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RBG- 19,754
File No. G9.5,
G9.8.2.7, G9.8.6.2

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

Dear Mr. Denton:

River Bend Station-Unit 1
Docket No. 50-458

Enclosed is the Gulf States Utilities Company (GSU) response to Safety Evaluation Report (SER) Open Item #13 - Safe/Alternate Shutdown (SER Section 9.5.1.4, pg. 9-41). Given the highly unlikely event of a large transient fire in the main control room, and if necessary, its eventual evacuation, provisions now exist outside the main control room to transfer control and logic from the main control room to the remote shutdown system (RSS) or local switchgear and bring the reactor to hot shutdown. Hot shutdown is verified using the RSS and diesel generator instrumentation in conjunction with an abnormal operating procedure. In addition, these provisions are sufficient to bring the reactor to cold shutdown within 72 hours of the initiating event. Attachment 1 contains marked-up Final Safety Analysis Report (FSAR) pages which document the additions being made to the remote shutdown panels, diesel generator local control panels, and other selected panels and equipment locations to provide this capability. These revisions will be incorporated in a future FSAR amendment.

Since the unacceptability of GSU's position regarding a large, transient fire in the main control room was identified late in the licensing/construction schedule and the modifications required involve numerous systems; procurement, installation and testing is expected to impact the current startup schedule. GSU believes the use of administrative controls, the current design and a low probability of the postulated event combine to provide adequate justification for operation

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in the interim. The modifications discussed within the context of this transmittal will be implemented no later than during the first refueling outage, or during the first planned outage lasting at least 60 days, or during the first unplanned outage lasting at least 120 days. This schedule plan is consistent with the requirements imposed by the NRC on operating plants per 10CFR50.48 paragraphs (c)(4) and (c)(13).

Sincerely,

J. E. Booker

J. E. Booker
Manager-Engineering,
Nuclear Fuels & Licensing
River Bend Nuclear Group

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Attachment

shutdown conditions from normal operation or from anticipated transient conditions when control rod insertion capability is lost.

2. SLCS Operation

Schematic arrangements of system mechanical equipment and operator information display are shown in Fig. 9.3-9. SLCS component control logic is shown in Fig. 7.4-2. Instrument location drawings and elementary diagrams are identified in Section 1.7.

The SLCS is initiated by the main control room operator by turning a keylocked switch for system A, or a different keylocked switch for system B to the RUN position. The key is removable in the center NORMAL position. Should the selected pump fail to start, the other key switch may be used to select the alternate pump loop.

When the SLCS is initiated, the explosive-operated valve in the selected loop fires and the tank discharge valve starts to open immediately. The pump that has been selected for injection does not start until the tank discharge valve is open.

When the SLCS is initiated from system A, the outboard isolation valve of the RWCU system is automatically closed. Initiation from system B closes the inboard isolation valve automatically (Table 6.2-40).

Pumps are interlocked so that either the storage tank discharge valve or the test tank discharge valve must be open for the pump to run.

7.4.1.4 Remote Shutdown System (RSS)

1. RSS Function

The RSS is designed to achieve and maintain hot reactor shutdown and subsequently to achieve cold shutdown from outside the main control room following these postulated conditions:

1. The plant is at normal operating conditions, all plant personnel have been evacuated from the main control room and it is inaccessible for control of the plant.

2. The initial event that causes the main control room to become inaccessible is assumed to be such that the reactor operator can manually scram the reactor

Insert 1 for page 7.4-7

, and other selected control points,

Insert 2 for page 7.4-7

The main steam isolation valves and the automatic depressurization system (ADS) valves represent potential fire-induced LOCA pathways which are accounted for in the design of the RSS. Isolation is assured through the respective deenergization of the RPS breakers in the RPS distribution panels at el. 115 in the Control Building and the ADS breakers in the DC distribution panels at el. 98 in the Control Building.

The initiating event that causes the main control room to become inaccessible could be a large transient fire which includes shorts and/or spurious signals producing potential LOCA pathways and/or incorrect system line-up for shutdown. Transfer and control switches exist at the RSS Division I panel (single failure criteria is not applicable for a fire event) and the diesel generator local control panels to achieve and maintain hot shutdown; while local transfer and control switches for the DG fuel oil transfer pump and the standby service water pumphouse ventilation fan exist to achieve and maintain cold shutdown. For all remaining initiating events requiring a main control room evacuation, i.e. other than a transient fire, functional redundancy is provided by the RSS Division I and Division II panels, both at el. 98 in the Control Building.

before leaving the main control room. The capability of opening the output breakers of the RPS logic from outside the main control room can be used as a backup means to achieve initial reactor reactivity shutdown.

3. The main turbine pressure regulators may be controlling reactor pressure via the bypass valves. It is assumed that this turbine generator control panel function is also lost. Therefore, main steam isolation is assumed to occur at a specified low turbine inlet pressure and reactor pressure is relieved through the relief valves to the suppression pool.

4. The reactor feedwater system which is normally available is also assumed to be inoperable. Reactor vessel water inventory is provided by the RCIC system or by the automatic initiation of the HPCS system. 11

The RSS is required only during times of main control room inaccessibility when normal plant operating conditions exist, i.e., no transients or accidents are occurring. For this reason, only the equipment which interfaces directly with safety-related equipment (RHR, RCIC, etc) is required to be of safety-related quality. Transfer and control switches at the RSS panels are provided for equipment which is controlled during remote shutdown. The controls and indications at these panels are listed in the following sections. Functional redundancy is provided by the Division I and Division II panels which are located in different fire areas in the control building (El 98). 11

Insert 1

Insert 2

2. Remote Shutdown System Operation

Instrument location drawings and elementary diagrams are identified in Section 1.7.

Some of the existing systems used for normal reactor shutdown operation are also utilized in the remote shutdown capability to shut down the reactor from outside the main control room. The remote Division I shutdown panel is designed to control the required shutdown systems from outside the main control room irrespective of shorts, opens, or grounds in the control circuit in the main control room that may have resulted from an event causing an evacuation. The functions needed for remote shutdown control are provided with manual transfer switches which override controls from the main control room and transfer the controls to the 11

Insert 1 remote shutdown panel. Remote shutdown control is not possible without actuation of the transfer switches. ~~All necessary~~ power supplies and control logic are also transferred, as necessary. ~~Operation of the transfer switches causes an alarm in the main control room.~~ Access to the remote shutdown panel is administratively and procedurally controlled. Controls and

Insert 2

Insert 1 for page 7.4-7a

and other selected control points.

Insert 2 for page 7.4-7a

via the plant security system. Local transfer switch positions are monitored via remote annunciation in the main control room, while proper system line-up (local control switches) are monitored via remote indication at the RSS Division I panel.

initiation instrumentation for all system equipment ~~(i.e., valves and pumps)~~ necessary for proper system lineup and ~~complete system control~~ are located on the remote shutdown panels. System control is available from the RSS panels and other selected control points. Manual activation of SRVs, along with the initiation of RCIC system and/or the automatic initiation of the HPCS system, maintains reactor water inventory and brings the reactor to a hot shutdown condition after scram. During this phase of shutdown, the suppression pool is cooled by operating the RHR system in the suppression pool cooling mode. Reactor pressure is controlled and core decay and sensible heat are rejected to the suppression pool by relieving steam pressure through the relief valves.

Manual operation of the relief valves cools the reactor and reduces its pressure at a controlled rate until ~~the cold shutdown condition is reached or alternative~~ methods of heat removal ~~are restored.~~ The RHR system ~~is~~ operated in the shutdown cooling mode using the RHR system heat exchanger to cool reactor water and bring the reactor to the cold shutdown condition.

a long-term can be established

a. Reactor Core Isolation Cooling (RCIC) System

The following RCIC system equipment/functions have transfer and control switches located on the Division I remote shutdown panel.

1E51*MOVF010 - Motor-operated valve (pump suction from condensate storage)

1E51*MOVF013 - Motor-operated valve (RCIC injection shutoff)

1E51*MOVF019 - Motor-operated valve (minimum flow to suppression pool)

1E51*MOVF022 - Motor-operated valve (test bypass to condensate storage)

1E51*PC002C - Gland seal system air compressor

1E51*MOVF031 - Motor-operated valve (pump suction from suppression pool)

1E51*MOVF045 - Motor-operated valve (steam to turbine)

1E51*MOVF046 - Motor-operated valve (lube oil cooling)

1E51*MOVF059 - Motor-operated valve (test bypass to condensate storage)

1E51*MOVF063 ~~E51-F063~~ - Motor-operated valve (steam supply line isolation inboard)

1E51*MOVF064 ~~E51-F064~~ - Motor-operated valve (steam supply line isolation outboard)

1E51*MOVF068 ~~E51-F068~~ - Motor-operated valve (turbine exhaust to suppression pool)

1E51*MOVF076 ~~E51-F076~~ - Motor-operated valve (steam line warmup line isolation)

1E51*MOVF077 ~~E51-F077~~ - Motor-operated valve (vacuum breaker isolation outboard)

1E51*MOVF078 ~~E51-F078~~ - Motor-operated valve (vacuum breaker isolation inboard)

1E51*MOVF510 ~~E51-F510~~ - Motor-operated valve (trip throttle valve)

1E51*PC002 ~~E51-C002~~ - Motor-operated valve (RCIC turbine trip and throttling valve)

See Fig. 5.4-8.

The following RCIC system instrumentation is provided on the remote shutdown panel:

1C61*FICR001 ~~C61-R001~~ - RCIC flow controller and indicator

1C61*SIR003 ~~C61-R003~~ - RCIC turbine speed indicator

Indicating lights for conditions of turbine tripped, turbine bearing oil low pressure, turbine governor bearing oil temperature high, and turbine coupling end bearing oil temperature high

Valve position and pump status indicators.

b. Residual Heat Removal (RHR) System

The following RHR system equipment/functions have transfer and control switches located at the remote shutdown panel:

1E12*PC002A ~~E12-C002A~~ - RHR pump

1E12*MOVF003A ~~E12-F003A~~ - Motor-operated valve (heat exchanger shell side outlet)

1E12*MOVF004A - Motor-operated valve (RHR pump suction)

1E12*MOVF006A - Motor-operated valve (shutdown cooling)

1E12*MOVF006B - Motor-operated valve (shutdown cooling)

1E12*MOVF008 - Motor-operated valve (outboard shutdown isolation)

1E12*MOVF009 - Motor-operated valve (inboard suction isolation)

1E12*MOVF011A - Motor-operated valve (RHR heat exchanger flow to suppression pool)

1E12*MOVF023 - Motor-operated valve (reactor head spray)

1E12*MOVF024A - Motor-operated valve (RHR test line)

1E12*MOVF026A - Motor-operated valve (RHR heat exchanger flow to RCIC)

11 1E12*MOVF027A - Motor-operated valve (injection shutoff)

1E12*MOVF037A - Motor-operated valve (shutoff upper pool cooling)

1E12*MOVF042A - Motor-operated valve (RHR injection)

1E12*MOVF047A - Motor-operated valve (heat exchanger shell side inlet)

1E12*MOVF048A - Motor-operated valve (heat exchanger shell side bypass)

1E12*MOVF040 - Motor-operated valve (discharge to radwaste)

1E12*MOVF052A - Motor-operated valve (steam isolation)

1E12*MOVF053A - Motor-operated valve (RHR injection)

1E12*MOVF064A - Motor-operated valve (RHR pump minimum flow)

1E12*MOVF068A - Motor-operated valve (heat exchanger water discharge valve)

The following RHR system equipment/functions have transfer and control switches located at the Division II remote shutdown panel:

1E12*PC002B - RHR Pump

1E12*MOVF004B - Motor-operated valve (RHR pump suction - suppression pools)

1E12*MOVF064B - Motor-operated valve (RHR pump minimum flow bypass)

1E12*MOVF047B - Motor-operated valve (heat exchanger inlet)

1E12*MOVF003B - Motor-operated valve (heat exchanger outlet)

1E12*MOVF027B - Motor-operated valve (RHR B outboard isolation)

1E12*MOVF042B - Motor-operated valve (RHR B injection)

1E12*MOVF024B - Motor-operated valve (RHR test return) 11

1E12*MOVF053B - Motor-operated valve (shutdown cooling injection)

1E12*MOVF048B - Motor-operated valve (heat exchanger bypass)

1E12*MOVF011B - Motor-operated valve (RHR heat exchanger flow to suppression pool)

1E12*MOVF052B - Motor-operated valve (steam line isolation)

1E12*MOVF037B - Motor-operated valve (shutdown upper pool cooling)

1E12*PC002C - RHR pump

1E12*MOVF105 - Motor-operated valve (RHR pump suction - suppression pool)

1E12*MOVF064C - Motor-operated valve (RHR pump minimum flow bypass)

1E12*MOVF042C - Motor-operated valve (RHR C injection)

1E12*MOVF068B - Motor-operated valve (SW outlet from RHR heat exchanger)

See Fig. 5.4-12.

The following RHR instrumentati
Division I shutdown panel:

1C61*FIR005 - RHR flow

Valve position stat
indication.

The following RHR inst
Division II remote shutdown

1RHS*FI15B - RHR B pump

1RHS*FI15C - RHR C pump

c. Nuclear Boiler System

The following functions ha
located at the Division I an
panels:

1B21*RVF051C - Air-opera

1B21*RVF051G - Air-opera

1B21*RVF051D - Air-opera

The following nuclear boile
the Division I remote shutdo

1C61*LIR010 - Reactor le

1C61*PIR911 - Reactor pr

Valve position status ind

The following nuclear boile
the Division II remote shutdo

1ISC*PI101 - Reactor vess

1RHS*LI119 - Reactor vess

See Fig. 7.3-2.

d. Standby Service Water Sys

The following SSW system eq
and control switches locat
shutdown panel:

1SWP*P2A - SSW pump

See Fig. 5.4-12.

The following RHR instrumentation is located on the Division I shutdown panel:

1C61*FIR005 - RHR flow indicator for loop A | 11

Valve position status indication and pump status indication.

The following RHR instrumentation is located on the Division II remote shutdown panel: | 11

1RHS*FI15B - RHR B pump flow

1RHS*FI15C - RHR C pump flow

c. Nuclear Boiler System

The following functions have transfer and control switches located at the Division I and Division II remote shutdown panels:

1B21*RVF051C - Air-operated SRV (non-ADS)

1B21*RVF051G - Air-operated SRV (ADS) | 15

1B21*RVF051D - Air-operated SRV (non-ADS)

The following nuclear boiler instrumentation is provided on the Division I remote shutdown panel: | 11

1C61*LIR010 - Reactor level indicator

IC61*PIR911 - Reactor pressure indicator

Valve position status indicators.

The following nuclear boiler instrumentation is provided on the Division II remote shutdown panel:

1ISC*PI101 - Reactor vessel pressure

1RHS*LI119 - Reactor vessel level

See Fig. 7.3-2.

d. Standby Service Water System

The following SSW system equipment/functions have transfer and control switches located at the Division I remote shutdown panel: | 11

1SWP*P2A - SSW pump | 11

Insert 1 →

1SWP*P2C - SSW pump

The following SSW system equipment/functions have transfer and control switches located at the Division II remote shutdown panel:

1SWP*P2B - SSW pump

11 ~~1SPW~~ 1SWP*P2D - SSW pump

1SWP*MOV96B - Motor-operated valve (isolate normal SW supply)

~~1SPW~~ 1SWP*MOV55B - Motor-operated valve (cooling tower inlet)

~~1E12*MOVR068B - Motor-operated valve (SW outlet from RHR heat exchanger)~~

Insert 2 →

See Fig. 7.3-11.

The following SSW system instrumentation is provided on the Division I and Division II remote shutdown panels:

11 1SWP*FI64A and FI64B - Flow indicators (RHR heat exchangers A and B)

Valve position and pump status indicators.

e. Containment Atmosphere Monitoring System

The following containment atmosphere monitoring system
11 instrumentation is provided on the Division I remote shutdown panel:

11 1CMS*TR103 - Recorder drywell pressure/temperature and suppression pool level/temperature

Insert 1 for page 7.4-11a

1SWP*MOV96A - Motor-operated valve (isolate normal SW supply)
1SWP*MOV55A - Motor-operated valve (cooling tower inlet)

The following SSW system equipment/functions have transfer switches located at the Division I remote shutdown panel and control switches located at either the equipment or motor control center.

1SWP*P3A - Chilled water condenser recirculation pump
1SWP*P3C - Chilled water condenser recirculation pump
1SWP*MOV501A - Motor-operated valve (RPCCW heat exchanger supply)
1SWP*MOV511A - Motor-operated valve (RPCCW heat exchanger return)
1SWP*MOV502A - Motor-operated valve (containment unit cooler supply)
1SWP*MOV506B - Motor-operated valve (HPCS diesel jacket cooler return)
1SWP*MOV503A - Motor-operated valve (containment unit cooler return)
1SWP*PVY32A - Pressure valve power supply (chilled water chiller outlet/bypass)
1SWP*PVY32C - Pressure valve power supply (chilled water chiller outlet/bypass)
1SWP*PVX32A - Pressure valve instrument relay (chilled water chiller outlet/bypass)
1SWP*PVX32C - Pressure valve instrument relay (chilled water chiller outlet/bypass)
1SWP*MOV74B - Motor-operated valve (HPCS room unit cooler return)
1SWP*PC32A - Pressure controller (chilled water chiller outlet/bypass)
1SWP*PC32C - Pressure controller (chilled water chiller outlet/bypass)
1SWP*MOV77A - Motor-operated valve (HPCS diesel jacket cooler supply)
1SWP*MOV81A - Motor-operated valve (drywell/containment unit cooler return)
1SWP*MOV507A - Motor-operated valve (drywell/containment unit cooler supply)
1SWP*MOV73A - Motor-operated valve (HPCS room unit cooler supply)
1SWP*MOV22A - Motor-operated valve (containment unit cooler return)
1SWP*MOV171 - Motor-operated valve (HPCS room unit cooler supply)
1SWP*MOV172 - Motor-operated valve (HPCS room unit cooler return)

Insert 2 for page 7.4-11a

1SWP*MOV74A - Motor-operated valve (HPCS room unit cooler return)
1SWP*MOV506A - Motor-operated valve (HPCS diesel jacket cooler return)

The following containment atmosphere monitoring system instrumentation is provided on the Division II remote shutdown panel:

11

1CMS*TI40B and 1CMS*TI40D - Suppression pool temperature
1CMS*LIX23B - Suppression pool level
1CMS*PI2B - Drywell pressure
1CMS*TI41B and 1CMS*TI41D - Drywell temperature

Insert →

7.4.1.5 Design Basis Information

The safe shutdown systems are designed to provide timely protection against the onset and consequences of conditions that threaten the integrity of the fuel barrier and the RCPB. Chapter 15 identifies and evaluates events that jeopardize the fuel barrier and RCPB. The methods of assessing barrier damage and radioactive material releases, along with the methods by which abnormal events are identified, are presented in that chapter.

1. Variables Monitored to Provide Protective Actions

The following variables are monitored in order to provide protective actions to the safe shutdown systems:

a. RCIC - Reactor vessel low water level (t ip level 2)

All other safe shutdown systems are initiated by operator actions.

The plant conditions which require protective action involving safe shutdown are described in ~~Chapter 15~~ Chapters 9 and 15 and Appendix 15A.

2. Location and Minimum Number of Sensors

See the Technical Specifications for the minimum number of sensors required to monitor safety-related variables. There are no sensors in the safe shutdown systems which have a spatial dependence.

3. Prudent Operational Limits

Prudent operational limits for each safety-related variable trip setting are selected with sufficient margin so that a spurious safe shutdown system initiation is avoided. It is then verified by analysis that the release of radioactive materials, following postulated gross failures of the fuel or the nuclear system process barrier, is kept within acceptable bounds.

Insert for page 7.4-12

f. Control Building Chilled Water System

The following control building chilled water system equipment/functions have transfer switches located at the Division I remote shutdown panel and control switches located at the equipment, motor control center, or load center:

1HVK*CHL1A - Control building chilled water compressor
1HVK*CHL1C - Control building chilled water compressor
1HVK*P1A - Control building chilled water pump
1HVK*TV17A - Temperature valve (standby switchgear room chilled water)
1HVK*TV18A - Temperature valve (chiller equipment room chilled water)
1HVK*CHL1APL - Control building chilled water compressor lube oil pump
1HVK*CHL1CPL - Control building chilled water compressor lube oil pump
1HVK*MOV20A - Motor-operated valve (chilled water pump discharge)

g. Reactor Plant Ventilation System

The following reactor plant ventilation system equipment/functions have transfer switches located at the Division I remote shutdown panel and control switches located at the equipment or motor control center:

1HVR*UC1A - Unit cooler (containment)
1HVR*UC6 - Unit cooler (auxiliary building)
1HVR*UC11A - Unit cooler (auxiliary building)
1HVR*UC7 - Unit cooler (auxiliary building)
1HVR*AOD51A - Auxiliary building unit cooler (1HVR*UC11A) discharge damper

h. Control Building Air Conditioning System

The following control building air conditioning system equipment/functions have transfer switches at the Division I remote shutdown panel and control switches located at the equipment or motor control center:

1HVC*TC58A - Temperature controller
1HVC*TC44A - Temperature controller
1HVC*FN2A - Standby switchgear return fan
1HVC*ACU2A - Control building air handling unit
1HVC*ACU3A - Chiller equipment room air handling unit
1HVC*FN3A - Battery room 1A exhaust fan
1HVC*FN3D - Battery room 1A exhaust fan
1HVC*AOD5A - Standby switchgear return fan suction damper
1HVC*AOD12A - Standby switchgear ACU discharge damper
1HVC*AOD38A - Standby switchgear ACU inlet damper

The following control building air conditioning system equipment/functions have transfer switches at the Division II remote shutdown panel and control switches located at the equipment or motor control center:

1HVC*AOD5B - Standby switchgear return fan suction damper
1HVC*AOD12B - Standby switchgear ACU discharge damper
1HVC*AOD38B - Standby switchgear ACU inlet damper

i. Yard Structures Ventilation System

The following yard structure ventilation system equipment/functions have transfer switches located at the Division I remote shutdown panel and control switches located at the equipment motor control center:

1HVY*FN1A - Standby service water pumphouse ventilation fan
1HVY*FN2A - Standby service water pumphouse ventilation fan
1HVY*FN2C - Standby service water pumphouse ventilation fan

The following Division I yard structure ventilation system equipment has transfer and control switches located at the equipment motor control center:

1HVY*FN1C - Standby service water pumphouse ventilation fan

j. Main Steam Safety/Relief Valves

The following main steam safety and relief valves, vents and drains system equipment/function has a transfer switch located at the Division I remote shutdown panel and a control switch located at the equipment motor control center:

1SVV*MOV1A - Motor-operated valve (containment isolation)

k. Diesel Generator and Power Supply Systems

The following diesel generator and power supply system equipment/functions have local transfer and control switches at the Division I diesel generator control panel:

1HVP*FN6A - DG room 'A' ventilation supply fan
1HVP*FN2A - DG room 'A' ventilation exhaust fan
1HVP*AOD11A - Air-operated damper (DG room 'A')
1EGS*EG1A - Standby diesel generator
1EGF*P1A - DG fuel oil transfer pump
1EGF*PCV25A - Pressure-control valve (DG fuel oil return line)
1EGF*LT16A - DG fuel oil day tank level transmitter
1EGF*LIX16A - DG fuel oil day tank level power supply
1EGF*LIY16A - DG fuel oil day tank level instrument relay
1ENS*ACB01 - Standby bus (1ENS*SWG1A) distribution breaker
1ENS*ACB04 - Standby bus (1ENS*SWG1A) alternater supply breaker

1ENS*ACB05 - Standby bus (1ENS*SWG1A) distribution breaker
1ENS*ACB06 - Standby bus (1ENS*SWG1A) manual supply breaker
1ENS*ACB07 - Standby DG (1EGS*EG1A) supply breaker
1ENS*ACB10 - Standby bus (1ENS*SWG1A) distribution breaker
1ENS*ACB11 - Standby bus (1ENS*SWG2A) generator neutral breaker
1ENB*ACB560 - Battery charger supply breaker
1ENB*ACB565 - Auxiliary building (1ENB*MCC1) breaker
1EJS*ACB08 - Standby switchgear room 1A 1EHS*MCC14A breaker
1EJS*ACB10 - Standby battery charger 1ENB*CHGR1A breaker
1EJS*ACB14 - Standby switchgear room 1A 1EHS*MCC8A breaker
1EJS*ACB17 - Bus 1EJS*SWG1A supply breaker
1EJS*ACB27 - Auxiliary building 1EHS*MCC2A breaker
1EJS*ACB28 - Auxiliary building 1EHS*MCC2C breaker
1EJS*ACB29 - Auxiliary building 1EHS*MCC2E breaker
1EJS*ACB30 - Auxiliary building 1EHS*MCC2G breaker
1EJS*ACB31 - Auxiliary building 1EHS*MCC2J breaker
1EJS*ACB34 - DG room 'A' 1EHS*MCC15A breaker
1EJS*ACB35 - Auxiliary building 1EHS*MCC26 breaker
1EJS*ACB38 - Bus 1EJS*SWG2A supply breaker

The following diesel generator and power supply system equipment/function has transfer and control switches located at the equipment:

1EGF*P1C - DG fuel oil transfer pump

since the fire protection system inside the diesel generator building is seismically designed at least one train of onsite power is assured. The design provides that:

a. The fire protection piping inside the diesel generator building meets the requirements of ANSI B31.1, and the pipe supports comply with the requirements of AISC, including seismic loads.

b. Further protection against inadvertent operation is provided by the deluge valve, closed head design for systems PS 2A, 2B, and 2C in fire areas DG-1, DG-2, and DG-3. 13

Fire areas generally contain only one division of electrical equipment such as MCC and switchgear which might be involved in a fire or be inadvertently sprayed by the fire brigade, yet fire brigade usage of fire suppression fog nozzles was evaluated. The safe shutdown analysis shows that there is at least one other set of systems, equipment, and cables located outside the fire area free of fire damage, or protected by an approved method (see Legend for Table 9A.2-35), or described in fire brigade procedures to ensure safe shutdown.

4. Fire protection for the main control room is analyzed separately and is described in GE Topical Report NEDO-10466A. Section 4.0 of this report describes the details. The NRC accepted this report for reference in license applications on July 13, 1978. The PGCC design separates the Division I/II/III cables with fire stops and fire seals within raceways, and provides barriers in panels in those cases where separate panels are not provided. The main control room is continuously manned and access is controlled to limit the introduction of personnel and combustibles. Therefore, fire in more than a single electrical division is not postulated. 13

Insert →

5. Spurious valve operation was analyzed separately. Redundant switchgear, load centers, and motor control centers and the control circuits are located in separate fire areas separated by fire barriers or protected using an acceptable method. A failure in the control circuitry caused by a fire

Insert for page 9A.2-2a

In the unlikely event of a large transient fire in the main control room, provisions exist within the Division I RBS to safely bring the plant to cold shutdown.

9A.2.5 CONTROL BUILDING

Tables 9A.2-7 and 9A.2-8 provide data and information required for the fire hazards analysis and loading of the control building.

The control building contains the major controls and related equipment necessary to start up, operate, and shut down the plant. It is a four-story reinforced concrete structure including walls, floors, and roof. Minimum 3-hr fire barriers are located throughout to mitigate the consequences of a fire. All penetrations in these barriers are also rated for 3 hr. El 70'-0" contains cable and air conditioning equipment areas. El 98'-0" contains the standby switchgear rooms, the remote shutdown panel rooms, and the equipment room containing chillers and cable areas. El 115'-0" contains an additional switchgear room, battery rooms, motor generator areas, cable chases, and air conditioning equipment rooms and charcoal filter trains. The main control room is at el 136'-0". Cable chases extending from el 70'-0" to the control room level contain the PGCC equipment cables and are enclosed with 3-hr, fire-rated barriers. Fire protection of the PGCC is described in NEDO-10466A. Remote shutdown capability for Division I and Division II are provided to shut down the reactor in the event that the main control room becomes uninhabitable.

Insert

9A.2.5.1 Safe Shutdown Analyses

Safety-related cables in trays are arranged so that Division I is located in the west section, Division II in the east section and Division III in separate equipment rooms. Adequate separation is provided by minimum 3-hr, fire-rated walls except for the walls separating the redundant Division I and II chillers and air-conditioning equipment rooms. Area C-4 contains the Division I and II redundant HVAC equipment on the west and east sides of the wall, respectively. The equipment ensures adequate ventilation for the respective standby switchgear rooms. As listed in Table 9A.2-8, the combustible loading consists of the air-conditioning unit's motor insulation. The loading due to cables is negligible since cables are run in conduit. Area C-13 contains the Division I and II redundant chiller equipment necessary to air-condition the main control room on the west and east sides of the wall, respectively. Combustible loading consists of cable in tray, approximately

Insert for page 9A.2-11

for any reason, including a large transient fire. The Division I RSS is utilized to attain cold shutdown for a large transient fire in the Main Control Room.