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Docket Nos. 50-280
and 50-281

Mr. J. H. Ferguson
Executive Vice President - Power
Virginia Electric and Power Company
Post Office Box 26666
Richmond, Virginia 23261

Dear Mr. Ferguson:

By letter dated September 26, 1972, we requested that you review the Surry Power Station to determine whether the failure of any non-Category I (seismic) system could result in the flooding of equipment important to safety. By letter dated October 26, 1972, as supplemented, your provided the necessary information.

Based on our review of the information you have provided, we conclude that added protective measures, in conjunction with existing design features, satisfy the guidelines for the protection for safety-related equipment from flooding. The details of our review are provided in the enclosed Safety Evaluation Report.

Sincerely,
Original signed by:
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Enclosure:
As Stated

cc: w/enclosure
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

December 18, 1980

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and 50-281

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Executive Vice President - Power
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Division of Licensing

Enclosure:
As Stated

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SAFETY EVALUATION REPORT
SUSCEPTIBILITY OF SAFETY-RELATED SYSTEMS TO FLOODING FROM FAILURE OF NON-CATEGORY I SYSTEMS FOR SURRY POWER STATION UNITS 1 AND 2

INTRODUCTION

By letter to the Virginia Electric and Power Company (VEPCO) dated September 26, 1972, the Nuclear Regulatory Commission (NRC) requested a review of nuclear generating plants to determine whether the failure of any non-category I (seismic) system could result in a condition, such as flooding, that might adversely affect the performance of safety-related equipment. By letter dated October 26, 1972, and subsequent letters (see References in enclosure), the Virginia Electric and Power Company submitted the additional information requested by the NRC as well as descriptions of various plant changes implemented to mitigate the effects of failure of non-Category I systems on safety-related equipment.

A continuing review of potential sources and consequences of flooding at Surry Units 1 and 2 was conducted by the VEPCO between 1972 and 1975. Initially, at the request of NRC in September 1972, the VEPCO reviewed several water systems as sources of flooding. Following the issuance of more descriptive guidelines for review of flooding from failure of non-Category I systems in December 1974, the facilities were again reviewed on a broader bases. The potential sources of flooding were described; and safety-related equipment which could be damaged by flooding were identified, and measures taken to minimize the effects of flooding and to protect safety-related equipment were reviewed.

EVALUATION AND CONCLUSION

The enclosed technical evaluation was prepared for us by Lawrence Livermore National Laboratory as part of our technical assistance program.

The consultant has reviewed the VEPCO submittals for Surry Units 1 and 2 to determine if postulated failures of non-Category I (seismic) components could adversely affect the operability of safety-related equipment. The consultant's findings, with which we agree, indicate a degree of vulnerability of some safety-related equipment due to postulated flooding from some non-Category I (seismic) sources. To minimize this vulnerability, the licensee has performed modifications in the form of installing 24 inch high dikes, installing water level switches/alarms, installing flow directing pipe sleeves, and has instituted operating procedures to provide assurance of proper operator action in the event of flooding.

Based on our review of the consultant's technical evaluation, we conclude that the added protective measures, in conjunction with existing design features, satisfy the guidelines for the protection for safety-related equipment from flooding as a consequence of failure of non-Category I (seismic) sources and, is therefore, acceptable.

ENVIRONMENTAL CONSIDERATIONS

We have determined that this action does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the action is insignificant from the standpoint of environmental impact and pursuant to 10 CFR 51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with this action.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the action does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the action does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and this action will not be inimical to the common defense and security or to the health and safety of the public.

Date: DECEMBER 1 8 1980

SELECTED ISSUES PROGRAM

TECHNICAL EVALUATION OF THE SUSCEPTIBILITY OF SAFETY-RELATED SYSTEMS TO FLOODING CAUSED BY THE FAILURE OF NON-CATEGORY I SYSTEMS FOR SURRY UNITS 1 AND 2

Docket Nos. 50-280 and 50-281

by

Victor R. Latorre
Richard A. Victor

December 1980

ENGINEERING RESEARCH DIVISION
ELECTRONICS ENGINEERING DEPARTMENT
LAWRENCE LIVERMORE NATIONAL LABORATORY

ABSTRACT

This report documents the technical evaluation of Surry Power Station Units 1 and 2. The purpose of this evaluation was to determine whether the failure of any non-Class I (seismic) equipment/piping could result in a condition, such as flooding, that might adversely affect the performance of the safety-related equipment required for the safe shutdown of the facility, or to mitigate the consequences of an accident. Criteria developed by the U.S. Nuclear Regulatory Commission were used to evaluate the acceptability of the existing protection system as well as measures taken by Virginia Electric and Power Company (VEPCO) to minimize the danger of flooding and to protect safety-related equipment.

Based on the information supplied by the licensee, it is concluded that the licensee, VEPCO, has demonstrated in its analysis that Surry Units 1 and 2 have the capacity and capability to manage and mitigate any single incident, such as flooding from a non-Class I system component or pipe, so that this flooding will not prevent the safe shutdown of the facility.

FOREWORD

This report is supplied as part of the Selected Electrical, Instrumentation and Control Systems Issues (SEICSI) Program being conducted for the U.S. Nuclear Regulatory Commission (NRC), Office of Nuclear Reactor Regulation, Division of Operating Reactors, by the Lawrence Livermore National Laboratory, Engineering Research Division of the Electronics Engineering Department.

The NRC work is funded under the authorization entitled, "Electrical, Instrumentation and Control System Support", B&R 201904 031. FIN A-0231.

TABLE OF CONTENTS

1. INTRODUCTION

By letter to the licensee, Virginia Electric and Power Company (VEPCO), dated September 26, 1972, [Ref. 1], the Nuclear Regulatory Commission (NRC), formerly U.S. Atomic Energy Commission, requested a review of Surry Power Station Units 1 and 2, to determine whether the failure of any non-Category I equipment outside containment, particularly in the circulating water system and fire protection system, could result in a condition such as flooding that might adversely affect the performance of safety-related equipment required for safe shutdown of the facilities or which may be required to limit the consequences of an accident. By letter dated October 26, 1972, [Ref. 2], and subsequent letters and reports, the licensee submitted the additional information requested by NRC, as well as descriptions of various plant changes implemented to mitigate the effects of failure of non-Category I systems on safety-related equipment. The NRC quidelines [Ref. 9] are provided as Appendix A to this report.

The purpose of this technical evaluation is to determine, on the basis of the information provided, whether the licensee's response and/or equipment/plant modifications are adequate to mitigate the effects of flooding on equipment important to safety.

2. EVALUATION

2.1 BACKGROUND

Three separate reviews of Surry Units 1 and 2 were conducted by the licensee between 1972 and 1975. Initially, at the request of NRC in 1972, the licensee reviewed the circulating water system as a source of flooding [Ref. 2]. Subsequently, as a result of the generation of new criteria, the NRC requested that Surry Units 1 and 2 be again reviewed [Ref. 4]. This review resulted in the licensee report on the modifications to the plant and interim measures taken to protect safety-related equipment from the effects of flooding [Ref. 6].

The various sources of flooding identified by the licensee and the appropriate safety equipment are discussed in Sections 2.2 and 2.3. Section 2.4 provides an evaluation of existing protection as well as measures that were taken by VEPCO to minimize the danger of flooding and to protect safety-related equipment.

2.2 SOURCES OF FLOODING

During the licensee's reviews of Surry Units 1 and 2, the following sources of flooding were identified:

1. Circulating Water System
2. Fire Protection System
3. Primary Grade Water Line

A failure of the circulating water line in the basement (elevation 9'6") or rupture of the six-inch fire main on mezzanine level are the most limiting flood sources in the turbine buildings.

A failure of the fire protection system is the most limiting flood source in the Fuel Building and Auxiliary Building. No non-Category I flood sources were identified in the Decontamination Building.

2.3 SAFETY-RELATED EQUIPMENT SUBJECT TO FLOODING DAMAGE

The following safety-related locations and equipment were determined to require protection from flooding:

1. Turbine Building
2. Decontamination and Fuel Buildings
3. Auxiliary Building
4. Service Building - Relay Room
5. Safeguards Building
6. Control Room
7. Emergency Diesel Generators
8. Circulating Water Intake Structure

Existing protection from flooding as well as the steps taken by the licensee to protect the above equipment from flooding damage are discussed in Section 2.4.

2.4 GENERAL CONSIDERATIONS

For Surry Units 1 and 2, the licensee has made systematic evaluations of all safety-related equipment required for shutdown or to limit the consequences of an accident. In addition, the licensee has instituted and installed alarms and barriers in critical areas to prevent flooding of safety-related equipment. The completion of these modifications have been verified by the Inspection and Enforcement (I&E) inspector.

Common mode failure mechanisms for containment recirculation spray systems have been identified. These are the result of locating service water supply valves for the recirculating spray heat exchangers in common valve pits on the lower level of the Turbine Building for each unit. Flooding of the Unit 2 pit has incapacitated the motor operators on two separate occasions. The valves are designed to Seismic Class I criteria, whereas the turbine buildings are not designed to seismic criteria. In the event of an eathquake, loss of the valves might result from failure of the buildings. The licensee's corrective measures will be addressed in this report.

In its letter of June 21, 1974 [Ref.3], the licensee stated that flooding, caused by failure in the fire protection system, in general, does not adversely affect safety-related equipment. The spacious floor areas and the many floor drains and sumps throughout the plant will provide adequate time for an operator to isolate the flood source before significant water levels are obtained. The present system of alarms in the fire protection system and the area sumps will alert the operator to a possible flood situation. The fire protection lines in each building may be readily isolated by a single manual isolation valve located at the supply header to each building. Where water from the flood source could flow into safety related areas, dikes are provided.

The licensee has made modifications to the Fuel Building, the Auxiliary Building, the Service Building, the Turbine Building, and various pipe tunnels. These will be discussed in detail in the following sections on an area basis.

2.5 TURBINE BUILDING

The Turbine Building contains the following safety-related equipment or systems at elevation 9'6" (Basement) that are susceptible to flooding:

Ventilating Units
Component Cooling Heat Exchangers
Instrument Air Compressors

The switchgear areas which are located at elevation 9'6" in the Service Building are accessible to Unit 1 Turbine Building Basement through a double width pedestrian door. The switchgear area contains the 4160 Volt and 480 Volt switchgear units, 480 Volt motor control centers, the battery rooms, emergency shutdown panels, miscellaneous other electrical equipment, and access to the relay rooms.

The flooding caused by a circulating water expansion joint rupture will be controlled by a partial enclosure (flow restrictors) around each circulating water expansion joint. A system of level alarms and level switches will immediately alert the operator of a flooding condition and automatically trip the circulating water intake valves in the event of delayed operator response. Isolation of adjacent safety-related areas is attained by constructing two-foot high dikes around entrances to the safety-related areas and by forming watertight seals around safety-related valve pits. These barriers and seals are designed to provide adequate protection until the flood source can be isolated.

The system of alarms, switches, shields, dikes and seals will allow the operator approximately 20 minutes to isolate the flood source, based on maximum possible flow through the shielded expansion joints. If the operator response time is greater than 20 minutes, the circulating water intake valve will be automatically closed by any two-out-of-three level switch signals when the water in the Turbine Building rises to the nine inch level. Closure of the circulating water intake valves will result in the turbine being automatically tripped.

Specific modifications to both Unit No. 1 and Unit No. 2 to protect against failure in the circulating water system are:

1. The service water valve pits serving the recirculating spray coolers, the bearing coolers, and the component coolers were sealed [Ref. 3].

2. One of the four 1/8 inch steel plates covering the 19'0" deep Amertap equipment pit downstream of the condenser was replaced with grating. This accomodates an additional 138,000 gallons of flood water.

3. Two level alarms were added, one located one foot off the bottom and a second located two feet off the bottom of the following Turbine Building pits:

   a. Pit located just south of the condenser where circulating water intake lines to the condenser are located.

   b. Pit located just north of the condenser where circulating water discharge lines from the condenser are located.

   c. Amertap equipment pit located north of the condenser.

4. Three level switches were added, two on the north side of the condenser and one on the south side of the condenser. These switches are actuated when the water level in the Turbine Building reaches elevation 10'3". Two out of three signals from these level switches will close the four circulating water intake valves.

5. Each circulating water expansion joint (12 per unit) is partially enclosed with 3/16" thick carbon steel plate, leaving 1/2" gap around one end to allow for movement. This shield will cut maximum predicted flow from a ruptured expansion joint by approximately a factor of 10.

Modifications to Unit No. 1, only.

1. A dike 2'0" high surrounding the pit which provides entrance to the Auxiliary Building tunnel and around the entrance to the switchgear and relay rooms was contructed. Steps for passage over these dikes were provided as necessary.

2. The four (4) floor drains located at elevation 9'6" (in electrical relay rooms) were isolated to prevent backflow from a high level in the Turbine Building sump.

Four, normally closed, 30-inch valves in the service water system, are located in a valve pit on the lower level of the Turbine Building for each unit. In the event of a LOCA, the valves open automatically so that service water can flow through each of the recirculating spray heat exchangers (four per unit). The motor operators for these valves are also located in the valve pits. On two occasions, the Unit No. 2 valve pit has been flooded thus affecting the capability of the motor operators.

In the reconfiguration of the valve pit, the licensee installed a watertight bulkhead in the valve pit and a concrete dike around the valve pit. The bulkhead and dike provide separation of the redundant trains with respect to flooding. Since each recirculation spray heat exchanger is designed to transfer 50% of the heat load, we conclude that the bulkhead and dike will provide significant additional protection against internal flooding.

The above measures have been completed and accepted by I&E. [Ref. 11].

We conclude that the above system of alarms, bulkheads, and dikes are adequate to mitigate the effects of flooding from failure of the circulating water system.

2.6 DECONTAMINATION AND FUEL BUILDINGS

No safety-related equipment was identified in these areas by the licensee.

The only source of flooding in these areas is the fire protection system.

The decontamination and fuel buildings drain via pipe tunnels without hold up to the auxiliary buildings. A normally closed, fail open trip valve was installed in the 6-inch supply header to the fuel building. This valve is located just north of the fuel building in a newly constructed valve pit. In addition, a switch for valve operation is located at each of the fire hose stations so that the fire lines can be rapidly pressurized when fire water is required.

We conclude that these measures are adequate.

2.7 AUXILIARY BUILDING

The safety-related equipment located in the Auxiliary Building, identified by the licensee to be subject to the effects of flooding, are the charging pump and the cooling water pump motors. The flood volume required to ground these motors is approximately 135,000 gallons.

The fire protection system was determined to be the most limiting flood source. The fire protection system supplies the Auxiliary Building, as well as the main steam valve houses (safeguards buildings), which have unrestricted spill paths (via pipe tunnels) to the Auxiliary Building. The fire protection system could provide the critical flood volume for the Auxiliary Building in approximately 27 minutes.

Two station modifications were implemented by the licensee [Ref. 6], as a permanent means of mitigating the effects of flooding.

1. Installation of water detection switches in the following locations:

- On the floor of the pipe tunnel which extends from the fuel and decontamination buildings to the Auxiliary Building.

- At the 6'10" elevation at the access to each of the pipe tunnels which run from the main steam valve houses to the auxiliary buildings at the 3'6" elevation.

These switches activate alarms in the Control Room to alert operators to a flooding condition.

2. Dikes two feet high were erected at entrances to the charging pump pits (elevation 13'0"). These dikes will prevent the leaking water from flowing into the charging pump pits.

We conclude that the above features and procedures are adequate to prevent flooding of the safety related equipment in the Auxiliary Building.

2.8 SERVICE BUILDING - RELAY ROOM

Various control cabinets in the relay room were identified by the licensee as the most vulnerable safety-related equipment subject to effects of flooding in the Service Building. Because of the proximity of these vital controls to the floor of the Service Building, major flooding in this area could possibly affect safe shutdown.

A rupture of the six-inch lines of the fire protection system on the north wall of the Turbine Building above the mezzanine level would result in flooding in the Service Building Relay Room. The following station modifications were implemented as a permanent means of mitigating the effects of flooding by the licensee [Ref. 6]:

1. Installation of water detection switches on the floor of the pipe trench inside the Relay Room. These switches activate alarms in the Control Room to alert operators to a flooding condition.

2. Alteration of the 24-inch dike along the north wall of the Turbine Building to provide separation between the area surrounding the door to the Relay Room and the rest of the area enclosed by the dike.

3. Installation of a flow directing pipe sleeve around the fire main above the Turbine Building mezzanine in the area above the dike described above for the purpose of diverting flooding to either end of the dike surrounded area.

4. A 2'0" high dike was erected inside Mechanical Equipment Room No. 3 so that flooding in the Mechanical Equipment Room will not, in turn, flood the Switchgear and Relay rooms. Steps are provided as necessary for passage over the dike.

5. The pipe tunnel leading from Mechanical Equipment Room No. 3 into the Switchgear and Relay rooms has been sealed with concrete at the entrance to the tunnel.

We conclude that the above features are adequate to prevent flooding of safety-related equipment and systems in the Service Building.

2.9 SAFEGUARDS BUILDING

The equipment important to safety in the Safeguards complex (which includes the main steam house, electrical vault, containment penetration and cable vault, auxiliary feedwater and containment spray valve house, motor control center rooms, vent equipment room, and the purge air ducts area) are the auxiliary feedwater, containment spray and recirculating spray pumps, low head safety injection pumps, 480 volt motor control center, and electrical cables.

The licensee has stated that the safety-related equipment located in these areas would not be affected by any reasonable flood sources, because service water lines of the direct tunnel to the Auxiliary Building are protected by alarms.

We conclude that these buildings and areas are not susceptible to flooding.

2.10 CONTROL ROOM

The Control Room, with its control cabinets, electrical cables and instruments is located at the 27'0" elevation, next to the Turbine Building. There is a domestic water line in the area; however, any accumulating water would run down steps from the Control Room to the next level below.

We conclude there is no danger of flooding safety-related equipment in the Control Room area.

2.11 EMERGENCY DIESEL GENERATORS

The three emergency Diesel Generators (D-G) are located in three independent rooms in the Service Building next to Turbine Building. There are two doors into each room, which are normally kept closed. There is no large water system piping that penetrates these rooms (fire protection is achieved by CO_2). The only source of flooding is a small one-inch water line which supplies make-up water to the contained cooling systems for the diesel engines. There are ventilation louvered openings in the lower portions of the doors leading from the D-G rooms to the yard, preventing flooding of any safety-related equipment or system. We conclude that this design for mitigating consequences of flooding in the D-G rooms is adequate.

2.12 CIRCULATING WATER INTAKE STRUCTURE

Service water is supplied to the recirculation spray heat exchangers from the circulating water system by gravity flow between the high level intake canal and the discharge canal seal pit. In the event of a loss of station power at the river intake, three diesel-driven emergency service water pumps are provided for both units at the river intake structure to supply makeup to the high level canal. Each pump is sized for a flow of 15,000 gpm and a total head of 45 feet and each can supply sufficient water to provide coolant for engineered safety features following a loss-of-coolant accident or a loss of station power.

There is no potential for flooding the service water pump diesels from a failure of the discharge piping or expansion joint of a circulating water pump, nor from the failure of the expansion joint of a service water pump.

The service water pump diesels are located in a separate concrete enclosed compartment from the circulating and service water pumps. This compartment is located 18' above normal water level of the intake bay, directly below. The identified potential pipe failure is located in the intake bay. High level alarms in the Control Room alert the operators of high water in the intake bay resulting from flood conditions on the river.

We concur there is no potential for flooding the service water pump diesel engines from a non-seismic pipe break.

3. CONCLUSIONS

The Surry Power Station (Units 1 and 2), has been designed and modified to mitigate or prevent the potential damage caused by flooding of equipment important to safety and/or the safe shutdown of the facility. Modifications made to the facility to control flooding of circulating water in the basement of the Turbine Building include the installation of circulating water pipe expansion joint flow restrictors, redundant level alarms in three different pits in the basement of the Turbine Building which sound in the Control Room, two-foot high dikes, and other additions. Also certain changes were made to operating procedures to control flooding in this area. Various other modifications described above were made in the Auxiliary Building, Pipe Tunnel, Relay Room Pipe Trench, and on the mezzanine level of the Turbine Building to control flooding in these areas from a failed fire main.

It is concluded that with the modifications accomplished and with the changes to operating procedures described in this evaluation, the "NRC Guidelines for Protection from Flooding of Equipment Important to Safety" [Appendix A] have been satisfied.

REFERENCES

1. USAEC Letter (R. C. DeYoung) to Virginia Electric and Power Company (VEPCO), dated September 26, 1972.

2. VEPCO letter (S. Ragone) to USAEC (R. C. DeYoung) dated October 26, 1972.

3. VEPCO letter (C. M. Stallings) to USAEC (K. R. Goller) dated June 21, 1974.

4. USAEC letter (R. A. Purple) to VEPCO (S. Ragone) dated October 31, 1974.

5. VEPCO letter (C. M. Stallings) to USAEC (R. A. Purple) dated December 12, 1974.

6. VEPCO letter (C. M. Stallings) to USAEC (K. R. Goller) dated December 30, 1974.

7. VEPCO letter (C. M. Stallings) to USAEC (K. R. Goller) dated January 17, 1975.

8. VEPCO letter (C. M. Stallings) to USNRC (E. G. Case) dated July 14, 1977, with enclosure, "Fire Protection Systems Review for Surry Power Station-Units 1 and 2", (July 1, 1977).

9. NRC Guidelines for Protection from Flooding of Equipment Important to Safety, April 12, 1973.

10. NRC Memorandum (from K. V. Seyfrit to F. J. Long) dated January 17, 1978.

11. NRC Memorandum (from G. Lalinas to B. Grimes), dated July 31, 1979.

12. VEPCO Letter (B. R. Sylvia) to USNRC (Harold R. Denton) dated December 4, 1980.

APPENDIX A

NRC GUIDELINES
FOR PROTECTION FROM FLOODING OF EQUIPMENT IMPORTANT TO SAFETY

Licensees are required to investigate their facilites to review their designs to assure that equipment important to safety will not be damaged by flooding due to rupture of a non-Class I system component or pipe such that engineered safety features will not perform their design function. No single incident of a non-Class I system component or pipe failure shall prevent safe shutdown of the facility.

Review of responses to the letters should assure that the plants meet the following guidelines:

1. Separation for redundancy - single failures of non-Class I system components or pipes shall not result in loss of a system important to safety. Redundant safety equipment shall be separated and protected to assure operability in the event a non-Class I system or component fails.

2. Access doors and alarms - watertight barriers for protection from flooding of equipment important to safety shall have all access doors or hatches fitted with reliable switches and circuits that provide an alarm in the control room when the access is open.

3. Sealed water passages - passages or piping and other penetrations through walls of a room containing equipment important to safety shall be sealed against water leakage from any postulated failure of non-Class I water system. The seals shall be designed for the SSE, including seismically induced wave action of water inside the affected compartment during the SSE.

4. Class I watertight structures - walls, doors, panels, or other compartment closures designed to protect equipment important to safety from damage due to flooding from a non-Class I system rupture shall be designed for the SSE, including seismically induced wave action of water inside the affected compartment during the SSE.

5. Water level alarms and trips - rooms containing non-Class I system components and pipes whose rupture could result in flood damage to equipment important to safety shall have level alarms and pump trips (where necessary) that alarm in the control room and limit flooding to within the design flood volume. Redundance of switches is required. Critical pump (i.e. high volume flow, such as condenser circulating water pumps) trip circuits should meet IEEE 279 criteria.

6. Class I equipment should be located or protected such that rupture of a non-Class I system connected to a tower containing water or body of water (river, lake, etc.) will not result in failure of the equipment from flooding.

7. The safety analysis shall consider simultaneous loss of offsite power with the rupture of a non-Class I system component or pipe.

The licensees' responses should include a listing of the non-Class I systems considered in their analysis. These should include at least the following systems:

Firewater	Demineralized Water
Service Water	Drains
Condensate	Heating Boiler Condensate
Feedwater	Condenser Circulating Water
Reactor Building Cooling Water	Makeup
Turbine Building Cooling Water	Potable Water

If the licensee indentifies deficiencies, he should describe interim and final corrective action to be taken and provide a schedule for completion of any required modifications. All corrective action should be completed as expeditiously as is practicable.