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January 30, 1985

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

Subject: LaSalle County Station Unit 2
Environmental Qualification of
Electrical Equipment
NRC Docket 50-374

- References (a): September 4, 1981 letter from
L. O. DelGeorge to A. Schwencer.
- (b): Section 3.11, SER (March 1981), SSER #1
(June 1981), SSER #2 (Feb. 1982).
- (c): January 8, 1985 letter from
J. G. Marshall to H. R. Denton.

Dear Mr. Denton:

In accordance with a request made by Dr. A. Bournia during a telecon of January 22, 1985, the following information is provided. It is intended to supplement the Reference (c) submittal regarding an extension on the scheduler requirements of 10CFR 50.49 (g).

Provided as Attachment A is a table which identifies by equipment number each application for which an extension is being sought. Also identified is the manufacturer and model number of the pertinent item. This table corresponds directly to the report provided in Reference (c) which broadly reviews the actions required to attain a qualified status and proposes a schedule for implementation. Further, in the column headed "Reference", the page number is identified from the LaSalle County Assessment to Justify Interim Operation, VOL II, QUAD-1-81-852 (Rev. 3, June 1982) compiled by Quadrex Corporation, where the item was individually reviewed by function, failure mode and effects, and whether operator action was required for the needed safety function. For your convenience, copies of the pertinent pages are provided in Attachment B.

H. R. Denton

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January 30, 1985

Recall that the main volume of the report was transmitted to the Commission per Reference (a) and followed-up by explanatory FMEA's via letter of October 22, 1981; the commission's acceptance was provided in Reference (b) following the field audit of October 1981. The up-dated revision of the JIO report which included the Component Application Statements was transmitted to the Commission as a part of the 90-day response to the SER in June 1982. Although this study was undertaken prior to issuance of the rule, it is our judgement that all provisions of 10CFR 50.49 (i) are adequately addressed.

Should you need any further information, please contact this office.

Very truly yours,

J. G. Marshall

J. G. Marshall
Nuclear Licensing Administrator

lm

cc: A. Bournia - via Federal Express
Resident Inspector - LSCS (w/o Att.)

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Attachment A

Environmental Qualification - Request for Extension
LaSalle County Station, Unit 2
Identification of Applications for Which an
Extension is Requested

Limiter Valve Motor Operators

Equipment No.	Model No.	Reference *
2E22-F012	SB-0-25	M.5-2.79a
2E22-F001	SMB-00-25	M.5-2.81a
2E22-F015	SMB-2-60	M.5-2.83a
2E22-F011	SMB-3-60	M.5-2.85a
2E22-F010	SMB-4-100	M.5-2.87a
2E22-F023	SMB-4-150	M.5-2.89a
2E12-F003 A, B	SMB-1	M.5-1.99F
2E12-F004 A,B,C	SMB-00	M.5-1.99G
2E12-F006 A,B	SMB-0	M.5-1.99H
2E12-F011 A,B	SMB-000	M.5-1.99J
2E12-F021	SMB-3	M.5-1.99M
2E12-F024 A,B	SMB-3	M.5-1.99N
2E12-F026 A,B	SMB-000	M.5-1.99P
2E12-F027 A,B	SMB-000	M.5-1.99Q
2E12-F047 A,B	SMB-1	M.5-1.99t
2E12-F048 A,B	SMB-3	M.5-1.99u
2E12-F049 A,B	SMB-00	M.5-1.99v
2E12-F053 A	SMB-3	M.5-1.99x
2E12-F064 A,B,C	SMB-00	M.5-1.99y
2E12-F068 A,B	SMB-0	M.5-1.99z
2E12-F093	SMB-000	M.5-1.99ad
2E12-F094	SMB-000	M.5-1.99ae
2E21-F011	SMB-00	M.5-1.99ai
2E21-F012	SMB-3	M.5-1.99aj
2E32-F003A	SMB-000	M.5-1.99am
2E51-F010	SMB-000	M.5-1.99as
2E51-F031	SMB-000	M.5-1.99aw
2E51-F059	SMB-00	M.5-1.99az
2E51-F064	SMB-1	M.5-1.99ba
2E51-F068	SMB-00	M.5-1.99bb
2VP053 A,B	SMB-000	M.5-1.99bq
2VP063 A,B	SMB-000	M.5-1.99br
2VQ042	SMB-000	M.5-1.99cf
2VQ043	SMB-000	M.5-1.99cg

* Refer to LaSalle County Station Assessment to Justify Interim Operation, Quadrex Report No. QUAD-1-81-852, Rev. 3, Appendix F.

S&K Flow Element

Equipment No.	Model No.	Reference *
2E32-N006 A,E,J,N	20-9651-8550	M.5-2.43a

Delphi Hydrogen-Oxygen Analyzer Panel

Equipment No.	Model No.	Reference *
2PL76J	K-IV	M.5-1.56a
2PL77J	K-IV	M.5-1.56a

Atomics International Hydrogen Recombiner

Equipment No.	Model No.	Reference *
2HG01A	Part #N116000024-03	M.5-1.75a

Klockner - Moeller AC Motor Control Center

Equipment No.	Model No.	Reference *
2AP71E	Series 170	M.5-1.4a
2AP75E	Series 170	M.5-1.4d
2AP76E	Series 170	M.5-1.4g
2AP78E	Series 170	M.5-1.4j
2AP82E	Series 170	M.5-1.4l
2AP83E	Series 170	M.5-1.4o

Magnetrol Level Switch

Equipment No.	Model No.	Reference *
2C11-N013 A-D	5.0 - 751	M.5 - 2.26a
2E22-N001 A,B	5.0 - 751	M.5 - 2.26c
2E22-N002 A,B	5.0 - 751	M.5 - 2.26c

* Refer to LaSalle County Station Assessment to Justify Interim Operation, Quadrex Report No. QUAD-1-81-852, Rev. 3, Appendix F.

General Electric Terminal Board

Equipment No.	Model No.	Reference *
2H22-P018	EB-5	M.5 - 2.71a
2H22-P021	EB-5	M.5 - 2.71a
2H22-P022	EB-5	M.5 - 2.71a
2H22-P024	EB-5	M.5 - 2.71a
2H22-P025	EB-5	M.5 - 2.71a
2H22-P026	EB-5	M.5 - 2.71a
2H22-P027	EB-5	M.5 - 2.71a
2H22-P030	EB-5	M.5 - 2.71a
2H22-P031	EB-5	M.5 - 2.71a
2H22-P032	EB-5	M.5 - 2.71a
2H22-P033	EB-5	M.5 - 2.71a
2H22-P041	EB-5	M.5 - 2.71a
2H22-P042	EB-5	M.5 - 2.71a
2H22-P055	EB-5	M.5 - 2.71a
2PL32J	EB-5	M.5 - 1.105a
2PL33J	EB-5	M.5 - 1.105b
2PL34J	EB-5	M.5 - 1.105c
2PL35J	EB-5	M.5 - 1.105d

* Refer to LaSalle County Station Assessment to Justify Interim Operation, Quadrex Report No. QUAD-1-81-852, Rev. 3, Appendix F.

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Attachment B

The following pages are excerpted from the report entitled, LaSalle County Station Assessment to Justify Interim Operation, Report No. QUAD-1-81-852, Rev. 3, Appendix F, prepared by Quadrex Corporation

The main volume of the report was transmitted to the Commission via the September 4, 1981 letter from L.O. DelGeorge to A. Schwencer. An up-dated revision of the report which included the attached Component Application Statements was transmitted as a part of the 90-day response to the SER in June 1982.

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component AP-71E

This component is located in the Reactor Building, elevation 761', in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides motive and control power to the components shown in the reference key diagram - 480 volts MCC 135X-1 (Division 1).

(b) Effect of Component Failure

The failure of this component due to the Instrument Line Break Event in the Reactor Building or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of this component for this event will not affect the other 480 volt components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by the failure of this component; however, their operation is not required for this event.

1. Switchgear Heat Removal System

VX-02C, VX-03C battery room exhaust fan

2. Hydrogen Recombiner System

HGO-01B, HGO-02B, HGO-05B, HG-06B recombining inlet and discharge valves.

3. Containment Monitoring System

CM-02PA, CM-03PA sample pumps.

The components in the following systems are affected, but their six safety objective functions can be accomplished by the redundant components or alternate systems powered from redundant MCC's located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of one is highly unlikely and if one were to fail the others would continue to provide the function.

TABLE M.5-1 (Cont.)

1. Nuclear Boiler System
B21-F019 (Containment isolation function)
The redundant valve B21-F016 is powered from MCC 136Y-2 located at elevation 740'
B21-F067A, B, C & D (Containment isolation function) main steam line drain
The redundant valves are B21-F022A, B, C & D are powered from RPS MG sets.
2. Primary Containment Purge System
VQ-029, VQ-040, VQ-026 (Containment isolation function)
The redundant valves VQ-027, VQ-030, VQ-031 are powered from Division 2 MCC 136X-2 located outside the harsh environment.
VQ-038 (Containment isolation function)
The redundant valve VQ-037 is powered from Division 2 MCC 136X-1 located at elevation 820'-1"
3. Reactor Core Isolation Cooling System
E51-F008, E51-F064 (Safe shutdown and core coverage functions)
The redundant system HPCS is powered from Division 3 MCC 143-1 located outside the harsh environment.
E51-F008, E51-F064 (Containment isolation function)
The redundant valve E51-F063 is powered from Division 2 MCC 136Y-2 located at elevation 740'.
4. Residual Heat Removal
E12-F008 (Containment isolation function)
The redundant valve E12-F009 is powered from Division 2 MCC 136Y-1 located at elevation 710'-6".
E12-F023 (Containment isolation function)
The redundant valves are check valves in the RCIC system.
E12-F008 (Shutdown cooling function)
The redundant valves E12-F004B and C (suppression pool cooling) are powered from Division 2 MCC 136Y-1, 136Y-2 located at elevations 710'-6" and 740'. E12-F312A is not required for H₂ recombiner cooling.
5. Reactor Water Clean-up System
G33-F004 (Containment isolation function)
The redundant valve G33-F001 is powered from Division 2 MCC 136Y-1 located at elevation 710'-6". G33-F040 is not required.

TABLE M.5-1 (Cont.)

6. Primary Containment Ventilation System

VP-053A, B; VP-063A, B (Containment isolation function)

The redundant valves VP-113A, B; VP-114A, B are powered from Division 2 MCC 136Y-1 located at elevation 710'-6"

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failing. Consequently, no operator action is required to meet the six safety objectives for the Instrument Line Break. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

Schematic: 1E-1-4000CT

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component AP-75E

This component is located in the Reactor Building, 740' elevation in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides motive and control power to the components shown in the references key diagram - 480 volts MCC 135Y-1 (Division 1).

(b) Effect of Component Failure

The failure of this component due to the Instrument Line Break Event in the Reactor Building or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of this component for this event will not affect the other 480 volt components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by the failure of this component; however, their operation is not required for this event.

1. Reactor Recirculation System:
B33-F023A Reactor recirculation suction
B33-F067A Reactor recirculation discharge
B33-D003A Hydraulic control unit
2. Standby Liquid Control System:
C41-C001A SLC pump
C41-F001A SLC storage tank outlet
C41-D002 SLC tank heater
3. Control Rod Drive Hydraulic System:
C11-F003 CRD cooling water pressure
4. Reactor Water Cleanup System:
G33-F101 Drain Valve
G33-F100 Recirculation loop line to RWCU
5. Residual Heat Removal System
E12-F064A Minimum flow bypass
6. Nuclear Boiler System
B21-F065A Feedwater isolation

7. MSIV - Leakage Control System:

E32-F001A,E,J,N MSIV inboard valves
E32-F002A,E,J,N MSIV inboard valves

The components in the following systems are affected by the failure of this component but their six safety objective functions can be accomplished by the redundant components or alternate systems powered from redundant MCC's which are located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of any one is highly unlikely and if one were to fail the others would continue to provide the function.

1. Primary Containment Purge System:

VQ-042, VQ-043 (Containment isolation function)

The redundant valves VQ-027, VQ-030, are powered from Division 2 MCC 136X-2 located outside harsh environment.

VQ-036, VQ-048, VQ-051 (Containment isolation function)

The redundant valves VQ-034, VQ-035, VQ-047, VQ-050 are powered from Division 2 MCC 136Y-1 located at 710'-6" elevation.

VQ-041 (Containment isolation function)

The redundant valve VQ-037 is powered from Division 2 MCC 136X-1 located at 820'-6" elevation

2. Residual Heat Removal System:

E12-F052A, E12-F087A (Residual heat removal function)

The redundant valves E12-F052B and E12-F087B are powered from MCC 136Y-2 located at 740' elevation.

E12-F040A, B (Containment isolation function)

The redundant valves E12-F049A, B are powered from Division 2 MCC 136Y-1 located at 710'-6" elevation.

3. Reactor Building Closed Cooling Water System:

WR-029, WR-040 (Containment isolation function)

The redundant valves WR-179 and WR-180 are powered from Division 2 MCC 136Y-2 located at 740' elevation.

4. CSCS-ECWS

DG-035 (Core coverage function)

The redundant system HPCS is powered from Division 3 MCC 143-1 which is located outside the harsh environment.

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failed. Consequently, no operator action is required to meet the six safety objectives for the instrument line break. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

Schematic: IE-1-4000DU

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component AP-76E

This component is located in the Reactor Building, 710'-6" elevation in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides motive and control power to the components shown in the reference key diagram - 480 volt, MCC 135Y-2 (Division 1).

(b) Effect of Component Failure

The failure of this component due to the Instrument Line Break Event in the Reactor Building or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of this component for this event will not affect the other 480 volt components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by the failure of of this component; however, their operation is not required for this event.

1. Residual Heat Removal:
E12-F073A, F074A Heat Exchanger Vent
E12-F024A RHR test, containment spray to suppression pool
E12-F016A, F017A Containment spray
 F027A
2. Low Pressure Core Spray:
E21-F012 LPCS test bypass to suppression pool
E21-F011 LPCS minimum flow bypass
3. Reactor Building Equipment Drain System:
RE-08PA N.E. reactor building equipment drain sump pump
RE-07PA N.W. reactor building equipment drain sump pump
4. Diesel Fuel Oil System:
OD001P Diesel generator fuel transfer pump
5. MSIV Leakage Control System
E32-C001 Inboard system blower
E32-B001A,E,J,N Pipe heaters
E32-F002A,E,J,N Inboard valves

The components in the following systems are affected by the failure of this component. But the six safety objective functions can be accomplished by the redundant components or alternate systems powered from redundant MCC's which are located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of any one is highly unlikely and if one were to fail, the others would continue to provide the function.

1. Residual Heat Removal System:

E12-F053A, B (Containment isolation function)

The redundant valves E12-F050A, B are testable check valves. The redundant valves E12-F099A, B are powered from Division 2 MCC 1364-2 located at 740' elevation

E12-F004A, F047A, F048A, F003A, F026A, F068A, F011A, F006A (Residual heat removal function)

The redundant valves E12-F004B, F047B, F048B, F003B, F026B, F068B, F011B, F006B are powered from Division 2 MCC 1364-1 located at 710'-6" elevation.

E12-F042A (Core coverage function)

The redundant valve E12-F042B is powered from MCC 136Y-1 located at 710'6" elevation. The alternate system HPCS (also available) is powered from Division 3 MCC 143-1 located outside the harsh environment.

2. Low Pressure Core Spray:

E21-F001, F005, C002 (Core coverage function)

The alternate system HPCS is powered from Division 3 MCC 143-1 which is located outside the harsh environment.

3. Core Standby Cooling System:

VY04C RCIC/LPCS pumps cooler fan (LPCS - core coverage, RCIC - safe shutdown functions)

The redundant fan VY02C for HPCS is powered from Division 3 MCC 143-1 which is located outside the harsh environment.

VY01C, (Core coverage function)

The redundant fan VY02C for HPCS is powered from Division 3 MCC 143-1 which is located outside the harsh environment.

VY01C, VY05C (Residual heat removal function)

The redundant fans VY03C, VY06C (RHR B/C) are powered from MCC 136Y-1 located at 710'-6" elevation.

4. Reactor Core Isolation Cooling System:

E51-C003 (Safe shutdown and core coverage).

The alternate system HPCS is powered from Division 3 MCC 143-1 which is located outside the harsh environment.

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failed. Consequently, no operator action is required to meet the six safety objectives for the instrument line break. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

Schematic: 1E-1-4000CV

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component AP-78E

This component is located in the Reactor Building, elevation 820'-6" in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation for the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides motive and control power to the components shown in the reference key diagram - 480 volts MCC 136X-1 (Division 2).

(b) Effect of Component Failure

The failure of this component due to the Instrument Line Break Event in the Reactor Building or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of these components for this event will not affect the other 480 volt components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by this component failure; however, their failure will not affect achieving the six safety objectives.

1. Reactor Protection MG set room (1) battery room exhaust fan (1VX08C and 1VX06C)
2. Refueling platform (1F21-E003)

The following components are affected by the failure of this MCC, but their six safety objective functions can be accomplished by the redundant components found in the same or other systems powered from redundant MCC's located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of any one is highly unlikely and if one were to fail the others would continue to provide the function.

1. Primary Containment Vent Exhaust to Purge Train Isolation Valve (IVQ-037).

The redundant valve is IVQ-038 which is powered by Division 1 MCC 135X-1 located in elevation 761'.

TABLE M.5-1 (Cont.)

2. Control Room HVAC Supply Fans (OVC-01CA and OVC-02CA).
The redundant control room HVAC supply fans (OVC-01CB and OVC-02CB) are powered by Division 2 MCC 236X-1 located in Unit 2.
3. Standby Gas Treatment Isolation Valves (1VG-001 and 1VG-003), auxiliary relay power for 1VG-01C, 1VG-02C and 1VG-001, standby gas treatment equipment train cooling fan (WG-02C), heating coil (1VG-01A) and supply fan (1VG-01C) will fail should this MCC fails. Unit 2 can be used as a backup for Unit 1 provided isolation valve 1VG-001 can be opened manually by plant personnel.

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failing. Consequently, no operator action is required to meet the six safety objectives for the Instrument Line Break Event. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

Schematic: 1E-1-4000CV

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component AP-82E

This component is located in the Reactor Building, elevation 710'-6", in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside the Containment and high radiation from the LOCA inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

This component provides motive and control power to the components shown in the reference key diagram - 480 volts MCC 136Y-1 (Division 2).

(b) Effect of Component Failure

The failure of this component due to the Instrument Line Break Event in the reactor building or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of this component for this event will not affect the other 480 volt components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by this component failure, however, their failure will not affect achieving the six safety objectives.

1. Main steam line drain valve B21-F020 is not required for containment isolation.
2. RHR Loop B pump minimum flow bypass valve E12-F064B to the suppression pool is not required to operate for this event. RHR system operation is not affected by the failure of this component.
3. RHR B/C water leg pump E12-C003. Failure of this valve does not affect operation of RHR Loop A for this event. LPCS, HPCS and RCIC are available as backup.
4. RHR system emergency make up water cross-tie valve E12-F093. Failure of this valve has no effect in the operation of the RHR system.
5. RHR pump E12-C002B test return line discharge to the suppression pool (E12-F021). This valve is not required for RHR system operation

TABLE M.5-1 (Cont.)

6. S. E. reactor building sump pump 1A (RE-03PA) and south reactor floor drain sump 1A (RF-02PA) are NON-ESS, therefore, it is not required to function during this event.
7. Diesel generator fuel transfer pump (1D0-01P).
8. Hydrogen recombiner valves 1E12-F312B, 1HG-001A, 1HG-002A, 1HG-006A, 1HG-009, 1HG-003 and 1HG-018 are not required to operate for this event.
9. MSIV-LCS outboard blowers E32-C002B & F are not required to operate for this event.
10. Residual Heat Removal:
E12-F073B, F074B Heat exchanger vent
E12-F024B RHR test, containment spray to suppression
E12-F016B, F017B, F027B pool
E12-F016B, F017B, F027B containment spray

The following components are affected by the failure of this MCC, but their function can be accomplished by the redundant components found in the same or other systems powered from redundant MCC's which are located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of any one is highly unlikely and if one were to fail the others would continue to provide the function.

1. RHR pump suction valve E12-F004B from the suppression pool.
The redundant valve is E12-F004A which is located in Division 1 MCC 135Y-2 located at elevation 710'-6"
2. RHR suction cooling inboard isolation valve E12-F009
The redundant valve for this function is RHR suction cooling outboard isolation valve E12-F008 which is powered by Division 1 MCC 135X-1 located at elevation 761'.
3. RHR discharge to radwaste inboard isolation valve E12-F049A.
The redundant valve to be used for isolation function is RHR discharge to radwaste outboard isolation valve E12-F040A, B, which is provided by Division 1, MCC 135Y-1 located at elevation 740'.
4. Reactor water clean up system inboard isolation valve G33-F001.
The redundant valve for this function is the RWCU system outboard isolation valve G33-F004 which is powered by Division 1 MCC 135X-1 located at elevation 761'.
5. RHR pumps B/C cubicle cooler fan IVY-03C
Failure can occur to RHR pumps E12-L002 B & C due to high ambient temperature. RHR Pump A is available for Loop A to function since RHR Pump A cubicle cooler (IVY-01C) which is powered by Division 1 MCC 135Y-1 located at elevation 710'-6" is still operable.

TABLE M.5-1 (Cont.)

6. RHR service water pumps C,D cubicle cooler fan IVY-06C.
Failure can occur to RHR Loop B service water pumps due to high ambient temperature. RHR Loop A service water pumps A, B cubicle cooler fan IVY-05C powered by Division 1 MCC 135Y-2 located at elevation 740' is available to service RHR Loop A operation.
7. Drywell Cooler 1A inlet inboard isolation valve IVP-113A, B
The redundant valve to be used for this isolation function is the drywell cooler 1A outlet outboard isolation valve IVP-063A, B powered by Division 1 MCC 135X-1 located at elevation 761'.
8. Drywell Cooler 1A outlet inboard isolation valve IVP-114A, B
The redundant valve to be used for this isolation function is the Drywell Cooler 1A outlet outboard isolation valve IVP-053A, B powered by Division 1 MCC 135X-1 located at elevation 761'.
9. Residual Heat Removal Function, E12-F004B, F047B, F003B, F026B, F006B, F068B, F011B

The redundant valves E12-F004A, F047A, F048A, F003A, F026A, F006A, F068A, F011A are powered from Division 1 MCC 135Y-2 located at elevation 710'-6".
10. Core Coverage Function E12-F042B
The redundant valve is powered from Division 1, MCC 135Y-2 located at elevation 710'-6". The alternate system HPCS (also available) is powered from Division 3, MCC 143-1 located outside the harsh environment.

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failed. Consequently no operator action is required to meet the six safety objectives for the Instrument Line Break Event. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

P&ID:

Schematic: 1E-1-4000CX

FCD:

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

1. Component AP 83E

This component is located in the Reactor Building, 740' elevation, in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside the Containment and high radiation from the LOCA inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

This component provides motive and control power to the components shown in the reference Key Diagram - 480V MCC 1364-Z (Div. 2).

(b) Effect of Component Failure

The failure of this component, due to the Instrument Line Break Event in the reactor building or the LOCA event, will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of this component for this event will not affect the other 480V components in the electrical power distribution system.

(c) Impact on Other Systems

The components in the following systems are affected by failure of this component; however, their operation is not required.

1. Reactor Recirculation System:
B33-F023B Reactor recirculation suction
B33-F067B Reactor recirculation discharge
B33-D003 Hydraulic control unit
2. Standby Liquid Control System:
C41-C001B SLC pump
C41-F001B SLC tank outlet
C41-D003 SLC tank heater
3. Residual Heat Removal System:
E12-F094 RHR service water cross-tie
E12-F064C RHR pump C minimum flow bypass
4. Reactor Core Isolation Cooling System:
E51-F076 RCIC steam line warm-up
E51-F086 RCIC vacuum breaker isolation

TABLE M.5-1 (Cont.)

The components in the following systems are affected by the failure of this component but the six safety objective functions can be accomplished by redundant components or alternate systems powered from redundant MCCs which are located in widely separated areas of the building. Physical obstructions, massive heat sinks, and limited discharge through the small line would limit the extent of the harsh environment such that failure of any one is highly unlikely and if one were to fail the others would continue to provide the function.

1. Nuclear Boiler System

B21-F016 (Containment isolation function)

The redundant valve B21-F019 (outboard isolation) is powered from Div. 1 MCC 135X-1 located at 761' elevation.

2. Residual Heat Removal System

E12-F042C (Core coverage function)

The alternate system HPCS is powered from Div. 3 MCC 143-1 which is located outside the harsh environment.

E12-F004C (Residual heat removal function)

The redundant valve E12-F004A (suppression pool cooling Loop A) is powered from Div. 1 MCC 135Y-2 located at 710'-6" elevation.

E12-F052B, F087B (Residual heat removal function)

The redundant valves E12-F052A, F087A are powered from Div. 1 MCC 135Y-1 located at 740' elevation.

E12-F099A, F099B (Containment isolation function)

The redundant valves E12-F053A, B (outboard isolation) are powered from Div. 1 MCC 135Y-2 located at 710'-6" elevation.

3. Primary Containment Purge System

VQ-034 & VQ-035, VQ-047, VQ-050 (Containment isolation function)

The redundant valves VQ-036, VQ-048, VQ-051 are powered from Div. 1 MCC 135Y-1 located at 740' elevation.

4. Reactor Building Closed Cooling Water System

WR 179, WR 180 (Containment isolation function)

The redundant valves WR 029, WR 040 are powered from Div. 1 MCC 135Y-1.

TABLE M.5-1 (Cont.)

5. Reactor Core Isolation Cooling System

E51-F063 (Containment isolation function)

This redundant outboard isolation valves E51-F008 & F064 are powered from Div. 1 MCC 135X-1 located at 761' elevation.

E51-F063 (Safe shutdown & core coverage functions)

The alternate system HPCS is powered from Div. 3 MCC 143-1 which is located outside the harsh environment.

(d) Operator Action

Essential safety systems are maintained on separate divisional power. Safe shutdown is accomplished with any one entire division failed. Consequently, no operator action is required to meet the six safety objectives for the Instrument Line Break Event. With respect to LOCA radiation, interim operation with the equipment is justified by the successful testing already completed and documented.

References:

Schematic: 1E-1-4000CY

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component PL76J, PL77J

The Delphi K-IV Hydrogen-Oxygen Analyzer Panel components are located in the reactor building in environmental zone H4A. Hence, these components are exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components contain the post-LOCA primary containment H_2-O_2 percentage recorders, and also provide inputs to the plant computer.

(b) Effect of Component Failure

The failure of these components due to the Line Break Event Outside Containment or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of these components for this event will affect the capability to sample the H_2-O_2 percentage inside the primary containment. This capability is not required for the Instrument Line Break Outside Containment event.

(c) Impact on Other Systems

The sole function of these components is to sample H_2-O_2 percentage in the containment. No other systems are affected by their failure due to the Instrument Line Break Outside Containment.

(d) Operator Action

These devices are not required when the harsh environment caused by the line break exists. No operator action is required to achieve any of the six safety objectives for the instrument line break event. With respect to LOCA radiation, interim operation with this equipment is justified by the successful testing already completed and documented.

References:

P&ID: M-156, Sheets 1 and 2

Schematic: 1E-14018AH, AJ, and AM

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component HG01A

The Atomics International 211A (for unit 1) and 211B (for unit 2), Part No. N116000024-03, Hydrogen Recombiners are located in the Reactor Building in environmental zone H4A. Hence, these components are exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components control the concentration of combustible gases in the primary containment following a LOCA, taking suction from the drywell area and returning the discharge to the suppression pool area in Units 1 or 2.

(b) Effect of Component Failure

The loss of these components will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852).

Failure of these components for these events will affect the operation of the Hydrogen Recombiner in the unit subjected to the harsh environment. The backup unit in the non-accident unit will provide the alternate functional capability.

(c) Impact on Other Systems

The sole function of these components is to control combustible gas concentration in Units 1 and 2. No other systems are affected by their failure.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break Outside Containment exists. For LOCA considerations, the hydrogen recombiner on the unaffected unit serves as a back-up. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-130, Sheets 1 and 2

Schematic: 1E-1-4103AF

FCD: FSAR Figure 6.2-33, Sheets 1 and 2

TABLE M.5-1

m) COMPONENT APPLICATION STATEMENT

Component E12-F003A, B

These MOVs are located in the RHR cubicle in environmental zone H6. Hence, these components are exposed to a harsh environment for the Line Break Outside the Containment in the RHR cubicle and high radiation from the LOCA inside containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operated valves control the shell side discharge of the RHR heat exchangers.

(b) Effect of Component Failure

Failure of these components will affect the flow of the RHR system on the output of the shell side of the heat exchanger. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves. The failure of these components due to the Instrument Line Break Outside the Containment will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

(c) Impact on Other Systems

The sole function of these components is to provide control for the RHR flow from the outlet of the heat exchanger. No other systems are affected by their failure.

(d) Operator Action

These devices are not required when the harsh environment caused by the line break exists. They are in the position to perform their intended safety function. The RHR heat exchanger in the unaffected loop is available to provide cooling. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID:	M-96, Sheet 4
Schematic:	1E-1-4220AX, AY
FCD:	FSAR Figure 7.3-11

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F004A, B, C

These motor operated valves are located in the reactor building in environmental zone H5E. Hence, these components are exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment. (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of this component failure is considered only for these events.

(a) Component Function

These motor operated valves isolate the suppression pool suction line to the RHR pumps.

(b) Effect of Component Failure

These valves are always in the position to perform their intended safety function. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

The failure of these components due to the Instrument Line Break Outside Containment or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.1, page 4-2 of Quadrex Report QUAD-1-81-852).

(c) Impact on Other Systems

No other systems are affected by failure of these valve motor operators.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break and LOCA radiation exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheets 1, 2, 3, Zones A-7, B-7, C-7

Schematic: 1E-1-4220-AX, AZ, AL, BL

FCD/FSAR: Figure 7.3-12

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F006 A, B

These motor operated valves are located in the Reactor Building in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of this component failure is considered only for these events.

(a) Component Function

These motor operated valves are required for RHR shutdown cooling.

(b) Effect of Component Failure

These valves are always in the position to perform their intended safety function. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

The failure of these components due to the Instrument Line Break Outside Containment or the LOCA event will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.1, page 4-2, of Quadrex Report QUAD-1-81-852).

(c) Impact on Other Systems

The sole function of these valves is for RHR shutdown cooling. Failure of these valve motor operators does not affect other systems.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break or LOCA radiation exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheets 1, 2, Zones A-6, B-6

Schematic: 1E-1-4220-BA, 1E-1-4220-BB, 1E-1-4220-AH

FCD/FSAR: Figure 7.3-21, Sheet 5

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F011A&B

These MOVs are located in the RHR cubicles in environmental Zone H6. Hence, these components are exposed to a harsh environment for the Line Break Outside the Containment in the RHR cubicle and high radiation from the LOCA inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operator valves are required for RHR loop A and B heat exchanger discharge to the suppression pool.

(b) Effect of Component Failure

Failure of these components may disable either the RHR Loop A or Loop B steam condensing mode but this mode is not required to meet the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by the failure of these motor operator valves. These valves have no electrical interface with other components of any other systems.

(d) Operation Action

These devices are not required when the harsh environment caused by the Instrument Line Break Outside the Containment and the LOCA radiation harsh environment exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheet 4, Zone A-3 & A-6

Schematic Diagram: 1E-1-4220BE & BF

FCD: FSAR Figure 7.3-12, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F021

The Limitorque Type SMB is located in the Reactor Building in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component is used for testing the RHR pump (E12-C002C)

(b) Effect of Component Failure

This valve is normally closed and is opened only for test. Failure of this component prevents testing of the RHR pump; however, failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other components or system is affected by the failure of this component. This valve has no electrical interface with other components on this system or any other system, nor does it affect the operation of the RHR system.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheet 3, Zone E-6

Schematic: 1E-1-4220BH

FCD: FSAR Figure 7.3-12, Sheet 4

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F024A and B

The Limitorque type SMBs are located in the RHR cubicle in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR pumps E12-C002A and B test return line to the suppression pool and for suppression pool cooling.

(b) Effect of Component Failure

Failure of these components prevents testing of the RHR pump operation and normal pool cooling. Failure of these components has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other component or system is affected by the failure of these components. These valves have no electrical interface with other components on this system or any other systems.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break exists. They perform their function before they are affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID:	M-96, Sheets 1 and 2, Zones D2 and E1
Schematic:	1E-1-4220BK, BL
FCD:	FSAR Figure 7.3-12, Sheet 3

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F026A & B

The Limitorque type SMBs are located in the RHR cubicle in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR heat exchanger steam condensing mode discharge to RCIC pump suction.

(b) Effect of Component Failure

Failure of these components prevents RHR heat exchanger steam condensing mode flow to RCIC pump suction. Steam condensing is still available through the suppression pool. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of these components has no effect in achieving the six safety objectives as described in Quadrex report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by the failure of these components. These valves have no electrical interface with other components on this system or any other systems.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break Event or LOCA Event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheet 4, Zones B4 and B5

Schematics: 1E-1-4220BK, BM

FCD: FSAR Figure 7.3-12, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F027A, B

The Limotorque type SMBs are located in the RHR cubicle in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR heat exchanger flow to suppression pool spray.

(b) Effect of Component Failure

Failure of these components disable suppression pool spray flow from heat exchanger. The alternate loop at RHR is still available for the Instrument Line Break Event. RHR suppression pool cooling is still available to cool the suppression pool. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of these components has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

There is no electrical interface with any other systems. Suppression pool cooling is not affected by the failure of these components.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break exists. They perform their function before they are affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheets 1 & 2, Zones: Sheets 1, C-5; Sheet 2, C-4

Schematic: 1E-1-4220BK, BN

FCD: FSAR Figure 7.3-12, Sheet 3

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F047A, B

The Limitorque type SMBs are located in the RHR cubicle in environmental zone H6. Hence these components are exposed to a harsh environment for the Instrument Line Break Outside the Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR pump discharge flow to RHR heat exchangers. These are normally opened valves only closed for normal initiation of steam condensing.

(b) Effect of Component Failure

Failure of these components under worst condition will result in the valves remaining in their as-is position which has no effect on this safety function. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of these components has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by the failure of these components. These valves have no electrical interface with other components on this system or any other systems.

(d) Operator Action

These devices are in the position to perform their intended safety function. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID:	M-96, Sheet 4, Zones E-4 and E-5
Schematic:	1E-1-422OBS, BT
FCD:	FSAR Figure 7.3-12, Sheet 5

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F048 A, B

The Limitorque Type SMBs are located in the RHR cubicle in environmental zone H6. Hence, this component is exposed to a harsh environment for the Instrument Line Break outside the containment and high radiation from the LOCA event inside containment (see Section 4.4, page 4-32, of Quadrex Report, QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR pump discharge to the reactor vessel for core coverage.

(b) Effect of Component Failure

These valves are normally open and aligned for the LPCI mode. Failure of these components under worst condition will prevent diverting LPCI flow through the heat exchangers. RHR pump C002C, LPCS, HPCS and RCIC systems are available to provide core coverage. Failure of these components has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other component or system is affected by the failure of these components. These valves have no electrical interface with other components in this system or any other system.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break exists. They perform their function before they are affected by the LOCA radiation harsh environment. The operator will take action in accordance with the emergency procedures to divert the LPCI flow to the RHR heat exchangers.

References:

P&ID: M-96, Sheet 4, Zones E-1, D-8
Schematic: 1E-1-4220SS, BU
FCD: FSAR Figure 7.3-12, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F049 A, B

The Limitorque Type SMBs are located in RHR cubicle in environmental zone H6. Hence this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components are used for RHR heat exchanger warm up discharge to reactor building equipment drain tank during normal shutdown cooling initiation. They are not used in any accident mode.

(b) Effect of Component Failure

Failure of these components prevents condensate drainage to the reactor building drain tank. If the accident occurs during warm up the valves could fail to isolate. Isolation can be achieved by closing E12-F049, otherwise the valves are normally closed. Failure of these components has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other component or system is affected by the failure of these components. These valves have no electrical interface with other components in this system or any other system, nor do they affect the operation of the RHR system.

(d) Operator Action

These devices are not required when the harsh environment caused by the Instrument Line Break exists. They perform their function before they are affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheet 4, Zones C-1, D-8
Schematic: 1E-1-4220BV, BW
FCD: FSAR Figure 7.3-12, Sheet 3

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F053A, B

These motor operated valves are located in the reactor building in environmental zone H4A. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operated valves are required for RHR shutdown injection into the vessel.

(b) Effect of Component Failure

Failure of these valve operators under worst condition may prevent the valves from opening and injection of RHR cooling water into the RPV for core coverage. LPCS, HPCS, and RCIC systems are available to provide core coverage. No failure mechanism at the valve can cause the valves to change position from open to close because the motor control centers are not at the same location as the valves.

Failure of these components has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

No other component or system is affected by failure of these components. These valves have no electrical interference with other components or any other system.

(d) Operator Action

These devices are not required when the harsh environment caused by Instrument Line Break exists. These devices perform their function before it is affected by the LOCA radiation.

References:

P&ID: M-96, Sheets 1 and 2, Zone D5 and D6

Schematic: 1E-1-4220BX and BZ

FCD: FSAR Figure 7.3-12, Sheet 3

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F064A, B, C

These motor operated valves are located in the reactor building in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operated valves provide minimum flow bypass to the suppression pool.

(b) Effect of Component Failure

Failure of these valve operators under worst condition may prevent the valves from opening and minimum flow bypass to the suppression pool. No failure mechanism at the valve can cause the valves to change position from open to close because the motor control centers are not at the same location as the valves.

Failure of these valves have no impact on other systems and it has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by failure of these components. These valves have no electrical interference with other components or any other system.

(d) Operator Action

These devices are not required when the harsh environment caused by Instrument Line Break exists. These devices perform their function before it is affected by the LOCA radiation. The operator will take action in accordance with the emergency procedures to achieve core cooling if the valves are inoperable.

References:

P&ID:

Schematic: 1E-1-4220CA

FCD: FSAR Figure 7.3-12, Sheet 4

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F068A, B

The motor operated valve E12-F068A is located in ECCS equipment cubicle in environmental zone H5E, and E12-F068B is located in RHR cubicle in environmental zone H6. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operated valves are used in the RHR service water heat exchanger discharge.

(b) Effect of Component Failure

Failure of these components under worst condition would prevent opening the valves for RHR service water flow (discharge). No failure mechanism at the valve can cause the valve to change position from open to close because the motor control centers are not at the same location as the valves.

Failure of these valve operators have no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by failure of these components. These valves have no electrical interface with other components.

(d) Operator Action

These devices are not required when the harsh environment caused by Instrument Line Break exists. These devices perform their function before it is affected by the LOCA radiation. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-87, Sheets 1 and 2, Zones F2 and B2

Schematic: 1E-1-4220CB, CC

FCD: FSAR Figure 7.3-12, Sheet 2 (E12-F068A is not shown)

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F093

This motor operated valve is located in RHR cubicles in environmental zone H6. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for emergency makeup water crosstie.

(b) Effect of Component Failure

Failure of this component may disable emergency makeup function for RHR but this function is not required for core coverage nor residual heat removal. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with components on this system or any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break or LOCA event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96, Sheet 4, Zone F-4

Schematic: 1E-1-4220CG

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E12-F094

This motor operated valve is located in RHR cubicles in environmental zone H6. Hence, this component is exposed to a harsh environment only for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for emergency makeup water crosstie.

(b) Effect of Component Failure

Failure of this component may disable emergency makeup function of RHR but this function is not required for core coverage nor residual heat removal. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-91-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components on this system or any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break or LOCA Event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-96

Schematic: 1E-1-4220CG

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E21-F011

The Limitorque type SMB is located in the RCIC/LPCS cubicle in environmental zone H5A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component is used for LPCS pump minimum flow bypass to the suppression pool.

(b) Effect of Component Failure

Failure of this component would slightly reduce LPCS injection flow, and does not significantly affect the LPCS operation. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this component has no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by the failure of this component. This valve has no electrical interface with other components on this system or any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-94, Sheet 1, Zone C3

Schematic: 1E-1-4221AB

FCD: FSAR Figure 7.3-10, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E21-F012

The Limitorque type SMB is located in reactor building in environmental zone H4A. Hence, this component is exposed to a harsh environment only for the Instrument Line Break Outside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852) and to high radiation following the LOCA event. The impact of component failure is considered only for these events.

(a) Component Function

This component is used for testing LPCS pump (E21-C001) function with pump taking suction from the suppression pool and discharging back to the suppression pool.

(b) Effect of Component Failure

Failure of this component prevents testing of the LPCS pump.

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other component or system is affected by the failure of this component. This valve has no electrical interface with other components or this system or any other system, nor does it affect the operation of the LPCS.

(d) Operator Action

This system is not required to operate during these events. This valve is normally closed and does not operate for these events. If it is open during a LOCA event, capability to close will be maintained prior to being exposed to high radiation. No operator action is required to meet the six safety objectives.

References:

P&ID: M-94, Sheet 1, Zone C-5

Schematic: 1E-1-4221AC

FCD: FSAR Figure 7.3-10, Sheet 1

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E32-F003A, E, J, N

The Limitorque type SMBs are located in the Main Steam Tunnel in environmental zone H5C. Hence, these components are exposed to a harsh environment only for the Main Steam Line Break Outside Containment in the steam tunnel (see Section 4.2, page 4-12, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

These components are used for the operation of inboard MSIV-LCS.

(b) Effect on Component Failure

Failure of these components prevent operation of inboard MSIV Leakage Control System. Outboard MSIV-LCS is still available. The MSIV-LCS is not required for this event.

Failure of these components has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

These valves have electrical interface with valves E32-F001A, E, J, N and E32-F002A, E, J, N. However, their failure does not affect the operation of the outboard MSIV-LCS.

(d) Operator Action

The LCS is used only for a LOCA inside containment. Since it is not required to mitigate this event, no operator action is required to meet the six safety objectives.

References:

P&ID: M-55, Sheet 8, Zones E-4, D-4, C-4, and B-4
Schematic: 1E-1-4225AK, AL, AM, AN
FCD: FSAR Figure 6.7-3, Sheet 3

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E51-F010

This motor operated valve is located in the Reactor Building in environmental zone H5A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for RCIC pump suction from the condensate storage tank.

(b) Effect of Component Failure

This valve is normally open, but failure of this valve to close could eventually disable RCIC injection, if low level was experienced in the condensate storage tank. Failure of this component may disable RCIC system; however, the alternate system HPCS is available for shutdown cooling or core coverage and RHR system is available for heat removal. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other system.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break Event or LOCA Event exists. It is in the position to perform its intended safety function. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-101, Sheet 2, Zone A5
Schematic: 1E-1-4226AP
FCD: FSAR Figure 7.4-2, Sheet 1

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E51-F031

This motor operator valve is located in the Reactor Building in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for RCIC pump suction from suppression pool.

(b) Effect of Component Failure

Failure of this component may disable RCIC system, however, the alternate system HPCs is available. This valve is normally in the closed position which is the position to perform its safety function. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break Event or LOCA Event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-101, Sheet 2, Zone B-7

Schematic: 1E-1-4226AT

FCD: FSAR Figure 7.4-2, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E51-F059

This motor operated valve is located in the RCIC/LPCS cubicle in environmental zone H5A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

This motor operated valve is required for RCIC test bypass to condensate storage tank.

(b) Effect of Component Failure

This valve is normally in the closed position performing its safety function. Failure of this component during test may disable RCIC system, however, the alternate system HPCS is available. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operation Action

This device is not required when the harsh environment caused by the Instrument Line Break or LOCA Event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-101, Sheet 2, Zone E-5

Schematic Diagram: 1E-1-4226AW

FCD: FSAR Figure 7.4-2, Sheet 1

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E51-F064

This motor operated valve is located in the reactor building in environmental zone H5B. Hence, the component is exposed to a harsh environment for the Instrument Line Break Event Outside the containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for the RHR steam condensing mode.

(b) Effect of Component Failure

This valve is normally closed which is the position to perform its safety function of isolation. Failure of this component may disable RHR steam condensing mode which is not required.

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break or LOCA events exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-101, Sheet 1, Zone E-7

Schematic Diagram: 1E-1-4226AM

FCD: FSAR Figure 7.4-2, Sheet 2

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E51-F068

This motor operated valve is located in the reactor building in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for RCIC turbine exhaust to suppression pool.

(b) Effect of Component Failure

This valve is normally open which is the position to perform its safety function. Failure of this component may disable RCIC system; however, the alternate system HPCS is available.

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this valve operator has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break or LOCA event exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-101, Sheet 1, zone C-7

Schematic Diagram: 1E-1-4226AY

FCD: FSAR Figure 7.4-2, Sheet 5

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component VP053A, B

These motor operated valves are located in the reactor building in environmental zone H4A. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

These motor operated valves are required for primary containment chilled water outboard isolation.

(b) Effect of Component Failure

Failure of these valve operators in the worst condition will prevent these valves to close upon receiving an isolation signal from the primary containment and reactor vessel isolation system. Containment isolation is achieved by automatically closing inboard isolation valves which are located inside the containment, therefore, they are not affected by the instrument line break. In addition, this is a closed system within primary containment. The failure of these components will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Quadrex Report QUAD-1-81-852).

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by failure of this motor operator valve. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. This device performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-86, Zones E2 and C2
Schematic: 1E-1-4081AE
FCD: FSAR Figure 7.3-23, Sheet 1

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component VP06 3A,B

These motor operated valves are located in the reactor building in environmental zone H4A, hence this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These motor operated valves are required for drywell cooler outboard isolation.

(b) Effect of Component Failure

Failure of these valve operators in the worst condition will prevent these valves to close upon receiving an isolation signal from the primary containment and reactor vessel isolation system. Containment isolation is achieved by automatically closing inboard isolation valves which are located inside the containment, therefore, they are not affected by the instrument line break. In addition, this is a closed system within primary containment. The failure of these components will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Quadrex Report QUAD-1-81-852).

No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components or any other systems.

This device is not required when the harsh environment caused by the instrument line break exists. This device performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-86, Zones D2 and B2

Schematic: 1E-1-4081AE, AF

FCD: FSAR Figure 7.3-23, Sheet 1

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component VQ-042

This motor operated valve is located in the reactor building in environmental zone H4A. This component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Event Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for drywell nitrogen inerting isolation.

(b) Effect of Component Failure

Failure of this component may disable Primary Containment Purge system, but operation of this system is not required to meet the six safety objectives as described in Quadrex Report QUAD-1-81-852).

The failure of the valve to perform its isolation function is not required because of the inboard valve. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. This device performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-92, Sheet 1, Zone D-2

Schematic: 1E-1-4082AL

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component VQ-043

This motor operated valve is located in the reactor building in environmental zone H4A. This component is exposed to a harsh environment for the Instrument Line Break outside the containment and the high radiation from the LOCA Event inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD 1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This motor operated valve is required for suppression pool inerting isolation.

(b) Effect of Component Failure

Failure of this component may disable Primary Containment Purge system, but operation of this system is not required to meet the six safety objectives as described in Quadrex Report, QUAD 1-81-852.

The failure of the valve to perform its isolation function is not required because of the inboard valve. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other systems are affected by failure of this valve motor operator. This valve has no electrical interface with other components of any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. This device performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-92, Sheet 1, Zone C-2

Schematic: 1E-1-4082-AL

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component PL-32J

This component is located in the basement floors outside ECCS equipment cubicles in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment. (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides control and indication for HPCS cubicle ventilation.

(b) Effect of Component Failure

Failure of this component may disable the ventilation system for HPCS cubicle but the ventilation system for RCIC/LPCS cubicle is available for the alternate RCIC and LPCS systems. (The control panel for RCIC/LPCS is in zone H5A).

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This component does not have electrical interface with any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation. Alternate systems are available to provide core coverage and cooling. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

Schematic: 1E-1-4089AA

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component PL-33J

This component is located in the basement floor outside ECCS equipment cubicles in environment zone H5E. Hence, this component is exposed to a harsh environment for the Line Break Outside Containment in the RHR cubicle and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides control and indication for RHR B&C cubicle ventilation.

(b) Effect of Component Failure

Failure of this component may disable the ventilation system for RHR B&C cubicle but the ventilation system for RHR A cubicle is available for RHR system (Division 1). The control panel PL-34J for RHR A cubicle is in zone H5E but widely separated from panel PL 33J.

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This component does not have electrical interface with any other system.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation. Alternate systems are available to provide core coverage and cooling. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

Schematics: 1E-1-4089AA

TABLE M.5-1 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component PL-34J

This component is located in the basement floor outside ECCS equipment cubicles in environment zone H5E. Hence, this component is exposed to a harsh environment for the Line Break Outside Containment in the RHR cubicle and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides control and indication for RHR A cubicle ventilation.

(b) Effect of Component Failure

Failure of this component may disable the ventilation system for RHR A cubicle, but the ventilation system for RHR B&C cubicles is available for RHR system (Division 2). The control panel PL33J for RHR B&C is in zone H5E but widely separated from panel PL-34J.

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This component does not have electrical interface with any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation. Alternate systems are available to provide core coverage and cooling. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

Schematic: 1E-1-4089AA

TABLE M.5-1 (Cont)

m) COMPONENT APPLICATION STATEMENT

Component PL-35J

This component is located in the RCIC/LPCS cubicle in environmental zone H5A. Hence, this component is exposed to a harsh environment for the Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides control and indication for RCIC/LPCS cubicle ventilation system.

(b) Effect of Component Failure

Failure of this component may disable the ventilation system for RCIC/LPCS cubicle but the ventilation systems for HPCS and RHR cubicles are available for the alternate HPCS and RHR systems. (The control panel for HPCS/RHR cubicles are in zone H5E).

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This component does not have electrical interface with any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation. Alternate systems are available to provide core coverage and cooling. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

Schematic: 1E-1-4089AB

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component C11-N013A, B, C, and D

The Magnetrol 751 reactor water level components are located in the reactor building in environmental zone H4A. Hence, these components are exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components sense water level in the scram discharge volume and scram the reactor at high level.

(b) Effect of Component Failure

The loss of these components due to the Instrument Line Break Event Outside Containment or the LOCA will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of these components for this event will prevent the automatic scram function for high scram discharge volume only. It does not affect the other automatic scrams or the manual scram capability.

(c) Impact on Other Systems

The sole function of these components is to sense the high water level in the scram discharge volume and initiate automatic scram. No other systems are affected by their failure.

(d) Operator Action

These devices perform their function before they are affected by the Instrument Line Break Event or LOCA event. Therefore, no operator action is required to achieve any of the six safety objectives. Due to physical separation, failure of one instrument line will not impact the components in the other 3 RPS divisions.

References:

P&ID: FSAR Figure 7.7-2, Sheet 1, M-100, Sheet 2

Schematic: 1E-1-4215AC, AD, AE and AF

IED: FSAR Figure 7.2-1, Sheet 2 of 4

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-N001A, B; E22-N002A, B

The Magnetrol 751 water level components are located in environmental zone H7. Hence, these components are exposed to a harsh environment only for the Line Break Event Outside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

These components sense water levels in the condensate storage tank and the suppression pool, and align the HPSC suppression pool pump suction valve.

(b) Effect of Component Failure

The loss of these components due to the Line Break Event Outside Containment will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852).

Failure of these components for this event will only affect the automatic alignment of the HPCS suppression pool pump suction valve. Suction will still be available from the CST. The manual alignment of the valve will not be affected by the level switches, and other ECCS systems are available.

(c) Impact on Other Systems

The sole function of these components is to provide water level signals for alignment of the suppression pool pump suction valve. No other systems are affected by their failure.

(d) Operator Action

Failure of these components in the worst case could result in the loss of HPCS inventory. However, ADS is available as a backup and would automatically provide adequate inventory makeup. Therefore, no operator action is required to meet the six safety objectives.

References:

Schematic: 1E-1-4222AC

FCD: FSAR Figure 7.3-6, Zone H-7

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E32-N006 A, E, J, N

These components are located in the upper basement floor outside of ECCS equipment cubicle in environmental zone H5E. Hence, these components are exposed to a harsh environment for the line break outside the containment and the high radiation from the LOCA event inside containment (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

These components sense the inboard system flow into the low pressure manifold. This signal is used as a permissive for isolating MSIV-LCS inboard system valves on high leakage flow in the steam lines.

(b) Effect of Component Failure

The failure of these components will not preclude achieving the six safety objectives, namely safe shutdown, containment isolation, core coverage, RHR, containment integrity and effluent control (see Section 4.4, page 4-32 of Quadrex Report QUAD-1-81-852).

Failure could trip the inboard MSIV-LCS system but the outboard system would remain available.

(c) Impact on Other Systems

The sole function of these components is to provide a high leakage flow signal to isolate MSIV-LCS inboard valves. No other systems are affected by their failure.

(d) Operator Action

This device is not required when the harsh environment caused by the line break exists. For LOCA considerations, the outboard MSIV-LCS would perform the required function in the unlikely event that the inboard MSIV-LCS becomes inoperable later in the event. The operator will take action in accordance with the emergency procedures to control MSIV leakage.

References:

P&ID:	M-55, Sheet 8
Schematic:	1E-1-4225-AG
FCD/FSAR:	Fig. 6.7-3, Sheet 2

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component Terminal Board (EB-5), H22-POXX

This component is located in the reactor building in environmental zone H5. Hence, this component is exposed to a harsh environment for the Instrument Line Break Event Outside Containment and high radiation from the LOCA event inside containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for this event.

(a) Component Function

This component provides connections between the wiring in the panels and field wiring or cables.

(b) Effect of Component Failure

Failure of this component for this event on one rack will only affect the operation of those instruments associated with one division and/or logic channel of the safeguard system within the rack. Redundant safeguard system instrument racks are physically separated around the reactor building. These instrument racks are available to perform the functions required for initiating safeguard systems needed to mitigate this event.

Failure of this component will have no affect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

The failure of this component only affects the operation of one rack and will not affect other redundant divisional instrument racks which are electrically and physically separated around the reactor building.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. Back-up ESF systems are available. This device performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

Local rack arrangement drawing and wiring diagram - GE supplied.

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F012

This component is located in the HPCS cubicle in environmental zone H6. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides minimum flow bypass to suppression pool.

(b) Effect of Component Failure

Failure of this component prevents minimum flow to the suppression pool. This valve is not required for safe shutdown or core coverage functions. Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

(c) Impact on Other Systems

No other components or systems are affected by the failure of this component. This valve has no electrical interface with other components of this system or any other system.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break and LOCA exists. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-95, Zone C-3

Schematic: 1E-1-4222AE

FCD: FSAR Figure 7.3-6, Sheet 2

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F001

This component is located in the Reactor Building in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component is used for HPCS pump suction from the condensate storage tank.

(b) Effect of Component Failure

Failure of this component under the worst condition will prevent closing of this valve and HPCS pump cooling will eventually be lost. RCIC and the other two ECCS divisions are available as backup. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other component or system is affected by the failure of this component. This valve has no electrical interface to any other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-95, Sheet 1, Zone A-4

Schematic: 1E-1-422AD

FCD: FSAR Figure 7.3-6, Sheet 1

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F015

This component is located in the basement floor outside of the HPCS equipment cubicle in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component is used for HPCS pump suction from suppression pool.

(b) Effect of Component Failure

Failure of this component under the worst condition will prevent opening of this valve and suction from suppression pool to HPCS pump will be lost. RCIC system is available as a backup along with ADS. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves.

Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other system is affected by the failure of this component. This valve has no electrical interface to any other systems. No other systems are affected by their failure.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID:	M-95, Zone B-6
Schematic:	1E-1-4222AE
FCD:	Figure 7.3-6, Sheet 2

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F011

This component is located in the basement outside of the HPCS equipment cubicle in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides a test bypass to the condensate storage tank.

(b) Effect of Component Failure

This valve is normally closed and is opened only for test. Failure of this component prevents test bypass to the condensate storage tank and may prevent the opening of valve F015 suction from suppression pool. However, RCIC and ADS are available for safe shutdown and core coverage functions. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves. Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This valve has no electrical interface with other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the Instrument Line Break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-95, Zone D-3

Schematic: 1E-1-4222AE

FCD: FSAR Figure 7.3-6, Sheet 2

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F010

This component is located in the basement floor outside of the HPCS equipment cubicle in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides a test bypass to the condensate storage tank.

(b) Effect of Component Failure

This valve is normally closed and is opened only for test. Failure of this component prevents test bypass to the condensate storage tank and may prevent the opening of valve F015 suction from suppression pool. However, RCIC and ADS are available for safe shutdown and core coverage functions. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves. Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other systems are affected by the failure of this component. This valve has no electrical interface with other systems.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives

References:

P&ID: M-95, Zone D4
Schematic: 1E-1-4222AD
FCD: FSAR Figure 7.3-6, Sheet 2

TABLE M.5-2 (Cont.)

m) COMPONENT APPLICATION STATEMENT

Component E22-F023

This component is located in the basement floor area outside of the HPCS equipment cubicle in environmental zone H5E. Hence, this component is exposed to a harsh environment for the Instrument Line Break Outside Containment and high radiation from the LOCA Inside Containment (see Section 4.4, page 4-32, of Quadrex Report QUAD-1-81-852). The impact of component failure is considered only for these events.

(a) Component Function

This component provides a test bypass to the suppression pool.

(b) Effect of Component Failure

This valve is normally closed and is opened only for test. Failure of this component prevents test bypass to the suppression pool. This valve is not required for safe shut-down or core coverage function, and RCIC and ADS are available. No failure mechanism at the valve can cause the valve to change position from open or close because the motor control centers are not at the same location as the valves. Failure of this component has no effect in achieving the six safety objectives as described in Quadrex Report QUAD-1-81-852.

(c) Impact on Other Systems

No other components or other systems are affected by the failure of this component. This valve has no electrical interface with other components of this system or any other system.

(d) Operator Action

This device is not required when the harsh environment caused by the instrument line break exists. It performs its function before it is affected by the LOCA radiation harsh environment. Therefore, no operator action is required to achieve any of the six safety objectives.

References:

P&ID: M-95, Zone C-5
Schematic: 1E-14222AF
FCD: Figure 7.3-6, Sheet 1