33 Auxiliary Building General Area, Elevation 346 feet 0 inch (Fire Zone 11.2-0)

Safe shutdown equipment located in this zone and safe shutdown power and control cables routed through this zone are listed in Table 2.4-42.

Redundant cabling for the essential service water pumps A and B are present in this zone. The cabling is associated with the cubicle coolers, pumps, and lube oil pumps. This deviation from Appendix R guidelines has been identified and addressed in Subsection A5.8.9.

Also present in this zone are redundant cables 1CV030 and 1CV032 which are associated with the auxiliary lube oil pumps for centrifugal charging pumps 1A and 1B, respectively. These pumps build up lube oil pressure prior to starting the centrifugal charging

pumps. Loss of the lube oil pumps can be circumvented by starting the charging pumps locally at the switchgear in accordance with approved station procedures. Once the charging pumps are started, lube oil pressure is maintained by a separate shaft driven pump. Since the effects of a fire on these pieces of equipment can be circumvented, the ability to safely achieve and maintain hot standby is not affected.

Also present in this zone are cables associated with both divisions of RHR pumps and the RHR cubicle coolers. These cables are:

Division 11

1RH001
1VA063
1VA064
1VA148
1VA150
1VA251

Division 12

1RH008
1VA066
1VA067

The Division 12 cables will be repaired according to plant procedures so that the plant can be safely brought to cold shutdown within 72 hours.

2.4.2.34 Residual Heat Removal Pump 1A Room (Fire Zone 11.2A-1)

Safe shutdown equipment located in this zone and safe shutdown power and control cables routed through this zone are listed in Table 2.4-43.

Only Division 11 equipment and cables are present in this zone, therefore, a fire in this zone would not affect the ability to safely shut down the plant.

2.4.2.35 Containment Spray Pump 1B Room (Fire Zone 11.2C-1)

No safe shutdown equipment is located in this zone. Safe shutdown power and control cables routed through this zone are listed in Table 2.4-44.

Only Division 12 cables are present in this zone, therefore, a fire in this zone would not affect the ability to safely shut down the plant.

2.4.2.36 Residual Heat Removal Pump 1B Room (Fire Zone 11.2D-1)

Safe shutdown equipment located in this zone and safe shutdown power and control cables routed through this zone are listed in Table 2.4-45.

Only Division 12 equipment and cables are present in this zone, therefore, a fire in this zone would not affect the ability to safely shut down the plant.

2.4.2.37 Auxiliary Building General Area Elevation 364 feet
0 inch (Fire Zone 11.3-0)

Safe shutdown equipment located in this zone and safe shutdown power, control, and instrumentation cables routed through this zone are listed in Table 2.4-46.

This fire zone contains redundant cabling and equipment for several systems needed to achieve hot standby. These include components of both divisions of the essential service water system, and the centrifugal charging pump system. Though redundant cabling is present, the Division 11 cables for both the essential service water system and the centrifugal charging pump systems are wrapped for protection from fires. Also present are cables associated with 3 out of 4 main steam atmospheric relief valves. The fourth valve is not affected. Also, local manual operation of all valves is still possible. One valve is sufficient to shut down the plant. Also, the component cooling equipment and cabling present in this zone were identified as a deviation from Appendix R guidelines and are addressed in Subsection A5.8.15 which outlines the protection of the "O" pump of the component cooling system. With the above protection, the ability to safely achieve and maintain hot standby would not be affected due to a fire in this zone.

Redundant cabling for the RHR system is present in this zone but the Division 11 cables associated with the RHR pump 1A and the cubicle cooler present in the RHR pump room have been wrapped for protection from fire. Therefore, in order to safely bring the plant to cold shutdown following a fire in this zone, only Division 11 cable 1RH074 and transmitter 1TE-0604 must be repaired.

2.4.2.38 Auxiliary Building Unit 1 Area, Elevation 364 feet
0 inch (Fire Zone 11.3-1)

Safe shutdown equipment located in this zone and safe shutdown power, control, and instrumentation cables routed through this zone are listed in Table 2.4-47.

Redundant cabling for the centrifugal pump system and the essential service water system are present in this zone. Both of these systems are needed to bring the plant to hot shutdown. Protection from fire is provided by wrapping the cable trays for the Division 12 cables associated with the centrifugal charging pump. The Division 12 cables present in this zone for the essential service water system are control cables, therefore, the pump can be manually started by following plant procedures. Since the effects of a fire in this zone on the above equipment have been mitigated, the ability to safely achieve and maintain hot standby has not been affected.

Also present in this zone is redundant cabling associated with the RHR system. Of the three Division 12 cables present in the zone, cables 1VA152 and 1VA153 are protected from fire. Only

Control and control power cables for diesel generators 1A and 1B are routed through this zone. Both diesel generators can be started locally since control power feed 1DG157 is available for DG1A and control power feed 1DG159 is available for DG1B. In any event, DG1B must be operable since, as indicated in the discussions which follow, in certain cases only Division 12 equipment would be available if a fire were to occur in this zone.

Deviations from Appendix R guidelines involving the following safe shutdown equipment have been identified and justified for this zone (Refer to Subsection A5.8.22): MCC131X5 and MCC132X5; auxiliary feedwater pumps 1A and 1B; diesel oil transfer pumps 1A, 1C, and 1D; Division 12 miscellaneous electric equipment room supply fan; and Division 11 and 12 ESF switchgear room supply fans. As indicated in Subsection A5.8.22, AFW pump 1B could be started manually at a local panel in the event of a fire in this zone. Also, diesel oil transfer pump 1B and the above Division 12 fans would remain available.

Control cable 1VX114 for the Division 12 ESF switchgear room supply fan is routed through this zone. This cable is redundant to the Division 11 switchgear room supply fan cables 1VX001, 1VX003, and 1VX004. Therefore, cable 1VX114 will be protected or rerouted.

Control cables and one power cable for centrifugal charging pump 1A and control cables for centrifugal charging pump 1B are routed through this zone. Pump 1B could still be operated manually at the switchgear in the event of a fire in this zone.

Also routed through this zone are control cables for ESW pumps 1A and 1B; ESW pump 1A cubicle cooler; component cooling pumps "O", 1A, and 1B; and ESW cooling tower fans OA, OB, OE, and OF. These components can be operated manually at their respective switchgear. In addition, control cables for main steam atmospheric relief valves 1A, 1B, 1C, and 1D are routed through this zone; however, these valves can be operated manually using the hand pumps located in the main steam pipe tunnel.

Cables required for all reactor coolant wide range hot leg RTD's and all incore thermocouples are routed through this zone. As indicated in Subsection 2.4.2.21, dual element RTD's will be provided, and the cables for these RTD's will be routed such that loss of all indication will not occur in the event of a fire in this zone. However, this modification will not be completed prior to fuel load. Therefore, until the new panel is installed, the operators will utilize Train B of the heated junction thermocouples (Reactor Vessel Level) for inference of reactor coolant hot leg temperature. Cables for this instrument are independent of this zone.

The reactor vessel level instrumentation is described in detail in a June 7, 1982 letter (Tramm to Denton, "Detection of Inadequate Core Cooling"). The physical location of the thermocouples within the reactor vessel demonstrates that the temperatures of the unheated junction thermocouples will be the same as the core exit thermocouples.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE*</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 11, 1983 Edition - Foam Systems</u>					
18.20-0(NS)	11-1983-2-4.2	1	All valves used in the foam system protecting the outdoor fuel oil storage tank should be indicator type and be listed.	Two main valves are indicating type - not listed.	It is M&MPC opinion the non-listed valves will have no impact on the operation of the systems. These tanks are not related to the safe shutdown of the plant.
18.20-0(NS)	11-1983-2-4.3	2	All pipe fittings shall be American Standard for the pressure class involved.	Water pressure in the plant exceeds 175 psig.	The design of the pipe and fittings has been verified to be adequate for the maximum operating pressure of the system.
18.20-0(NS)	11-1983-2-5.3.3	3	The tank automatic detection equipment shall be provided and the supervision so arranged that failure of equipment or loss of power will result in positive notification of an abnormal condition.	Changing to manual system; detection will be in place for alarm only.	Supervision will be added to detection system within one year.
18.20-0(NS)	11-1983-2-6.3	4	The foam specification shall state that the installation conforms to NFPA 11.		CECo will request letter from manufacturer addressing conformance to NFPA 11 requirements by 5% power.
18.20-0(NS)	11-1983-5-2	5	The completed system shall be tested by qualified personnel to meet the approval of the authority having jurisdiction.		Testing completed.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 12, 1980 Edition - Carbon Dioxide</u>					
All CO ₂ Systems (S&NS)	12-1980-1-10.3.2	1	Provide the hydrostatic test pressure used on the valves controlling the low pressure CO ₂ systems.		Station will obtain vendor information for M&MPC review by 5% power.
All CO ₂ Systems	12-1980-1-11.2	2	Verify that all carbon dioxide systems will be thoroughly inspected and tested at least annually.		System demonstration procedure was reviewed; will be 18 month surveillance. This frequency is considered to be satisfactory.
3.2 A-1, 3.2 B-1 3.2 C-1, 3.2 D-1 3.2 E-1, 3.1-1(S)	12-1980-2-4.1	3	Deep-seated fire hazards (cable tunnel and cable spreading rooms) should have system concentration testing run for at least 20 minutes.	Retests were conducted except for upper cable spreading room.	Station will conduct test in upper cable spreading room and M&MPC will witness test and review results.
All CO ₂ Systems (S&NS)	12-1980-1-6.2	4	Provide warning signs in all areas protected by CO ₂ systems for personnel safety.		Signs have been provided.
8.3-1 18.11-0	12-1980-1-9.6.1	5	Verify that the CO ₂ storage tanks (10 ton and 2 ton) were tested and marked in accordance with specifications of ASME for unfired pressure vessels.		Station will obtain vendor information. M&MPC will review by 5% power to verify testing performed.
8.3-1 18.11-0	12-1980-1-9.6.4	6	Verify that the refrigeration system can maintain 0 F in the storage container.	This is accomplished by the pressure control settings.	Pressure control features of design ensure that 0°F will be maintained. No further action required.
9.1-1, 9.2-1, 9.3-1, 9.4-1, 11.4 A-1(S)	12-1980-1-5.3.8	7	Fuel supply should be automatically shut off to the diesel generators and diesel driven auxiliary feedwater pump in case of fire in those areas.		Diesel engine is required for safe shutdown and fuel will not be interlocked to shut off. The room is protected by automatic CO ₂ in the event of a fire.
3.1-1(S)	12-1980-1-8.3.4	8	The control panel and manual actuation of the carbon dioxide system protecting the cable tunnel should be relocated from the 401' El. to the 426' El. for better accessibility.	Relocation of the control panel and manual actuation of the carbon dioxide system is not required.	Will provide instruction signs in addition to operator training in system activation, including location of manual pull stations by fuel load.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 12A, 1980 Edition - Halon 1301 Fire Extinguishing Systems</u>					
3.3A-D-1(S)	12A-1980-1-9.1.2	1	The number of multiple reserve cylinders should be determined by the Authority Having Jurisdiction (NRC).	Additional halon capacity was added in response to NRC concerns. Refer to Appendix A5.4 for a discussion of the halon systems.	A back-up CO ₂ extinguishing system is provided. Therefore, no additional halon cylinders are required for the purpose of backup.
3.3A-D-1(S)	12A-1980-1-8.5.5	2	Warning and instruction signs at entrances to and inside protection areas shall be provided.		Will provide signs by December 31, 1984. CO ₂ complete. Halon in progress.
3.3B-1(S)	12A-1980-2-2.2-3	3	The extended discharge setting should be tested to ensure accuracy. (It was tested in a manual mode and no automatic system was provided.)		System will be retested and placed in automatic mode by fuel load. M&MPC to review existing documentation.
13.0 (Q.A. Vault Service Bldg.) (NS)	NFPA 12A-1980 1-8.1	1	Alarms shall be installed in accordance with 72D.	Verify that fire and trouble alarms transmit to control room panel 1PM09J formerly OPM05J.	Alarm test has been conducted.
13.0 (Q.A. Vault Service Bldg.) (NS)	NFPA 12A-1980 1-8.1	2	Alarms shall be installed in accordance with 72D.	Verify that alarms transmit to control room panel OPM01J and to the SE recorder printout.	Alarm test has been
13.0 (Q.A. Vault Service Bldg.) (NS)	NFPA 12A-1980 1-6.3.10	3	All manual operating devices shall be identified as to the hazard they protect.	Label the two manual pull stations.	Signs will be provided by December 31, 1984.
13.0(NS)	NFPA 12A-1980- 1-8.5.5	4	Warning and instruction signs shall be provided at entrances and inside the room.	Provide signs.	Signs will be provided by December 31, 1984.
13.0(NS)	NFPA 12A-1980 1.9.2	5	Halon 1301 shall comply with Military Spec. MIL-M-1221 8 B.	Obtain vendor letter of halon purity.	Station will obtain halon purity spec's. from vendor who refilled cylinders by December 31, 1984.
13.0(NS)	NFPA 12A-1980 1-7.4	6	The completed system shall be tested to meet the approval of the authority having jurisdiction.	To assure that the freon substitute test gas provided a meaningful test, list the weight(s) of the freon for the 1/28/81 test.	Station will obtain weight of freon test gas from Viking by 5% power.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 12A, 1980 Edition - Halon 1301 Fire Extinguishing Systems (Cont'd)</u>					
13.0(NS)	NFPA 12A-1980 1-7.4	7	Only listed or approved equipment shall be used in the halon system.	Verify that Alison control panel OFF02J is approved for fire protection use.	Station will obtain letter from Alison that control panel is U.L. listed or F.M. approved and then provide U.L. or F.M. label by 5X power.
13.0 (NS)	NFPA 12A-1980	8	Plans and specifications shall include all pertinent items necessary for the proper design.	The Viking 1/28/81 test report refers to 1-100 lb. reserve halon cylinder, however, there is no reserve backup for this system.	Investigate why Viking referred to a 100 lb. reserve cylinder and then revise test report accordingly by 5X power.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 13, 1983 Edition - Sprinkler Systems</u>					
All zones sprinklered All System	13-1983 2-9.2.2	1	Gauges on system risers shall have a maximum limit not less than twice the normal working pressure.	Gauges on riser are 300 psi.	Gauges with pressure of 300 psi are considered more than adequate on the systems in the plant.
Stairwell sprinklers in 3 fire (S) zones Aux. Bldg. P-18	13-1983 1-8.1.1	2	Only approved devices should be installed on sprinkler systems. (shut-off valve)	"N" stamped and approved (UL) may not be available. The valve fits the description in NFPA 13 other than it closes much faster than the required 5 seconds.	Present valve arrangement does not compromise system integrity. U.L. listed valves will not be installed in lieu of "N" stamp valves.
8.3-2 Turbine Bldg. 401' L-36	13-1983 1-8.1.1	3	Only approved devices should be installed on sprinkler systems (Hanger for feed main to radwaste area)	The main is wrapped with cable rather than a tested and approved hanger.	Main will be rerouted by 5% power (temporary condition).
All zones (S&NS)	13-1983 4-2.5.1	4	A minimum of 18" clearance shall be maintained under sprinkler heads.	The existing sprinkler configuration does not meet this requirement.	Viking modifications are in progress. Complete by 5% power.
Most zones (S&NS)	13-1983 4-3.2.2	5	Sprinklers shall not be located more than 20" below ceilings.	The existing sprinkler configuration does not meet this requirement.	Viking modifications are in progress. Complete by 5% power.
13-1983	4-4.1.1	6	Sprinklers should be extended below obstructions greater than 4' wide above hazards.	The existing sprinkler configuration does not meet this requirement.	Viking modifications are in progress. Complete by 5% power.
8.3-1(NS)	13-1983 4-4.1.1	6 (Cont'd)	(a) Turbine 401' above oil purifier.	The hazards are unprotected due to obstructions. This should be changed.	
8.5-1(NS)	13-1983 4-4.1.1	6 (Cont'd)	(b) Turbine 426' above BFPT lub. oil conditioner.	The hazards are unprotected due to obstructions. This should be changed.	
8.6-1(NS)	13-1983 4-4.1.1	6 (Cont'd)	(c) Turbine 426' along 18 wall (various comb. cabling not protected).	The hazards are unprotected due to obstructions. This should be changed.	

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 13, 1983 Edition - Sprinkler Systems (Cont'd)</u>					
8.3-1(NS)	13-1983 4-4.13	6 (Cont'd)	(d) Turbine 401' along 18 wall (various comb. cabling not protected).	The hazards are unprotected due to obstructions. This should be changed.	
	13-1983 4-1.1.1	7	Additional sprinklers should be added to protect specific hazards.	These areas are currently unprotected and the sprinklers recommended should be installed.	Viking modifications are in progress. Complete by 5% power.
8.5-1(NS) Heater bay 426' E-5	13-1983 4-1.1.1	7 (Cont'd)	(a) Oil vapor extractor. (20' radius)	These areas are currently unprotected and the sprinklers recommended should be installed.	
8.5-1(NS) Turbine 426' Various points	13-1983 4-1.1.1	7 (Cont'd)	(b) Cable concentrations.	These areas are currently unprotected and the sprinklers recommended should be installed.	
8.5-1(NS) Turbine 426' F-3	13-1983 4-1.1.1	7 (Cont'd)	(c) Area extending 20' south of H ₂ seal oil unit.	These areas are currently unprotected and the sprinklers recommended should be installed.	
8.5-1(NS) Turbine 426' C-14 (Hatchway above)	13-1983 4-1.1.1	7 (Cont'd)	(d) Sidewall sprinklers needed over steam driven auxiliary feedwater pump turbine.	An oil hazard exists with a hatchway to the turbine floor which needs protection.	
All zones/S sprinkered	13-1983 3-13.1.3	8	Sprinkler system fittings should be examined to determine if they are of the heavy pattern type due to pressure on systems exceeding 175 psi.		The design of the pipe and fittings has been verified to be adequate for the maximum operating pressure of the system.
8.3-1(NS)			- Turbine 401' along 18 wall (various combustible cabling not protected).	This item is duplicate of 8.3-1(NS) part (d) above.	Viking modifications are in progress. Complete by 5% power.

Note: Some areas could not be visually inspected due to obstructions and measurements could not be obtained. These areas were reviewed against as-built drawings indicating piping dimensions and no deviations were observed in the sprinkler systems.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 13A, 1981 Edition - Inspection, Testing, and Maintenance of Sprinkler System</u>					
All Sprinklered Zones (S&NS)	13A-1981-3-5.1.1	1	A stock of 24 sprinklers should be maintained at all times including all temperature types that are utilized in the plant.		Will be done by SZ power. Sprinklers have been ordered.
All Sprinklered Zones (S&NS)	13A-1981-2-6.1	2	A riser flow test should be performed quarterly on main drain valves noting pressure gauge readings with unrestricted water flow with the main drain valve wide open.		Will write procedure for M&MPC review by fuel load.
All Sprinklered Zones (S&NS)	13A-1981-4-5.2	3	Valves controlling water supply to alarm devices should be sealed or locked in the normally open position.		Will provide seals by fuel load in addition to inspection procedures for valve surveillance.
All Exterior Zones (S&NS)	13A-14 .3.1	4	Quarterly each post indicator valve should be given a "spring" or torsion test.		Monthly the station will verify that lock is on and annually will open and close valve. This is considered adequate.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 14, 1983 Edition - Standpipe and Hose</u>					
A:1	14-1983-4-43.3	1	Each hose reel or hose rack throughout the station should be provided with a label affixed to include "Fire Hose for Use by Occupants" and operating instructions.		Fire hose will be utilized by trained fire brigade personnel only. Other than red color coded piping, no further instructions will be provided.
A:1	14-1983-7-1.4	2	Verification should be made where two or more standpipes are installed in the same building, that they are interconnected at the bottom.	Multiple supply loops are provided throughout the station.	No further action necessary.
A:1	14-1983-4-2.1	3	Verification should be made to assure that all existing angle valves on the standpipe systems are U.L. listed or F.M. approved.	Could not find listing on Anderson Greenwood Co. Valves. Other valves have no Mfg. MA. or Model No.	Existing valves do not compromise system integrity. Section III valves are required and will remain in place, as these valves are considered of equal quality to a listed valve.
A:1	14-1983-4-6.3.1	4	Verification should be made to assure that all 1 1/2 inch hose throughout the station is U.L. listed or F.M. approved.		Will do by fuel load.
A:1	14-1983-7-5.1.3	5	Verification should be made to assure that fittings used on the standpipe systems are "extra-heavy" where pressures exceed 175 psi.		The design of the pipe and fittings has been verified to be adequate for the maximum operating pressure of the system.
A:1	14-1983-7-2.2	6	Verification should be made to assure that isolating valves are provided on each standpipe riser. Valves should be arranged so that when any standpipe is impaired, all other standpipes will not have their water supply interrupted.		Design review and walkdown have been performed by S&L/M&M. Cross-tie lines and various valves have been added in containment and auxiliary building.
A:1	14-1983-7-6.1.1	7	Verification should be made to assure that all pipe hangers are of an approved type so they will sustain the loads and return the pipe in a secure position.		Piping supports are seismically designed in all safety related areas and have been reviewed by S&L.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 14, 1983 Edition - Standpipe and Hose (Cont'd)</u>					
All	14-1983-4-7.1	8	The flowing pressures at hose outlets exceed 100 psi each. Outlet shall be provided with an approved device to reduce the pressure with required flow at the outlet to 100 psi.		Fire brigade members will be trained for working pressures in excess of 150 psi. Brigade training will be documented.
All	14-1983-4-7.1	9	Where system pressures at any hose valve outlet exceed 150 psi, an appropriate warning sign should be provided at each outlet unless a pressure regulating device is provided.		Signs have been provided.
All	14-1983-7-7.1	10	An approved 3½" dial spray pressure gage should be provided at the top of each standpipe. Gauges shall be located in a suitable place where water will not freeze. Each gauge will be controlled by a valve having arrangements for draining.	The purpose of these gauges is to assure that minimum pressure requirements at the hose stations are met.	The normal operating pressures of the fire protection system have been reviewed and calculations indicate adequate pressure will be maintained. Therefore the gauges are not considered necessary.
	14-1983-4-1.1 and 4-3.1 and 4-4.1	11	Elevation No. 412 in containment No. 1 is adequately covered by hose connections from other levels. Elevation No. 412 does not have any hose connection in containment.		Elevation 412' is adequately covered by hose stations from adjacent levels in containment.
	14-1983--4.3.-	12	All nozzles for Class II service hose throughout the plant should be listed for use on Class A, B, and C fires.		Will be done by December 31, 1984, except for fuel handling building due to NRC not allowing spray nozzles.
	14-1983--4.1.1	13	Hose reel number 146 is located in an inaccessible location. This hose station should be re-located to a location in the same vicinity where it will not be obstructed.		This hose station has been relocated.
	14-1983-1-6.3	14	All 1½ inch hose should be properly connected to afford ready means of control of incipient fires without unnecessary delay.		Completed.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 14, 1983 Edition - Standpipe and Hose (Cont'd)</u>					
12.1-0	14-1983-4-4.3.4	15	Replace the straight-stream nozzles on hose reels 170, 171, and 173 with U.L. listed nozzles rated for Class A, B, and C fires. These hose stations are located in fuel handling areas.		Solid stream nozzles will remain in fuel handling areas.
	14-1983-1-6.3	16	Properly mount hose reel No. 140 to a wall so that the hose can be readily available during emergency conditions.	Hose reel found on floor.	Hose reel No. 142 has been properly relocated and mounted.
	14-1983-4-1.1	17	Hose reel No. 140 is located in an area obstructed by pipes and is inaccessible. This hose station should be re-located to a location in the same vicinity where it will not be obstructed.		Hose reel No. 142 has been properly relocated and mounted.
	14-1983-4-1.1	18	Hose reel number 137 is located in an inaccessible location. This hose station should be re-located to a location where it will not be obstructed.		Based upon S&L/MSM walkdown of 8-9-84, hose reel No. 137 is considered accessible.
(NS)	14-1983-5-2.3	19	The water supply for the hose connections in the "River Screen House" is not automatic. Revisions to the water supply should be made to provide an automatic water supply capable for supplying the streams first operated until the secondary sources can be brought into action.	A call must be made to control room to start pump.	No revisions to be made. M&M has accepted current design.
	14-1983-4-1.1	20	Hose reel numbers 207, 210, 215, and 212 are located in inaccessible locations. These hose stations should be relocated to locations where they will not be obstructed.	Hose station located in lower cable spreading area.	Hose stations 210 and 215 have been relocated and hard rubber hose will be provided on reel by fuel load. Hose stations 207 and 212 are considered accessible per 8-9-84 M&M/S&L walkdown.
	14-1983-4-1.1	21	The angle valve for hose reel No. 215 was blocked from piping and is inaccessible to open. The valve should be relocated so it is accessible during emergency conditions.		The angle valve has been relocated.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 14, 1983 Edition - Standpipe and Hose (Cont'd)</u>					
	14-1983-4-1.1	22	Hose reel No. 248 is located in an inaccessible location. This hose station should be relocated to a location where it will be readily accessible.	Must climb ladder to get hose.	Valve is accessible but hose reel will be mounted on wall by fuel load per 8-9-84 M&M/S&L walkdown.
	14-1983-4-4.3.4	23	Provide a U.L. listed nozzle for hose connection Nos. 249 and 250. The nozzle should be listed for Class A, B, and C fires.		Will be replaced by December 31, 1984.
	14-1983-4-1.1	24	The angle valve for hose reel No. 249 is inaccessible. The valve should be relocated to a conspicuous area where it is not obstructed.		Based upon 8-9-84 M&M/S&L walkdown, existing location is accessible. Due to congestion in the upper table spreading room, existing location is best available.
	14-1983-8-2.4	25	Verification should be made as to the last hydrostatic testing of hose Nos. 253 and 266. There was no date stamped on the hoses or the monthly inspection tags. If these hoses are overdue for testing, a program for testing should begin and continue at intervals in accordance with NFPA 1962.		Will be completed by fuel load.
	14-1983-4-4.1.1 and 4-4.3.4	26	Provide a U.L. listed hose and nozzle (for Class A, B, and C fires) at hose station No. 243.		Will be completed by December 31, 1984.
	14-1983-4-2.1	27	Provide a U.L. listed valve at the standpipe outlet of hose station 270 for attachment of hose.		Non-listed valve does not affect operability of hose station.
	14-1983-4-4.3.4	28	Verification should be made on all hose racks to assure they are suitable for the hose installed. Each rack should be U.L. listed for lined or unlined hose.	Check hose rack at station Nos. 179, 180, 256, 263, 264, 184, 265, and 178.	Will be done by fuel load.
	14-1983-7-6.2.1	29	The standpipe riser for hose reel No. 14 (Turbine Building, Elevation 451') should be supported in a manner to restrain movement of the pipe.		Will be done by fuel load.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 14, 1983 Edition - Standpipe and Hose (Cont'd)</u>					
	14-1983-3-2.3.1	30	The hose at location No. 27 should be properly mounted so it is in a condition where it is ready for use during emergency conditions.		Will be done by fuel load.
	14-1983-4-2.1	31	Replace the missing handwheel for the valve located at the outlet for hose Nos. 206 and 88.		Will be done by fuel load.
	14-1983-4-2.1	32	Replace the leaking valve in the hose cabinet at station No. 265 with a U.L. listed valve.		Will be done by fuel load.
	14-1983-7-6.2.1	33	The standpipe risers for hose reel Nos. 3 and 19 (Turbine Building, Elevation 451') should be supported in a manner to restrain movement of the pipe.		Will be done by fuel load.
	14-1983	34	Remove the 3/4" valved extension from the standpipe at hose station Nos. 6, 48, 30, 32, 86, 88, 70, 71, 119, and 116.		Will be done by fuel load.
	14-1983-7-6.2.1	35	The standpipe riser for hose reel Nos. 51, 48, 49, 32 (Turbine Building Elevation 426') should be supported in a manner to restrain movement of the pipe.		Will be done by fuel load.
	14-1983-4-2.1	36	Replace the leaking valve at hose station No. 88 with U.L. listed valve.		Will be done by fuel load.
	14-1983-7-6.2	37	The standpipe riser for hose reel No. 89 (Turbine Building, Elevation 401') should be supported in a manner to restrain movement of the pipe.		Will be done by fuel load.
	14-1983-8-2.-	38	Verification should be made as to the last hydrostatic testing of hose No. 118. The date stamped on the hose is 1/77. If 1977 was the last test date, arrangements should be made to test the hose.		Will be done by fuel load.
	14-1983-3-2.1	39	Hose connections should be provided in the warehouse building.		Will be done by 52 power.
	14-1983-2-1.3.1 and 2-1.3.2	40	Verification should be made on all standpipe under 50 ft. in height to be a minimum of 2 inches in size and all in excess of 50 ft. shall be at least 2 1/2 in. in size.		H&MPC will determine if existing design is acceptable.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 15, 1983 Edition - Water Spray Systems (Cont'd)</u>					
18.10C-1(NS)	15-1983-2-1.1	7	A cock handle should be installed on the alarm test connection for the water spray system protecting the unit auxiliary transformer 141-1.		An operator will carry a valve handle during testing and attach it to the stem. This would guard against malicious operation.
18.10D-1(NS)	15-1983-2-1.1	8	A cock handle should be installed on the alarm test connection for the water spray system protecting the unit auxiliary transformer 141-2.		An operator will carry a valve handle during testing and attach it to the stem. This would guard against malicious operation.
11.7-0(S)	15-1983-4-7.1.1	9	The main control valves supplying water to all the individual manual water spray systems protecting the charcoal filters for the auxiliary building should be supervised.	The individual valves are supervised but not the main valve.	Valves will be locked open and surveilled on a monthly basis by fuel load.
11.7-0(S)	15-1983-4-3	10	The thermostat sensing line on the charcoal filter water spray systems should extend farther than two filter sections to cover the hazard.	There are approximately 6 sections each with 9 levels of filter trays.	Detection will be redesigned by fuel load.
18.10A-1, 18.10B-1, 18.10C-1, 18.10D-1, 18.10E-1(NS)	15-1983-4-3	11	The transformer water spray systems should operate automatically upon actuation of the heat detection system for proper hazard protection.	The only automatic operation is on failure of the transformer.	Station does not intend redesign. Actuation of deluge valve trips transformer.
14.6-0(NS)	15-1983-4-7.1.1	12	The control valves on the manual water spray system protecting the VA gas charcoal filters in the radwaste building should be supervised.	Valve equipment Nos. OFP 513A and OFP 513B.	Valves will be sealed by SX power.
11.7-0(S)	15-1983-5-3.1	13	It should be verified that the discharge pattern of the nozzles protecting the charcoal filters is not obstructed by the angle bracing installed at the third tray level.		Will be corrected by fuel load.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 13, 1983 Edition - Water Spray Systems</u>					
13.10 E-1(NS)	15-1983-2-1.1	1	A cock handle should be installed on the alarm test connection for the water spray system protecting the system auxiliary transformer 1A2-1.		An operator will carry a valve handle during testing and attach it to the stem. This would guard against malicious operation.
3.3-1, 13.10A-1, 13.10B-1, 13.10C-1, 13.10D-1, 13.10E-1(NS)	15-1983-2-5.1	2	The Viking model D-3 deluge valves for the water spray systems protecting the transformers, lube oil storage tank, and turbine bearings are listed for maximum working pressures of 175 psi. The static pressure on the systems was approximately 180 psi. Higher pressure fittings should be used on these systems.	A static pressure slightly above the working pressure would probably not be harmful to the equipment. Higher pressure rated valves and fittings should not be needed if the static stays not more than 5 to 10 psi. above the rated working pressure of 175 psi.	Static pressure slightly above the working pressure would not be harmful to the equipment.
13.10A-1, 13.10B-1, 13.10C-1, 13.10D-1, 13.10E-1(NS)	15-1983-2-1.2	3	The equipment used to automatically actuate the transformer water spray systems should be listed by Underwriters Laboratories for the purpose. The heat detection equipment is not listed in the 1983 Fire Protection Equipment directory.		The detection equipment only supply on alarm function and do not actuate the water spray. Thus the unlisted equipment is considered acceptable.
3.3-1(NS)	15-1983-4-7.1.1	4	Isolation valve for hydrogen seal oil water spray system should be supervised by one of the following: (1) control station or proprietary, (2) locking, (3) sealing.	This valve is just off the ring header.	P&ID M-52-3 has been revised to show Viking Valve 1PPI24 as locked open or sealed in the open position. Station will lock open the valve.
13.10A-1(NS)	15-1983-2-1.1	5	A cock handle should be installed on the alarm test connection for the main transformer 1E.		An operator will carry a valve handle during testing and attach it to the stem. This would guard against malicious operation.
13.10B-1(NS)	15-1983-2-1.1	6	A cock handle should be installed on the alarm test connection for the main transformer 1F.		An operator will carry a valve handle during testing and attach it to the stem. This would guard against malicious operation.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 15, 1983 Edition - Water Spray Systems (Cont'd)</u>					
A:1(NS)	15-1983-8-6	14	Provide water spray system test data to verify that, under test conditions, heat detectors operate within 40 seconds when exposed to standard heat test source.		To be provided by SZ power. Procedures will be evaluated and revised if necessary.
All	15-1983-6-2.5	15	Verify that water spray system control valves and automatic detection equipment is tested at least annually.		Procedures require testing to be conducted every 18 months. This is considered adequate.
All	15-1983-6-2.6	16	Verify that manual tripping devices and valves for water spray systems are operated at least annually.		Procedures require testing to be conducted every 18 months. This is considered adequate.
All	15-1983-6-2.8	17	Verify that all spray nozzles are visually inspected and cleaned, if necessary, at least annually.		Procedures established for 18 month surveillance. This is considered adequate.
All	15-1983-5-3.1	18	Verify that a full flow test of each automatic and manual water spray system was conducted.		MANPC will review by fuel load.
All	15-1983-6-1.2	19	Verify that selected plant personnel are trained in, and have been assigned, the task of operating and maintaining the water spray equipment.		Will be implemented with operator training by fuel load.
All	15-1983-6-1.3	20	Provide the frequency of regularly scheduled plant inspections at which water spray equipment is to be visually checked.		Procedure for 18 months surveillance will be written by fuel load. This is considered adequate.
All	15-1983-4-6.2	21	Verify that provisions are made for effective drainage of water from the filter area during the operation of the systems.		Drains are purposely closed. Operators would manually open drains upon system operation.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 16, 1980 Edition - Foam Water Systems</u>					
10.1-1, 10.2-1(S)	16-1980-2-1	1	All component parts including the foam water sprinkler system shall be listed.	The A-20 activator is pneumatic but is hydraulically supplied. Valves were noted not to be listed. The Alison control panel is not listed.	Listing of these valves is not considered necessary since this system will be manually actuated. Listing of the panel is under investigation, to be completed by 52 power.
10.1-1, 10.2-1(S)	16-1980-4-3.3	2	All fittings shall be listed for pressures greater than 175 psig.		The design of the pipe and fittings has been verified to be adequate for the maximum operating pressure of the system.
10.1, 10.2-1(S)	16-1980-5-1	3	Provide verification that supply piping flushing was conducted in accordance with NFPA 16.	System flushed to ANSI standards.	M&MPC will review by fuel load.
10.1-1, 10.2-1(S)	16-1980-5-2	4	Verification should be given that hydrostatic testing has been conducted at 50 psig over the fire pump's churn.	System pressure relief set at 180 psi.	Hydrostatic testing at 225 psi is considered adequate.
10.1-1, 10.2-1(S)	16-1980-7-1.1	5	The foam water sprinkler system shall be serviced by qualified personnel semiannually.	Procedures are for servicing every 18 months.	Procedure will be approved by fuel load, and reviewed by M&MPC.

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TABLE 3-1 (Cont'd)

<u>PIPE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 20, 1984 Edition - Fire Pumps</u>					
18.12-0	20-1983-2-7.1	1	The electrical motor driven fire pump shall be protected against possible interruption of service.	Protected by distance and redundancy.	The electric fire pump is detached a minimum of 34 feet from a possible oil fire exposure from the circulating water pumps. The electric pump is also backed-up by a redundant diesel engine driven fire pump that is located and protected in a 3 hour fire rated room.
18.13-0	20-1983-2-7.4	2	Provide emergency lighting for the diesel engine driven fire pump.		Emergency lighting has been provided.
18.12-0 & 18.13-0	20-1983-2-10.4	3	Provide a listed check valve in each of the fire pumps discharge assemblies. (The existing check valves are not listed.)		Will do by 52 power.
18.12-0 & 18.13-0	20-1983-2-12-1	4	Provide listed relief valves for the diesel and electric pumps.		Will do by 52 power.
18.12-0 & 18.13-0	20-1983-4-3.5.3	5	Provide a 1 1/2" pipe size or larger automatic air release valve for each of the fire pumps.		Will do by 52 power.
18.12-0	20-1983-7-1.1.1	6	The electric motor driven fire pump controller shall be listed for electric motor driven service.	The controller is not listed.	Justification has been provided to the NRC in a December 14, 1983 letter from T. R. Tramm to H. R. Denton.
18.12-0	20-1983-7-1.1.3	7	The electric motor driven fire pump controller shall be marked to show manufacturers name and complete electrical rating.		Will label by 52 power.
	20-1983-7-5.2.1	8	The fire pumps' automatic controller pressure sensing lines should be relocated so connections are made between the pump discharge check valve and the discharge control valve.	Necessary.	Will relocate by 52 power.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 20, 1984 Edition - Fire Pumps (Cont'd)</u>					
	20-1983-7-4.6	9	Audible alarms powered by a source not exceeding 125 volts should be provided in the control room and should include the following:		
18.12-0			OA Pump 1) Loss of line power on line side of motor starter. This alarm circuit shall be energized by a separate, reliable, supervised power source.		S&L has determined that current design meets this requirement.
18.12-0			2) Phase reversal on line side of motor starter. This alarm circuit shall be energized by a separate reliable supervised power source, or from the pump source, or from the pump motor power, reduced to not more than 125 volts.	Phase reversal not likely.	S&L has determined that current design meets this requirement.
18.13-0	20-1983-8-2.7.2	10	The automatic electric solenoid valve located in the exchanger supply line for the OB fire pump diesel engine should be specifically listed for fire protection service.		Existing design justified, "UL" does not label solenoid valve in the required range.
18.12-0 & 18.13-0	20-1983-11-1.1	11	Verification of hydrostatic testing to the fire pumps discharge piping should be provided.		Documentation under review by M&MPC
18.12-0) & 18.13-0)	20-1983-11-2.3	12	Perform an error analysis to determine the accuracy limits of fire pump test equipment.		M&MPC will do by fuel load.
18.13-0	20-1983-2-7.1	13	The steel plate located in the roof of the diesel engine driven fire pump room should be replaced with a three hour rated cover.		Will provide 3 hour rated cover by 52 power.

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TABLE 3-1 (Cont'd)

<u>DESCRIPTION</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>Note NFPA 24, 1981 Edition - Fire Mains and Hydrants</u>					
Outside Ring Header	24-1981-3-3.2	1	The following post-indicator valves (PIV's) are Not practical to relocate, located closer than 40 ft. to the buildings: OFF 560 OFF 559 OFF 561 OFF 577		Isolation capabilities are considered adequate.
Outside Ring Header	24-1981-3-6	2	Valve OFF 577 should be provided with identification signs.		Will do by fuel load.
Outside Ring Header	24-1981-4-2.2	3	The following hydrants are located closer than 40 ft. to buildings they are protecting. OFF 10S OFF 12S OFF 13S OFF 23S	Not practical to relocate.	Loss of any single hydrant does not effect building coverage.
Outside Ring Header	24-1981-5-1.3	4	The existing practice is to secure one 2 1/2 inch hose to the hydrant, but with the remaining part of the hose located in the hose house. The hose should be disconnected and completely stored in the hose house.		New hose houses cover hydrant.
Outside Ring Header	24-1981-5-6-1	5	A review of several hose houses indicated not all of the required equipment was provided in the cabinet, such as all the coupling spanners, spray nozzles, fire ax, etc.		Equipment has been provided in hose houses.
Outside Ring Header	24-1981-5-3	6	In addition, several of the hose houses have were noted to have sustained physical damage and should be properly repaired. (i.e., holes in cabinets, damaged doors, etc.)		New hose houses have been provided.
Outside Ring Header	24-1981-8-8.2	7	The outside ring header was not properly flushed in regard to NFPA. This ring header should be flushed in regard to Table 8-8.2.	System flushed to ANSI standard.	M&MPC will review by fuel load.

TABLE 3-1 (Cont'd)

<u>PIPE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>Note NFPA 24, 1981 Edition - Fire Mains and Hydrants (Cont'd)</u>					
Outside Ring Header	24-1981-8-9.3.2	8	Per the Byron QA Surveillance 3980 on October 26, 1982, the leakage was 79.55 gallons for a hydrostatic test of two hours at 300 psi. This leakage is in excess of 8-9.3.2, and the underground piping should be inspected and corrected.	This may be old test prior to installing welded underground piping.	M&MPC will verify by fuel load.
Outside Ring Header	24-1981-3-5-	9	A post-indicator valve (PIV) should be provided at OFF 612.		Drawing revision will eliminate NFPA deviation by 5X power. Existing arrangement meets NFPA code.
Outside Ring Header	24-1981-8-6.2.9	10	Documentation should be provided that substantiates the decision to omit thrust blocking on underground piping at tees, elbows, etc.	Welded underground piping except connections to hydrants.	Restraints not needed on welded piping; thrust blocking provided at hydrant connections.
Outside Ring Header	24-1981-8-4	11	Documentation should be provided verifying that QC inspected the installed underground ring header prior to backfilling.		M&MPC will review by fuel load.
Outside Ring Header	24-1981-8--	12	Check valves should be installed in connections between the fire protection water system and service water systems.	These connections are normally closed and automatic check valves are not needed.	Service water systems are third order back-up water supply and procedures will be written by fuel load monitor potential leakage of butterfly valves installed.
Outside Ring Header	24-1981-8--	13	The butterfly isolation valves on the connections between fire protection water system and service water system should be UL listed.	These valves are on service water system and listing is not necessary.	Valves are ASME Section III. Leakage monitoring procedure addresses leakage concerns. No further action is required.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 26, 1983 Edition - Valve Supervision</u>					
	26-1983-6-4 and 6-6	1	The proprietary supervisory service should be extended by providing tamper switches for control valves OFF 625, OFF 624, and OFF 623 located in the auxiliary building on levels 401, 383 and 364.		Valves will be sealed in the open position and surveilled by fuel load.
	26-1983-2-1	2	Identification signs should be provided on control valves OFF 625, OFF 624 and OFF 623 in the auxiliary building on level 401, 383, and 364. These signs should specifically detail what each system controls.		Will be provided by fuel load.
	26-1983-6-7.2.1	3	All sectional control valves for fire protection should be sealed in the open position.	No valves reported sealed.	Valves have been sealed in the open position.

TABLE 3-1 (Cont'd)

<u>PROCEDURE</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 27, 1981 Edition - Private Fire Brigades</u>					
BAP 1100-17 Rev. 0	NFPA 27-1981 & 803-1983 14-2	1	A detailed action plan should be developed for in-plant personnel.		M&MPC will review pre-fire plans and comment by fuel load.
BAP 1100-T3 Rev. 0	NFPA 27-1981 4-4.3.4	2	An assessment of <u>each</u> brigade members knowledge of their role in the fire fighting strategy for the area assumed to control a fire. (paragraph 1)		Will be added to procedure by 52 power.
	NFPA 27-1981 4-4.3.4	3	An assessment of <u>each</u> brigade member's conformance with established plant fire fighting procedures and use of fire fighting equipment. (paragraph 2)		M&MPC will review fire drill critiques as developed by 52 power.
BAP 1100-11 Rev. 1	NFPA 27-1981	4	Add reference to NFPA 27. (paragraph B2)		Will do by fuel load.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 30, 1981 Edition - Flammable Liquids Code</u>					
8.1-0 (clean and dirty oil tank)(NS)	30-1981 2-7.1	1	Tank should be tested in accordance with API 650.	The tank drawing notes that the tank was built to API 650 but without evidence of an API monogram on the tank, documentation indicating compliance with the test should be made available.	Station will provide information for M&MPC review by SZ power.
8.2-1 Diesel lube oil drain tank 369(NS)	30-1981 2-4.2 30-1981 2-2.5	2	A 6.68" diameter emergency breather vent should be provided for the tank.	The existing 24" diameter manhole cover is bolted tight to the tank. The bolts can be replaced with long bolts and the cover can be secured so that the cover will lift when the tank is under the internal pressure and relieve the pressure. Since lube oil is a Class III B combustible liquid, the vent need not terminate outside.	S&L will review tank design and comment on emergency relief capabilities by SZ power.
8.2-1 Diesel lube oil drain tank 369(NS)	30-1981 2-4.4.3	3	The liquid transfer connections beneath the liquid level of the tank, e.g., piping to transfer pumps, should be provided with either (a) a normally closed remotely activated valve, or (b) an automatic closing heat activated valve, or (c) another approved device to provide for quick cutoff of flow in the event of fire in the vicinity of the tank.		M&M to provide recommendation to S&L by fuel load.
8.2B-0 Station Auxiliary diesel F.O. Storage tank(NS)	37-1979 5-5.3 30-1981 2-4.4.3	4	The liquid transfer connections beneath the liquid level of the tank should be provided with either (a) a normally closed remotely activated valve or, (b) an automatic closing heat activated valve, or (c) another approved device to provide for quick cut-off of flow in the event of fire in the vicinity of the tank.		M&M to provide recommendation to S&L by fuel load.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 37, 1979 Edition - Stationary Combustion Engines</u>					
9.3-1 9.4-1 EMD's Day Tanks(S)	37-1979 5-4.1 5-4.2	1	The tank should be equipped with (1) a high level alarm, and (2) a high level shutoff.		The fuel oil circulates to storage tanks to maintain full capacity. Fuel does not overflow into room.
9.3-1 9.4-1 EMD's Day Tanks(S)	37-1979 5-5.3 30-1981 2-4.4.3	2	The liquid transfer connections beneath the liquid level of the tank should be provided with either (a) A normally closed remotely activated valve, (b) an automatic closing heat activated valve, or (c) another approved device to provide for quick cut-off of flow in the event of fire in the vicinity of the tank.		Shut-off will not be permitted for this equipment since it is safety-related.
10.1-1 10.2-1 (25,000 gallon diesel F.O. storage tanks)(S)	37-1979 5-5.3 30-1981 2-4.4.3	3	The liquid transfer connections beneath the liquid level of the tank should be provided with either (a) a normally closed remotely activated valve or (b) an automatic losing heat activated valve or (c) another approved device to provide for quick cut-off of flow in the event of fire in the vicinity of the tank.		Shut-off will not be permitted for this equipment since it is safety-related.
8.2-1(NS)	37-1979 7-1.2 30-1981 5-5.1	4	The drain tank should be equipped with a UL listed high temperature limit safety switch interlocked to shut off the heaters whenever temperature of the lube oil approaches its flashpoint.	The safety switch should be independent of temperature operating controls.	M&M to provide recommendation to S&L by fuel load.
8.73-0(NS)	37-1979 5-5.1 5-5.2	5	The tank should be equipped with (1) an overflow line piped back to the supply tank (125,000 gallon F.O. storage tanks), (2) a high level alarm, and (3) a high level automatic shutoff.	The tank is already equipped with an overflow line but the line terminates on the floor of the room. The high level device should be interlocked to shut off the pump in the event of high tank levels.	M&M to provide recommendation to S&L by fuel load.

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TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>FOUNDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>	
<u>NFPA 37, 1979 Edition - Stationary Combustion Engines (Cont'd)</u>						
10.1-1 10.2-1 (25,000 Gallon F.O. Storage Tank)(S)	37-1979 5-5.3 30-1981 2-4.4.8	6		The 4" overflow line should (1) be increased to one pipe size greater than the 4" inlet line, and (2) be liquid tight and discharging back to the outside source of liquid or to an approved location.	The overflow line is presently sized the same as the fill line. The overflow line terminated at floor level above a funnel piped to a sump below the room. The overflow arrangement of the tanks was reviewed and a high level alarm on the tank is considered necessary.	Will provide high level alarm by 5% power.
10.1-1 10.2-1 (25,000 Gallon F.O. storage tanks)(S)	37-1979 5-6.1 30-1981 2-4.2 30-1981 2-2.5	7		Supplement the 3" breather vent (BV) with an emergency breather vent (EBV) of at least 9.14" diameter piped to the outside.		M&M has accepted S&L calculation justifying present design.
11.4A-1 (Auxiliary Feedwater Diesel F.O. Storage Tank)(S)	37-1979 5-4.2	8		The overflow line (10 59A-1 $\frac{1}{2}$) to the 1B in the diesel oil storage room should be increased in size to 2".	The return line and the fill line are the same size (1 $\frac{1}{2}$ ")	M&M has accepted S&L calculation justifying present design.
11.4A-1 (Auxiliary Feedwater Diesel F.O. Storage Tank)(S)	37-1979 5-4.1 5-4.2	9		The tank should be equipped with (1) high level alarm, and (2) high level shutoff.		Tank is manually filled. Any overflow is piped back to 25,000 gal. storage tanks. This is considered adequate.
11.4A-1 (Auxiliary Feedwater Diesel F.O. Storage Tank)(C)	37-1979 5-5.5 30-1981 2-4.4.3	10		The liquid transfer connection beneath the liquid level of the tank should be provided with (a) A normally closed remotely activated valve, (b) an automatic closing heat activated valve, or (c) another approved device to provide for quick cut-off of flow in the event of fire in the vicinity of the tank.		Shut-off will not be permitted on safety-related equipment.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 37, 1979 Edition - Stationary Combustion Engines (Cont'd)</u>					
11.4A-1 Auxiliary Feedwater Diesel F.O. Storage Tank(S)	37-1979 5.6-1 30-1981 2-4.2	11	Tests should be performed on the 2" vent pipe to determine whether the long length of pipe will create back pressures that can cause the internal pressures in the tank to exceed 2.5 psi when 73,700 CFM needs to be vented.		M&M has accepted S&L calculation justifying present design.
18.12-0 (diesel fire pump F.O. storage tank)	37-1979 5-5.3 30-1981 2-4.4.3	12	The liquid transfer connections beneath the liquid level of the tank should be provided with (a) a normally closed remotely activated valve, (b) an automatic closing heat activated valve, or (c) another approved device to provide for quick cut-off of flow in the event of fire in the vicinity.		Shut-off will not be provided on safety-related equipment.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REPT. DATE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 50A, 1984 Edition - Gaseous Hydrogen System</u>					
18.18-O(NS)	50A-1984 2-2.3	1	The pressure relief device on the H ₂ storage tanks is piped in a manner that would allow moisture to collect, freeze, and impair proper operation. This should be corrected and the valve should be inspected for possible damage.	Temporary tape is placed on the vents which should be replaced with permanent fixtures.	Will correct by SE power. S&L to review and issue design change
18.18-O(NS)	50A-1984 2-4.6	2	The ground (bonding clamp) should be rust free to make a proper electrical connection.	Clamp should be cleaned or replaced.	Will be cleaned or replaced by SE power.
18.18-O(NS)	50A-1984 2-4.3	3	The gate in the boundary fence is allowed to swing into a pressure vessel at a vulnerable point. A gate stop should be installed.		Will provide gate stop by SE power.
18.18-O and all interior zones in which the piping crosses(NS)	50A-1984 2-6.1	4	All piping, tubing, and fittings shall be tested and proven gas-tight at maximum operating pressure.	No data is now available. This could be on record.	Station will provide information by fuel load for M&MPC review by SE power.
	50A-1984 2-4.1	5	All valve, gauges, and other accessories shall be proven suitable for hydrogen services.	No data is now available. This could be on record.	Station will provide information by fuel load for M&MPC review by SE power.

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TABLE 1-1 (Cont'd)

<u>FIRE CODES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 72D, 1979 Edition - Proprietary Protective Signaling Systems</u>					
72D-75-1232(b)/ 1234 72D-79-2-4.3		1	Test gate valve supervising switches semi annually and perform drain test.		Switches will be periodically tested annually. Drain tests will be conducted. The annual testing period is considered adequate. Procedure will be developed by fuel load.
72D-75-1234		2	After any sprinkler system control valve has been operated, perform a drain test to insure that the valve has been fully reopened.		This drain test will be conducted for all sprinkler systems by fuel load.)
72D-79-4-7.3		32D-75-1246	Upon receipt of trouble signals, the control room operator shall notify the authority having jurisdiction where interruption of normal service will exist for more than four hours and provide written notice to the authority having jurisdiction when equipment has been out of service for eight hours.		The authority having jurisdiction is not notified when detection equipment is out of service for an extended period. Rather, the limiting conditions for operation are specified in the Technical Specifications, Section 3.3.3.B. Additional fire protection measures are specified for such cases. This is considered to be adequate.
72D-75-1022 72D-79-2-2.2		4	All devices, combinations of devices and equipment constructed shall be approved/ listed for the purposes intended. (This pertains to the Allison Control Panels).	Documentation could not be found substantiating the listing or approval of the Allison Panels. Note: P.O. 420036 and Specification 72854 specified U.L. listed or FM approval.	Documentation describing all differences from listed panels is being obtained from the manufacturer. When this information is reviewed, it will be evaluated and corrective actions, if required, will be identified by SE power.

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OCTOBER 1994

TABLE 3-1 (Cont'd)

<u>FIRE CODES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 720, 1979 Edition - Proprietary Protective Signaling Systems (Cont'd)</u>					
	72D-75-2023 72D-79-2-2.2	5	Upon installation completion of the additional smoke detectors acceptance tests shall be conducted.		Acceptance tests have been conducted.
	72D-79-3-5.12	6	Automatic fire detectors which have integral trouble contacts shall be wired on the initiating device circuit so that a trouble condition on one detector will not impair the alarm operation from other initiating devices.		Upon receipt of a trouble alarm an operator is dispatched to the area and a fire watch may be initiated until trouble is cleared. This is considered to be acceptable.
	72D-79-3-6.2.2	7	Automatic sprinkler system signals shall indicate distinctively the particular function (valve position, grounds, opens etc.).		Upon receipt of a trouble alarm an operator is dispatched to the area and a fire watch may be initiated until trouble is cleared. This is considered to be acceptable.
	72D-75-2223 72D-79-2-6.2.3	8	When central station primary power is provided from a commercial light and power source and an engine driven generator storage batteries having the capacity to operate the system under maximum load for four hours shall be provided.	Bus 132 (ESF Bus) is the primary power supply to the proprietary alarm systems. Bus 134 is the secondary power supply. An impairment in Bus 142 could impair all sources of power to Bus 132.	Bus 142 is a safety-related ESF power source. It is normally fed from the system auxiliary transformer, but it also has a diesel generator backup in case of a loss-of-offsite power. In addition, a manual crossover to Unit 2 Bus 242 is provided. This supply is as reliable as was intended by the NFPA code, and is considered to be acceptable as is.

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AMENDMENT 5
OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE LINES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA '2D, 1979 Edition - Proprietary Protective Signaling Systems (Cont'd)</u>					
	72D-75-2224 72D-79-2-6.24	9	A separate power supply, independent of the main power supply, shall be provided for the operation of trouble signals (may use the secondary power supply).	Trouble signals are fed from the primary source.	Due to the high reliability of the primary power supply, as mentioned above, this is considered to be acceptable.
	72D-79-2-6.4.2	10	Label the circuit disconnecting means at MCC 134X5 and 132X2 "Fire Alarm Circuit Control".		Labels will be provided by 52 power.
	72D-75-2461	11	Provide distinctive trouble and alarm signals in the control room for Units No. 1 and No. 2.	Signals used for Unit 1 and No. 2 are distinctive from other plant signals but not from the Unit No. 1 and Unit No. 2 control panels.	The Unit 1 and Unit 2 fire alarm panels are located not adjacent to one another in the control room. It will be obvious to an operator responding to a fire alarm which unit is affected. The existing design is considered to be acceptable.

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 72E, 1982 Edition - Fire Detectors</u>					
All	72E-1982-2-5	1	Upon completion of the detection installation, a satisfactory test of the fire/smoke detectors shall be made in the presence of a representative of the authority having jurisdiction.	Testing done on all installed detectors.	Test will be written and reviewed by NEMPC by fuel load. Heat detection must be installed and tested.
9.1-1, 9.2-1, 9.5-1(S)	72E-1982-5-5.1	2	Review the placement of the ultraviolet detectors.	NEMPC is reviewing recommendations made in 9.1-1 and 9.2-1.	Existing design is acceptable.
All	72E-1982-9-3	3	Periodic testing of all detection systems shall be accomplished in accordance with NFPA 72E.	NEMPC has reviewed applicable procedure.	Procedure is satisfactory. All additional detectors installed will be tested accordingly. The procedure will be modified by SE power.
9.1-1, 9.2-1(S)	72E-1982-3-5-3	4	A heat detector should be located in each bay formed by the ceiling beams of the diesel generator rooms.	The beam depths exceed 18" and are more than 8' O.C.	Additional heat detectors have been provided in bays above engine.
9.1-1(S)	72E-1982-3-5-3	5	The two heat detectors installed below the 27" deep beam in diesel generator room 1B should be relocated at the ceiling.	NFPA 72E requires heat detectors to be at the ceiling.	Detectors have been relocated.
	72E-1982	6	Additional detectors should be added in beam pockets throughout the plant.	These items were addressed in detail with walkdown. Additional detectors added.	The installation and testing of additional detectors is complete.

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OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 80, 1981 Edition - Fire Doors (Cont'd)</u>					
SD 180 SD 181 147-317 313-336 398 442-553 669-720	80-1981 2-5.1	4	Only labeled door frame shall be used.		The justification for the use of non-label doors in certain instances is contained on page 2.1-8 of the FFR.
See also Doors listed in Paragraph 1-5.1					
147-148 152-153 155-225 234-261 286-291 298-301 317-326	80-1981 2-5.4	5	The clearance between the door and the frame and between meeting edges of doors swinging in pairs shall not exceed 1/8 inch.		These are UL listed doors and door pairs installed in a UL listed door frame. No further action is necessary.
129-336 370-371 430-433 441-442 460					
509-523 553-554 649-669 720					
143-152 155-170 173-125 509	80-1981 2-5.4	5	The clearance between the bottom of the door and a raised noncombustible sill shall not exceed 3/8 inch. Where there is no sill, the maximum clearance between the bottom of the door and floor shall not exceed 3/4 inch.	Reduce clearance.	Clearance have been reduced with sills.
261-262 291-340	80-1981 2-5.4.4 14-1.2	7	All closing mechanisms shall be adjusted to overcome the resistance of the latch mechanism so that positive latching is achieved on each door operation. Doors shall be operable at all times.		Will do by fuel load.

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OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 80, 1981 Edition - Fire Doors (Cont'd)</u>					
153-154	80-1981 14-1.2	14	Fire doors shall be operable at all times.	Latches found recessed into door.	Will repair by fuel load.
3D 75-180 3D 181 141-170 173-189 190-292 296-299 300-319 321 48-51 71-181 182-183 192-193 411-420 429-436 451-463 89-100 105-545 573-648 729-730	80-1981 14-1.2	15	Fire doors shall be operable at all times.	Power cables that pass through door openings and other construction-related activities do not permit doors to be closed. This also prevents checks of door operability.	Will repair by fuel load.
433	80-1981 14-1.3.3	16	Blocking or wedging of doors in the open position shall be prohibited.	When opened only 85 from closed position door astragal on active leaf becomes wedged against pipe.	Will repair by fuel load.
Fire Zone 18.13-0	80-1981 2-5.6	17	The clearance between the bottom of the fire door and the floor shall not exceed 3/4 inch.	Diesel engine driven pump room door.	Threshold has been installed.

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OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 90A, 1981 Edition - Air Conditioning And Ventilation</u>					
18.1-1 (ESF Div. elev. 425') 18.2-1 (ESF Div. 11 elev. 425') 18.1-1 (Lower cable sprd. rm. elev. 439) 11.7-1 (Cont. purge supply elev. 467') 11.7-0 (Cont. purge exhaust elev. 451') 18.2-1 (Non-ESF supply unit elev. 451') 18.4-1 (Control Rm. HVAC elev. 451')(3)	90A-1981-2-3.1.1	1	Air filters shall be approved such as Class 1 and Class 2 .net will not burn or emit excessive smoke.	These filter enclosures contain Class 2 filters with combustible pegboard panels in the frame. Combustible pegboard should be removed.	Temporary condition. Pegboard will be removed by fuel load on systems required to be operable at that time. Other systems will be completed by SX power.
11.4A-1 (Aux. feed pump bay r2. rm.)(3)	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 3 hr. rated fire damper.	(a) 1. Ceiling and wall fire dampers are rated for 1 1/2 hr. 2. Ceiling damper has bent frame which may prevent closing. 3. Metal flex conduit for electrothermal link (ETL) mounted in track may prevent closing.	Will install 3 hr. dampers by fuel load. Will repair frame by fuel load. Will relocate flex conduit by fuel load.
11.4B-0 (HVAC for Radarsite and Remote shutdown rooms.)(S).	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 3 hr. rated fire damper.	(b) No fire dampers for HVAC room.	Will install 3 hr. dampers by initial criticality.
18.24-0 (Sample room.)(NS)	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 3 hr. rated fire damper.	(c) Ceiling supply duct has one 1/2 hr. fire damper, whereas return duct has two 1 1/2 hr. dampers.	Install fire dampers in accordance with S&L drawings by SX power.

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 OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 90A, 1981 Edition - Air Conditioning and Ventilation (Cont'd)</u>					
8.3-1 (Duct from zone 7.1-1 penetrates fire-wall @ Col. 18 on elev. 411' -)	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 1 hr. rated fire damper.	(d) ETL not electrically connected. ETL should still operate automatically but may fall into damper track preventing closing.	Investigate why ETL was installed and if it is necessary by fuel load.
9.3-1(5)	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 1 hr. rated fire damper.	(e) One of the two 14 hr. ceiling fire dampers has bent roll which may prevent closing.	Will repair bent roll by fuel load.
11.3F-1 and 11.3G-1(5)	90A-1981-3-3.1	2	Duct openings through fire walls shall be protected by an automatic closing 1 hr. rated fire damper.	(f) Common 3 hr. fire wall between safety inj. pump and charging pump/cooler is violated by common duct system outside the room that does not have fire dampers.	Neither area comprises a 1 hr. fire rated room. Safe shutdown does not require 3-hr. rated separation. Not necessary to install damper in duct.
9.3-1 (14 hr. damper @ Col. D-1.5 elev. 422') (NS)	90A-1981-3-3.7.1.5	3	Closing of fire dampers shall be automatic.	Flex conduit for ETL not secured and may get caught.	Will relocate flex conduit by fuel load to ensure that it is secured and will not get caught.
5.3-1(5)	90A-1981-4-3(b)	4	Duct smoke detectors shall be installed in the return air stream prior to exhausting from the building or being diluted by outside air.	(a) Return air duct from Switchgear Room (zone 5.4-1) to filter unit in zone 10.1-1 elev. 451'.	Will install duct detector by 38 power.
11.7-0 (Cont. purge exhaust duct elev. 475')(5)	90A-1981-4-3(b)	4	Duct smoke detectors shall be installed in the return air stream prior to exhausting from the building or being diluted by outside air.	(b) Couldn't locate detector if any. Containment purge system may be connected to Aux. Bldg. exhaust shaft.	S&L review with M&M resulted in cancellation of change.
10.1-1(5)	90A-1981-4-3(a)	5	Duct smoke detectors shall be installed in the main supply duct downstream of filters.	(a) Non-ESP switchgear HVAC system on elev. 451'.	Will install smoke detectors per current S&L drawings by fuel load.

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REVISION 5
OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONE</u>	<u>WPPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>WPPA 30A, 1981 Edition - Air Conditioning and Ventilation (Cont'd)</u>					
5.4-1(3)	30A-1981-4-3(a)	5	Duct smoke detectors shall be installed in the main supply duct downstream of filters.	(b) 12"x18" supply duct from Div. I Elec. Equipment Room (zone 5.4-1) to Div. II Elec. Equipment Room (zone 5.4-1)	Adequate area smoke detectors will be provided. This should be adequate in lieu of duct detector.
11.43-0 'EVAC for Ejectors and Remote Shut-down'(3)	30A-1981-4-3(a)	5	Duct smoke detectors shall be installed in the main supply duct downstream of filters.	(c) Entire system.	Will provide duct detectors per current S&L drawings by fuel load.
7.1-1 (Battery Room Jumper) 8.3-1 (Battery Room duct detector elev. 311") 8.3-1 (Sample room air handling unit detector elev. 311") 8.3-1 (Detector for Boiler Room exhaust 1400 CFM fans) in elev. 315" 8.3-1 (Return air duct detector 8' dia. 71" dia. 72' e.lev. 325")(45) 8.3-1 (Damper in exhaust duct)(4)	30A-1981-2-1.4.1	6	A service opening shall be provided adjacent to each fire jumper, smoke jumper, and smoke detector.	Access panels needed for various jumpers and detectors throughout.	Access panels installation complete. Station walkdown identified additional panel required and to be installed by fuel load. Information to S&L as available.
All zones	30A-1981-2-1.4.2	7	Service openings shall be identified with letters to indicate location of fire protection devices.	Pertains to <u>all</u> dampers and detectors for entire plant.	Will identify location of fire protection equipment at first refueling outage.

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OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>PIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 90A, 1981 Edition - Air Conditioning and Ventilation (Cont'd)</u>					
8.3-1 (Supply duct for heater drain pump area, elev. +01')(NS)	90A-1181-4-5.1 (9)	9	Detectors shall be installed in accordance with NFPA 72.	The pyrotechnic model CA-6 is listed for air velocities of 500-3100 FPM. In reference to the S&L HVAC drawings and actual detector location, the following areas exceed 3100 FPM should verify actual air flows.	New smoke detectors will be furnished for the VA and VT systems by fuel load and first refueling outage, respectively.
8.3-1 (Boiler Room exhaust (72,000 CFM elev. +18')(NS)					
8.3-1 (Air return # col. #1 (14,000 CFM elev. +26')(NS)					
3.3-1 (ESV Dev. 11 supply)(S)					
3.3-1 (Supply for cond. pump area, elev. +01')(NS)					
10.3-1 (Steam pipe tunnel end safety valve vent system Area 2 col. 2" elev. +15')(S)					
11.4A-0 (Lab fume exhaust duct elev. +25')(S)					
11.7-0 (Aux. Bldg. exhaust fans 4x8 elev. +75')					
9.3-1 (Secretary Room duct elev. +11')(NS)	90A-1181-4-5.1	10	Detectors shall be installed in accordance with NFPA 72.	Detector's should be installed in accordance with the Mfg's. installation instructions.	Will seal sampling tubes by fuel load.
9.3-1 (Supply for heater drain pump area elev. +11')(NS)	90A-1181-4-5.1	10	Detectors shall be installed in accordance with NFPA 72.	(a) Detector sampling tubes not sealed at duct penetrations.	To seal sampling tubes by fuel load.
9.3-1 (Supply col return detectors # col. #1 #2 elev. +25')(NS)					

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OCTOBER 1984

TABLE 3-1 (Cont'd)

<u>FIRE ZONES</u>	<u>NFPA REFERENCE</u>	<u>RECOMMENDATION NUMBER</u>	<u>RECOMMENDATION</u>	<u>COMMENTS</u>	<u>RESOLUTION</u>
<u>NFPA 90A, 1981 Edition - Air Conditioning and Ventilation (Cont'd)</u>					
8.3-1 (Supply for load. pump area elev. 401' - Vaca (a))(48) 11.4-0 (Aux. Bldg. supply duct: 2 col's. Q15) (3)	90A-1981-4-3.1	10	Detectors shall be installed in accordance with NFPA 72E.	(a) Detector sampling tubes not sealed at duct penetrations	Will seal sampling tubes by fuel load.
9.3-1 (Supply 9 col. B1, elev. 325')(45)	90A-1981-4-3.1	10	Detectors shall be installed in accordance with NFPA 72E.	(b) Detector inlet sampling tube not properly secured.	Secure tube by fuel load.
19.3-1 (Steam pipe tunnel and safety valve vent. fans Areas 1&2, elev. 414')(5)		10	Detectors shall be installed in accordance with NFPA 72E.	(c) Outlet sampling tube doesn't protrude into air stream.	Station will investigate with vendor and correct if necessary by fuel load.
11.7-0 (Aux. Bldg. exhaust fan "A" elev. 475)		10	Detectors shall be installed in accordance with NFPA 72E.	(d) Detector control panel is cracked with exposed internal wiring.	Will replace control panel by fuel load.
9.4-0 (Control Room office supply fans A&B elev. 469')		10	Detectors shall be installed in accordance with NFPA 72E.	(e) Detectors adjacent to fans. Sampling tubes should be a minimum of two duct widths from sources of turbulence.	Will relocate sample tubes per manufacturer's instructions by 3E power. S&L to use a design change.
Generic to all duct smoke detectors(S)	90A-1981-4-3 (a)(5)	11	Detectors in the main supply and return air ducts shall automatically stop the fan(s).	Delineate which systems are interlocked with fans.	Station HVAC Dept. will address by 3E power.
Generic to all HVAC systems(S)	90A-1981-4-3	12	Smoke sensors shall be installed in systems over 15,000 CFM.	Describe where and what HVAC systems are utilized for smoke control.	N&M to respond to S&L by fuel load. Existing design should be acceptable.
Generic to all detectors	90A-1981-4-3.1	13	Detectors shall be installed in accordance with NFPA 72E. Initial and periodic tests shall be conducted.	Provide documentation for testing; sensitivity, interlocks, alarms, smoke test, in accordance with Mfg's. instructions.	Functional system testing procedures are adequate. Agreement reached with MRC.

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STATION-1

Attachment 5
OCTOBER 1984

A5.2.2 FIRE DETECTION AND PROTECTION IN AREAS WHERE CABLES ARE INSTALLED

The plant's fire detection system consists of detectors which are required by the fire hazards analysis and located in zones covering strategic areas throughout the station. The cable spreading room, the control room, the battery room, cable penetration areas inside and outside the containment, and the computer room are included. Any fire (or fire detection system trouble) is annunciated in the main control room.

Fire Suppression for Cable Spreading Areas

- a. upper cable spreading room
 1. automatic Halon 1301 system,
 2. manual carbon dioxide system, and
 3. manual water hose stations.
- b. lower cable spreading room
 1. automatic carbon dioxide system,
 2. manual carbon dioxide, and
 3. manual water hose stations.

Cable trays located outside of the cable spreading rooms do not have special fire suppression or detection systems dedicated specifically to them. However, cable trays which are located in a hazardous area which has a fire suppression system or fire detection system will inherently receive fire protection.

Fire Stops

Details for fire stops for conduit, cable tray, and cable riser penetrations through walls and floors have been developed. Fire stops are provided wherever cables penetrate fire barrier walls or floors. The rating of the fire stop is determined by testing and is consistent with the fire loading associated with the wall or floor being penetrated as determined by the results of the fire hazard analysis. Documented records of inspections are used to verify that each fire stop and seal has been properly installed.

A5.4.5 HALON 1301 SYSTEMS

Automatic Halon systems have been provided for the upper cable spreading areas and the QA vault. Both systems are actuated by ionization detectors. The upper cable spreading rooms have two trains of ionization detectors.

An automatic Halon system has been chosen as the primary fire suppression agent for the upper cable spreading area because of possible water damage to control room panels from leakage through floor penetrations. Use of Halon initially permits the fire brigade to enter the room where the Halon system has discharged without the breathing apparatus and the usual lack of visibility that accompanies a CO₂ discharge.

Halon has been selected as the primary extinguishing agent for the QA vault because of the distance from the CO₂ storage tanks, Halon is less toxic than CO₂ in the concentrations required and there is no damage to records and furniture in the room which are not affected directly by the fire as there would be by using a deluge or sprinkler system.

The Halon supply for the upper cable spreading area is located at about L-23 on elevation 468 feet 4 inches and at 45-H.9 on elevation 433 feet 0 inch for the QA vault.

Operation of both Halon systems is identical. If actuated automatically an electrical signal is sent to a solenoid valve which releases the Halon from a storage cylinder into the manifold header. In the case of the QA vault, all the Halon is then discharged through the distribution nozzles onto the fire. For the upper cable spreading area system, only the solenoid valves of the cylinders assigned to the subject fire area are actuated.

The Halon then enters the manifold piping where it passes through the actuated deluge valve of the subject fire area and onto the fire. The Halon supply for the cable spreading areas is sized only for the largest hazard with extra bottles for extended discharge. A reserve supply for either system is not provided.

The QA vault Halon system may be operated by a Manual electric pushbutton station which is located near the hazard area. In case of electrical failure, either system may be actuated manually at the bottles by pulling the manual release level on each bottle.

Table A5.4-6 lists various technical data on the Halon systems.

One local control cabinet has been provided for the QA vault. Two local control cabinets have been provided for each upper cable spreading area.

Each local control cabinet has a white "power on" indicating light.

All electrical equipment used in the fire protection system for the hazard area is wired to the local cabinet.

Each local cabinet provides outputs for each of the following conditions to the control room: hazard area "fire" and hazard area "trouble" (the trouble condition includes failure of the automatic detection system, loss of power, failure of the electrical actuation system, and isolation valve closed).

Each cabinet provides output contacts for the hazard area predischarge alarm and fire alarm horns.

Each Halon system is tested periodically by subjecting each system to a "puff" test in accordance with NFPA guidelines.

Automatic initiation of the Cardox system is accomplished by Fenwall rate compensated detectors in areas other than cable spreading areas, and by ionization detectors in the cable spreading areas.

Local push buttons adjacent to the CO₂ protected rooms provide manual electrical control for testing purposes, or to initiate the CO₂ in an emergency if thermostats should fail to actuate the CO₂ system.

In case of electrical failure, local electromanual pilot cabinets (EMPC) are provided for each protected room and at the main storage tank, which permit manual initiation of the system.

A manual abort system is provided for each automatic total flooding area. The above consists of a supervised 1/4-inch Jamesbury ball valve on the pilot line and a "deadman" push-button station. The pushbutton station resets the pre-discharge timer so that a person may enter a room for an abbreviated survey of the area before the system discharges. Once the CO₂ discharge has begun, it cannot be aborted except by shutting off the tank gate valve. The ball valve may be used to positively prevent any discharge from occurring in the subject hazard area, however, it cannot stop a discharge that has already begun. The ball valve will be used whenever maintenance personnel will be present in an area for an extended period of time.

Areas protected by carbon dioxide are listed in Tables A5.4-1 and A5.4-7. Provisions have been made for addition of CO₂ hose reels in the future if the need arises.

Local control cabinets are provided by Cardox for each hazard area. Each cabinet has the following indicating lights:

- a. 1 - red "fire" light,
- b. 2 - white "power on" light, and
- c. 5 - amber "trouble" lights.

The "trouble" lights are used to indicate trouble with the following supervised items. One amber light is used for each item:

- a. thermostats,

- b. remote pushbutton switches,
- c. local hazard alarms,
- d. discharge valve solenoid, and
- e. lock-out valve closed.

The local control cabinet furnishes the following output signals to the control room:

- a. hazard area trouble,
- b. hazard area fire, and
- c. contacts for hazard area alarms.

For each hazard area, audible and visual alarms are provided in the control room to indicate "fire" and "trouble" for the CO₂ system.

The CO₂ storage unit is operated off the 480-V distribution system. The electrical actuation and detector circuits for the fire protection systems are supplied with power from the 125-Vdc distribution system except that the detection circuits for the cable spreading areas are supplied with power from the 120-Vac ESF power supplies. In case of a bus failure, 125-Vdc battery power supply will be utilized. If this should fail the CO₂ system may be actuated manually by the electro-manual pilot cabinets at each protection area.

The Byron river screen house also contains a 2-ton carbon dioxide storage tank. Its features are identical to the 10-ton unit except that 3-inch gate valves, master valves, and selector valves are used. Electrical accessories are also identical to the main system.

The carbon dioxide system will be given a full concentration discharge test when it has been installed and "puff" tests thereafter as required by the NFPA guidelines.

A5.8.16 Deviation No: A.16

Fire Zone(s) or Elevations Involved

364 feet 0 inch (Fire Zone 11.3-0)

Description of Equipment/Cables Involved

The redundant cables and equipment required for safe shutdown and located in Fire Zone 11.3-0 are listed in Table A5.8.16-1. The location of the fire zone and associated equipment and cables is shown on Figure A5.8.16-1.

Description of Deviation(s)

No deviation from the requirements of Section III.G.2 of Appendix R exists due to the corrective measures which have been instituted. The applicant has committed to install a 3-hour fire-rated barrier around the Division 11 cable risers at column-rows 13 to 15 and Q.

Justification for Deviation(s)

No justification for deviation 16 is required because the applicant has demonstrated compliance with the requirements of Section III.G.2 of Appendix R.

A5.8.18 Deviation No: A.18

Fire Zone(s) or Elevations Involved

383 feet 0 inch (Fire Zone 11.4-0)

Description of Equipment/Cables Involved

The redundant cables and equipment required for safe shutdown and located in Fire Zone 11.4-0 are listed in Table A5.8.18-1.

Description of Deviation(s)

The redundant safe shutdown cables located in Fire Zone 11.4-0 are less than 20 feet apart and the intervening space contains combustible materials and the area is not covered by a total suppression system which is not in accordance with the guidelines of Section III.G.2 of Appendix R.

Justification for Deviation(s)

The diesel driven auxiliary feedwater pump is located within its own room, which has 3-hour fire-rated barriers separating it from the general area outside. This pump can be manually started from a local control panel in this room, and it will operate completely independent of the associated cables located outside of the room in the general area on Elevation 383 feet 0 inch (Fire Zone 11.4-0). Thus, the fact that cables for both AFW pumps are present in the same area in Fire Zone 11.4-0 and could be damaged by a single fire is acceptable, since the Division 12 diesel driven AFW pump can still be manually started and operated.

In order to provide an adequate supply of water to the secondary heat sink in a timely manner following a fire in this zone, remote start capability for the diesel-driven auxiliary feedwater pump is required. Therefore, a remote switch will be installed at the elevation below in Fire Zone 11.3-0 to ensure that the diesel-driven auxiliary feedwater pump can be manually started in the case of a fire in Fire Zone 11.4-0.

The minimum vertical separation where Division 11 cables pass underneath Division 12 cables is 27 feet. Although combustible materials in the form of cables in trays are present in the intervening space, the nature of the combustible materials and the fact that Division 12 cables are in conduit are considered to provide adequate protection to these cables. Should a fire in this area damage both divisions cables and render these valves inoperable, the ability to safely shutdown the plant would not be lost. Hot standby could be maintained utilizing the pressurizer safety valves for overpressure protection. Cool-down and depressurization could be accomplished using the steam generators to remove decay heat, and if required, utilizing the letdown system. This mode of operation will take the primary system to a low enough temperature and pressure to initiate RHR system operation. This deviation from Appendix R requirements is considered to be acceptable.

A5.8.33 Deviation No: C.6Fire Zone(s) or Elevations Involved

Fire Zone 1.3-1

Description of Equipment/Cables Involved

One of the four available RPS Channel 2 reactor coolant cold leg temperature instrumentation cables is required to achieve and maintain hot standby. The available instrumentation cables are 1RC373, 1RC392, 1RC397, and 1RC402. All four of these cables are routed in Fire Zone 1.3-1.

Description of Deviation(s)

All four RPS Channel 2 reactor coolant cold leg temperature instrumentation cables are routed through the same containment penetration at Elevation 439 feet 3 inches and azimuth angle of 195 -45'. In addition, area-wide fire suppression is not provided in this zone. This is not in accordance with the guidelines of Section III.G.2 of Appendix R.

Justification for Deviation(s)

A modification is currently planned to replace the existing hot and cold leg resistance temperature detectors (RTD) with dual element models. In each case, the second element will be powered from a non-safety-related division, and its cables will be routed so as to maintain adequate separation within containment, right out to the penetrations. This modification will ensure that a single fire could not cause loss of all reactor coolant hot and cold leg temperature indication. This modification will be installed during the first outage of sufficient duration, but no later than September 30, 1986. Therefore, this deviation will exist only during the first fuel cycle. In the interim period, training will be developed to guide the operators to utilize steam generator saturation pressure to infer cold leg temperature should these instruments be lost due to a fire. In addition, at least one channel of each of the following instruments will remain free of fire damage and be available: reactor coolant wide range hot leg temperature, steam generator pressure and wide range level, and pressurizer pressure and level.

A5.8.34 Deviation No: C.7**Fire Zone(s) or Elevations Involved****Fire Zones 1.2-1 and 1.3-1****Description of Equipment/Cables Involved**

One of the four available RPS Channel 1 reactor coolant hot leg temperature instrumentation cables or one division of incore thermocouple cables is required to achieve and maintain hot standby. The available hot leg RTD cables are 1RC351, 1RC356, 1RC361, and 1RC366. All four of these cables are routed through Fire Zone 1.2-1. The available Division 11 incore thermocouple cables are 1IT303 through 1IT340, 1IT343, 1IT344, 1IT425 and the 33 mineral insulated cables from junction box 1IT01J to the reactor vessel head. The available Division 12 incore thermocouple cables are 1IT351 through 1IT382, 1IT347, 1IT348, 1IT427, and the 32 mineral insulated cables from junction box 1IT02J to the reactor vessel head. The "1IT" cables are routed in Fire Zones 1.2-1 and 1.3-1, and the mineral insulated cables are routed in Fire Zone 1.3-1.

Description of Deviation(s)

All four RPS Channel 1 reactor coolant hot leg temperature instrumentation cables are routed through the same containment penetration at Elevation 417 feet 6 inches and azimuth angle of 127 -15'. In addition, these cables are separated by less than 20 feet in the sector bounded by azimuths 127 -15' and approximately 101 (penetration of 1RC356 and 1RC361 through the shield wall), Elevations 410 feet 0 inch and 421 feet 0 inch, and a radius of approximately 60 feet from the centerline of containment. Intervening combustibles are present in the form of cable trays. Area-wide suppression is not provided. Thus, a single fire could damage all four hot leg RTD cables.

The Division 11 "1IT" cables are routed in conduit from a containment penetration at Elevation 417 feet 6 inches and azimuth angle of 137 -49' to junction box 1IT01J outside the missile barrier at Elevation 451 feet 9 inches and azimuth angle 195 -45'. The Division 12 "1IT" cables are routed in conduit from a containment penetration at Elevation 439 feet 3 inches and azimuth angle of 127 -15' to junction box 1IT02J outside the missile barrier at Elevation 435 feet 9 inches and azimuth angle 197 -30'. The mineral insulated cables are routed in conduit from junction boxes 1IT01J and 1IT02J, between steam generators 1A and 1D, to the primary shield wall. These same cables are then routed in cable trays (Elevation 430 feet) from the primary

shield wall to a connector plate above the reactor vessel, and from there routed vertically down to the reactor vessel head. The minimum separation between Division 11 "LIT" cables and the hot leg RTD cables is approximately 12 feet, while the minimum separation between Division 12 "LIT" cables and the hot leg RTD cables is approximately 22 feet. Intervening combustibles in the form of cable insulation within cable trays are present between the incore thermocouple cables and the hot leg RTD cables. Area-wide suppression is not provided. This is not in accordance with the guidelines of Section III.G.2 of Appendix R.

Justification for Deviation(s)

A modification is currently planned to replace the existing hot and cold leg resistance temperature detectors (RTD) with dual element models. In each case, the second element will be powered from a non-safety-related division, and its cables will be routed so as to maintain adequate separation within containment, right out to the penetrations. This modification will ensure that a single fire could not cause loss of all reactor coolant hot and cold leg temperature indication. This modification will be installed during the first outage of sufficient duration but no later than September 30, 1986. Therefore, this deviation will exist only during the first fuel cycle. In the interim period, training will be developed to guide the operators to utilize the incore thermocouple to infer hot leg temperature should these instruments be lost due to a fire. In addition, at least one channel of each of the following instruments will remain available and free of fire damage: reactor coolant wide range cold leg temperature, steam generator wide range level and pressure, and pressurizer level and pressure.

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QUESTION 010.65

"The response to Question 10.55 provided by Amendment 39, regarding operator response to plant transients caused by fire-induced spurious operation of equipment does not provide sufficient detail. For each fire area, identify the plant transients that could be initiated by fire-induced spurious operation of equipment. Identify the instrumentation available to the operator to assess the transient and necessary corrective actions to be taken. Identify how the corrective actions would be integrated into the shutdown actions identified for Question 10.64."

RESPONSE

Valves are the only plant equipment considered subject to spurious operation, as a result of a fire, which could impact the safe shutdown capability of the plant. Spurious starting of pumps due to a fire is not considered because there is no adverse safety impact of a pump starting.

An analysis has been performed to identify those valves which are subject to spurious actuation due to a fire and could impact safe shutdown capability.

Assumptions

The assumptions made in performing the analysis were as follows:

- a. Appendix R definitions of safe shutdown capability were used;
- b. Fire occurs in only one fire zone of the plant;
- c. All safe shutdown equipment which could be disabled by a fire in this fire zone is disabled and is thus not available for mitigation of the spurious operation.
- d. Spurious actuation of a valve results from hot short or open to power or control cables;
- e. Only one spurious actuation occurs per single fire;
- f. Spurious actuation plus failure of identical redundant components were not considered because separation of redundant equipment is addressed in Section 2.4 of the Fire Protection Report; and
- g. Valves with power locked out were not considered because a hot short of the control cables would not cause actuation.

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Table Q10.65-1 lists the cables required for each of the above valves and Table Q10.65-2 gives the cable routing by fire zone for these valves. (Cable listings and routings for valves OSX162C and OSX162D are not given since these are Unit 2 valves.

However, the evaluation which follows addresses these valves as well as the Unit 1 valves OSX162A and OSX162B.)

Evaluation

The cable routings for the 17 valves listed above (except LFP010 and LFP011) were reviewed against the cable routings for other safe shutdown components to determine if a single fire could result in a spurious valve actuation and a simultaneous loss of function of redundant safe shutdown components such that safe shutdown capability would be impaired. The results of this review are given in Table Q10.65-3 which is a tabulation of the fire zones for which safe shutdown capability could be impaired. Valves LFP010 and LFP011 were not reviewed in the above manner since the spurious actuation alone results in the worst case effect on safe shutdown capability. Fire zones in which a fire could cause spurious operation of these valves are those zones listed in Table Q10.65-2.

Disposition of Results

As shown in Tables Q10.65-2 and Q10.65-3, there are numerous fire zones for which spurious actuation of any of the 17 valves identified previously due to a single fire could affect the safe shutdown capability of the plant. The following discussion addresses the actions that will be taken in regard to these valves.

a. Valves 1AF004A and 1AF004B

Fuses supplying power to these air operated valves will be permanently pulled. They will only be installed during periodic testing of the pumps, and this activity will be administratively controlled. This will preclude spurious operation of these valves during normal operation, since the cable from the fuse panel to the valve is routed exclusively in conduit.

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b. Valves 1FP010 and 1FP011

These valves are normally open energized valves, thus they fail closed on loss of power. The fire protection line served by these valves is only required in the event of a fire inside containment. The cables for outboard isolation valve 1FP010 are routed outside containment and, therefore, a fire inside containment could not spuriously close this valve. Spurious closure of 1FP010 or 1FP011 due to a fire outside containment is not a problem since it would not be necessary to supply water to hose stations inside containment.

Since a fire inside containment could cause spurious closure of inboard isolation valve 1FP011, this valve will be replaced with a check valve. The check valve is not subject to spurious operation due to a fire.

c. Valves 0SX162A, 0SX162B, 0SX162C, and 0SX162D

Spurious opening of any of these valves would be detected by a gradual rise in essential service water temperature. Sufficient time (at least 30 minutes) is available to allow for manual valve closure. These valves are all located by the essential service water cooling towers, thus they are not located in the fire zones in question. They would be available immediately for manual operations.

d. Valves 1SX001A and 1SX001B

Circuit breakers supplying power to these valves will be deenergized during normal plant operation. This will preclude spurious operation of these valves.

e. Valves 1SX016A, 1SX016B, 1SX027A, and 1SX027B

The worst case scenario involving these valves assumes that a fire in the auxiliary building damages the power cables to one train of RCFC fans and causes a spurious closure of either the inlet or outlet valve for the essential service water supply to the redundant RCFC train. This would result in a complete loss of RCFC function until the valve could be manually reopened. Instrumentation available

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to the operator to determine that this situation exists includes containment temperature indication and RCFC status indication in the main control room. It has been verified that the inlet and outlet valves are accessible for manual operation.

These valves are all located in Fire Zone 11.3-1, the Unit 1 piping penetration area, which is also one of the fire zones with redundant cables, as listed in Table Q10.65-3.

Therefore, a calculation has been performed for the loss of all RCFC's (conservatively assuming that the reactor continues to operate at full power) to determine if sufficient time (at least 30 minutes) is available to allow for manual operation prior to the time at which the containment temperature reaches the equipment environmental qualification temperature (325° F). The results of this calculation show that in 30 minutes the containment temperature reaches approximately 170° F, assuming an initial temperature of 120° F. It is estimated that the equipment EQ temperature of 325° F would be reached after 31 hours. Therefore, sufficient time is available to allow for manual operation.

f. Valves 1SX101A, 1SX173, and 1SX178

The consequence of the worst case scenario involving spurious operation of any one of these valves is a loss of all auxiliary feedwater flow. Refer to item a. above.

October 19, 1984

Docket No. 99900367/84-01

Square D Company
Power Equipment Division
ATTN: Mr. R. H. Brunner
Plant Manager
252 North Tippecanoe
Peru, Indiana 46970

Gentlemen:

This is to confirm the telephone conversation on October 9, 1984, by J. J. Petrosino, of this office with Mr. L. D. West of your staff, concerning the inspection at the Peru, Indiana plant on December 17-21, 1984.

The inspection will relate to implementation of your QA program.

Your cooperation concerning this matter will be appreciated.

Sincerely,

Gary G. Zech, Chief
Vendor Program Branch
Division of Quality Assurance,
Safeguards, and Inspection Programs
Office of Inspection and Enforcement

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