Edwin I Hatch Nuclear Plant

Technical Requirements Manual

Unit 1 and 2

Edwin I Hatch Nuclear Plant

Technical Requirements Manual

Unit 1

HATCH UNIT 1 TECHNICAL REQUIREMENTS MANUAL

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T 1.0 USE AND APPLICATION

T 1.1 GENERAL OVERVIEW

The Technical Requirements Manual (TRM) contains Specifications and operational conveniences, such as lists, cross references, acceptance criteria, and drawings.

The TRM Specifications are contained in Section 3.0 and include operational requirements, Surveillances, and Required Actions for nonfunctional equipment. Instructions for the use and application of TRM Specifications are included at the beginning of Section 3.0.

Operational conveniences provide a ready reference to setpoints, lists, and other helpful tools described in plant procedures and programs.

Other plant documents, such as Fire Hazards Analysis (FHA) Appendix B, CORE OPERATING LIMITS REPORT (COLR), and Offsite Dose Calculation Manual (ODCM), are not considered part of the TRM, but are included with the TRM as Appendices, and either contain their own rules of usage or are covered by other plant documents.

The TRM is a licensing document and changes to this manual are governed by Procedure NMP-AD-009, Licensing Document Change Requests.

T 1.2 DEFINITIONS

Channel - An arrangement of components and modules that are required to generate a single protective action signal when the associated setpoint is reached. A channel ends where it combines with other single protective action signals or enters a logic system composed of relays, via a bistable trip device. If there is only one input from a channel to an end device, the channel is usually considered to end at the input terminals for the control logic of the end device.

The above definition may be applied to instrument surveillances required in the Technical Requirements Manual. For Technical Specifications required surveillance, the following definition from ANSI/IEEE Std 279-1971 applies:

An arrangement of components and modules as required to generate a single protective action signal when required by a generating station condition. A channel loses its identity where single action signals are combined.

Channel Functional Test Scope - The CHANNEL FUNCTIONAL TEST normally includes the components and modules of a channel, as defined above, except as follows. The test signal should be injected as close as possible to the sensor except when specifically stipulated in a licensing document. Each output (e.g., contact) of the channel should be tested with the following exception. If an alarm function is the sole function of the channel, the alarm output of the channel must be tested up to the point where it loses its identity. If this does not apply, the alarm function is not required to be tested. Figure 1.2-1 shows the typical configuration for a protective action logic system and the divisions between trip system; channels, trip logic, and actuation logic. This drawing shows two channels in a trip system; however, a trip system may include more than two channels. As seen in the Figure 1.2-1, channels A1 and A2 end at the contacts for relays K1 and K2, respectively. Consequently, a CHANNEL FUNCTIONAL TEST for each of the channels normally includes these contacts. Where a positive indication of bistable trip status is provided, as in the Analog Transmitter Trip System, the trip status indication may be considered the channel end point, provided the bistable is utilized as the initiating device for the actuation logic in the LOGIC SYSTEM FUNCTIONAL TEST. This will ensure the appropriate overlap in testing. In this case, the trip output logic switch within the bistable takes the place of the K1 and K2 relays, as shown in Figure 1.2-1.

When a channel involves two functions, one supplied by the master trip unit and the other supplied by the slave trip unit, the 6 hour Allowed Outage Time (AOT) for surveillance testing applies to the total time the channel is removed from service for testing both functions.

The above definition of channel functional test scope may be used for Technical Requirements Manual surveillances. For Technical Specifications surveillances, the definition of channel functional test as provided in the Technical Specifications Section 1.1, applies.

FUNCTIONAL – Functionality is a concept similar to Operability. Systems, structures, and components (SSCs) in the Technical Requirements Manual are either Functional or Nonfunctional, as opposed to Operable or Inoperable. The term “Operable” is reserved solely for Technical Specifications SSCs.

Similar to the definition of Operable, an SSC is Functional when it is capable of performing its specified function, and when all attendant equipment required for the SSC to perform its specified function, is capable of performing its support functions.

In-Place Qualitative Assessment - The observation and/or comparison of a resistance temperature detector (RTD) or thermocouple sensor indication and status to other indication or status derived from similar instrument channels measuring the same parameter. It is based on the assumption that instrument channels monitoring the same parameter should read reasonably close and track the same value.

Operations with the Potential to Drain the Reactor Vessel (OPDRV) - This is a self-defined phrase, only applicable with fuel in the reactor vessel. The following activities are examples of OPDRVs. Note that this is not an all inclusive listing.

- Failure to maintain OPERABILITY of the RHR suction valve interlocks (F004A, B, C, & D and F006A, B, C, & D) while in Operational Condition 4 or 5. An exception is that, while in Condition 4 or 5, the interlocks may be defeated provided that the RPV is isolated from the shutdown cooling suction piping by a manual valve via an approved procedure.

- Failure to maintain OPERABILITY of Reactor Water Cleanup primary containment isolation valves 1G31-F001 and F004 while in MODE 4 or 5.

    a. If one of these valves is in the isolated position, deactivated, and controlled via the clearance procedure, this does not apply; or

    b. If (1) the integrity of the RWCU system is intact and no maintenance is being performed on RWCU that has the potential for draining the reactor vessel through this flowpath; (2) the reactor pressure vessel water level-Low Low, Level 2 isolation instrumentation is OPERABLE for 1G31-F001 or 1G31-F004, (3) the valve being relied upon is fully OPERABLE, and (4) system pressure remains below 200 psig, the necessary automatic controls are in place to prevent unexpected loss of inventory via this flowpath such that this does not apply. NOTE: The limitation on system pressure ensures there is no driving pressure (pipe break, crack, or leak) that could create a condition that could lead to an OPDRV.

- Failure to maintain RHR primary containment isolation valves 1E11-F008 and 1E11-F009 OPERABLE per Unit 1 Technical Specifications LCOs 3.3.6.1 and 3.6.1.3 while in MODE 4 or 5. If REQUIRED ACTIONS of Unit 1 Technical Specifications LCOs 3.3.6.1 and 3.6.1.3 are satisfied, this does not apply.

- Opening a greater than 1 inch penetration to the RPV or RPV cavity. Exceptions to this are:

a. Penetrations that are isolated from the RPV or RPV cavity by at least one closed, deactivated valve, manual valve, or blank flange.

b. Penetrations that are isolable from the RPV or RPV cavity by a functional isolation system provided RPV water cannot be diverted to other sources.

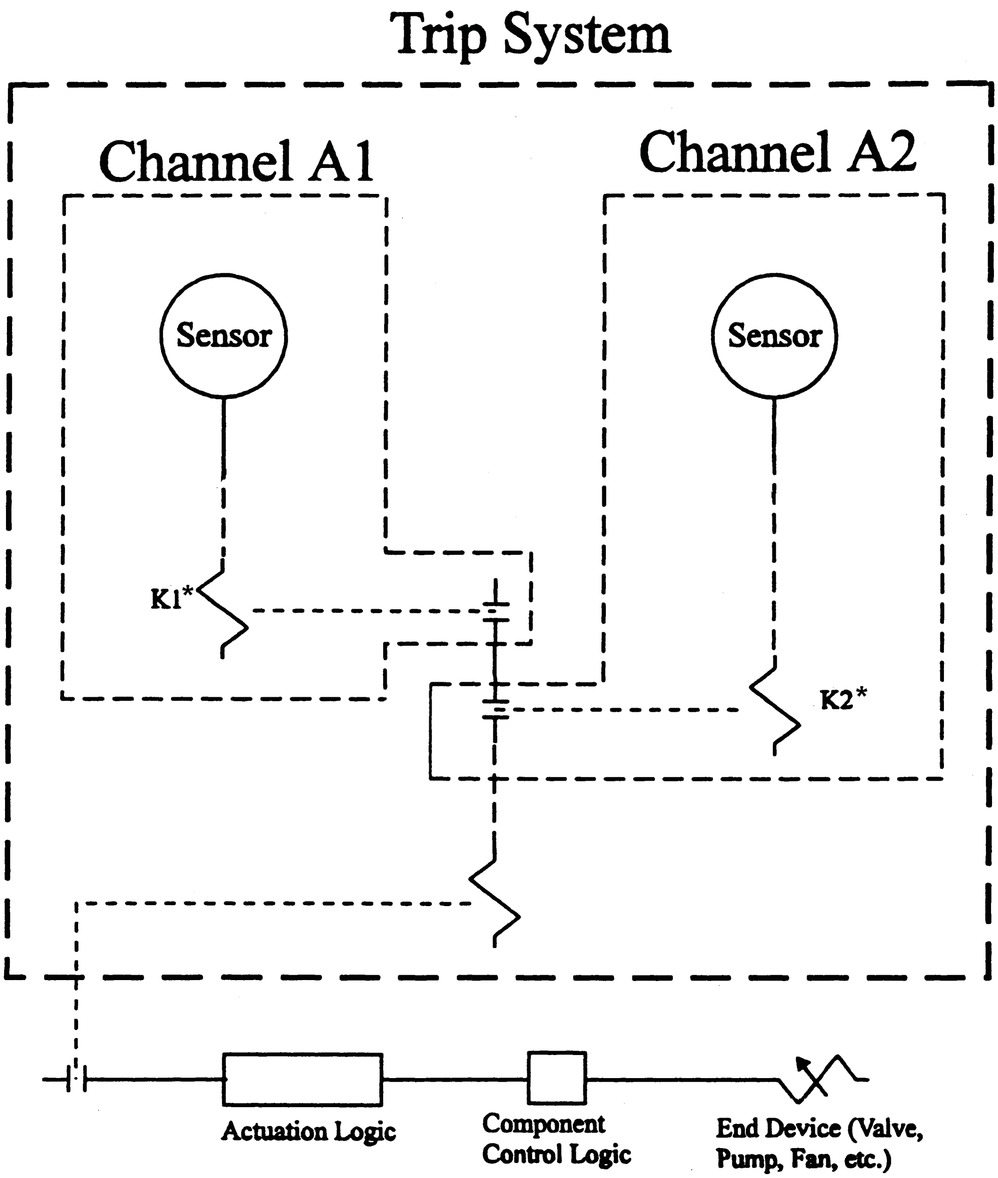
c. Penetrations that are isolated from the RPV or RPV cavity by another barrier (such as plugs, freeze seals, etc.) utilized via an approved procedure.

d. Lines above the Main Steam Line elevation of 196 feet - 10 inches (if no movement of irradiated fuel is in progress).

e. Any RPV penetration which is at an elevation above the RPV, or RPV cavity, water level.

- Evolutions associated with the following systems/components, if not isolated by at least one boundary: Reactor Water Cleanup, Reactor Recirculation, Residual Heat Removal, Control Rod Drive (removal), Standby Liquid Control, Reactor Coolant Sampling, Main Steam Isolation Valves, Safety Relief Valves, Main Steam, Feedwater, Core Spray, High Pressure Coolant Injection, Reactor Core Isolation Cooling, RPV Instrumentation, and RPV Cavity Drains.

System Functional Test - The injection of an actual or simulated actuation signal, overlapping a LOGIC SYSTEM FUNCTIONAL TEST as appropriate, to verify that system components perform the system’s specified safety function. Where required, Bases provide additional test description.



*Where a positive indication of bistable trip status is provided, as in the Analog Transmitter Trip System, the trip output logic switch within the bistable takes the place of the K1 and K2 relays, provided the bistable is utilized as the initiating device for the actuation logic in the LOGIC SYSTEM FUNCTIONAL TEST.

Figure 1.2-1

PROTECTIVE ACTION LOGIC SYSTEM

Table T2.1-1 (Sheet 1 of 3)

OPERABILITY DETAILS FOR
LCO 3.7.4, MCREC SYSTEM, AND LCO 3.7.5, CONTROL ROOM AC SYSTEM

Given: AHU Configuration[a]	, and 1R24-S029 aligned to 1R24	, then declare inoperable MCREC subsystem for LCO 3.7.4[b]	, and declare inoperable control room air conditioning subsystem for LCO 3.7.5[c]
A - OPERABLE-AUTO B - OPERABLE-AUTO C - OPERABLE-AUTO	S002	NONE	NONE
	S003	NONE	NONE
A - OPERABLE-AUTO B - OPERABLE-AUTO C - OPERABLE-OFF	S002	NONE	NONE
	S003	NONE	NONE
A - OPERABLE-AUTO B - OPERABLE-OFF C - OPERABLE-AUTO	S002	A OR B	NONE
	S003	NONE	NONE
A - OPERABLE-OFF B - OPERABLE-AUTO C - OPERABLE-AUTO	S002	NONE	NONE
	S003	A OR B	NONE
A - OPERABLE-AUTO B - OPERABLE-OFF C - OPERABLE-OFF	S002	A OR B	NONE
	S003	A OR B	NONE
A - OPERABLE-OFF B - OPERABLE-AUTO C - OPERABLE-OFF	S002	A OR B	NONE
	S003	A OR B	NONE
A - OPERABLE-OFF B - OPERABLE-OFF C - OPERABLE-AUTO	S002	A OR B	NONE
	S003	A OR B	NONE
A - OPERABLE-AUTO B - OPERABLE-AUTO C - Inoperable	S002	NONE	C
	S003	NONE	C
A - OPERABLE-AUTO B - Inoperable C - OPERABLE-AUTO	S002	A OR B	B AND if ≤ 65°F, C[d]
	S003	NONE	B
A - Inoperable B - OPERABLE-AUTO C - OPERABLE-AUTO	S002	NONE	A
	S003	A OR B	A AND if ≤ 65°F, C[d]

Table T2.1-1 (Sheet 2 of 3)

OPERABILITY DETAILS FOR LCO 3.7.4, MCREC SYSTEM, AND LCO 3.7.5, CONTROL ROOM AC SYSTEM

Given: AHU Configuration[a]	, and 1R24-S029 aligned to 1R24	, then declare inoperable MCREC subsystem for LCO 3.7.4[b]	, and declare inoperable control room air conditioning subsystem for LCO 3.7.5[c]
A - OPERABLE-AUTO B - OPERABLE-OFF C - Inoperable	S002	A OR B	C
	S003	A OR B	C
A - OPERABLE-OFF B - OPERABLE-AUTO C - Inoperable	S002	A OR B	C
	S003	A OR B	C
A - OPERABLE-AUTO B - Inoperable C - OPERABLE-OFF	S002	A OR B	B AND if $\leq$ 65°F, C [d]
	S003	A OR B	B
A - OPERABLE-OFF B - Inoperable C - OPERABLE-AUTO	S002	A OR B	B AND if $\leq$ 65°F, C [d]
	S003	A OR B	B
A - Inoperable B - OPERABLE-AUTO C - OPERABLE-OFF	S002	A OR B	A
	S003	A OR B	A AND if $\leq$ 65°F, C [d]
A - Inoperable B - OPERABLE-OFF C - OPERABLE-AUTO	S002	A OR B	A
	S003	A OR B	A AND if $\leq$ 65°F, C [d]
A - OPERABLE-AUTO B - Inoperable C - Inoperable	S002	A OR B	B AND C
	S003	A OR B	B AND C
A - Inoperable B - OPERABLE-AUTO C - Inoperable	S002	A OR B	A AND C
	S003	A OR B	A AND C
A - Inoperable B - Inoperable C - OPERABLE-AUTO	S002	A OR B	A AND B
	S003	A OR B	A AND B

Table T2.1-1 (Sheet 3 of 3)

OPERABILITY DETAILS FOR
LCO 3.7.4, MCREC SYSTEM, AND LCO 3.7.5, CONTROL ROOM AC SYSTEM

NOTES:

a. OPERABLE-AUTO defined as control switch in RUN, EMERGENCY RUN, or STANDBY with automatic start and/or post-LOSP restart capability.

   OPERABLE-OFF defined as control switch position in OFF with the capability for the Operator to manually start the AHU (and, for AC subsystem OPERABILITY, associated condenser/compressor) from the control room.

b. For each OPERABLE AHU, it is assumed that its associated condenser/compressor cooling functions are also OPERABLE to ensure loop seal is maintained.

c. Optional allowances for inoperable subsystems do not preclude changing the declared inoperable subsystem to best accommodate other plant circumstances; e.g., inoperable diesel generators (DGs), Safety Function Determination Program. However, in these instances, the Condition for one inoperable MCREC subsystem shall not be evaluated for Completion Time extensions, in accordance with Section 1.3.

d. When the outside air temperature is > 65°F, the loss of one of the three control room AC subsystems results in a loss of redundancy, **REGARDLESS** of the power supply alignment, requiring entry into an Action Statement commensurate with such a loss (i.e., CONDITION B of TS LCO 3.7.5).

   However, if the temperature was ≤ 65°F continuously for the previous 24 hours, inoperability of one of the three control room AC subsystems does not result in a loss of redundancy **UNLESS** the remaining two subsystems are powered from the same power supply. Since TS LCO 3.7.5 does not address the loss of redundancy when the remaining subsystems are powered from the same power supply, an inappropriate Condition (i.e., CONDITION A of TS LCO 3.7.5) would be entered UNLESS a penalty is taken for the power supply alignment. Therefore, to force entry into the Condition that is appropriate for a loss of redundancy (i.e., CONDITION C of TS LCO 3.7.5), a second subsystem must be declared inoperable.

   Taking the penalty when the temperature was ≤ 65°F continuously for the previous 24 hours appears to be inappropriate; however, given the format of TS LCO 3.7.5, taking the penalty is the proper action for one to enter the proper TS Condition.

T 3.0 TRM SPECIFICATIONS

The Technical Requirements Manual (TRM) Specifications are formatted in a manner consistent with the Technical Specifications (TS) (Appendix A to the Operating License).

The Definitions contained in Technical Specifications Section 1.1, “Definitions,” apply to the TRM Specifications. Defined terms are shown in all capital letters, consistent with the Technical Specifications.

The rules of usage for the TRM Specifications are the same as those for the Technical Specifications. These rules are found in Technical Specifications Sections 1.2, “Logical Connectors;” 1.3, “Completion Times;” and 1.4, “Frequency.”

Technical Specifications Section 3.0, “Limiting Condition for Operation (LCO) Applicability and Surveillance Requirement (SR) Applicability,” applies with the following exception:

> **LCO 3.0.6, regarding support/supported system ACTIONS, is not applicable to TRM Specifications. However, when an inoperable TS support system, structure, or component (SSC) provides support to a TRM SSC, which, in turn, supports a supported SSC addressed in the TS, LCO 3.0.6 remains applicable.**
>
> **LCO 3.0.7, regarding allowances to change specified Technical Specifications, is not applicable to TRM Specifications.**

While the TRM Specifications are to be treated like Technical Specifications from an implementation viewpoint, the TRM Specifications are essentially procedures. Therefore, unless specifically stated in the TRM Specifications, entry into or violation of a TRM Required Action, or violation of a Surveillance Requirement is not reportable per 10 CFR 50.72 or 10 CFR 50.73. Likewise, power reductions and/or plant shutdowns required to comply with TRM ACTIONS are not reportable per 10 CFR 50.72 or 10 CFR 50.73.

Failure to comply with TRM Specifications requirements shall be treated as a failure to follow procedure.

T 3.3.1 REACTOR PROTECTION SYSTEM (RPS) SHORTING LINKS

TLCO 3.3.1 The shorting links shall be removed from the Reactor Protection System (RPS) circuitry.

APPLICABILITY: MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies and SDM not demonstrated per 42CC-ERP-010-0S, Shutdown Margin Demonstration, for current core configuration.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Shorting links not removed from RPS circuitry.	A.1 Suspend CORE ALTERATIONS except for control rod insertion.	Immediately
	AND	
	A.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.1.1	Verify shorting links removed.	Once within 30 minutes prior to entering Applicability
TSR 3.3.1.2	Perform LOGIC SYSTEM FUNCTIONAL TEST of RPS non-coincidence trip.	24 months

T 3.3.2 CONTROL ROD BLOCK INSTRUMENTATION

TLCO 3.3.2 The control rod block instrumentation for each Function in Table T3.3.2-1 shall be FUNCTIONAL.

APPLICABILITY: According to Table T3.3.2-1.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one or more required channels nonfunctional.	A.1 Initiate Reactor Manual Control System rod withdrawal block.	1 hour

SURVEILLANCE REQUIREMENTS

--NOTES--

1. Refer to Table T3.3.2-1 to determine which TSRs apply for each control rod block Function.

2. When a channel is placed in a nonfunctional status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.2.1	-------------------------------NOTES----------------------------- 1. For Function 1, not required to be performed when entering the MODE 2 IRM range Applicability from a higher IRM range until 12 hours after entering the MODE 2 IRM range Applicability. 2. For Function 2, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	7 days
TSR 3.3.2.2	---------------------------NOTES--------------------------------- Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. --- Perform CHANNEL FUNCTIONAL TEST.	184 days
TSR 3.3.2.3	--------------------------NOTES---------------------------------- 1. Neutron detectors are excluded. 2. For Function 4, withdrawal of control rods is not permitted during the CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	24 months

Table T3.3.2-1 (Page 1 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. SRM				
a. Detector Not Full In	2(a)	3	TSR 3.3.2.1	Not full in
	5	2(b)	TSR 3.3.2.1	Not full in
b. Upscale	2(c)	3	TSR 3.3.2.1 TSR 3.3.2.3	$\leq 10^5$ cps
	5	2(b)	TSR 3.3.2.1 TSR 3.3.2.3	$\leq 10^5$ cps
c. Inoperative	2(c)	3	TSR 3.3.2.1	NA
	5	2(b)	TSR 3.3.2.1	NA
d. Downscale	2(a)	3	TSR 3.3.2.1 TSR 3.3.2.3	≥ 3 cps
	5	2(b)	TSR 3.3.2.1 TSR 3.3.2.3	≥ 3 cps
2. IRM				
a. Detector Not Full in	2, 5	4(e)	TSR 3.3.2.1	Not full in
b. Upscale	2, 5	4(e)	TSR 3.3.2.1 TSR 3.3.2.3	≤ 108/125 of full scale
c. Inoperative	2, 5	4(e)	TSR 3.3.2.1	NA
d. Downscale	2(d)	4(e)	TSR 3.3.2.1 TSR 3.3.2.3	≥ 5/125 of full scale

(continued)

(a) With IRMs on Range 2 or below.

(b) Only one SRM is required to be FUNCTIONAL during spiral offload or reload when the fueled region includes only that SRM detector.

(c) With IRMs on Range 7 or below.

(d) With IRMs on Range 2 or above.

(e) One channel in each quadrant of the core must be FUNCTIONAL whenever the IRMs are required to be FUNCTIONAL.

Table T3.3.2-1 (Page 2 of 2)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. APRM				
a. Simulated Thermal Power - Upscale	1	3	TSR 3.3.2.2 TSR 3.3.2.3	(h)
b. Simulated Thermal Power - Upscale (Setdown)	2, 5[(g)]	3	TSR 3.3.2.2 TSR 3.3.2.3	(h)
c. Inoperative	1, 2[(g)]	3	TSR 3.3.2.2	NA
d. Neutron Flux - Downscale	1	3	TSR 3.3.2.2 TSR 3.3.2.3	(h)
e. Low LPRM Count	1, 2, 5[(g)]	3	TSR 3.3.2.2	(h)
f. Reactor Recirculation Flow - Upscale	1	3	TSR 3.3.2.2 TSR 3.3.2.3	(h)
4. Scram Discharge Volume Water Level - High	1, 2, 5[(f)]	1	TSR 3.3.2.3	≤ 18 gallons

(f) With any control rod withdrawn from a core cell containing one or more fuel assemblies, except control rods withdrawn under the provisions of Technical Specification LCO 3.10.5 or LCO 3.10.6.

(g) During SDM demonstrations in accordance with Technical Specification LCO 3.10.8.

(h) Allowable value controlled by the Setpoint Index.

T 3.3.3 NON-TYPE A, NON-CATEGORY 1 POST ACCIDENT MONITORING INSTRUMENTATION

TLCO 3.3.3 The instrumentation for each Function in Table T3.3.3-1 shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2

ACTIONS

---NOTE---
Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. For Functions 2, 8, and 9, one or more Functions with one required channel nonfunctional.	A.1	Restore required channel to FUNCTIONAL status.	30 days
B. For Functions 2, 8, and 9, one or more Functions with two required channels nonfunctional. OR For Functions 4, 6, and 7, one or more Functions with the required channel nonfunctional.	B.1 AND B.2	Initiate action to monitor associated parameter by alternate means. Restore one required channel to FUNCTIONAL status.	72 hours 7 days
C. For Function 3, RPIS nonfunctional.	C.1	Be in MODE 3.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. For Function 5, one or more S/RVs with one or more required channels nonfunctional.	D.1	Monitor suppression pool water temperature to observe any unexplained temperature increase which might be indicative of an open S/RV.	Once per 12 hours
E. For Function 5, two or more S/RVs with two required channels nonfunctional.	E.1	Restore required channels to FUNCTIONAL status.	7 days
F. Required Action and associated Completion Time of Condition A, B, D, or E not met.	F.1	Submit report to SRB, detailing interim compensatory measures, cause for inoperability, and schedule for restoration to FUNCTIONAL.	7 days

SURVEILLANCE REQUIREMENTS

---NOTE---

1. Refer to Table T3.3.3.1-1 to determine which TSRs apply for each Non-Type A, Non-Category 1 Post Accident Monitoring Function.

2. When a channel is placed in a nonfunctional status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.3.1	Perform CHANNEL CHECK.	31 days
TSR 3.3.3.2	Perform CHANNEL FUNCTIONAL TEST.	184 days
TSR 3.3.3.3	Perform CHANNEL CALIBRATION.	24 months

Table T3.3.3-1 (Page 1 of 1)
Non-Type A, Non-Category 1 Post Accident Monitoring Instrumentation

	FUNCTION	REQUIRED CHANNELS PER FUNCTION[(a)]	SURVEILLANCE REQUIREMENTS
1.	(Deleted)		
2.	Suppression Chamber Pressure	2	TSR 3.3.3.1 TSR 3.3.3.3
3.	Rod Position Information System (RPIS)[(b)]	1	TSR 3.3.3.1
4.	Post-LOCA Radiation	1	TSR 3.3.3.1 TSR 3.3.3.3
5.	Safety/Relief Valve Position	2[(c)] per S/RV	TSR 3.3.3.1 TSR 3.3.3.3
6.	Main Stack Effluent Monitor	1[(d)]	TSR 3.3.3.2 TSR 3.3.3.3
7.	Reactor Building Vent Plenum Effluent Monitor	1[(d)]	TSR 3.3.3.2 TSR 3.3.3.3
8.	Drywell Oxygen Concentration	2	TSR 3.3.3.1 TSR 3.3.3.3
9.	Drywell Hydrogen Concentration	2	TSR 3.3.3.1 TSR 3.3.3.3

(a) For Function 5, each S/RV is considered a separate Function.

(b) The RPIS is nonfunctional when there is a simultaneous loss of the full-core display and the four-rod display.

(c) One channel consists of a primary indicator, and the other channel consists of a secondary indicator.

(d) This channel consists of two detectors: one for mid-range noble gas and one for high-range noble gas.

T 3.3.4 TRAVERSING INCORE PROBE (TIP) SYSTEM

TLCO 3.3.4 Four TIP subsystems shall be FUNCTIONAL.

APPLICABILITY: During recalibration of LPRMs,
During monitoring of APLHGR, LHGR, AND MCPR.

ACTIONS

--NOTE--
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE----------- Separate Condition entry is allowed for each measurement location. -----------------------------	A.1 -----------NOTE-------------- Only applicable if total TIP uncertainty < 8.7%, and rod pattern is octant symmetric. ---------------------------------	
One or more TIP subsystems with one or more measurement locations nonfunctional.	Substitute data for measurement location from FUNCTIONAL octant-symmetric location.	As needed
	<u>OR</u>	
	A.2 -----------NOTE-------------- Only applicable to ≤ 8 measurement locations. ---------------------------------	
	Substitute data for measurement location from process computer normalized with available measurements.	As needed

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more TIP subsystems nonfunctional for reasons other than Condition A.	B.1 Restore TIP subsystems to FUNCTIONAL status.	1250 effective full power hours from last performance of TSR 3.3.4.1
C. Required Action and associated Completion Time of Condition B not met.	C.1 Suspend use of the TIP System for monitoring and calibration functions.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.4.1	Normalize each TIP detector output to each of the remaining TIP detectors.	1000 effective full power hours

T 3.3.5 HPCI AND RCIC TURBINE TRIPS (and RCIC Min-Flow)

TLCO 3.3.5 The HPCI and RCIC instrumentation for each Function in Table T3.3.5-1 shall be FUNCTIONAL.

APPLICABILITY: MODE 1,
MODES 2 and 3 with reactor steam dome pressure > 150 psig.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one channel nonfunctional in one trip system.	A.1 Restore channel to FUNCTIONAL status. OR A.2 -----------NOTE------------ Not applicable to Function 7. ------------------------------- Place channel in trip.	12 hours 12 hours
B. One or more Functions with one channel nonfunctional in both trip systems.	B.1 Restore one channel to FUNCTIONAL.	1 hour
C. Required Action and associated Completion Time not met.	C.1 Declare associated System nonfunctional.	Immediately

SURVEILLANCE REQUIREMENTS

--NOTES--

1. Refer to Table T3.3.5.1-1 to determine which TSRs apply for each Function.

2. When a channel is placed in a nonfunctional status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.5.1	Perform CHANNEL CHECK.	12 hours
TSR 3.3.5.2	Perform CHANNEL FUNCTIONAL TEST.	92 days on an ALTERNATE TEST BASIS
TSR 3.3.5.3	Perform CHANNEL CALIBRATION.	24 months
TSR 3.3.5.4	Perform LOGIC SYSTEM FUNCTIONAL TEST, and simulated automatic actuation including calibration of required time delay relays and timers.	24 months

Table T3.3.5-1 (Page 1 of 1)
HPCI and RCIC Instrumentation

FUNCTION	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. HPCI Turbine Overspeed	1	TSR 3.3.5.3	≤ 5000 rpm
2. HPCI Turbine Exhaust Pressure	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3 TSR 3.3.5.4	≤ 146 psig
3. HPCI Pump Suction Pressure	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3 TSR 3.3.5.4	≤ 12.6 inches Hg vacuum
4. RCIC Turbine Overspeed			
a. (Deleted)			
b. Mechanical	1	TSR 3.3.5.3	≤ 125% rated speed
5. RCIC Turbine Exhaust Pressure	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3	≤ 45 psig
6. RCIC Pump Suction Pressure	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3	≤ 12.6 inches Hg vacuum
7. RCIC Pump Discharge Flow			
a. Flow-High	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3	≤ 87 gpm
b. Flow-Low	1	TSR 3.3.5.1 TSR 3.3.5.2 TSR 3.3.5.3	> 53 gpm

TLCO 3.3.6 (Not utilized in Unit 1 TRM)

T 3.3.7 MCREC SYSTEM INSTRUMENTATION

TLCO 3.3.7 The MCREC System Instrumentation for each Function in Table T3.3.7-1 shall be FUNCTIONAL.

APPLICABILITY: According to Table T3.3.7-1.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels nonfunctional.	A.1	Enter the Condition referenced in Table T3.3.7-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table T3.3.7-1.	B.1	Place MCREC System in the pressurization mode of operation.	1 hour from discovery of loss of MCREC initiation capability in both trip systems
	AND		
	B.2	Place channel in trip.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. As required by Required Action A.1 and referenced in Table T3.3.7-1.	C.1	Place MCREC System in the pressurization mode of operation.	1 hour from discovery of loss of MCREC initiation capability in both trip systems
	AND		
	C.2	Restore channel to FUNCTIONAL status.	7 days
D. As required by Required Action A.1 and referenced in Table T3.3.7-1.	D.1	Place channel in trip.	1 hour
E. Required Action and associated Completion Time not met.	E.1	Place MCREC System in the pressurization mode of operation.	6 hours

SURVEILLANCE REQUIREMENTS

---NOTES---

1. Refer to Table T3.3.7-1 to determine which TSRs apply for each MCREC initiation Function.

2. When a channel is placed in a nonfunctional status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.7.1	Perform CHANNEL CHECK.	24 hours
TSR 3.3.7.2	Perform CHANNEL FUNCTIONAL TEST.	92 days on an ALTERNATE TEST BASIS
TSR 3.3.7.3	Perform CHANNEL CALIBRATION.	24 months for Functions 1, 2, and 3 92 days on an ALTERNATE TEST BASIS for Functions 4 and 5
TSR 3.3.7.4	Perform LOGIC SYSTEM FUNCTIONAL TEST and simulated automatic actuation including calibration of time delay relays and timers.	24 months

Table T3.3.7-1 (Page 1 of 1)
MCREC System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level-Low Low Low, Level 1	1, 2, 3	2	B	TSR 3.3.7.1 TSR 3.3.7.2 TSR 3.3.7.3	≥ -113 inches
2. Drywell Pressure-High	1, 2, 3	2	B	TSR 3.3.7.1 TSR 3.3.7.2 TSR 3.3.7.3	≤ 1.92 psig
3. Main Steam Line Flow-High	1, 2[(b)], 3[(b)]	2 per MSL	B	TSR 3.3.7.1 TSR 3.3.7.2 TSR 3.3.7.3	≤ 138% rated steam flow
4. Refueling Floor Area Radiation-High	1, 2, 3,[(a)]	1	C	TSR 3.3.7.1 TSR 3.3.7.3	≤ 20 mr/hr
5. Main Control Room Intake Radiation-Downscale	1, 2, 3,[(a)]	1	D	TSR 3.3.7.1 TSR 3.3.7.3 TSR 3.3.7.4	≥ 0.015 mr/hr

(a) During movement of irradiated fuel assemblies in the secondary containment, during CORE ALTERATIONS, or during OPDRVs.

(b) With any main steam line not isolated.

T 3.3.8 OFFGAS POST-TREATMENT INSTRUMENTATION

TLCO 3.3.8 The offgas post-treatment instrumentation channels in Table T3.3.8-1 shall be FUNCTIONAL.

APPLICABILITY: MODE 1,
MODE 2 with any main steam line not isolated and steam jet air ejector (SJAE) in operation.

ACTIONS

---NOTES---

1. Separate Condition entry is allowed for each Function.

2. LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel in one or more Functions nonfunctional.	A.1 Place channel in trip.	1 hour
B. Required Action and associated Completion Time of Condition A not met. OR Two channels in one or more Functions nonfunctional.	B.1 Exit the Applicability. OR B.2 Verify adequate alternative monitoring facilities are available.	24 hours 24 hours

SURVEILLANCE REQUIREMENTS

--NOTES--

1. Refer to Table T3.3.8-1 to determine which TSRs apply for each Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.8.1	Perform CHANNEL CHECK.	24 hours
TSR 3.3.8.2	Perform CHANNEL FUNCTIONAL TEST.	31 days
TSR 3.3.8.3	Perform CHANNEL CALIBRATION.	92 days on an ALTERNATE TEST BASIS
TSR 3.3.8.4	Perform LOGIC SYSTEM FUNCTIONAL TEST and simulated automatic actuation including calibration of time delay relays and timers.	24 months

Table T3.3.8-1 (Page 1 of 1)
Offgas Post-Treatment Instrumentation

	FUNCTION	REQUIRED CHANNELS PER FUNCTION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Offgas Post-Treatment Radiation Monitoring, Upscale	2	TSR 3.3.8.1 TSR 3.3.8.2 TSR 3.3.8.3 TSR 3.3.8.4	(a)
2.	Offgas Post-Treatment Radiation Monitoring, Downscale	2	TSR 3.3.8.1 TSR 3.3.8.2 TSR 3.3.8.3 TSR 3.3.8.4	(a)

(a) Less than or equal to the equivalent limit provided in Technical Specification 5.5.4.g, "Radioactive Effluents Control Program."

T 3.3.9 OFFGAS HYDROGEN

TLCO 3.3.9 One offgas hydrogen monitoring instrument channel shall be FUNCTIONAL.

AND

Offgas hydrogen concentration downstream of the recombiners shall be ≤ 4% by volume.

APPLICABILITY: MODE 1,
MODE 2 with any main steam line not isolated and steam jet air ejector (SJAE) in operation.

ACTIONS

--NOTE--

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. The required offgas hydrogen monitoring instrumentation channel nonfunctional.	A.1	Monitor offgas hydrogen concentration downstream of the recombiners by sample/analyses or temporary hydrogen analyzer.	8 hours AND Once per 4 hours thereafter
	AND		
	A.2	Restore required offgas hydrogen monitoring instrumentation channel to FUNCTIONAL status.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1	Submit a Special Report to the SRB explaining why nonfunctionality was not corrected.	14 days
C. Offgas hydrogen concentration not within limit.	C.1	Initiate action to reduce offgas hydrogen concentration and potential for offgas system fire.	Immediately

SURVEILLANCE REQUIREMENTS

---NOTE---
When a channel is placed in a nonfunctional status solely for performance of required Tests, entry into associated Conditions and Required Compensatory Measures may be delayed for up to 6 hours.

SURVEILLANCE		FREQUENCY
TSR 3.3.9.1	Perform CHANNEL CHECK and verify hydrogen concentration is within limit.	24 hours
TSR 3.3.9.2	Perform CHANNEL FUNCTIONAL TEST of hydrogen monitor.	31 days
TSR 3.3.9.3	Perform CHANNEL CALIBRATION of hydrogen monitor. Include the use of standard gas samples containing a nominal: a. One volume-percent hydrogen with balance nitrogen, and b. Four volume-percent hydrogen with balance nitrogen.	92 days on an ALTERNATE TEST BASIS

T 3.3.10 TURBINE OVERSPEED PROTECTION

TLCO 3.3.10 Turbine Overspeed Protection System shall be FUNCTIONAL.

APPLICABILITY: Main turbine speed > 90 rpm.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The required Turbine Overspeed Protection System NON-FUNCTIONAL.	A.1 Isolate the turbine from the steam supply.	24 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
TSR 3.3.10.1	Exercise and monitor each of the emergency trip devices (ETD) through at least one complete cycle of full travel.	7 days
TSR 3.3.10.2	Cycling each of the following through at least one complete cycle of full travel: a. Turbine main stop valves (TSV); b. Turbine reheat stop valves and intercept valves (CIV).	31 days
TSR 3.3.10.3	Cycling each of the turbine control valves (TCV) through at least one cycle of travel from its open position to full closed.	92 days
TSR 3.3.10.4	Functionally test each channel of the following overspeed subsystems: a. Primary overspeed trip relays; b. Emergency overspeed trip relays.	7 days
TSR 3.3.10.5	Exercise each combination of two ETDs to dump the emergency trip header.	Prior to turbine start
TSR 3.3.10.6	Disassemble one of each type of the Turbine Overspeed Protection System valves (control, stop, combined intercept), performing visual and surface inspection of valve seats, disks, and stems for unacceptable flaws and corrosion.	6 years

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
TSR 3.3.10.7	INITIATE turbine overspeed trip with the following subsystems: a. Primary overspeed trip subsystem; b. Emergency overspeed trip subsystem.	24 months

T 3.3.11 MAIN STEAM LINE (MSL) RADIATION INSTRUMENTATION

TLCO 3.3.11 Two channels per trip system of the MSL Radiation - High High Function shall be FUNCTIONAL.

AND

The mechanical vacuum pump trip breaker, the reactor water sample isolation valves, and the steam packing exhauster trip breaker shall be FUNCTIONAL.

APPLICABILITY: MODES 1 and 2 with reactor power ≤ 20% RTP

ACTIONS

---NOTE---

Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels nonfunctional	A.1 Place channel or associated trip system in trip.	24 hours
B. Required Action and associated Completion Time of Condition A not met. OR Isolation capability not maintained (multiple nonfunctional channels or nonfunctional breaker/valve).	B.1 Isolate affected mechanical vacuum pump, reactor water sample valve(s), and steam packing exhauster.	12 hours

SURVEILLANCE REQUIREMENTS

---NOTE---
When a channel is placed in a nonfunctional status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains isolation capability.

SURVEILLANCE		FREQUENCY
TSR 3.3.11.1	Perform CHANNEL CHECK.	12 hours
TSR 3.3.11.2	Perform CHANNEL FUNCTIONAL TEST.	7 days
TSR 3.3.11.3	------------------------------NOTE------------------------------ Quarterly calibration utilizes a standard current source for instrument channel alignment. Calibration using a radiation source shall be made once per 24 months. --- Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 3 x normal full power background.	92 days on an ALTERNATE TEST BASIS
TSR 3.3.11.4	Perform LOGIC SYSTEM FUNCTIONAL TEST and simulated automatic actuation for reactor water sample valves and mechanical vacuum pump, including calibration of time delay relays and timers necessary for proper functioning of the trip systems.	24 months

T 3.3.12 LPCI VALVE SELECT TIMERS

TLCO 3.3.12 (Not utilized in Unit 1 TRM)

T 3.3.13 MAIN TURBINE PRESSURE REGULATOR

TLCO 3.3.13

a. Three throttle pressure transmitters and three processors of the main turbine pressure regulator system shall be FUNCTIONAL,

OR

b. Two throttle pressure transmitters and three processors of the main turbine pressure regulator system shall be FUNCTIONAL with notification to Engineering for condition evaluation and restoration of third throttle pressure transmitter,

OR

c. One throttle pressure transmitter and at least two processors shall be FUNCTIONAL with the following limits applied when the associated Technical Specifications LCO is applicable:

---NOTE---
Appropriate limits may be obtained from either the reactor fuel vendor or Reactor Engineering if the limits are not specified in the current revision of the CORE OPERATING LIMITS REPORT (COLR).
----

(1) LCO 3.2.2, MINIMUM CRITICAL POWER RATIO (MCPR), main turbine pressure regulator system TLCO 3.3.13.c limits specified in the COLR; and

(2) LCO 3.2.3, LINEAR HEAT GENERATION RATE (LHGR), main turbine pressure regulator system TLCO 3.3.13.c limits specified in the COLR.

APPLICABILITY: MODES 1 AND 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. All three throttle pressure transmitters or two processors NON-FUNCTIONAL.	A.1 Place the reactor mode switch in the shutdown position.	Immediately
B. Requirements of the TLCO not met for reasons other than Condition A.	B.1 Satisfy the requirements of the TLCO.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.13.1	Perform CHANNEL CHECK.	24 hours
TSR 3.3.13.2	Perform CALIBRATION of three throttle pressure regulator transmitters.	24 months during shutdown

T 3.3.14 CROSSFLOW FEEDWATER MEASUREMENT SYSTEM

TLCO 3.3.14 The Crossflow Feedwater Measurement System shall be FUNCTIONAL.

APPLICABILITY: THERMAL POWER > 2777 CMWt.

ACTIONS

--NOTE--
LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Crossflow System nonfunctional.	A.1 Restore Crossflow System to FUNCTIONAL status.	72 hours
B. Required Action A.1 and associated Completion Time not met.	B.1 Reduce thermal power to ≤ 2777 CMWt.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.3.14	Confirm no process computer out-of-service Crossflow System alarms have been present for a period greater than 5 hours.	Continuously

T 3.4.1 RCS CHEMISTRY

TLCO 3.4.1 The chemistry of the Reactor Coolant System (RCS) shall be maintained within the limits of Table T3.4.1-1.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RCS chemistry not within the limits of Table T3.4.1-1 in MODE 1, 2, or 3.	A.1 Restore RCS chemistry to within limits of Table T3.4.1-1.	24 hours
	AND	
	A.2 Restore RCS chemistry to within limits of Table T3.4.1-1.	336 hours cumulative in past 365 days
B. Required Action A.2 and associated Completion Time not met.	B.1 Submit Special Report to the SRB, outlining cause of the limit violations and plans for maintaining chemistry compliance.	30 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action A.1 and associated Completion Time not met. OR Conductivity > 10 μmho/cm at 25°C in MODE 1, 2, or 3. OR Chloride concentration > 0.5 ppm in MODE 1, 2, or 3.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	12 hours 36 hours
D. Conductivity not within limit of Table T3.4.1-1 in other than MODES 1, 2, and 3.	D.1 Restore conductivity to within limits of Table T3.4.1-1.	24 hours
E. Chloride concentration not within limit of Table T3.4.1-1 in other than MODES 1, 2, and 3.	E.1 Restore chloride concentration to within limits of Table T3.4.1-1.	48 hours
F. ------------NOTE--------------- Required Action F.1 shall be completed if this Condition is entered. ----------------------------------- Required Action and associated Completion Time of Condition E not met.	F.1 Determine structural integrity of RCS is acceptable for continued operation.	Prior to entering MODE 2 or 3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.1.1	Verify conductivity is within limits of Table T3.4.1-1.	72 hours <u>AND</u> 24 hours when continuous conductivity monitor is nonfunctional
TSR 3.4.1.2	Verify chloride concentration is within limits of Table T3.4.1-1.	72 hours

Table T3.4.1-1 (Page 1 of 1)
RCS Chemistry Limits

APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	CHLORIDE CONCENTRATION LIMIT	CONDUCTIVITY LIMIT (AT 25°C)
1	< 0.5 ppm	< 5 μmho/cm
2	< 0.1 ppm	< 5 μmho/cm
At all other times	< 0.1 ppm	< 10 μmho/cm

T 3.4.2 STRUCTURAL INTEGRITY

TLCO 3.4.2 The structural integrity of ASME Code Class 1, 2, 3, and MC (equivalent) components defined in the ISI Boundary Diagrams shall be maintained in accordance with the current ISI Plan requirements and applicable revision of 10 CFR 50.55a.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.
When associated subsystem(s) are required to be FUNCTIONAL or OPERABLE, except when testing is conducted pursuant to Technical Specification 3.10.1, Inservice Leak and Hydrostatic Testing Operation.

ACTIONS

---NOTE---
Separate condition entry is allowed for each component.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Structural integrity of Class 1, 2, 3, or MC component(s) not conforming as required.	A.1 Initiate action to evaluate component(s)' FUNCTIONALITY or OPERABILITY and enter appropriate TS or TRM required actions for nonfunctional or inoperable component(s).	Immediately
B. Structural integrity of Class 1, 2, 3, or MC component(s) not conforming as required because of a missed inspection.	B.1 Perform missed inspection.	24 hours
	<u>OR</u>	
	B.2 Initiate action to obtain relief from the missed surveillance or inspection.	Immediately
	<u>OR</u>	
	-----------NOTE------------- B.3 may be used only when performance of the missed surveillance is impractical. ---------------------------------	

(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.3.1	Perform an evaluation of the risk associated with the missed inspection and include in the evaluation any necessary compensatory actions to be taken.	24 hours
	<u>AND</u>		
	B.3.2	Perform the missed inspection.	First reasonable opportunity
	<u>OR</u>		
	B.4	Declare affected component(s) inoperable or nonfunctional.	Immediately
C. Structural integrity of Class 1 component(s) not conforming as required other than a missed inspection.	C.1	Initiate action to maintain RCS temperature ≤ 50°F above minimum temperature required by NDT considerations.	Immediately
	<u>OR</u>		
	C.2	Initiate action to isolate affected component(s)	Immediately
D. Structural integrity of Class 2 component(s) not conforming as required other than a missed inspection.	D.1	Initiate action to maintain RCS temperature ≤ 212°F.	Immediately
	<u>OR</u>		
	D.2	Initiate action to isolate affected component(s).	Immediately
	<u>OR</u>		
	D.3	Declare affected component(s) inoperable or nonfunctional.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. (continued)	OR	
	D.4 Initiate action to confirm the ability of the component to perform its specified safety function, or its related support function, in its degraded or nonconforming condition.	Immediately
	AND	
	D.4.1 Perform a code repair.	First reasonable opportunity
	OR	
	D.4.2 Initiate action to obtain relief to perform a temporary non-code repair.	Immediately
	AND	
	D.4.3 Perform temporary non-code repair per approved relief.	First reasonable opportunity
E. Structural integrity of Class 3 component(s) not conforming as required other than a missed inspection.	E.1 Initiate action to isolate affected component(s).	Immediately
	OR	
	E.2.1 Initiate action to obtain relief to perform a temporary non-code repair.	Immediately
	AND	
	E.2.2 Perform temporary non-code repair per approved relief.	30 days

(continued)

ACTIONS

E. (continued)	<u>OR</u>	
	E.3.1 Initiate action to effect a code repair.	Immediately
	<u>AND</u>	
	E.3.2 Restore component(s)' structural integrity.	30 days
	<u>OR</u>	
	E.4 Declare affected component(s) inoperable or nonfunctional.	Immediately
	<u>OR</u>	
	E.5 Initiate action to confirm the ability of the component to perform its specified safety function, or its related support function, in its degraded or nonconforming condition.	Immediately
	<u>AND</u>	
	E.5.1 Perform a code repair.	First reasonable opportunity
	<u>OR</u>	
	E.5.2 Initiate action to obtain relief to perform a temporary non-code repair.	Immediately
	<u>AND</u>	
	E.5.3 Perform temporary non-code repair per approved relief.	First reasonable opportunity

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.4.2.1	Perform required inspection and testing in accordance with the current ISI Plan requirements and applicable revision of 10 CFR 50.55a.	In accordance with the current ISI Plan requirements

T 3.6.1 SUPPRESSION CHAMBER-TO-DRYWELL VACUUM BREAKER POSITION INDICATION

TLCO 3.6.1 Two closed-position indicator channels for each suppression chamber-to-drywell vacuum breaker shall be FUNCTIONAL.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

---NOTE---
Separate Condition entry is allowed for each indicator channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One closed-position indicator channel on one or more suppression chamber-to-drywell vacuum breakers nonfunctional.	A.1	Demonstrate FUNCTIONALITY of second indication by exercising the affected vacuum breaker.	2 hours AND Once per 15 days thereafter
	AND		
	A.2	Demonstrate drywell-to-suppression chamber maintains > 0.5 psid for 1 hour without makeup.	24 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Two closed position indicator channels on one or more suppression chamber-to-drywell vacuum breakers nonfunctional. <u>OR</u> Required Action A.1 and associated Completion Time not met.	B.1	Monitor drywell-to-suppression chamber dp to verify associated vacuum breaker remains closed.	Once per 12 hours
	<u>AND</u>		
	B.2	Demonstrate drywell-to-suppression chamber maintains > 0.5 psid for 1 hour without makeup.	Once per 15 days
	<u>AND</u>		
	B.3	Restore closed-position indicator channel to FUNCTIONAL status.	Prior to startup from next MODE 4
C. Required Action A.2 and associated Completion Time not met. <u>OR</u> Required Action and associated Completion Time of Condition B not met.	C.1	Declare the associated vacuum breaker open.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.6.1.1	During performance of Technical Specification SR 3.6.1.8.2, verify proper position indication.	In accordance with SR 3.6.1.8.2

T 3.7.1 SNUBBERS

TLCO 3.7.1 All required snubbers utilized on safety-related systems shall be FUNCTIONAL. Snubbers utilized on nonsafety-related systems shall be FUNCTIONAL if the failure of that snubber or the nonsafety-related system would have an adverse effect on any safety-related system.

APPLICABILITY: MODES 1, 2, and 3.

MODES 4 and 5 for snubbers on systems required FUNCTIONAL in those MODES.

ACTIONS

---NOTE---

1. Separate Condition entry is allowed for each snubber.
2. Actions are applicable to a snubber with a seismic function ONLY.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required snubbers removed from supported system. <u>OR</u> One or more required snubbers nonfunctional while in place.	A.1 Refer to the requirements of Technical Specifications LCO 3.0.8.	Immediately
B. One or more required snubbers nonfunctional.	B.1 Perform an engineering evaluation on the components which are supported by the snubber(s) in accordance with ASME OM Code, Subsection ISTD .	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Declare supported system nonfunctional.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.1.1	Perform visual examinations of each snubber in accordance with ASME OM Code.	In accordance with site snubber program
TSR 3.7.1.2	Perform a functional test on a representative sample of snubbers in accordance with ASME OM Code.	In accordance with site snubber program.
TSR 3.7.1.3	Snubber service life will be monitored in accordance with ASME OM Code.	In accordance with site snubber program.

T 3.7.2 ECCS AND RCIC ROOM COOLERS

TLCO 3.7.2 The following ECCS and RCIC room coolers shall be FUNCTIONAL:

a. Four core spray/residual heat removal (CS/RHR) room coolers;

b. Two high pressure coolant injection (HPCI) room coolers; and

c. Two RCIC room coolers.

APPLICABILITY: When associated ECCS and RCIC System and RHR shutdown cooling, suppression pool cooling, and suppression pool spray subsystems are required to be OPERABLE.

ACTIONS

---NOTE---

Separate Condition entry is allowed for each room cooler.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CS/RHR room cooler nonfunctional.	A.1 Declare ECCS and RHR shutdown cooling, suppression pool cooling, and suppression pool spray subsystems associated with nonfunctional room cooler inoperable.	Upon discovery of inoperable opposite division Unit 1 DG
	AND	
	A.2 Restore CS/RHR room cooler to FUNCTIONAL status.	30 days
B. One nonfunctional CS/RHR room cooler in both CS/RHR rooms powered by the same division.	B.1 Restore one CS/RHR room cooler to FUNCTIONAL status.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One HPCI room cooler nonfunctional. <u>OR</u> One RCIC room cooler nonfunctional.	C.1 Restore room cooler to FUNCTIONAL status. <u>OR</u> C.2 Obtain Corporate Nuclear Engineering and Licensing Department evaluation justifying extended Completion Time.	30 days 30 days
D. Required Action and associated Completion Time of Condition A, B, or C not met. <u>OR</u> Two area coolers in one or more ECCS/RCIC rooms nonfunctional.	D.1 Declare associated system(s) inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.7.2.1	Operate each room cooler.	92 days
TSR 3.7.2.2	Verify each room cooler actuates on an actual or simulated initiation signal.	18 months
TSR 3.7.2.3	Perform LOGIC SYSTEM FUNCTIONAL TEST and simulated automatic actuation, including calibration of time relays and timers necessary for proper functioning of the trip system.	24 months

T 3.7.3 SEALED SOURCE CONTAMINATION

TLCO 3.7.3 Each sealed source containing radioactive material either in excess of 100 μCi of beta and/or gamma emitting material or 5 μCi of alpha emitting material shall be free of $\geq$ 0.005 μCi of removable contamination.

APPLICABILITY: At all times.

ACTIONS

---NOTES---

1. Separate Condition entry is allowed for each source.

2. LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more sealed sources with removable contamination not within limit.	A.1	Suspend use and transfer of sealed source.	Immediately
	<u>AND</u>		
	A.2.1	Restore removable contamination to within limit.	Prior to use
	<u>OR</u>		
	A.2.2	Dispose of sealed source in accordance with 10 CFR.	Prior to use
	<u>AND</u>		
	A.3	Submit report of contaminated sealed source.	With the Annual Radiological Environmental Report

SURVEILLANCE REQUIREMENTS

--NOTES--

1. Each sealed source shall be tested for leakage and/or contamination by the licensee, or other persons specifically authorized by the Commission or an Agreement State.

2. The test method shall have a detection sensitivity of at least 0.005 μCi per test sample.

SURVEILLANCE		FREQUENCY
TSR 3.7.3.1	-------------------------------NOTE------------------------------- Not applicable to: sources with half-life ≤ 30 days excluding tritium; gaseous sources; startup sources and fission detectors previously subjected to core flux; or sources not in use. --- Verify each sealed source leakage and/or contamination is within limit.	6 months
TSR 3.7.3.2	------------------------------NOTE------------------------------- Only applicable to sealed startup sources and fission detectors. --- Verify each sealed source leakage and/or contamination is within limit.	Once within 31 days prior to use
TSR 3.7.3.3	------------------------------NOTE------------------------------- Only applicable to sources not in use. --- Verify each sealed source leakage and/or contamination is within limit.	Once within 6 months prior to transfer

TLCO 3.8.1 (Not utilized in Unit 1 TRM)

TLCO 3.8.2 (Not utilized in Unit 1 TRM)

T 3.9.1 FUEL MOVEMENT DECAY TIME

TLCO 3.9.1 The reactor shall be subcritical for ≥ 24 hours.

APPLICABILITY: During movement of irradiated fuel in or above the RPV.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Reactor subcritical for < 24 hours.	A.1 Suspend movement of irradiated fuel in and above the RPV.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
TSR 3.9.1.1 Verify reactor subcritical for ≥ 24 hours.	Prior to movement of irradiated fuel in or above the RPV

T 3.9.2 COMMUNICATIONS

TLCO 3.9.2 Direct communications shall be maintained between the main control room and refueling platform personnel.

APPLICABILITY: During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Direct communication not maintained.	A.1 Suspend CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.2.1	Verify direct communications between the control room and refueling floor platform personnel.	12 hours

T 3.9.3 REFUELING CRANE AND HOIST

TLCO 3.9.3 The crane/hoist in use for handling fuel assemblies or control rods within the RPV, and the 5-ton monorail hoist in use for handling new fuel assemblies and spent fuel pool gates, shall be FUNCTIONAL.

APPLICABILITY: During movement of fuel assemblies within the RPV,
During movement of control rods within the RPV,
During movement of new fuel assemblies,
During movement of spent fuel pool gates.

ACTIONS

---NOTE---

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Required crane/hoist nonfunctional.	A.1	Suspend movement of fuel assemblies with the nonfunctional crane/hoist after placing the load in a safe condition.	Immediately
	<u>AND</u>		
	A.2	Suspend movement of control rods within the RPV with the nonfunctional crane/hoist after placing the load in a safe condition.	Immediately
	<u>AND</u>		
	A.3	Suspend movement of spent fuel pool gates with the nonfunctional crane/hoist after placing the load in a safe condition.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----

References to auxiliary hoist encompass: 1) frame-mounted auxiliary hoist; 2) monorail-mounted auxiliary hoist; and 3) service platform hoist.

SURVEILLANCE		FREQUENCY
TSR 3.9.3.1	Verify the following setpoints for the required crane/hoist. a. Overload cutoff: 1. 1200 ± 30 lb for fuel grapple, and 2. 1000 ± 30 lb for auxiliary hoist; b. Loaded interlock: 1. 485 ± 30 lb for fuel grapple, and 2. 400 ± 30 lb for auxiliary hoist; c. Down-travel stop for auxiliary hoist ≤ 85 ft; d. Up-travel stop for top of load ≥ 6 ft below skimmer weirs, and e. Slack cable cutoff for main hoist; 50 ± 25 lb.	Once within 7 days prior to the start of movement of fuel assemblies or control rods within the RPV
TSR 3.9.3.2	Perform a load test for the required crane/hoist: a. ≥ 1200 lb for fuel grapple; and b. ≥ 1000 lb for auxiliary hoist.	Once within 7 days prior to the start of movement of fuel assemblies or control rods within the RPV
TSR 3.9.3.3	For the required 5-ton hoist: a. Perform visual inspection to ensure structural integrity; and b. Perform trial lift of a spent fuel pool gate or equivalent weight.	92 days

T 3.9.4 CRANE TRAVEL

TLCO 3.9.4 Loads > 1250 lb that travel over fuel assemblies in the spent fuel storage pool racks shall meet all the requirements stated in the Bases section of this TLCO.

APPLICABILITY: With fuel assemblies in the spent fuel storage pool racks.

ACTIONS

---NOTE---

LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Load > 1250 lb over fuel assemblies in the spent fuel storage pool racks does not meet all the requirements stated in the Bases section of this TLCO.	A.1 Initiate movement of load to safe condition.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.9.4.1	----------------------------NOTE---------------------------- Not applicable to loads consisting of fuel assemblies or control rods. ---	
	Verify load being moved is $\leq$ 1250 lb. <u>OR</u> If load > 1250 lb, verify the load movement complies with the requirements stated in the Bases section of this TLCO.	Once prior to movement over fuel assemblies in the spent fuel storage pool racks

T 3.10.1 EMERGENCY RESPONSE FACILITIES

TLCO 3.10.1 The Technical Support Center, the Operations Support Center, and the Emergency Operations Facility shall be FUNCTIONAL.

APPLICABILITY: At all times.

ACTIONS

---NOTES---

1. Separate condition entry is allowed for each facility.
2. LCO 3.0.3 is not applicable.
3. If an emergency response facility (ERF) is out of service but it is determined that it can at any time be returned to service within 30 minutes, the CONDITION statements may be exited.
4. If an ERF will be removed from service for greater than 30 minutes, notify Emergency Planning to prepare a 10 CFR 50.54(q) evaluation. Entry into Condition A is required when the affected ERF becomes NON-FUNCTIONAL.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more emergency facilities nonfunctional.	A.1 Restore emergency facilities to FUNCTIONAL status.	30 minutes
	<u>AND</u>	
	---------------------NOTE-------------------- Alternate facilities are applicable only to OSC and TSC. ---	
	A.2 Verify availability of alternate facilities.	Immediately
B. Required Action A and associated Completion Time not met.	B.1 Initiate compensatory actions, as necessary, to provide emergency response functions.	Immediately
	<u>AND</u>	
	B.2 Complete NRC notifications as necessary.	Within 8 hours.
	<u>AND</u>	
	B.3 Proceed with actions to return ERFs to FUNCTIONAL status with a high priority.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
TSR 3.10.1.1	Perform testing and inventory to ensure functionality of an ERF.	In accordance with applicable procedures

B T 3.3.4 TRAVERSING INCORE PROBE (TIP) SYSTEM

BASES

FUNCTIONALITY of the TIP System requires:

a. Four movable detectors, drives, and readout equipment to map the core, and

b. Indexing equipment to allow all required detectors to be normalized in a common location.

The FUNCTIONALITY of the TIP System ensures that the measurements obtained from use of this equipment accurately represent the spatial neutron flux distribution in the reactor core.

In REQUIRED ACTION A.1, the Specification allows use of substituted TIP data from symmetric channels, adjusted by the plant computer to remove machine and power level dependent biases, if the control rod pattern is symmetric.

In REQUIRED ACTION A.2, the source of substituted data may also be calculations performed by the online computer core monitoring system which are normalized to available real data. Symmetry is not required for substitution of calculated readings. REQUIRED ACTION A.2 is modified by a note which limits the substitute readings to less than or equal to eight locations. For machines with nine channels, the use of A.2 is permitted provided the readings for the common channel are obtained from another FUNCTIONAL TIP machine.

B T 3.3.10 TURBINE OVERSPEED PROTECTION

BASES

The Main Turbine Overspeed Protection System is an integrated system with at least three lines of defense to protect from a damaging overspeed event and potential missile generation. The normal protection method is speed control using the control valves and the intercept valves. The secondary means of protection varies depending on the condition of the plant. Additionally, there is a Primary Overspeed Protection System and Emergency Overspeed Protection System. The Primary Overspeed Protection System is part of the normal speed control system and uses magnetic pickups to sense turbine speed, speed detection software, and associated logic circuits. The Emergency Overspeed Protection System consists of an independent 2-out-of-3 voting electronic overspeed protection module using three additional magnetic pickups, speed detection software, and associated logic circuits. Some components are common to the different protection schemes. The components that make up these protection schemes are identified below.

1. Normal Overspeed Protection Scheme – turbine speed over 1800 rpm sensed causes a feedback signal to close CVs and CIVs to bring speed back to 1800 rpm.

    a. Mark VI speed control
    b. EHC Fluid System
    c. Main turbine control valves
    d. Main turbine intercept valves

2. Primary Overspeed Protection Scheme – turbine speed over 1980 rpm sensed by the speed control speed pickups and an electrical trip is initiated to de-energize redundant sets of three solenoid controlled trip valves, dumping the ETS causing the stop valves to close followed by the control and intercept valves going closed.

    a. Speed control sensors
    b. Mark VI speed control
    c. Redundent 2-out-of-3 trip manifold assemblies
    d. Redundant sets of 3 trip solenoid valves
    e. Main turbine stop valves
    f. Main turbine reheat stop valves

3. Emergency Overspeed Protection Scheme – turbine speed over 1980 (higher than 2 above) is sensed by the speed pickups and an electrical trip is initiated by the electronic overspeed protection controllers to de-energize redundant sets of three solenoid controlled trip valves, dumping the ETS causing the stop valves to close followed by the control and intercept valves going closed.

(continued)

B T 3.3.10 TURBINE OVERSPEED PROTECTION (continued)

BASES

a. Emergency overspeed speed sensors
b. Mark VI overspeed protection controllers
c. Redundant 2-out-of-3 trip manifold assemblies
d. Redundant sets of 3 trip solenoid valves
e. Main turbine stop valves
f. Main turbine reheat stop valves

The Turbine Overspeed Protection System shall remain FUNCTIONAL. To satisfy this FUNCTIONALITY requirement, the following must be FUNCTIONAL:

- Two out of three primary speed signal input paths (Mark VI Turbine Control Module for Primary Overspeed Protection and Primary Overspeed Trip)
- Two out of three emergency speed signal input paths (Mark VI Protection Module for Emergency Overspeed Trip Protection)
- Two out of three Mark VI <R>,<S>,<T>, core trip signal output paths
- Two out of three Mark VI <X>,<Y>,<Z>, core trip signal output paths
- One out of two Mark VI trip cards (TREG, TRPG) required to trip an ETD system resulting in turbine trip
- One of two parallel ETD systems required to trip the turbine
- Six separate speed sensors, two of either group of 3 are required to trip

References:

S57299, S57294, and S57767

NOTES:

The main control room trip pushbutton switches and the local trip pushbutton switches de-energize the redundant sets of three solenoid controlled trip valves to produce a turbine trip.

BASES

B T 3.3.14 CROSSFLOW FEEDWATER MEASUREMENT SYSTEM

FUNCTIONALITY Requirements are as follows:

The Unit 1 Crossflow System consists of ultrasonic flow measurement (UFM) devices and computer electronics. The system is a high accuracy flow measurement system which improves the core thermal power (CTP) total loop uncertainty. The UFM feedwater flow rate is determined and compared with the C32 nozzle instrumentation, and a corrected feedwater flow is provided to the process computer for CTP computations.

The above system is required to be functioning properly for the Unit 1 Crossflow System to be considered FUNCTIONAL.

The Surveillance Requirement (TSR) provides for continuous monitoring by the process computer for Crossflow System alarms. The ACTION Statement is entered when a process computer Crossflow System alarm remains on for greater than a continuous 5-hour period. Upon entry into the ACTION Statement, the 5 hours shall be subtracted from the 72-hour Completion Time.

B T 3.9.4 CRANE TRAVEL

BASES

BACKGROUND

NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," (Ref. 1) was developed as an outgrowth of Generic Task A-36, "Control of Heavy Loads Near Spent Fuel." Following issuance of NUREG-0612, Generic Letter 80-113, dated December 22, 1980, was issued requesting that responses be prepared to indicate the degree of conformance with the guidelines of NUREG-0612. This generic letter was supplemented by GL 81-07, "Control of Heavy Loads," dated February 3, 1981. The generic letters provided for responses in two stages. The first response, Phase I, was to identify the load handling equipment within the scope of NUREG-0612 and to describe the associated load paths, procedures, operator training, special and general purpose lifting devices, the maintenance, testing, and repair of equipment, and the handling equipment specifications. Phase II was intended to show that either single-failure-proof handling equipment was not needed or that single-failure-proof equipment had been provided. On April 19, 1984, the NRC issued a Safety Evaluation Report (SER) for Phase I of the Plant Hatch response to the generic letter. That letter and SER concluded that the guidelines in NUREG-0612, Sections 5.1.1 and 5.3 have been satisfied, and thus, NRC concluded that Phase I for Plant Hatch was acceptable.

In May 2007, Regulatory Issue Summary 2005-25 Supplement 1, "Clarification of NRC Guidelines for Control of Heavy Loads," (Ref. 2) was issued by the NRC. In that RIS, the NRC addressed the following two points: first, load drop analyses performed in association with nonsingle-failure-proof cranes are to be incorporated into the FSAR such that it contains a description of the consequence evaluation and elements of the underlying analyses necessary to make the description complete and accurate; and second, the NRC will not allow new plants to use synthetic slings for use with single-failure-proof cranes. The RIS states that, due to the industry experience of heavy load drops with synthetic slings, the occurrence of single operational errors below the hook that result in synthetic round sling failures is incompatible with the intent of single-failure-proof handling systems. The NRC went on to note that it was not "backfitting" this requirement to current operating reactors. Thus, the current licensing basis for heavy loads at Plant Hatch continues to be as described in the April 19, 1984, SER. RIS 2005-25, Supplement 1 discussion regarding use of synthetic slings represents additional NRC guidance for safe movement of heavy loads.

(continued)

B T 3.9.4 CRANE TRAVEL

BASES (continued)

TLCO

This TLCO prohibits loads > 1250 lb from traveling over fuel assemblies in the spent fuel storage pool racks, except as noted below. This weight limit corresponds to the dry weight of a single spent fuel assembly and corresponding handling tool, which is the heavy load limit as described in NUREG-0612. This weight limit is an initial assumption in the accident analysis for the fuel handling accident. Therefore, dropping of a load weighing ≤ 1250 lb remains bounded by the fuel handling accident. The only permitted exceptions for loads > 1250 lb are single-failure-proof lifts which comply with the following requirements, in addition to existing requirements regarding procedural controls for heavy lifts, training of crane operators, and crane design, inspection, and maintenance.

- The Unit 1 single-failure-proof crane shall be used.
- In order to meet the intent of NUREG-0612, movement over irradiated fuel should be minimized to the extent possible and should comply with the approved safe load path.
- All nonstructural equipment > 1250 lb shall be removed from the load prior to movement.
- Lift shall have an engineering evaluation to ensure structural adequacy of the load relative to the defined lift points.
- Lifting devices shall be ANSI B30.9-1971 (Ref. 3) compliant and be constructed of metallic material, or shall be special lifting devices that satisfy ANSI N14.6-1978 (Ref. 4).

The use of a single-failure-proof crane in conjunction with the specified lifting devices described above meets the requirements of NUREG-0612 as clarified by the NRC's current position regarding use of synthetic slings stated in Regulatory Issue Summary 2005-025, Supplement 1 (See Background section).

APPLICABILITY

This TLCO is applicable to the reactor refueling floor during all modes of operation whenever there are fuel assemblies in the spent fuel storage pool racks.

(continued)

B T 3.9.4 CRANE TRAVEL

BASES (continued)

REFERENCES

1. NUREG-0612, “Control of Heavy Loads at Nuclear Power Plants,” July 1980.

2. NRC Regulatory Issue Summary 2005-25, Supplement 1.

3. ANSI B30.9-1971, “Slings.”

4. ANSI N14.6-1978, “Standard For Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds or More for Nuclear Materials.”

5. GE-NE-0000-0078-2619-R0, “ 360 Degree Auxiliary Work Platform Load Drop Analysis,” December 2007.

6. BH0-C-S08-V002-0001, Drop Load Analysis For Control of Heavy Loads/Floor Slab Analysis,” Rev. 1, May 1986.

B T 3.10.1 EMERGENCY RESPONSE FACILITIES

BASES

APPLICABILITY

This TLCO is applicable to the Technical Support Center (TSC), the Operations Support Center (OSC), and the Emergency Operations Facility (EOF).

Emergency events could occur during all modes of operation; consequently, the emergency response facilities (ERFs) shall be FUNCTIONAL at all times.

CONDITIONS

Condition A

The 30-minute out-of-service time is acceptable since alternate facilities are available to provide the emergency response functions during the time the primary ERF is nonfunctional. If the alternate facilities are not available, then CONDITION B is immediately entered.

The Note indicates that this action does not apply to the EOF since it does not have an alternate facility.

Note 3 modifies the CONDITION statements when it is determined that the primary ERF can at any time during its out-of-service period be returned to service within 30 minutes. In that case, the ERF is considered FUNCTIONAL and the CONDITION statements may be exited. Similarly, if the ERF is to be deliberately taken out of service but will be capable of being returned to service at any time within 30 minutes, the ERF is considered FUNCTIONAL and the CONDITION statements are not required to be entered.

Condition B

If the alternate facilities are available, then no compensatory actions may be needed, provided the necessary compensatory actions are encompassed in the procedures for the alternate facilities. If the alternate facilities are not available, then compensatory actions must immediately be put in place.

There is no alternate EOF.

The NRC must be notified via a 50.72(b)(3)(xiii) eight-hour telephone call if the ERF is discovered out of service and is expected to remain out of service for greater than 30 minutes, or of it remains out of service for longer than 30 minutes.

(continued)

B T 3.10.1 EMERGENCY RESPONSE FACILITIES (continued)

BASES

As indicated on Note 4 of the ACTIONS section, if the ERF will deliberately be taken out of service for a period longer than 30 minutes, a 50.54(q) evaluation shall be written. If the 50.54(q) evaluation determines that the effectiveness of the Emergency Plan is decreased, the evaluation must be completed and submitted to NRC Headquarters, and that approval must be received prior to the ERF being taken out of service.

Admittedly, the term “high priority” is subjective. Consequently, the following clarification is provided: In the context of this TLCO, “high priority” is taken to mean that returning the primary ERF to FUNCTIONAL status will be the overriding objective. Priority is not given to, for example, staying within budgetary or scheduling constraints.

FUNCTIONALITY REQUIREMENTS

Scheduled outages affecting emergency response facilities shall be limited to no more than 16 hours per calendar quarter.

TSC

The following is required for functionality of the TSC:

- The ventilation system for filtration and climate control.
- Offsite dose projection equipment.
- Communication capability between control room, TSC, OSC, EOF, field monitoring teams, and offsite agencies.
- Event assessment capability.

If any of the following are out of service, the impact of their loss shall be evaluated in determining the ability of the TSC to perform its safety function:

- The following communication systems:

FUNCTION	EQUIPMENT
TSC management with EOF	Commercial telephone lines, TSC/EOF/OSC conference bridge
Resource management	Commercial telephone lines Local area network (LAN)
Radiological monitoring	Southern Linc Kenwood Radio System

(continued)

B T 3.10.1 EMERGENCY RESPONSE FACILITIES (continued)

BASES

Notifications and offsite protective action recommendations (PARs)	Emergency Notification Network (ENN)
NRC notifications	Emergency Notification System (ENS)

- Availability of plant procedures and plant drawings. For example:

Technical Specifications, EOPs, plant operating procedures, emergency implementing procedures, system piping and instrumentation drawings, and elementary drawings.

- Emergency supplies and equipment as delineated in the Emergency Plan, section H, appendix 4.

- Technical data displays for event assessment.

<u>OSC</u>

The following is required for functionality of the OSC:

- Communication capability with the TSC and control room.

- The Health Physics emergency HVAC system for climate control.

If any of the following are out of service, the impact of their loss shall be evaluated in determining the ability of the OSC to perform its required function.

- Emergency equipment supplies as delineated in the Emergency Plan, section H, appendix 4.

- Communication devices capable of performing the indicated function as provided below:

FUNCTION	EQUIPMENT
OSC management with TSC	Commercial telephone lines TSC/EOF/OSC conference bridge
Resource management	Commercial telephone lines
Radiological monitoring	Southern Linc Kenwood Radio System

(continued)

B T 3.10.1 EMERGENCY RESPONSE FACILITIES (continued)

BASES

EOF

The following is required for functionality of the EOF:

- Offsite dose projection capability.
- Communication capability between control room, TSC, OSC, EOF, and offsite agencies.

If any of the following are out of service, the impact of their loss shall be evaluated in determining the ability of the EOF to perform its required function:

- Technical data displays.
- Availability of procedural information for EOF positions.
- Communication devices capable of performing the indicated function as provided.

FUNCTION	EQUIPMENT
TSC management with EOF	Commercial telephone lines TSC/EOF/OSC conference bridge
Resource management	Commercial telephone lines Local area network (LAN)
Radiological monitoring	Southern Linc Kenwood Radio System
Notifications and offsite protective actions recommendations	Emergency Notification Network (ENN)
NRC notifications	Emergency Notification System (ENS)

SURVEILLANCE REQUIREMENTS

42SV-X75-001-1 requires functional testing of the TSC ventilation and filtration system. A suitable environment must be maintained in the TSC for personnel occupancy and equipment operation during radiological events. To accomplish this, the TSC ventilation and filtration system provides an adequate supply of filtered fresh air during accident conditions, as well as minimizing airborne radioactivity in the TSC during and after an accident.

(continued)

B T 3.10.1 EMERGENCY RESPONSE FACILITIES (continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

Functional testing of the ventilation system is therefore performed to ensure the TSC remains habitable.

73EP-TET-001-0 requires that Channel Checks be performed of the technical data displays in the TSC and EOF. These displays must be functional to allow TSC personnel to adequately diagnose abnormal plant conditions during accident scenarios. In the EOF, data displays are used to keep abreast of plant conditions during the emergency. Channel Checks are qualitative assessments by observation of channel behavior. The determination includes, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. So, for example, the TSC and EOF data displays may be compared to each other, and to indications in the control room. If some of the technical data displays are found nonfunctional, this may not necessarily result in the facility being nonfunctional. Emergency Preparedness personnel shall evaluate the nonfunctional items and determine their effect on the functionality of the TSC and EOF.

73EP-INS-001-0 requires inventory of emergency equipment in the TSC and OSC. 73-EP-INS-002-0 requires inventories of procedures in the TSC and OSC. This TSR also ensures the availability of emergency equipment supplies that are normally kept in the TSC and OSC. NMP-EP-300 requires inventory of emergency procedure equipment in the EOF. This surveillance ensures that the ERFs are maintained in a state of readiness with respect to the equipment and items necessary for emergency response. If some items are not in place, they shall be immediately replaced. However, if certain items cannot be replaced, Emergency Preparedness personnel shall evaluate their loss with respect to the functionality of the respective ERF.

73EP-TET-001-0 requires functional testing of offsite dose projection equipment. Initial offsite dose projections are often made from the TSC. Followup projections are usually made from the EOF. Consequently, it is appropriate that both facilities retain functional offsite dose projection equipment. In addition to the testing required by this procedure, the offsite dose projection equipment will be tested during EP drills/exercises conducted each year at Plant Hatch.

73EP-TET-001-0 requires functional testing of the multiline pushbutton / ringdown lines and the ENN and ENS offsite notification systems. The multiline phones provide communications within the plant during an emergency to facilitate event diagnosis, the assignment and

(continued)

B T 3.10.1 EMERGENCY RESPONSE FACILITIES

BASES

SURVEILLANCE REQUIREMENTS (continued)

dispatch of emergency personnel, and information updates of plant conditions. The ENN and ENS systems are the primary methods of notifying State and local authorities and the NRC and, as such, these systems should remain functional. ENN and ENS equipment is available in both the TSC and EOF. NMP-EP-300 also requires testing of communication equipment such as commercial, Southern Linc, and satellite phones. A nonfunctional communications system will not necessarily indicate a nonfunctional ERF. Emergency Preparedness shall evaluate each case in determining the functionality of the particular ERF.

42SV-241-004-1 requires testing of the Health Physics area emergency filter train. The emergency mode of the Health Physics area ventilation system is required to maintain functionality of the OSC. It is used primarily to maintain habitability of the Health Physics office areas in the case of airborne conditions or when the normal system is unavailable. Health Physics areas must be habitable to support OSC related activities being performed in the Chemistry counting room or Health Physics offices. Consequently, the ventilation system must be FUNCTIONAL and capable of handling potentially airborne conditions. To ensure the ventilation system is capable of maintaining habitability of the Health Physics areas, the emergency mode of the Health Physics ventilation system is periodically tested. This test includes a visual inspection of the filter train, removal of the charcoal samples for analysis, flowrate verification, and HEPA filter in-place leak testing.

TABLE T5.0-1 (Sheet 1 of 2)
ACCEPTANCE CRITERIA

SR 3.1.4.3	SCRAM TIME < 800 PSIG	(seconds)
"0" psig Scram Time[a]		≤ 2

a. For reactor steam dome pressure < 800 psig, only notch position 06 scram time limit applies. For scram times between 0 psig and 800 psig, the scram time criteria are determined by linear interpolation between the 0 psig acceptance criteria stated here and the 800 psig acceptance criteria stated in TS Table 3.1.4-1.

SR 3.3.1.1.16	RPS RESPONSE TIMES	(seconds)
		APRM Two-out-of-Four Voter
	≤ 0.05	
TCV Fast Closure Trip Oil Pressure - Low		≤ 0.08[b]

b. Measured from start of Turbine Control Valve closure.

ECCS RESPONSE TIMES[c]	(seconds)
Core Spray	≤ 34
LPCI	≤ 64
HPCI	≤ 75

c. The ECCS and LLS Response Times are provided for reference only. No Unit 1 Technical Specifications Surveillances are associated with these response times. However, these response times are assumed in the safety analyses and should be considered in defining OPERABILITY of the applicable systems.

SAFER/GESTR (DBA LOCA Analysis) Valve Times	(seconds)
1B31-F031 A/B (required closing time)	≤ 43
1E11-F015 A/B (required opening time)	≤ 63
1E21-F005 A/B (required opening time)	≤ 20

TABLE T5.0-1 (Sheet 2 of 2)
ACCEPTANCE CRITERIA

LLS RESPONSE TIME[c]	(seconds)
Arm LLS	$\leq$ 1

c. The ECCS and LLS Response Times are provided for reference only. No Unit 1 Technical Specifications Surveillances are associated with these response times. However, these response times are assumed in the safety analyses and should be considered in defining OPERABILITY of the applicable systems.

SR 3.3.4.1.5 and SR 3.3.4.1.6 EOC RPT RESPONSE TIMES	(milliseconds)
TSV - Closure	$\leq$ 155
TCV - Fast Closure	$\leq$ 175
Breaker Interruption Time[d]	$\leq$ 135

d. Breaker interruption time consists of breaker response time plus the arc suppression time, which is a constant, supplied by the manufacturer, equal to 1/2 cycle (8.33 milliseconds).

SR 3.7.7.3 TURBINE BYPASS SYSTEM RESPONSE	(seconds)
Time from Initial Movement until 80%. The Bypass System is required to pass at least 80% of its rated flow within 0.30 seconds after initial movement of a Turbine Control Valve (TCV) or a Turbine Stop Valve (TSV) following a turbine trip. If any individual valve does not meet this Response Time, an evaluation must be performed to determine whether the system as a whole meets this requirement.	$\leq$ 0.30
Time from Initial Movement until Initial Movement of Turbine Bypass System. The Turbine Bypass System contains three Bypass Valves that are analytically modeled as a single valve. Therefore, it is possible for the Turbine Bypass System to meet this Response Time with one or two Bypass Valves exceeding the specified Response Time. If one or two Bypass Valves exceed this Response Time, it is necessary to arithmetically average the Response Times of all three Bypass Valves. If the arithmetic average is equal to or below 0.10 seconds, the Turbine Bypass System is considered to have met the Response Time.	$\leq$ 0.10

TABLE T6.0-1 (Sheet 1 of 3)
INSTRUMENTATION AND CONTROLS REQUIRED FOR REMOTE SHUTDOWN

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR THE FUNCTION		TRANSFER SWITCH	LOCATION	ALTERNATE INFORMATION SOURCE OR CONTROL SOURCE
RPV Pressure Control via SRVs	1B21-F013G	Manual LLS Valve	1C82-S1	1H21-P173	
	1B21-F013C	Manual LLS Valve	1C82-S24C	1C82-P002	
RCIC for RPV make-up	1E51-F045	RCIC steam to turbine MOV	1C82-S23B	1C82-P001	
	1E51-F046	RCIC turbine cooling water supply MOV			
	1E51-F013	RCIC pump discharge MOV	1C82-S23C	1C82-P001	
	1E51-F524	RCIC turbine trip/throttle valve	1C82-S23D	1C82-P001	
	1E51-C002-1	RCIC barometric condenser: condensate pump	1C82-S23E	1C82-P001	
	1E51-C002-2	RCIC barometric condenser: vacuum pump			
	1E51-F008	RCIC outboard steam supply line isolation MOV	1C82-S23F	1C82-P001	
	1E51-F007	RCIC inboard steam supply line isolation MOV	1C82-S23G	1C82-P001	
	1B21-R070	Reactor water level instrument	N/A	1H21-P173	
	1E51-R070	RCIC pump flow instrument	N/A	1H21-P173	
Support Equipment	1P41-C001B	PSW pump	1C82-S2B	1H21-P175	
RHR: Suppression Pool Cooling	1E11-C001B[(a)]	RHR Service Water pump 1B	1C82-S2A	1H21-P175	
	1E11-C001D[(a)]	RHR Service Water pump 1D			
Shutdown Cooling	1E11-C002B	RHR pump 1B	1C82-S2B	1H21-P175	

TABLE T6.0-1 (Sheet 2 of 3)
INSTRUMENTATION AND CONTROLS REQUIRED FOR REMOTE SHUTDOWN

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR THE FUNCTION		TRANSFER SWITCH	LOCATION	ALTERNATE INFORMATION SOURCE OR CONTROL SOURCE
RHR	1E11-F009	RHR shutdown cooling suction isolation inboard MOV	1C82-S23A	1C82-P001	
Cont'd:	1E11-F004B 1E11-F048B	RHR pump suction MOV RHR heat exchanger shell side bypass MOV	1C82-S24A	1C82-P002	
	1E11-F006B 1E11-F024B	RHR shutdown cooling suction MOV RHR test line isolation MOV	1C82-S24B	1C82-P002	
	1B31-F023B 1E11-F028B	Reactor recirculation pump suction MOV RHR suppression pool cooling/spray MOV	1C82-S24D	1C82-P002	
	1E11-F015B	RHR LPCI inboard injection MOV	1C82-S24E	1C82-P002	
	1E11-F008	RHR shutdown cooling suction outboard isolation MOV	1C82-S24F	1C82-P002	
	1E11-F007B 1E11-F017B	RHR pump 1B minimum flow MOV RHR LPCI outboard injection MOV	1C82-S24G	1C82-P002	
	1C32-R070	Reactor pressure instrument	N/A	1H21-P173	
	1E11-R070	RHR flow instrument	N/A	1H21-P173	
	1E11-R071	RHRSW flow instrument	N/A	1H21-P173	
	1T48-R070	Suppression pool level instrument	N/A	1H21-P173	
	1T48-R072	Suppression pool temperature instrument	N/A	1H21-P173	

TABLE T6.0-1 (Sheet 3 of 3)
INSTRUMENTATION AND CONTROLS REQUIRED FOR REMOTE SHUTDOWN

REQUIRED REMOTE SHUTDOWN FUNCTION	EQUIPMENT OR INDICATION REQUIRED FOR THE FUNCTION		TRANSFER SWITCH	LOCATION	ALTERNATE INFORMATION SOURCE OR CONTROL SOURCE
	1R43-R766A	DG 1A local frequency indication	N/A	1R43-P001A	
		DG 1A local speed setting knob	N/A	DG 1A Woodward Governor	
	1R43-R769A	DG 1A local voltage indication	N/A	1R43-P001A	
		DG 1A local Auto Voltage Adjust switch	N/A	1R43-P001A inside	
		DG 1A Diesel Generator Control switch [CONTROL REMOTE AT ENG. switch]	N/A	1R43-P003A	
Emergency	1R43-R766B	DG 1B local frequency indication	N/A	1R43-P001B	
Diesel		DG 1B local speed setting knob	N/A	DG 1B Woodward Governor	
Generator	1R43-R769B	DG 1B local voltage indication	N/A	1R43-P001B	
Equipment		DG 1B local Auto Voltage Adjust switch	N/A	1R43-P001B inside	
		DG 1B Mode Switch	2R43-M01	DG 1B room’s north wall	
	1R43-R766C	DG 1C local frequency indication	N/A	1R43-P001C	
		DG 1C local speed setting knob	N/A	DG 1C Woodward Governor	
	1R43-R769C	DG 1C local voltage indication	N/A	1R43-P001C	
		DG 1C local Auto Voltage Adjust switch	N/A	1R43-P001C inside	
		DG 1C Generator Control switch [CONTROL REMOTE AT ENG. switch]	N/A	1R43-P003C	

(a) Only one RHR service water pump is required.

TABLE T7.0-1 (Sheet 1 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
1A	Equipment Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	
1A	Equipment Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
1B	Equipment Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
1B	Equipment Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
2	Personnel Airlock	Inboard	Inner Door	-	B	-	-	-	-	-	-	1,4,7,8	-
2	Personnel Airlock	Inboard	Double O-Ring	-	B	-	-	-	-	-	-		-
2	Personnel Airlock	Outboard	Outer Door	-	B	-	-	-	-	-	-		-
2	Personnel Airlock	Outboard	Double O-Ring	-	B	-	-	-	-	-	-		-
3	Drywell Head	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
3	Drywell Head	Outboard	-	-	-	-	-	-	-	-	-		-
4	Drywell Head Access Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
4	Drywell Head Access Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
5A	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5A	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5B	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5B	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5C	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5C	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5D	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5D	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5E	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5E	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5F	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5F	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5G	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5G	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5H	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
5H	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
6	CRD Removal Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
6	CRD Removal Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
7A	Main Steam	Inboard	1B21-F022A	AO Globe	C	N2/AC/DC	N2/Spring	1	3<T<5	Open	Closed	1,2,3,5,9,19	RF
7A	Main Steam	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7A	Main Steam	Outboard	1B21-F028A	AO Globe	C	Air/AC/DC	Air/Spring	1	3<T<5	Open	Closed	1,2,3,5,10,19	AD

TABLE T7.0-1 (Sheet 2 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
7A	Main Steam	Outboard	1B21-F028A	AO Globe	C	Air/AC/DC	Air/Spring	1	3<T<5	Open	Closed	1,2,3,5,10,19	AD
7A	Main Steam	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7B	Main Steam	Inboard	1B21-F022B	AO Globe	C	N2/AC/DC	N2/Spring	1	3<T<5	Open	Closed	1,2,3,5,9,19	RF
7B	Main Steam	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7B	Main Steam	Outboard	1B21-F028B	AO Globe	C	Air/AC/DC	Air/Spring	1	3<T<5	Open	Closed	1,2,3,5,10,19	AD
7B	Main Steam	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7C	Main Steam	Inboard	1B21-F022C	AO Globe	C	N2/AC/DC	N2/Spring	1	3<T<5	Open	Closed	1,2,3,5,9,19	RF
7C	Main Steam	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7C	Main Steam	Outboard	1B21-F028C	AO Globe	C	Air/AC/DC	Air/Spring	1	3<T<5	Open	Closed	1,2,3,5,10,19	AD
7C	Main Steam	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7D	Main Steam	Inboard	1B21-F022D	AO Globe	C	N2/AC/DC	N2/Spring	1	3<T<5	Open	Closed	1,2,3,5,9,19	RF
7D	Main Steam	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
7D	Main Steam	Outboard	1B21-F028D	AO Globe	C	Air/AC/DC	Air/Spring	1	3<T<5	Open	Closed	1,2,3,5,10,19	AD
7D	Main Steam	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
8	Condensate Drain	Inboard	1B21-F016	MO Gate	C	AC	AC	1	-	Closed	Closed	1,2,4,5,9	RF
8	Condensate Drain	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
8	Condensate Drain	Outboard	1B21-F019	MO Gate	C	DC	DC	1	-	Closed	Closed	1,2,4,5,10	AD
8	Condensate Drain	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
9A	Primary Feedwater	Inboard	1B21-F010A	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10,15	AD
9A	Primary Feedwater	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
9A	Primary Feedwater	Outboard	1B21-F032A	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10,15	AD
9A	Primary Feedwater	Outboard	1G31-F039	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10,51	AD
9A	Primary Feedwater	Outboard	1E51-F013	MO Gate	C	DC	DC	-	-	Closed	Closed	1,2,5,10	AD
9A	Primary Feedwater	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
9B	Primary Feedwater	Inboard	1B21-F010B	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10,15	AD
9B	Primary Feedwater	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
9B	Primary Feedwater	Outboard	1B21-F032B	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10,15	AD
9B	Primary Feedwater	Outboard	1G31-F203	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,5,10	AD
9B	Primary Feedwater	Outboard	1E41-F006	MO Gate	C	DC	DC	-	-	Closed	Closed	1,2,5,10	AD
9B	Primary Feedwater	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
10	Steam to RCIC Turbine	Inboard	1E51-F007	MO Gate	C	AC	AC	4	25	Open	Closed	1,2,4,5,9	RF
10	Steam to RCIC Turbine	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-

TABLE T7.0-1 (Sheet 3 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
10	Steam to RCIC Turbine	Outboard	1E51-F008	MO Gate	C	DC	DC	4	30	Open	Closed	1,2,4,5,10	AD
10	Steam to RCIC Turbine	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
11	Steam to HPCI Turbine	Inboard	1E41-F002	MO Gate	C	AC	AC	3	57	Open	Closed	1,2,4,5,9,30	RF
11	Steam to HPCI Turbine	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
11	Steam to HPCI Turbine	Outboard	1E41-F003	MO Gate	C	DC	DC	3	67	Open	Closed	1,2,4,5,10,30	AD
11	Steam to HPCI Turbine	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
12	RHR Shutdown Cooling Suction	Inboard	1E11-F008	MO Gate	C	DC	DC	6	-	Closed	Closed	1,2,4,5,10,50	AD
12	RHR Shutdown Cooling Suction	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
12	RHR Shutdown Cooling Suction	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
12	RHR Shutdown Cooling Suction	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
13A	RHR Return to Recirc Loop	Inboard	1E11-F015A	MO Gate	C	AC	AC	13,j	-	Closed	Closed	1,2,4,5,10,23	AD
13A	RHR Return to Recirc Loop	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
13A	RHR Return to Recirc Loop	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
13A	RHR Return to Recirc Loop	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
13B	RHR Return to Recirc Loop	Inboard	1E11-F015B	MO Gate	C	AC	AC	13,j	-	Closed	Closed	1,2,4,5,10,23	AD
13B	RHR Return to Recirc Loop	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
13B	RHR Return to Recirc Loop	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
13B	RHR Return to Recirc Loop	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
14	RWC Supply	Inboard	1G31-F001	MO Gate	C	AC	AC	5,d	30	Open	Closed	1,2,4,5,10	AD
14	RWC Supply	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
14	RWC Supply	Outboard	1G31-F004	MO Gate	C	DC	DC	5,d	40	Open	Closed	1,2,4,5,10	AD
14	RWC Supply	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
15	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
15	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
16A	Core Spray	Inboard	1E21-F005A	MO Gate	C	AC	AC	-	-	Closed	Closed	1,2,4,5,10,23	AD
16A	Core Spray	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
16A	Core Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
16A	Core Spray	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
16B	Core Spray	Inboard	1E21-F005B	MO Gate	C	AC	AC	-	-	Closed	Closed	1,2,4,5,10,23	AD
16B	Core Spray	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
16B	Core Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
16B	Core Spray	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-

TABLE T7.0-1 (Sheet 4 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
17	RPV Head Spray	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
17	RPV Head Spray	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6	-
18	Clean Radwaste Pump Discharge	Inboard	1G11-F019	AO Globe	C	Air/AC	Spring	2,b	-	Open	Closed	1,2,4,5,10	AD
18	Clean Radwaste Pump Discharge	Outboard	1G11-F020	AO Globe	C	Air/AC	Spring	2,b	-	Open	Closed	1,2,4,5,10	AD
19	Dirty Radwaste Pump Discharge	Inboard	1G11-F003	AO Globe	C	Air/AC	Spring	2,b	-	Open	Closed	1,2,4,5,10	AD
19	Dirty Radwaste Pump Discharge	Outboard	1G11-F004	AO Globe	C	Air/AC	Spring	2,b	-	Open	Closed	1,2,4,5,10	AD
20	PSW Supply	Inboard	Closed System	-	-	-	-	-	-	-	-		-
20	PSW Supply	Outboard	1P41-F049	MO Gate	C	AC	AC	-	-	Open	Closed	1,2,4,5,16	AD
21	Service Air	Inboard	1P51-F514	Globe	C	Hand	Hand	-	-	Closed	Closed	1,2,4,5,10,26	AD
21	Service Air	Outboard	1P51-F513	Globe	C	Hand	Hand	-	-	Closed	Closed	1,2,4,5,10,26	AD
22	Drywell Pneumatic Supply	Inboard	1P70-F004	SO Globe	C	Spring	AC	13,c	-	Open	Closed	1,2,4,5,10,29	AD
22	Drywell Pneumatic Supply	Inboard	1P70-N003		C								-
22	Drywell Pneumatic Supply	Outboard	1P70-F005	SO Globe	C	Spring	AC	13,c	-	Open	Closed	1,2,4,5,10,29	AD
23	RBCCW Supply	Inboard	Closed System	-	-	-	-	-	-	-	-		-
23	RBCCW Supply	Outboard	1P42-F051	MO Gate	C	AC	AC	-	-	Open	Closed	1,2,4,5,17	AD
23	RBCCW Supply	Outboard	1P42-N031		A			-	-				-
23	RBCCW Supply	Outboard	1P42-N032		A			-	-				-
24	RBCCW Return	Inboard	Closed System	-	-	-	-	-	-	-	-		-
24	RBCCW Return	Outboard	1P42-F052	MO Gate	C	AC	AC	-	-	Open	Closed	1,2,4,5,17	AD
25	Drywell Purge Supply	Inboard	1T48-F307	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,13	RF
25	Drywell Purge Supply	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6,32	-
25	Drywell N2 Makeup	Inboard	1T48-F114	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Inboard	1T48-F118A	SO Globe	C	AC	Spring	11	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Inboard	1T48-F322	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell Purge Supply	Outboard	1T48-F308	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell Purge Supply	Outboard	1T48-F103	AO Bttrfly	C	Air/AC	Spring	11		Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Outboard	1T48-F113	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Outboard	1T48-F104	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Outboard	1T48-F321	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Outboard	1T48-F324	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,10	AD
25	Drywell N2 Makeup	Outboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6,33	
26	Drywell Exh Bypass	Inboard	1T48-F335A	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10,24	AD

TABLE T7.0-1 (Sheet 5 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
26	Drywell Exh Bypass	Inboard	1T48-F335B	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10,24	AD
26	Drywell Exh Bypass	Inboard	1T48-F341	SO Globe	C	AC	Spring	11	-	Closed	Closed	1,2,4,5,9	RF
26	Drywell Main Exh	Inboard	1T48-F319	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,13	RF
26	Drywell Main Exh	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	34	-
26	H2O2 Analyzer	Inboard	1P33-F002	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
26	Drywell Exh Bypass	Outboard	1T48-F334A	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10,24	AD
26	Drywell Exh Bypass	Outboard	1T48-F334B	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10,24	AD
26	Drywell Exh Bypass	Outboard	1T48-F340	SO Globe	C	AC	Spring	11	-	Closed	Closed	1,2,4,5,10	AD
26	Drywell Main Exh	Outboard	1T48-F320	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,10	AD
26	Drywell Main Exh	Outboard	Double O-Ring	-	B	-	-	-	-	-	-	35	-
26	H2O2 Analyzer	Outboard	1P33-F010	AO Globe	C	Spring	Air/AC	10	-	Open	Closed	1,2,4,5,10	AD
27A	Fission Products Monitor Supply	Inboard	1D11-F051	SO Gate	C	AC	Spring	11	-	Open	Closed	1,2,4,5,10	AD
27A	Fission Products Monitor Supply	Outboard	1D11-F053	SO Gate	C	AC	Spring	11	-	Open	Closed	1,2,4,5,10	AD
27B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
27B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
27C	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
27C	Drywell Press	Outboard	1E11-F043A	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
27D	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
27D	Drywell Press	Outboard	1E11-F043C	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
27E	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
27E	Drywell Press	Outboard	1T48-F304B	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
27F	Drywell Pneumatic Supply	Inboard	1P70-F066	SO Globe	C	Spring	AC	13,c	-	Open	Closed	1,2,4,5,10,29	AD
27F	Drywell Pneumatic Supply	Inboard	1P70-N016	-	C	-	-	-	-	-	-		-
27F	Drywell Pneumatic Supply	Outboard	1P70-F067	SO Globe	C	Spring	AC	13,c	-	Open	Closed	1,2,4,5,10,29	AD
28A	Reactor H2O Sample	Inboard	1B31-F019	AO Globe	C	N2/AC	Spring	1,a	-	Open	Closed	1,2,4,5,10	AD
28A	Reactor H2O Sample	Outboard	1B31-F020	AO Globe	C	Air/AC	Spring	1,a	-	Closed	Closed	1,2,4,5,10	AD
28B	Reactor Level and Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
28B	Reactor Level and Diff Press	Outboard	1B21-F047B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
28C	Reactor Level	Inboard	Orifice	-	-	-	-	-	-	-	-		-
28C	Reactor Level	Outboard	1B21-F045B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
28D	Reactor Level and Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
28D	Reactor Level and Press	Outboard	1B21-F049B	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 6 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
28E	Reactor Level and Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
28E	Reactor Level and Press	Outboard	1B21-F043B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
28F	H2O2 Sample Supply	Inboard	1P33-F003	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
28F	H2O2 Sample Supply	Outboard	1P33-F011	AO Globe	C	Spring	Air/AC	10	-	Open	Closed	1,2,4,5,10	AD
29A	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
29A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
29B	Reactor Level and Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
29B	Reactor Level and Diff Press	Outboard	1B21-F047A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
29C	Reactor Level	Inboard	Orifice	-	-	-	-	-	-	-	-		-
29C	Reactor Level	Outboard	1B21-F045A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
29D	Reactor Level and Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
29D	Reactor Level and Press	Outboard	1B21-F049A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
29E	Reactor Level and Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
29E	Reactor Level and Press	Outboard	1B21-F043A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
29F	Reactor Level Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
29F	Reactor Level Inst	Outboard	1B21-F041	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30A	Press Below Core Plate	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30A	Press Below Core Plate	Outboard	1B21-F055	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30B	Press Above Core Plate	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30B	Press Above Core Plate	Outboard	1B21-F057	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30C	Main Steam B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30C	Main Steam B Flow	Outboard	1B21-F015G	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30D	Main Steam B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30D	Main Steam B Flow	Outboard	1B21-F015H	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30E	HPCI Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30E	HPCI Steam Inst	Outboard	1E41-F024B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
30F	HPCI Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
30F	HPCI Steam Inst	Outboard	1E41-F024D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
31A	Recirc Line A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
31A	Recirc Line A Flow	Outboard	1B31-F009A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
31A	Recirc Line A Flow	Outboard	1B31-F009D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
31B	Recirc Line A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
31B	Recirc Line A Flow	Outboard	1B31-F010D	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 7 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
31B	Recirc Line A Flow	Outboard	1B31-F010D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
31B	Recirc Line A Flow	Outboard	1B31-F010A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
31C	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
31C	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
31D	H2O2 Sample Return	Inboard	1P33-F004	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
31D	H2O2 Sample Return	Outboard	1P33-F012	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
31E	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
31E	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
31F	Recirc Pump A Seal Purge	Inboard	1B31-F013A	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,4,5,10,36	AD
31F	Recirc Pump A Seal Purge	Outboard	1B31-F017A	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,4,5,10,36	AD
32A	Recirc Pump A Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
32A	Recirc Pump A Diff Press	Outboard	1B31-F040A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
32B	Recirc Pump A Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
32B	Recirc Pump A Diff Press	Outboard	1B31-F040C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
32C	Recirc Pump B Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
32C	Recirc Pump A Pressure	Outboard	1B31-F057A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
32D	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
32D	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
32E	Recirc Pump A Seal Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
32E	Recirc Pump A Seal Pressure	Outboard	1B31-F003A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
32F	Recirc Pump A Seal Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
32F	Recirc Pump A Seal Pressure	Outboard	1B31-F004A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
33A	Recirc Line B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
33A	Recirc Line B Flow	Outboard	1B31-F011A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
33A	Recirc Line B Flow	Outboard	1B31-F011D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
33B	Recirc Line B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
33B	Recirc Line B Flow	Outboard	1B31-F012A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
33B	Recirc Line B Flow	Outboard	1B31-F012D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
33C	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
33C	Spare	Outboard	-	-	-	-	-	-	-	-	-d	-	-
33D	Fission Products Monitor Return	Inboard	1D11-F050	SO Gate-	C	AC	Spring	11	-	Open	Closed	1,2,4,5,10	AD
33D	Fission Products Monitor Return	Outboard	1D11-F052	SO Gate	C	AC	Spring	11	-	Open	Closed	1,2,4,5,10	AD

TABLE T7.0-1 (Sheet 8 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
33E	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
33E	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
33F	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
33F	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
34A	Recirc Pump B Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
34A	Recirc Pump B Diff Press	Outboard	1B31-F040B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
34B	Recirc Pump B Diff Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
34B	Recirc Pump B Diff Press	Outboard	1B31-F040D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
34C	Recirc Pump B Seal Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
34C	Recirc Pump B Seal Pressure	Outboard	1B31-F003B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
34D	Recirc Pump B Seal Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
34D	Recirc Pump B Seal Pressure	Outboard	1B31-F004B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
34E	H2O2 Sample Return	Inboard	1P33-F005	SO Globe	C	DC	Spring	10	-	Open	Closed	1,2,4,5,10	AD
34E	H2O2 Sample Return	Outboard	1P33-F013	SO Globe	C	AC	Spring	10	-	Open	Closed	1,2,4,5,10	AD
34F	Recirc Line A Pressure	Inboard	Orifice	-	-	-	-	-	-	-	-		-
34F	Recirc Line B Pressure	Outboard	1B31-F057B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
35A	TIP Drive B	Inboard	Ball Vlv For J004B	Ball	C	AC	AC	13,e	-	Closed	Closed	1,2,4,5,10,25	AD
35A	TIP Drive B	Inboard	Double O-Rings	-	B	-	-	-	-	-	-	1,2,4,6	-
35A	TIP Drive B	Outboard	Shear Vlv For J004B	Shear	C	-	DC, Explosive	-	-	Open	Closed	25,37	AD
35B	TIP Drive C	Inboard	Ball Vlv For J004C	Ball	C	AC	AC	13,e	NA	Closed	Closed	1,2,4,5,10,25	AD
35B	TIP Drive C	Inboard	Double O-Rings	-	B	-	-	-	-	-	-	1,2,4,6	-
35B	TIP Drive C	Outboard	Shear Vlv For J004C	Shear	-	-	DC, Explosive	-	-	Open	Closed	25,37	-
35C	TIP Drive A	Inboard	Ball Vlv For J004A	Ball	C	AC	AC	13,e	NA	Closed	Closed	1,2,4,5,10,25	AD
35C	TIP Drive A	Inboard	Double O-Rings	-	B	-	-	-	-	-	-	1,2,4,6	-
35C	TIP Drive A	Outboard	Shear Vlv For J004A	Shear	-	-	DC, Explosive	-	-	Open	Closed	25,37	-
35D	TIP Drive D	Inboard	Ball Vlv For J004D	Ball	C	AC	AC	13,e	NA	Closed	Closed	1,2,4,5,10,25	AD
35D	TIP Drive D	Inboard	Double O-Rings	-	B	-	-	-	-	-	-	1,2,4,6	-
35D	TIP Drive D	Outboard	Shear Vlv For J004D	Shear	-	-	DC, Explosive	-	-	Open	Closed	25,37	-
35E	TIP N2 Purge	Inboard	1C51-F3017	Check	C	Process	Reverse Flow	-	-	Closed	Closed	1,2,4,5,18	AD
35E	TIP N2 Purge	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
36	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
36	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-

TABLE T7.0-1 (Sheet 9 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
37A	CRD Insert (Typical 38)	Inboard	-	-	C	-	-	-	-	-	-	-	-
37A	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
37A	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
37A	CRD Insert (Typical 38)	Outboard	D001-120	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37A	CRD Insert (Typical 38)	Outboard	D001-123	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37A	CRD Insert (Typical 38)	Outboard	D001-126	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
37A	CRD Insert (Typical 38)	Outboard	D001-138	Check	A	Process	Reverse Flow	-	-	Open	-	22,31	-
37B	CRD Insert (Typical 31)	Inboard	-	-	-	-	-	-	-	-	-	-	-
37B	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
37B	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
37B	CRD Insert (Typical 31)	Outboard	D001-120	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37B	CRD Insert (Typical 31)	Outboard	D001-123	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37B	CRD Insert (Typical 31)	Outboard	D001-126	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
37B	CRD Insert (Typical 31)	Outboard	D001-138	Check	A	Process	Reverse Flow	-	-	Open	-	22,31	-
37C	CRD Insert (Typical 31)	Inboard	-	-	-	-	-	-	-	-	-	-	-
37C	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
37C	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	
37C	CRD Insert (Typical 31)	Outboard	D001-120	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37C	CRD Insert (Typical 31)	Outboard	D001-123	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37C	CRD Insert (Typical 31)	Outboard	D001-126	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
37C	CRD Insert (Typical 31)	Outboard	D001-138	Check	C	Process	Reverse Flow	-	-	Open	-	22,31	-
37D	CRD Insert (Typical (37)	Inboard	-	-	-	-	-	-	-	-	-	-	-
37D	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
37D	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
37D	CRD Insert (Typical 37)	Outboard	D001-120	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37D	CRD Insert (Typical 37)	Outboard	D001-123	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
37D	CRD Insert (Typical 37)	Outboard	D001-126	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
37D	CRD Insert (Typical 37)	Outboard	D001-138	Check	A	Process	Reverse Flow	-	-	Open	-	22,31	-
38A	CRD Withdraw (Typical 38)	Inboard	-	-	-	-	-	-	-	-	-	-	-
38A	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
38A	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
38A	CRD Withdraw (Typical 38)	Outboard	D001-121	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-

TABLE T7.0-1 (Sheet 10 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
38A	CRD Withdraw (Typical 38)	Outboard	D001-122	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38A	CRD Withdraw (Typical 38)	Outboard	D001-127	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
38B	CRD Withdraw (Typical 31)	Inboard	-	-	-	-	-	-	-	-	-	-	-
38B	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
38B	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
38B	CRD Withdraw (Typical 31)	Outboard	D001-121	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38B	CRD Withdraw (Typical 31)	Outboard	D001-122	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38B	CRD Withdraw (Typical 31)	Outboard	D001-127	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
38C	CRD Withdraw (Typical 31)	Inboard	-	-	-	-	-	-	-	-	-	-	-
38C	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
38C	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
38C	CRD Withdraw (Typical 31)	Outboard	D001-121	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38C	CRD Withdraw (Typical 31)	Outboard	D001-122	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38C	CRD Withdraw (Typical 31)	Outboard	D001-127	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
38D	CRD Withdraw (Typical 37)	Inboard	-	-	-	-	-	-	-	-	-	-	-
38D	CRD Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
38D	CRD Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
38D	CRD Withdraw (Typical 37)	Outboard	D001-121	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38D	CRD Withdraw (Typical 37)	Outboard	D001-122	Solenoid	A	AC	Spring	-	-	Closed	-	22,31	-
38D	CRD Withdraw (Typical 37)	Outboard	D001-127	AO Valve	A	Spring	Air/AC	-	-	Closed	-	22,31	-
39A	Containment Spray	Inboard	1E11-F016A	MO Globe	C	AC	AC	13,g	-	Closed	Closed	1,2,4,5,10,20	AD
39A	Containment Spray	Inboard	Flange Gasket	-	C	-	-	-	-	-	-		-
39A	Containment Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
39B	Containment Spray	Inboard	1E11-F016B	MO Globe	C	AC	AC	13,g	-	Closed	Closed	1,2,4,5,10,20	AD
39B	Containment Spray	Inboard	Flange Gasket	-	C	-	-	-	-	-	-		-
39B	Containment Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
40A(A)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40A(A)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40A(B)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40A(B)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40A(C)	Core Spray Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
40A(C)	Core Spray Inst	Outboard	1E21-F018A	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 11 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
40A(D)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40A(D)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40A(E)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40A(E)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40A(F)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40A(F)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40B(A)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40B(A)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40B(B)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40B(B)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40B(C)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40B(C)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40B(D)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40B(D)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40B(E)	RCIC Steam Inst	Inboard	Orifice					-	-				-
40B(E)	RCIC Steam Inst	Outboard	1E51-F044B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
40B(F)	RCIC Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
40B(F)	RCIC Steam Inst	Outboard	1E51-F044D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
40C(A)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40C(A)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40C(B)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40C(B)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40C(C)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40C(C)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40C(D)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40C(D)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40C(E)	Spare	Inboard	Welded Cap	-	-	-	-	-	-	-	-	-	-
40C(E)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40C(F)	Drywell Pneumatic Suction	Inboard	1P70-F002	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10	AD
40C(F)	Drywell Pneumatic Suction	Outboard	1P70-F003	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1,2,4,5,10	AD
40D(A)	Core Spray Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
40D(A)	Core Spray Inst	Outboard	1E21-F018B	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 12 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
40D(B)	Spare	Inboard	Welded Cap	A	-	-	-	-	-	-	-	-	-
40D(B)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40D(C)	Spare	Inboard	Welded Plug	A	-	-	-	-	-	-	-	-	-
40D(C)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40D(D)	Spare	Inboard	Welded Plug	A	-	-	-	-	-	-	-	-	-
40D(D)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40D(E)	Spare	Inboard	Welded Plug	A	-	-	-	-	-	-	-	-	-
40D(E)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
40D(F)	Spare	Inboard	Welded Plug	A	-	-	-	-	-	-	-	-	-
40D(F)	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
41	Rad Monitoring	Inboard	Welded Plate	A	-	-	-	-	-	-	-	-	
41	Rad Monitoring	Outboard	-	-	-	-	-	-	-	-	-	-	
42	SLC	Inboard	1C41-F007	Check	C	Process	Reverse Flow	-	-	Closed	Closed	1,2,4,5,10	AD
42	SLC	Outboard	1C41-F006	Check	C	Process	Reverse Flow	-	-	Closed	Closed	1,2,4,5,10	AD
43	Drywell Test	Inboard	Double O-Rings	-	B	-	-	-	-	-	-	1,2,4,6	-
43	Drywell Test	Outboard	-	-	-	-	-	-	-	-	-		-
44	PSW Water Return	Inboard	Closed System	-	-	-	-	-	-	-	-		-
44	PSW Water Return	Outboard	1P41-F050	MO Gate	C	AC	AC	-	-	Open	Closed	1,2,4,5,16	AD
45A	HPCI Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
45A	HPCI Steam Inst	Outboard	1E41-F024A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
45B	HPCI Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
45B	HPCI Steam Inst	Outboard	1E41-F024C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
45C	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
45C	Drywell Press	Outboard	1E11-F043D	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
45D	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
45D	Drywell Press	Outboard	1E11-F043B	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
45E	Drywell Press	Inboard	Orifice	-	-	-	-	-	-	-	-		-
45E	Drywell Press	Outboard	1T48-F303B	Globe	A	Hand	Hand	-	-	Open	Open	12,27	-
45F	ILRT Sample Line	Inboard	1T23-F004	Globe	C	Hand	Hand	-	-	Closed	Closed	1,2,4,5,10,26	AD
45F	ILRT Sample Line	Outboard	1T23-F005	Globe	C	Hand	Hand	-	-	Closed	Closed	1,2,4,5,10,26	AD
46	Demineralized Water	Inboard	1P21-F420	Gate	C	Hand	Hand	-	-	Closed/LC	Closed	1,2,4,5,10,26	AD
46	Demineralized Water	Outboard	1P21-F353	Gate	C	Hand	Hand	-	-	Closed/LC	Closed	1,2,4,5,10,26	AD

TABLE T7.0-1 (Sheet 13 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
47	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
47	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
48A	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48A	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48B	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48B	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48C	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48C	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48D	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48D	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48E	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48E	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48F	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48F	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48G	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48G	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
48H	RPV Stabilizer Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
48H	RPV Stabilizer Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
49A	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49A	Jet Pump Inst	Outboard	1B21-F053A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
49B	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49B	Jet Pump Inst	Outboard	1B21-F059G	EFCV	A	Spring	Process	-	-	Open	Open	27	-
49C	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49C	Jet Pump Inst	Outboard	1B21-F059E	EFCV	A	Spring	Process	-	-	Open	Open	27	-
49D	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49D	Jet Pump Inst	Outboard	1B21-F059A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
49E	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49E	Jet Pump Inst	Outboard	1B21-F059C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
49F	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
49F	Jet Pump Inst	Outboard	1B21-F051A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
50A	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50A	Jet Pump Inst	Outboard	1B21-F053B	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 14 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
50B	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50B	Jet Pump Inst	Outboard	1B21-F059H	EFCV	A	Spring	Process	-	-	Open	Open	27	-
50C	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50C	Jet Pump Inst	Outboard	1B21-F059F	EFCV	A	Spring	Process	-	-	Open	Open	27	-
50D	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50D	Jet Pump Inst	Outboard	1B21-F059B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
50E	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50E	Jet Pump Inst	Outboard	1B21-F059D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
50F	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
50F	Jet Pump Inst	Outboard	1B21-F051B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51A	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51A	Jet Pump Inst	Outboard	1B21-F059M	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51B	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51B	Jet Pump Inst	Outboard	1B21-F053D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51C	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51C	Jet Pump Inst	Outboard	1B21-F059U	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51D	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51D	Jet Pump Inst	Outboard	1B21-F059P	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51E	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51E	Jet Pump Inst	Outboard	1B21-F059S	EFCV	A	Spring	Process	-	-	Open	Open	27	-
51F	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
51F	Jet Pump Inst	Outboard	1B21-F051D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52A	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52A	Jet Pump Inst	Outboard	1B21-F059L	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52B	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52B	Jet Pump Inst	Outboard	1B21-F053C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52C	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52C	Jet Pump Inst	Outboard	1B21-F059T	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52D	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52D	Jet Pump Inst	Outboard	1B21-F059N	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52E	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52E	Jet Pump Inst	Outboard	1B21-F059R	EFCV	A	Spring	Process	-	-	Open	Open	27	-

PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
52F	Jet Pump Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
52F	PASS	Inboard	1B21-F111	AO Gate	C	Air/AC	Spring	-	-	Closed	Closed	1,2,4,5,10,46	AD
52F	Jet Pump Inst	Outboard	1B21-F051C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
52F	PASS	Outboard	1B21-F112	AO Gate	C	Air/AC	Spring	-	-	Closed	Closed	1,2,4,5,10,46	AD
53B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
53B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
53C	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
53C	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
53D	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
53D	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
53E	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
53E	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
53F	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
53F	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
54A	Press Below Core Plate	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54A	Press Below Core Plate	Outboard	1B21-F061	EFCV	A	Spring	Process	-	-	Open	Open	27	-
54B	Press Above Core Plate	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54B	Press Above Core Plate	Outboard	1E21-F018C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
54C	Main Steam C Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54C	Main Steam C Flow	Outboard	1B21-F015K	EFCV	A	Spring	Process	-	-	Open	Open	27	-
54D	Main Steam C Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54D	Main Steam C Flow	Outboard	1B21-F015J	EFCV	A	Spring	Process	-	-	Open	Open	27	-
54E	RCIC Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54E	RCIC Steam Inst	Outboard	1E51-F044A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
54F	RCIC Steam Inst	Inboard	Orifice	-	-	-	-	-	-	-	-		-
54F	RCIC Steam Inst	Outboard	1E51-F044C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59A	Recirc Pump B Seal Purge	Inboard	1B31-F013B	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,4,5,10,36	AD
59A	Recirc Pump B Seal Purge	Outboard	1B31-F017B	Check	C	Process	Reverse Flow	-	-	Open	Closed	1,2,4,5,10,36	AD
59B	Recirc Line A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
59B	Recirc Line A Flow	Outboard	1B31-F009B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59B	Recirc Line A Flow	Outboard	1B31-F009C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59C	Recirc Line A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-

TABLE T7.0-1 (Sheet 16 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
59C	Recirc Line A Flow	Outboard	1B31-F010B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59C	Recirc Line A Flow	Outboard	1B31-F010C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59D	Spare	Inboard	Welded Cap	-	-	-	-	-	-	-	-	-	-
59D	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
59E	Recirc Line B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
59E	Recirc Line B Flow	Outboard	1B31-F012B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59E	Recirc Line B Flow	Outboard	1B31-F012C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59F	Recirc Line B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
59F	Recirc Line B Flow	Outboard	1B31-F011B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
59F	Recirc Line B Flow	Outboard	1B31-F011C	EFCV	A	Spring	Process	-	-	Open	Open	27	-
60A	Spare	Indoor	Welded Cap	-	A	-	-	-	-	-	-	-	-
60A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
60B	Rad Monitoring Spare	Inboard	Welded Plate	-	A	-	-	-	-	-	-	-	-
60B	Rad Monitoring Spare	Outboard	-	-	-								
61A	Spare	Inboard	Welded Plate	-	A	-	-	-	-	-	-	-	-
61A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
61B	Spare	Inboard	Welded Plate	-	A	-	-	-	-	-	-	-	-
61B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
62	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
62	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
100A	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100A	Neutron Monitoring (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
100B	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100B	Neutron Monitoring (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
100C	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
100C	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
100D	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100D	Neutron Monitoring (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
100E	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100E	Neutron Monitoring (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
100F(A)	Main Steam A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(A)	Main Steam A Flow	Outboard	1B21-F015C	EFCV	A	Spring	Process	-	-	Open	Open	27	-

TABLE T7.0-1 (Sheet 17 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
100F(B)	Main Steam C Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(B)	Main Steam C Flow	Outboard	1B21-F015M	EFCV	A	Spring	Process	-	-	Open	Open	27	-
100F(C)	Main Steam C Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(C)	Main Steam C Flow	Outboard	1B21-F015L	EFCV	A	Spring	Process	-	-	Open	Open	27	-
100F(D)	Main Steam D Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(D)	Main Steam D Flow	Outboard	1B21-F015S	EFCV	A	Spring	Process	-	-	Open	Open	27	-
100F(E)	Main Steam D Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(E)	Main Steam D Flow	Outboard	1B21-F015R	EFCV	A	Spring	Process	-	-	Open	Open	27	-
100F(F)	Main Steam A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
100F(F)	Main Steam A Flow	Outboard	1B21-F015D	EFCV	A	Spring	Process	-	-	Open	Open	27	-
100G/H	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100G/H	Neutron Monitoring (Elec Pen)	Outboard	-		-	-	-	-	-	-	-		-
100I/J	Neutron Monitoring (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
100I/J	Neutron Monitoring (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101A	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101A	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101B	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101B	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101C	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101C	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101D	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101D	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101E	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101E	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
101F	Recirc Pump Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
101F	Recirc Pump Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
102A	Indication and Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
102A	Indication and Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
102B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
102B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
103A	Indication and Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
103A	Indication and Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-

TABLE T7.0-1 (Sheet 18 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
103B(A)	Main Steam A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(A)	Main Steam A Flow	Outboard	1B21-F015A	EFCV	A	Spring	Process	-	-	Open	Open	27	-
103B(B)	Main Steam D Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(B)	Main Steam D Flow	Outboard	1B21-F015N	EFCV	A	Spring	Process	-	-	Open	Open	27	-
103B(C)	Main Steam D Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(C)	Main Steam D Flow	Outboard	1B21-F015P	EFCV	A	Spring	Process	-	-	Open	Open	27	-
103B(D)	Main Steam B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(D)	Main Steam B Flow	Outboard	1B21-F015F	EFCV	A	Spring	Process	-	-	Open	Open	27	-
103B(E)	Main Steam B Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(E)	Main Steam B Flow	Outboard	1B21-F015E	EFCV	A	Spring	Process	-	-	Open	Open	27	-
103B(F)	Main Steam A Flow	Inboard	Orifice	-	-	-	-	-	-	-	-		-
103B(F)	Main Steam A Flow	Outboard	1B21-F015B	EFCV	A	Spring	Process	-	-	Open	Open	27	-
104A	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104A	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104B	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104B	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104C	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104C	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104D	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
104D	Spare	Outboard	-	-	-	-	-	-	-	-	--	-	-
104E	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
104E	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
104F	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104F	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104G	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104G	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104H	CRD Position (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
104H	CRD Position (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
104I	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
104I	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
104J	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
104J	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-

TABLE T7.0-1 (Sheet 19 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
105A	600 Volt Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
105A	600 Volt Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
105B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
105B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
105C	600 Volt Power (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
105C	600 Volt Power (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
105D	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
105D	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
106A	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
106A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
106B	Thermocouples (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
106B	Thermocouples (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
107A	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
107A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
107B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
107B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
108A	Grounding Rod	Inboard	Grounding Rod	-	A	-	-	-	-	-	-	-	-
108A	Grounding Rod	Outboard	-	-	-	-	-	-	-	-	-	-	-
108B	Grounding Rod	Inboard	Grounding Rod	-	A	-	-	-	-	-	-	-	-
108B	Grounding Rod	Outboard	-	-	-	-	-	-	-	-	-	-	-
200A	Torus Access Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
200A	Torus Access Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
200B	Torus Access Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
200B	Torus Access Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
200C	Torus Access Hatch	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
200C	Torus Access Hatch	Outboard	-	-	-	-	-	-	-	-	-		-
201A	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201A	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201B	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201B	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201C	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201C	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-

TABLE T7.0-1 (Sheet 20 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
201D	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201D	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201E	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201E	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201F	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201F	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201G	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201G	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201H	Drywell to Torus Vent Line	Inboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
201H	Drywell to Torus Vent Line	Outboard	Expansion Bellows	-	B	-	-	-	-	-	-	1,2,4,6,21	-
202	Indication and Lights (Elec Pen)	Inboard	Cannister	-	B	-	-	-	-	-	-		-
202	Indication and Lights (Elec Pen)	Outboard	-	-	-	-	-	-	-	-	-		-
203	RCIC Pump Suct	Inboard	1E51-F003	AO Bttrfly	A	Spring	Air/AC	-	-	Open	Open	45	-
203	RCIC Pump Suct	Outboard	1E51-F031	MO Gate	A	DC	DC	-	-	Closed	Closed	45	-
204A	RHR Pump Suct	Inboard	1E11-F004A	MO Gate	A	AC	AC	-	-	Open	Open	45	-
204A	RHR Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28, 45	-
204B	RHR Pump Suct	Inboard	1E11-F004B	MO Gate	A	AC	AC	-	-	Open	Open	45	-
204B	RHR Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28, 45	-
204C	RHR Pump Suct	Inboard	1E11-F004C	MO Gate	A	AC	AC	-	-	Open	Open	45	-
204C	RHR Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28, 45	-
204D	RHR Pump Suct	Inboard	1E11-F004D	MO Gate	A	AC	AC	-	-	Open	Open	45	-
204D	RHR Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28, 45	-
205	Vacuum Relief	Inboard	1T48-F310	AO Bttrfly	C	Spring	Air/AC	-	-	Closed	Closed	1, 2, 4, 5, 13	RF
205	Vacuum Relief	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1, 2, 4, 6, 38	-
205	Vacuum Relief	Inboard	1T48-F311	AO Bttrfly	C	Spring	Air/AC	-	-	Closed	Closed	1, 2, 4, 5, 9	RF
205	Torus Purge Supply	Inboard	1T48-F309	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1, 2, 4, 5, 13	RF
205	Torus N2 Makeup	Inboard	1T48-F116	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus N2 Makeup	Inboard	1T48-F118B	SO Globe	C	AC	Spring	11	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus N2 Makeup	Inboard	1T48-F327	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus/Rx Bldg Differential Pressure	Inboard	Orifice										-
205	Torus Pressure	Inboard	Orifice										-
205	Vacuum Relief	Outboard	1T48-F328A	AO Check	C	VAC/Air/AC	Reverse Flow	-	-	Closed	Closed	1, 2, 4, 5, 10	AD

TABLE T7.0-1 (Sheet 21 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
205	Vacuum Relief	Outboard	1T48-F328B	AO Check	C	VAC/Air/AC	Reverse Flow	-	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus Purge Supply	Outboard	1T48-F324	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus Purge Supply	Outboard	1T48-F308	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,10	AD
205	Torus Purge Supply	Outboard	1T48-F103	AO Bttrfly	C	Air/AC	Spring	11	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus Purge Supply	Outboard	Double O-Ring	-	B	-	-	-	-	-	-	1, 2, 4, 6, 39	-
205	Torus N2 Makeup	Outboard	1T48-F115	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus N2 Makeup	Outboard	1T48-F104	AO Globe	C	Air/AC	Spring	11	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus N2 Makeup	Outboard	1T48-F325	AO Globe	C	N2/AC	Spring	-	-	Closed	Closed	1, 2, 4, 5, 10	AD
205	Torus/Rx Bldg Differential Pressure	Outboard	1T48-F301	Globe	A	Hand	Hand			Open	Open	12, 27	-
205	Torus/Rx Bldg Differential Pressure	Outboard	1T48-F302	Globe	A	Hand	Hand			Open	Open	12,27	-
205	Torus Pressure	Outboard	1T48-F303A	Globe	A	Hand	Hand			Open	Open	12,27	-
206A	PASS Sample Return	Inboard	1E41-F122	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5,10,47	AD
206A	Torus Water Level	Inboard	Orifice										-
206A	PASS Sample Return	Outboard	1E41-F121	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5,10,47	AD
206A	Torus Water Level	Outboard	1T48-F330B	Gate	A	Hand	Hand			Open	Open	12,48	-
206A	Torus Water Level	Outboard	1E41-F107	Gate	A	Hand	Hand			Open	Open	12,48	-
206B	PASS Sample Return	Inboard	1E41-F122	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5,10,47	AD
206B	Torus Water Level	Inboard	Orifice										-
206B	PASS Sample Return	Outboard	1E41-F121	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5,10,47	AD
206B	Torus Water Level	Outboard	1T48-F330A	Gate	A	Hand	Hand			Open	Open	11,12,48	-
206B	Torus Water Level	Outboard	1E41-F108	Gate	A	Hand	Hand			Open	Open	11,12,48	-
206C	Torus Water Level	Inboard	Orifice	-	-	-	-	-	-	-	-	-	-
206C	Torus Water Level	Outboard	1T48-F331B	Gate	A	Hand	Hand	-	-	Open	Open	12,48	-
206C	Torus Water Level	Outboard	1E41-F109	Gate	A	Hand	Hand	-	-	Open	Open	12,48	-
206D	Torus Water Level	Inboard	Orifice	-	-	-	-	-	-	-	-	-	-
206D	Torus Water Level	Outboard	1T48-F331A	Gate	A	Hand	Hand	-	-	Open	Open	11,12,48	-
206D	Torus Water Level	Outboard	1E41-F110	Gate	A	Hand	Hand	-	-	Open	Open	11,12,48	-
207	HPCI Pump Suct	Inboard	1E41-F051	AO Bttrfly	A	Spring	Air/AC	-	-	Open	Open	45	-
207	HPCI Pump Suct	Outboard	1E41-F042	MO Gate	A	DC	DC	3	-	Closed	Closed	45	-
208A	CS Pump Suct	Inboard	1E21-F001A	MO Gate	A	AC	AC	-	-	Open	Open	45	-
208A	CS Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28,45	-
208B	CS Pump Suct	Inboard	1E21-F001B	MO Gate	A	AC	AC	-	-	Open	Open	45	-
208B	CS Pump Suct	Outboard	Closed System	-	-	-	-	-	-	-	-	28,45	-

TABLE T7.0-1 (Sheet 22 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
209A	Torus Water Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
209A	Torus Water Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
209B	Torus Water Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
209B	Torus Water Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
209C	Torus Water Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
209C	Torus Water Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
209D	Torus Water Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
209D	Torus Water Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
210A	RHR Test Line	Inboard	1E11-F055A	Relief	A	-	-	-	-	Closed	-	45,49	-
210A	RHR Test Line	Inboard	1E11-F103A	MO Globe	A	AC	AC	-	-	Closed	Closed	45	-
210A	RHR Test Line	Inboard	1E11-F025A	Relief	A	-	-	-	-	Closed	-	45,49	-
210A	RHR Test Line	Inboard	1E11-F029	Relief	A	-	-	-	-	Closed	-	45,49	-
210A	RHR Test Line	Inboard	1E11-F007A	MO Gate	A	AC	AC	-	-	Open	Open	45, 52	-
210A	RHR Test Line	Inboard	1E11-F011A	MO Gate	A	AC	AC	13,g	-	Closed	Closed	45	-
210A	RHR Test Line	Inboard	1E11-F028A	MO Gate	C	AC	AC	13,g	-	Closed	Closed	20	AD
210A	RHR Test Line	Inboard	1E51-F019	MO Gate	A	DC	DC	13,i	-	Closed	Closed	45	-
210A	RHR Test Line	Inboard	1E21-F044A	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed	45	-
210A	RHR Test Line	Inboard	1E21-F015A	MO Globe	A	AC	AC	13,f	-	Closed	Closed	45	-
210A	RHR Test Line	Inboard	1E21-F031A	MO Gate	A	AC	AC	-	-	Open	Open	45	-
210A	RHR Test Line	Inboard	1E21-F061A	Relief	A	-	-	-	-	Closed	Closed	45,49	-
210A	RHR Test Line	Outboard	1E11-F026A	MO Gate	A	AC	AC	13,g	-	Closed	Closed	45	-
210A	RHR Test Line	Outboard	1E51-F021	Check	A	Process	Reverse Flow	-	-	Closed	Closed	45	-
210A	RHR Test Line	Outboard	Closed System	-	-	-	-	-	-	-	-	28,45	-
210B	RHR Test Line	Inboard	1E11-F055B	Relief	A	-	-	-	-	Closed	Closed	45,49	-
210B	RHR Test Line	Inboard	1E11-F103B	MO Globe	A	AC	AC	-	-	Closed	Closed	45	-
210B	RHR Test Line	Inboard	1E11-F025B	Relief	A	-	-	-	-	Closed	-	45,49	-
210B	RHR Test Line	Inboard	1E11-F007B	MO Gate	A	AC	AC	-	-	Open	Open	45,52	-
210B	RHR Test Line	Inboard	1E11-F011B	MO Gate	A	AC	AC	13,g	-	Closed	Closed	45	-
210B	RHR Test Line	Inboard	1E11-F028B	MO Gate	C	AC	AC	13,g	-	Closed	Closed	45	AD
210B	RHR Test Line	Inboard	1E41-F012	MO Globe	A	DC	DC	13,h	-	Closed	Closed	45	-
210B	RHR Test Line	Inboard	1E21-F044B	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed	45	-
210B	RHR Test Line	Inboard	1E21-F015B	MO Globe	A	AC	AC	13,f	-	Closed	Closed	45	-

TABLE T7.0-1 (Sheet 23 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
210B	RHR Test Line	Inboard	1E21-F031B	MO Gate	A	AC	AC	-	-	Open	Open	45	-
210B	RHR Test Line	Inboard	1E21-F061B	Relief	A	-	-	-	-	Closed	Closed	45, 49	-
210B	RHR Test Line	Outboard	1E11-F026B	MO Gate	A	AC	AC	13,g	-	Closed	Closed	45	-
210B	RHR Test Line	Outboard	Closed System	-	-	-	-	-	-	-	-	28,45	-
210B	RHR Test Line	Outboard	1E41-F046	Check	A	Process	Reverse Flow	-	-	Closed	Closed	45	-
211A	Torus Spray	Inboard	1E11-F028A	MO Gate	C	AC	AC	13,g	-	Closed	Closed	1,2,4,5,10,20	AD
211A	Torus Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
211B	Torus Spray	Inboard	1E11-F028B	MO Gate	C	AC	AC	13,g	-	Closed	Closed	1,2,4,5,10,20	AD
211B	Torus Spray	Outboard	Closed System	-	-	-	-	-	-	-	-	28	-
212	RCIC Turb Exh	Inboard	1E51-F001	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed	45	-
212	RCIC Turb Exh Vac Brkr	Inboard	1E51-F104	MO Gate	C	AC	AC	9	-	Open	Closed	40,45	-
212	RCIC Turb Exh	Outboard	1E51-F040	Check	A	Process	Reverse Flow	-	-	Closed	Closed	45	-
212	RCIC Turb Exh Vac Brkr	Outboard	1E51-F105	MO Gate	C	AC	AC	9	-	Open	Closed	40,45	-
213	RCIC Turb Vac Pump Disch	Inboard	1E51-F002	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed	45	-
213	RCIC Turb Vac Pump Disch	Outboard	1E51-F028	Check	A	Process	Reverse Flow	-	-	Closed	Closed	45	-
214	HPCI Turb Exh	Inboard	1E41-F021	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed	45	-
214	HPCI Turb Exh Vac Brkr	Inboard	1E41-F104	MO Gate	C	AC	AC	8	-	Open	Closed	41,45	-
214	HPCI Turb Exh	Outboard	1E41-F049	Check	A	Process	Reverse Flow	-	-	Closed	Closed	45	-
214	HPCI Turb Exh Vac Brkr	Outboard	1E41-F111	MO Gate	C	AC	AC	8	-	Open	Closed	41,45	-
215	HPCI Turb Exch Drain	Inboard	1E41-F022	Stop Check	A	Process	Reverse Flow	-	-	Open	Closed		-
215	HPCI Turb Exch Drain	Outboard	1E41-F040	Check	A	Process	Reverse Flow	-	-	Closed	Closed		-
216A	Torus Air Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
216A	Torus AirTemp	Outboard	-	-	-	-	-	-	-	-	-	-	-
216B	Torus Air Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
216B	Torus Air Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
216C	Torus Air Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
216C	Torus Air Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
216D	Torus Air Temp	Inboard	Welded Thermowell	-	A	-	-	-	-	-	-	-	-
216D	Torus Air Temp	Outboard	-	-	-	-	-	-	-	-	-	-	-
217	H2O2 Sample Supply	Inboard	1P33-F007	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
217	H2O2 Sample Supply	Outboard	1P33-F015	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
218A	Torus Drain Suct	Inboard	1G51-F011	AO Globe	A	-	Spring	-	-	Closed	Closed	44,45	-

TABLE T7.0-1 (Sheet 24 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
218A	Torus Drain Suct	Inboard	Flange Gasket	-	A	-	-	-	-	-	-	45	-
218A	Torus Purif Suct	Inboard	1G51-F002	Gate	A	Hand	Hand	-	-	Closed	Closed	45	-
218A	Torus Purif Suct	Inboard	Flange Gasket	-	A	-	-	-	-	-	-	45	-
218A	Torus Drain Suct	Outboard	1G51-F012	AO Globe	A	-	Spring	-	-	Closed	Closed	44,45	-
218A	Torus Purif Suct	Outboard	1G51-D001	Blind Flange	A	-	-	-	-	-	-	45	-
218B	Construction Drain	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6	-
218B	Construction Drain	Outboard	-	-	-	-	-	-	-	-	-		-
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	Orifice	-	-	-	-	-	-	-	-		-
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	1T48-F318	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,9	RF
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6,42	-
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	1T48-F333A	AO Globe	C	Air/AC	Spring	10	-	Closed	Closed	1,2,4,5,10,24	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	1T48-F333B	AO Globe	C	Air/AC	Spring	10	-	Closed	Closed	1,2,4,5,10,24	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	1T48-F339	SO Globe	C	AC	Spring	10	-	Closed	Closed	1,2,4,5,9	RF
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Inboard	1P33-F006	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1T48-F326	AO Bttrfly	C	Air/AC	Spring	2	-	Closed	Closed	1,2,4,5,10	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1T48-F332A	AO Globe	C	Air/AC	Spring	10	-	Closed	Closed	1,2,4,5,10,24	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1T48-F332B	AO Globe	C	Air/AC	Spring	10	-	Closed	Closed	1,2,4,5,10,24	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1T48-F338	SO Globe	C	AC	Spring	10	-	Closed	Closed	1,2,4,5,10	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1P33-F014	AO Globe	C	Spring	Air/DC	10	-	Open	Closed	1,2,4,5,10	AD
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	Double O-Ring	-	B	-	-	-	-	-	-	1,2,4,6,43	-
220	Torus Exh,Exh Byp,Press,H2O2 Anlzr	Outboard	1T48-F304A	Globe	A	Hand	Hand			Open	Open	12,27	-
221A	HPCI Turb Exh Vac Brkr	Inboard	1E41-F111	MO Gate	C	AC	AC	8	-	Open	Closed	1,2,4,5,10	AD
221A	HPCI Turb Exh Vac Brkr	Outboard	1E41-F104	MO Gate	C	AC	AC	8	-	Open	Closed	1,2,4,5,10	AD
221B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
221B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
221C	RCIC Turb Exh Vac Brkr	Inboard	1E51-F105	MO Gate	C	AC	AC	9	-	Open	Closed	1,2,4,5,10	AD
221C	RCIC Turb Exh Vac Brkr	Outboard	1E51-F104	MO Gate	C	AC	AC	9	-	Open	Closed	1,2,4,5,10	AD
222A	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
222A	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
222B	Spare	Inboard	Welded Cap	-	A	-	-	-	-	-	-	-	-
222B	Spare	Outboard	-	-	-	-	-	-	-	-	-	-	-
223A(A)	Vac Breaker Air Supply	Inboard	1T48-F323G Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-

TABLE T7.0-1 (Sheet 25 of 34)
PRIMARY CONTAINMENT PENETRATIONS

PEN. NO.	DESCRIPTION	BARRIER ORIENT.	BARRIER TYPE(MPL)	VALVE TYPE (A)	TEST TYPE (B)	POWER TO OPEN (A), (C)	POWER TO CLOSE (A), (C)	ISOL. GP. (D)	MAX/ OPER. TIME (sec) (G)	NORM. POS.	POS. ON ISOL. (E)	NOTES (F)	TEST DIRECT. (H)
223A(A)	Vac Breaker Air Supply	Outboard	1T48-F342G	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223A(B)	Vac Breaker Air Supply	Inboard	1T48-F323H Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223A(B)	Vac Breaker Air Supply	Outboard	1T48-F342H	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223A(C)	Vac Breaker Air Supply	Inboard	1T48-F323I Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223A(C)	Vac Breaker Air Supply	Outboard	1T48-F342I	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223A(D)	Vac Breaker Air Supply	Inboard	1T48-F323L Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223A(D)	Vac Breaker Air Supply	Outboard	1T48-F342L	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223A(E)	Vac Breaker Air Supply	Inboard	1T48-F323K Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223A(E)	Vac Breaker Air Supply	Outboard	1T48-F342K	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223A(F)	Vac Breaker Air Supply	Inboard	1T48-F323J Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223A(F)	Vac Breaker Air Supply	Outboard	1T48-F342J	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(A)	Vac Breaker Air Supply	Inboard	1T48-F323F Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(A)	Vac Breaker Air Supply	Outboard	1T48-F342F	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(B)	Vac Breaker Air Supply	Inboard	1T48-F323E Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(B)	Vac Breaker Air Supply	Outboard	1T48-F342E	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(C)	Vac Breaker Air Supply	Inboard	1T48-F323C Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(C)	Vac Breaker Air Supply	Outboard	1T48-F342C	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(D)	Vac Breaker Air Supply	Inboard	1T48-F323A Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(D)	Vac Breaker Air Supply	Outboard	1T48-F342A	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(E)	Vac Breaker Air Supply	Inboard	1T48-F323B Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(E)	Vac Breaker Air Supply	Outboard	1T48-F342B	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD
223B(F)	Vac Breaker Air Supply	Inboard	1T48-F323D Air Cyl	-	B	-	-	-	-	-	-	1,2,4,5	-
223B(F)	Vac Breaker Air Supply	Outboard	1T48-F342D	SO Globe	C	AC	Spring	-	-	Closed	Closed	1,2,4,5	AD

TABLE T7.0-1 (Sheet 26 of 34)
PRIMARY CONTAINMENT PENETRATIONS

NOTES

A. All motor-operated isolation valves remain in the last position upon failure of valve power.

B. Although specific penetrations are listed as receiving Type A, B, or C tests, only those penetrations that do not get a Type B or C test are listed as getting a Type A test.

C. The AC motor-operated valves are powered from the AC standby emergency buses. The DC powered isolation valves are powered from the plant batteries.

D. **Isolation groups for automatic PCIVs are defined as follows:**

Group 1: The valves in Group 1 are actuated by any one of the following conditions:

1. Reactor vessel water level - Low Low Low, Level 1
2. Main steam line flow - High
3. Main steam line tunnel temperature - High
4. Main steam line pressure - Low
5. Condenser vacuum - Low
6. Turbine building area temperature - High

Group 2: The valves in Group 2 are actuated by any one of the following conditions:

1. Reactor vessel water level - Low, Level 3
2. Drywell pressure - High
3. Drywell radiation - High*
4. Reactor building exhaust radiation - High*
5. Refueling floor exhaust radiation - High*

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*This signal isolates the 18 in. containment purge and vent valves only.

TABLE T7.0-1 (Sheet 27 of 34)
PRIMARY CONTAINMENT PENETRATIONS

Group 3: Isolation valves in the high pressure coolant injection (HPCI) system are actuated by any one of the following conditions:

1. HPCI steam line flow - High
2. HPCI steam supply pressure - Low
3. HPCI turbine exhaust diaphragm pressure - High
4. Suppression pool area ambient temperature - High**
5. Suppression pool area differential temperature - High**
6. Suppression pool area temperature - Time Delay Relays
7. Emergency area cooler temperature - High
8. HPCI pipe penetration room temperature - High

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**This signal must be present for more than 15 min before system isolation will take place via the suppression pool area temperature - time delay relays.

Group 4: Primary containment isolation valves in the reactor core isolation cooling (RCIC) system are actuated by any one of the following conditions:

1. RCIC steam line flow - High
2. RCIC steam line pressure - Low
3. RCIC turbine exhaust diaphragm pressure - High
4. RCIC suppression pool area ambient temperature - High***
5. RCIC suppression pool differential temperature - High***
6. RCIC suppression pool area temperature - Time Delay Relays
7. Emergency area cooler temperature - High

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***This signal must be present for more than 30 min before system isolation will take place via the RCIC suppression pool area temperature - time delay relays.

Group 5: The valves in Group 5 are actuated by any one of the following conditions:

1. Reactor vessel water level - Low Low, Level 2
2. Reactor water cleanup area temperature - High
3. Reactor water cleanup area ventilation differential temperature - High
4. Standby Liquid Control System initiation ****

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****Closes 1G31-F004 only.

TABLE T7.0-1 (Sheet 28 of 34)
PRIMARY CONTAINMENT PENETRATIONS

Group 6: The valves in Group 6 are actuated by any one of the following conditions

1. Reactor vessel water level - Low, Level 3
2. Reactor vessel steam dome pressure - High

Group 7: N/A to Unit 1

Group 8: The valves in Group 8 are actuated by the following concurrent conditions:

1. Drywell pressure - High
2. HPCI steam line pressure - Low

Group 9: The valves in Group 9 are actuated by the following concurrent conditions:

1. Drywell pressure - High
2. RCIC steam line pressure - Low

Group 10: The valves in Group 10 are actuated by any one of the following conditions:

1. Reactor vessel water level - Low, Level 3
2. Drywell pressure - High
3. Reactor building exhaust radiation - High
4. Refueling floor exhaust radiation - High

Group 11: The valves in Group 11 are actuated by any one of the following conditions:

1. Reactor vessel water level - Low, Level 3
2. Drywell pressure - High
3. Reactor building exhaust radiation - High
4. Refueling floor exhaust radiation - High

Group 12: N/A to Unit 1

Group 13: The valves in Group 13 are actuated by any one of the other isolation signals.

PRIMARY CONTAINMENT PENETRATIONS

D. **OTHER ISOLATION SIGNAL DESIGNATORS:**

a. 1B31-F019 and 1B31-F020 also isolate on main steam line radiation - high, high.

b. These valves do **NOT** isolate on reactor building exhaust radiation - high or refueling floor exhaust radiation - high or drywell radiation high signals.

c. These valves isolate, after a ten min time delay, on high flow in the drywell pneumatic supply line. This signal is indicative of a ruptured header in the drywell.

d. These valves also isolate on RWCU differential flow - high. 1G31-F004 also isolates on high temperature following the non-regenerative heat exchanger.

e. These valves close upon withdrawal of the TIP. TIP automatic withdrawal is actuated by either reactor vessel water level – low, or drywell pressure - high.

f. These valves isolate on Core spray actuation via a reactor vessel water level - low low low, level 1 or drywell pressure - high signal.

g. These valves isolate on LPCI actuation via a reactor vessel water level - low low low, level 1 or drywell pressure - high signal.

h. This valve closes when the HPCI steam supply valve or the HPCI turbine stop valve is closed or on HPCI pump discharge flow - High.

i. This valve closes when the RCIC steam supply valve or the RCIC turbine stop valve is closed or on RCIC pump discharge flow - High.

j. These valves automatically isolate under the following conditions: 1) 1E11-F008 not closed **AND** 2) 1E11-F009 not closed **AND** 3) reactor pressure $\leq$ 145 psig **AND** 4) high drywell pressure **OR** RPV water level 3.

E. The Position on Isolation results from the listed Normal Position receiving an isolation signal.

F. **NOTES:**

1. Type C test durations will be specified in subsection 6.4.3 of ANSI/ANS-56.8-1994.

2. Test pressures are at least 50.5 psig for all valves and penetrations except MSIVs which are tested at 28 psig.

PRIMARY CONTAINMENT PENETRATIONS

F.

3. The leakage rate through each MSIV shall be $\leq$ 11.5 scfh when tested at $\geq$ 28 psig.

4. The total acceptable leakage for all valves and penetrations other than the MSIVs is $0.6L_a$.

5. Local leak tests on all testable isolation valves shall be performed in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.

6. Local leak tests on all testable penetrations shall be performed in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.

7. The primary containment air lock shall be tested in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions.

8. The primary containment air lock door seals are tested at $\geq$ 10 psig. The overall air lock leakage rate does not exceed 0.05 L_a when tested at $\geq P_a$.

9. Identifies isolation valves that are tested by applying pressure between the inboard and outboard isolation valves. The inboard valve is not tested in the direction required for isolation but will have equivalent or more conservative leakage results.

10. Identifies isolation valves that are tested by applying pressure between the isolation valves and a manually or power operated valve (which could be another PCIV), test flange, or a temporary test plug, such that the isolation valve is tested in the direction required for isolation.

11. This penetration is sealed from the primary containment, and not leakage tested, due to its line terminating below the water level of the torus. No leakage test is necessary to satisfy Appendix J requirements as the torus is postulated to always remain filled with water.

12. Indicates a normally open isolation valve that does not receive a Type C test. Instrumentation, piping, and valves are tested during the Type A test.

13. Identifies isolation valves that are tested by applying pressure between the inboard and outboard isolation valves. Inboard valve is not tested in the direction required for isolation. Testing is performed following maintenance that could affect seat leakage to confirm bi-directional leakage characteristics.

14. (DELETED)

15. System remains water filled post LOCA. Leakage is not included in the 0.6 L_a Type B and C tests leakage totals.

PRIMARY CONTAINMENT PENETRATIONS

F.

16. Identifies isolation valves that are tested against a closed system inside primary containment.

17. Identifies isolation valves in X-23 and X-24 that are tested together against a closed system inside primary containment.

18. These isolation valves are tested using needle valve F3013 and by disconnecting the tubing at pressure control valve F3019 and applying pressure directly to the valves. NEDC-22253 concludes the TIP nitrogen purge line meets the applicable requirements of Regulatory Guide 1.11; therefore, TIP purge check valve 1C51-F3017 provides single containment isolation valve capability.

19. MSIVs require that both solenoid pilots be de-energized to close valves. The accumulator air pressure and the spring act together to close valves when both pilots are de-energized. Voltage failure at only one pilot does not cause valve closure. The valves are designed to close fully in less than 5 sec, but in no case less than 3 sec.

20. Containment spray and suppression cooling valves have interlocks that allow them to be reopened manually after automatic closure. This setup permits containment spray for high drywell pressure conditions and/or suppression water cooling. When automatic signals are not present, these valves may be opened for testing or operating convenience.

21. There is one bellows assembly on each torus downcomer from the drywell to the torus. The drywell penetrations are X-5A through H and the torus penetrations are X-201A through H. Although the same bellows assemblies are listed under both penetration numbers in these tables for completeness, they are listed only under X-5A through H in the LLRT procedure for simplicity.

22. Control rod hydraulic lines can be isolated by solenoid valves outside primary containment. Lines that extend outside the primary containment are small and terminate in a system designed to prevent out-leakage. Solenoid valves normally are closed, but they open on rod movement and during a reactor scram.

23. RPV water level - low, low, low or high drywell pressure coincident with a low reactor pressure permissive signal opens valves. Special interlocks permit testing these valves by a manual switch except when automatic isolation signals are present.

24. Manual switches override all automatic signals on the two smaller valves that bypass the suppression chamber and drywell exhaust valve.

25. RPV water level - low or high drywell pressure causes automatic withdrawal of the traversing incore probe. When the probe is withdrawn, the valve automatically closes by mechanical action. An explosive shear valve is installed outboard of the ball valve. The shear valve is provided to isolate the line if the probe does not withdraw.

26. Locked-closed manual valve.

27. Designed in accordance with Regulatory Guide 1.11. An orifice is located in the sensing line in proximity to the process line.

F. 28. The second isolation boundary is provided by a Quality Group B, Seismic Category I, missile-protected, closed system. The primary isolation boundary is provided by the other isolation barrier valve(s) listed for this penetration.

29. Flow instrumentation will generate a high flow isolation signal and automatically close the redundant isolation valves (after a time delay) should the pneumatic header in the drywell rupture. However, this automatic high flow signal is not required for Operability of the valve's primary containment isolation function.

30. RPV water level - low, low, or high drywell pressure opens the valve; a signal indicating a line break in the HPCI system steam line to the HPCI turbine overrides these signals and closes the valve.

31. The design of these lines does not facilitate Type C testing as described in 10 CFR 50, Appendix J. However, adequate leakage monitoring of the CRD lines is provided by normal plant operating procedures. Since the insert and withdraw lines are pressurized to at least reactor operating pressure by the cooling water flow during normal plant operation, leakage from these lines would be immediately evident. Type C test leakage is not included in the maximum allowable leakage rate 0.060 L_a summation. These valves remain closed during the test and are not vented.
The hydraulic control units are installed on El. 130 ft of the reactor building, a relatively high traffic area. In addition, the Unit 1 daily rounds procedure requires that an operator make a visual inspection for leakage in the CRD hydraulic area of the reactor building at least once per shift and record the inspection.

32. The first flange double o-rings on valve 1T48-F307 are an inboard barrier.

33. The second flange double o-ring and shaft double o-ring on valve 1T48-F307, in conjunction with the first flange double o-rings on valves 1T48-F308, 1T48-F324, 1T48-F309, and 1T48-F103, are outboard barriers.

34. The first flange double o-rings on valve 1T48-F319 are an inboard barrier.

35. The second flange double o-rings and shaft double o-rings on valve 1T48-F319, in conjunction with the first flange double o-rings on 1T48-F320, are outboard barriers.

36. The two check valves used as inboard and outboard barriers have been evaluated to provide sufficient isolation capability. The evaluation was done considering the consequences of breaking the line that these valves are a part of. Furthermore, it was concluded that the installation of an automatic power actuated valve outside primary containment could possibly result in a breach of the primary coolant boundary during normal reactor operation.

TABLE T7.0-1 (Sheet 33 of 34)
PRIMARY CONTAINMENT PENETRATIONS

F. 37. Since the shear valve isolates the TIP tubing by shearing the tube and drive cable and by jamming the sheared ends of the tubing into a Teflon coating on the shear valve disc, the valve cannot be Type C tested without destroying the drive tube. Therefore, the TIP shear valves are not Type C tested.

38. The first flange double o-rings on valves 1T48-F309, 310, and F311 are inboard barriers.

39. The second flange and shaft double o-rings on 1T48-308, 310, and 311, in conjunction with the first flange double o-rings on 1T48-F324 and F303, and the vacuum breaker body flange gaskets on 1 T48-F328A & B are an outboard barrier.

40. 1E51-F104 and F105 are tested as part of penetration X-221C.

41. 1E41-F104 and F111 are tested as part of penetration X-221A.

42. The first flange double o-rings on valve 1T48-F318 are an inboard barrier.

43. The second flange double o-rings on valve 1T48-F318 in conjunction with the first flange double o-rings on valve T48-F326 are outboard barriers.

44. The air supply lines to these valves have been cut and capped. These valves will remain closed at all items without the air supply. The electrical isolation signals are intact; however, these signals will not affect the position of these valves.

45. This penetration is sealed from the primary containment and not leakage tested due to its line termination below the water level of the torus. No leakage test is necessary to satisfy Appendix J requirements as the torus is postulated to always remain filled with water.

46. 1B21-F111 and F112 are outside the containment boundary. They are Type C tested since they will be used post LOCA to obtain samples.

47. 1E41-F121 and F122 are outside the containment boundary. They are Type C tested since they will be used post LOCA to obtain samples.

48. An orifice is located in the sensing line in proximity to the process line.

49. The relief valve setpoint is > 1.5 times the containment design pressure. Relief valve discharge side serves as a boundary.

50. Line break in the RHR system piping. High temperature or high differential temperature in the RHR equipment space alarms only; auto closure does not occur.

51. 1G31-F039 was replaced with a 3-in. valve. Less than 4 ft of this line were replaced with size 3-in. components (valve, piping and fittings). The majority of this line remains a line size of 4-in.

52. Valve will close after RHR flow is established. LCO 3.3.5.1 is applicable to this signal.

G. The only valve operational time limits listed in this table are the times explicitly assumed in the accident, anticipated operational occurrence, or high energy line break analyses. These values are typically higher than other valve stroke times that are contained in the Plant Hatch Pump and Valve Inservice Test Plan and/or Chapter 5.0 of the Technical Requirements Manual.

H. RF (Reverse Flow) - Type C test where test pressure is not applied in the same direction as when the valve would be required to perform its containment isolation function.

AD (Accident Direction) - Type C test where test pressure is applied in the same direction as when the valve would be required to perform its containment isolation function.

TABLE T7.0-2 (Sheet 1 of 4)
PRIMARY CONTAINMENT ISOLATION DEVICES: MPL TO PENETRATION NUMBER CROSS REFERENCE

MPL	PEN.	MPL	PEN.	MPL	PEN.
1B21-F010A	9A	1B21-F043A	29E	1B21-F059S	51E
1B21-F010B	9B	1B21-F043B	28E	1B21-F059T	52C
1B21-F015A	103B(A)	1B21-F045A	29C	1B21-F059U	51C
1B21-F015B	103B(F)	1B21-F045B	28C	1B21-F061	54A
1B21-F015C	100F(A)	1B21-F047A	29B	1B21-F111	52F
1B21-F015D	100F(F)	1B21-F047B	28B	1B21-F112	52F
1B21-F015E	103B(E)	1B21-F049A	29D	1B31-F003A	32E
1B21-F015F	103B(D)	1B21-F049B	28D	1B31-F003B	34C
1B21-F015G	30C	1B21-F051A	49F	1B31-F004A	32F
1B21-F015H	30D	1B21-F051B	50F	1B31-F004B	34D
1B21-F015J	54D	1B21-F051C	52F	1B31-F009A	31A
1B21-F015K	54C	1B21-F051D	51F	1B31-F009B	59B
1B21-F015L	100F(C)	1B21-F053A	49A	1B31-F009C	59B
1B21-F015M	100F(B)	1B21-F053B	50A	1B31-F009D	31A
1B21-F015N	103B(B)	1B21-F053C	52B	1B31-F010A	31B
1B21-F015P	103B(C)	1B21-F053D	51B	1B31-F010B	59C
1B21-F015R	100F(E)	1B21-F055	30A	1B31-F010C	59C
1B21-F015S	100F(D)	1B21-F057	30B	1B31-F010D	31B
1B21-F016	8	1B21-F059A	49D	1B31-F011A	33A
1B21-F019	8	1B21-F059B	50D	1B31-F011B	59F
1B21-F022A	7A	1B21-F059C	49E	1B31-F011C	59F
1B21-F022B	7B	1B21-F059D	50E	1B31-F011D	33A
1B21-F022C	7C	1B21-F059E	49C	1B31-F012A	33B
1B21-F022D	7D	1B21-F059F	50C	1B31-F012B	59E
1B21-F028A	7A	1B21-F059G	49B	1B31-F012C	59E
1B21-F028B	7B	1B21-F059H	50B	1B31-F012D	33B
1B21-F028C	7C	1B21-F059L	52A	1B31-F013A	31F
1B21-F028D	7D	1B21-F059M	51A	1B31-F013B	59A
1B21-F032A	9A	1B21-F059N	52D	1B31-F017A	31F
1B21-F032B	9B	1B21-F059P	51D	1B31-F017B	59A
1B21-F041	29F	1B21-F059R	52E	1B31-F019	28A

TABLE T7.0-2 (Sheet 2 of 4)
PRIMARY CONTAINMENT ISOLATION DEVICES: MPL TO PENETRATION NUMBER CROSS REFERENCE

MPL	PEN.
1B31-F020	28A
1B31-F040A	32A
1B31-F040B	34A
1B31-F040C	32B
1B31-F040D	34B
1B31-F057A	32C
1B31-F057B	34F
1C11-D001-120	37A
1C11-D001-120	37B
1C11-D001-120	37C
1C11-D001-120	37D
1C11-D001-121	38A
1C11-D001-121	38B
1C11-D001-121	38C
1C11-D001-121	38D
1C11-D001-122	38A
1C11-D001-122	38B
1C11-D001-122	38C
1C11-D001-122	38D
1C11-D001-123	37A
1C11-D001-123	37B
1C11-D001-123	37C
1C11-D001-123	37D
1C11-D001-126	37A
1C11-D001-126	37B
1C11-D001-126	37C
1C11-D001-126	37D
1C11-D001-127	38A
1C11-D001-127	38B
1C11-D001-127	38C
1C11-D001-127	38D

MPL	PEN.
1C11-D001-138	37A
1C11-D001-138	37B
1C11-D001-138	37C
1C11-D001-138	37D
1C41-F006	42
1C41-F007	42
1C51-F3017	35E
1C51-R751	35E
1D11-F050	33D
1D11-F051	27A
1D11-F052	33D
1D11-F053	27A
1E11-F004A	204A
1E11-F004B	204B
1E11-F004C	204C
1E11-F004D	204D
1E11-F007A	210A
1E11-F007B	210B
1E11-F008	12
1E11-F011A	210A
1E11-F011B	210B
1E11-F015A	13A
1E11-F015B	13B
1E11-F016A	39A
1E11-F016B	39B
1E11-F025A	210A
1E11-F025B	210B
1E11-F026A	210A
1E11-F026B	210B
1E11-F028A	210A
1E11-F028A	211A

MPL	PEN.
1E11-F028B	210B
1E11-F028B	211B
1E11-F029	210A
1E11-F043A	27C
1E11-F043B	45D
1E11-F043C	27D
1E11-F043D	45C
1E11-F055A	210A
1E11-F055B	210B
1E11-F103A	210A
1E11-F0103B	210B
1E11-F3078A	210A
1E11-F3078B	210B
1E21-F001A	208A
1E21-F001B	208B
1E21-F005A	16A
1E21-F005B	16B
1E21-F015A	210A
1E21-F015B	210B
1E21-F018A	40A(C)
1E21-F018B	40D(A)
1E21-F018C	54B
1E21-F031A	210A
1E21-F031B	210B
1E21-F044A	210A
1E21-F044B	210B
1E21-F061A	210A
1E21-F061B	210B
1E41-F002	11
1E41-F003	11
1E41-F006	9B

TABLE T7.0-2 (Sheet 3 of 4)
PRIMARY CONTAINMENT ISOLATION DEVICES: MPL TO PENETRATION NUMBER CROSS REFERENCE

MPL	PEN.	MPL	PEN.	MPL	PEN.
1E41-F012	210B	1E51-F021	210A	1P33-F007	217
1E41-F021	214	1E51-F028	213	1P33-F010	26
1E41-F022	215	1E51-F031	203	1P33-F011	28F
1E41-F024A	45A	1E51-F040	212	1P33-F012	31D
1E41-F024B	30E	1E51-F044A	54E	1P33-F013	34E
1E41-F024C	45B	1E51-F044B	40B(E)	1P33-F014	220
1E41-F024D	30F	1E51-F044C	54F	1P33-F015	217
1E41-F040	215	1E51-F044D	40B(F)	1P41-F049	20
1E41-F042	207	1E51-F104	212	1P41-F050	44
1E41-F046	210B	1E51-F104	221C	1P42-F051	23
1E41-F049	214	1E51-F105	212	1P42-F052	24
1E41-F051	207	1E51-F105	221C	1P42-N031	23
1E41-F104	214	1G11-F003	19	1P42-N032	23
1E41-F104	221A	1G11-F004	19	1P51-F513	21
1E41-F107	206A	1G11-F019	18	1P51-F514	21
1E41-F108	206B	1G11-F020	18	1P70-F002	40C(F)
1E41-F109	206C	1G31-F001	14	1P70-F003	40C(F)
1E41-F110	206D	1G31-F004	14	1P70-F004	22
1E41-F111	214	1G31-F039	9A	1P70-F005	22
1E41-F111	221A	1G31-F203	9B	1P70-F066	27F
1E41-F121	206A	1G51-D001	218A	1P70-F067	27F
1E41-F121	206B	1G51-F002	218A	1P70-N003	22
1E41-F122	206A	1G51-F011	218A	1P70-N016	27F
1E41-F122	206B	1G51-F012	218A	1T23-F004	45F
1E51-F001	212	1P21-F353	46	1T23-F005	45F
1E51-F002	213	1P21-F420	46	1T48-F103	25
1E51-F003	203	1P33-F002	26	1T48-F103	205
1E51-F007	10	1P33-F003	28F	1T48-F104	25
1E51-F008	10	1P33-F004	31D	1T48-F104	205
1E51-F013	9A	1P33-F005	34E	1T48-F113	25
1E51-F019	210A	1P33-F006	220	1T48-F114	25

TABLE T7.0-2 (Sheet 4 of 4)
PRIMARY CONTAINMENT ISOLATION DEVICES: MPL TO PENETRATION NUMBER CROSS REFERENCE

MPL	PEN.	MPL	PEN.	MPL	PEN.
		1T48-F323K Air Cyl	223A(E)	1T48-F342G	223A(A)
1T48-F115	205	1T48-F323L Air Cyl	223A(D)	1T48-F342H	223A(B)
1T48-F116	205	1T48-F324	25	1T48-F342I	223A(C)
1T48-F118A	25	1T48-F324	205	1T48-F342J	223A(F)
1T48-F118B	205	1T48-F325	205	1T48-F342K	223A(E)
1T48-F301	205	1T48-F326	220	1T48-F342L	223A(D)
1T48-F302	205	1T48-F327	205		
1T48-F303A	205	1T48-F328A	205		
1T48-F303B	45E	1T48-F328B	205		
1T48-F304A	220	1T48-F330A	206B		
1T48-F304B	27E	1T48-F330B	206A		
1T48-F307	25	1T48-F331A	206D		
1T48-F308	25	1T48-F331B	206C		
1T48-F309	205	1T48-F332A	220		
1T48-F310	205	1T48-F332B	220		
1T48-F311	205	1T48-F333A	220		
1T48-F318	220	1T48-F333B	220		
1T48-F319	26	1T48-F334A	26		
1T48-F320	26	1T48-F334B	26		
1T48-F321	25	1T48-F335A	26		
1T48-F322	25	1T48-F335B	26		
1T48-F323A Air Cyl	223B(D)	1T48-F338	220		
1T48-F323B Air Cyl	223B(E)	1T48-F339	220		
1T48-F323C Air Cyl	223B(C)	1T48-F340	26		
1T48-F323D Air Cyl	223B(F)	1T48-F341	26		
1T48-F323E Air Cyl	223B(B)	1T48-F342A	223B(D)		
1T48-F323F Air Cyl	223B(A)	1T48-F342B	223B(E)		
1T48-F323G Air Cyl	223A(A)	1T48-F342C	223B(C)		
1T48-F323H Air Cyl	223A(B)	1T48-F342D	223B(F)		
1T48-F323I Air Cyl	223A(C)	1T48-F342E	223B(B)		
1T48-F323J Air Cyl	223A(F)	1T48-F342F	223B(A)		

SECONDARY CONTAINMENT OVERVIEW

Pages T8.0-1 and T8.0-2 provide an overview of the remainder of the secondary containment section of the TRM. An understanding of this section is vital to proper use and understanding of the complete section.

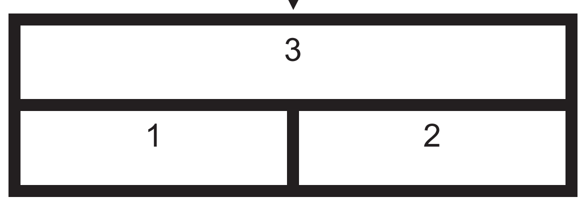
Pages T8.1-1 through T8.1-4 each address a specific secondary containment type. Each page specifies LCO and SURVEILLANCE REQUIREMENTS for the specific containment type and is laid out as follows:

This provides a simple pictorial representation of the containment configuration including zones to be included. Zones are as follows:

- 1: U1 Reactor Building
- 2: U2 Reactor Building
- 3: Common Refueling Floor

This identifies the containment type. In this example, it is “A.”

TYPE A



LCO REQUIREMENTS:

Unit	Status Restrictions/Limitations	Refueling Floor Equipment Hatch
1	Restrictions such as Unit MODE would be specified here.	Specifies if the hatch is required to be in place or not.
2	Restrictions such as Unit MODE would be specified here.	Specifies if the hatch is required to be in place or not.

LCO 3.6.4.1:	• Refers to the pictorial representation above. • Specifies hatches (including penetrations) and doors for the specified containment type.
LCO 3.6.4.2:	Specifies SCIVs required for the specified containment type.
LCO 3.6.4.3:	Specifies SGT Subsystems required for the specified containment type.

Prior to changing to a secondary containment type, the SRs for that containment must be current. If this is not possible, secondary containment is inoperable.

SURVEILLANCE REQUIREMENTS:

SR 3.6.4.1.1:	Specifies hatches to which this SR applies for this containment type. Included in this group are the items in Table T8.2-1 characterized by penetration information.

SR 3.6.4.1.2:	Specifies doors to which this SR applies for this containment type.

SR 3.6.4.1.3 and SR 3.6.4.1.4:	Specifies number of SGT subsystems required for surveillances for this containment type. Must test one of the specified combinations every 24 months such that all combinations are tested every X times 24 (+25%) months where X equals number of combinations.

SR 3.6.4.2.1	Specifies SCIVs to which this SR applies for this containment type.

STANDARD LIMITATIONS FOR SURVEILLANCE REQUIREMENTS

The following apply to the SURVEILLANCE REQUIRMENTS for each containment Type, and will not be repeated on each page:

A. TYPE X LCO requirements do not have to be met during TYPE X surveillance testing IF the containment is not currently in TYPE X.

For example, if surveillance for Type C secondary containment is to be performed while the actual containment configuration is Type A:

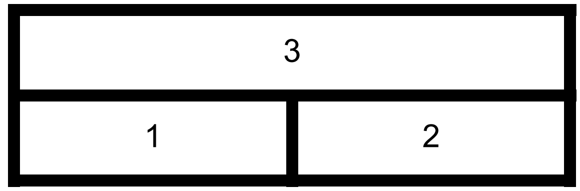
1. The LCO REQUIREMENTS specified for Type A containment (page T8.1-1) remain in effect.
2. The SURVEILLANCE REQUIREMENTS specified for Type C containment (page T8.1-4) must be satisfied.

B. If TYPE X containment surveillance is being performed, must ensure TYPE X testing does not invalidate current containment TYPE UNLESS appropriate TS LCO CONDITION is entered.

For example, must ensure that alignment / gagging of SCIVs in Table T8.3-1 does not make the SCIVs inoperable for the actual secondary containment type in effect. IF (in this example) one SCIV is made inoperable, enter TS LCO 3.6.4.2, CONDITION A.

TYPE A

LCO REQUIREMENTS:



Unit	Status Restrictions/Limitations	Refueling Floor Equipment Hatch
1	NONE	Either IN or OUT
2	NONE	Either IN or OUT

LCO 3.6.4.1:	Secondary Containment Boundary as shown above.

LCO 3.6.4.2:	Required SCIVs as defined by TRM Table T8.2-1.

LCO 3.6.4.3:	Required SGT Subsystems: 1A, 1B, 2A, 2B (i.e., all 4)

SURVEILLANCE REQUIREMENTS:

SR 3.6.4.1.1:	Required hatches defined by Table T8.2-1.

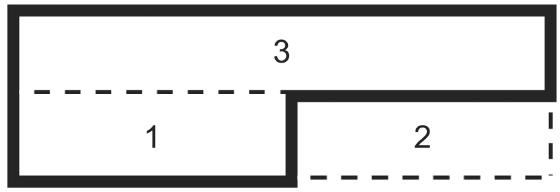
SR 3.6.4.1.2:	Required doors defined by Table T8.2-1.

SR 3.6.4.1.3 and SR 3.6.4.1.4:	3 SGT subsystems are required for surveillances. Must test one of the following combinations every 24 months such that all combinations are tested every 96 (+25%) months: • 1A, 1B, 2A (One U1 SGT subsystem may trip per design.) • 1A, 1B, 2B (One U1 SGT subsystem may trip per design.) • 1A, 2A, 2B • 1B, 2A, 2B

SR 3.6.4.2.1	Required SCIVs defined by Table T8.2-1.

TYPE B1

LCO REQUIREMENTS:



Unit	Status Restrictions/Limitations	Refueling Floor Equipment Hatch
1	NONE	OUT
2	• In MODE 4 or 5, OR defueled and not conducting OPDRVs. • U2 reactor coolant < 212°F and vented. • No refueling floor airspace to U2 Reactor Building airspace opening exists via the drywell.	IN

LCO 3.6.4.1: Secondary Containment Boundary as shown above.

LCO 3.6.4.2: Required SCIVs as defined by TRM Table T8.2-1.

LCO 3.6.4.3: Required SGT Subsystems: One U1 subsystem and both U2 subsystems: 1A, 2A, 2B OR 1B, 2A, 2B

SURVEILLANCE REQUIREMENTS:

SR 3.6.4.1.1: Required hatches defined by Table T8.2-1.

SR 3.6.4.1.2: Required doors defined by Table T8.2-1.

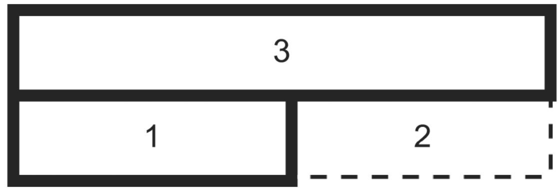
SR 3.6.4.1.3 and SR 3.6.4.1.4: 2 (of the 3 required by LCO 3.6.4.3) SGT subsystems are required for surveillances. Must test one of the following combinations every 24 months such that all combinations are tested every 120 (+25%) months:

- 1A, 2A
- 1A, 2B
- 1B, 2A
- 1B, 2B
- 2A, 2B

SR 3.6.4.2.1 Required SCIVs defined by Table T8.2-1.

TYPE B2

LCO REQUIREMENTS:



Unit	Status Restrictions/Limitations	Refueling Floor Equipment Hatch
1	NONE	IN
2	• In MODE 4 or 5, OR defueled and not conducting OPDRVs. • U2 reactor coolant < 212°F and vented. • No refueling floor airspace to U2 Reactor Building airspace opening exists via the drywell.	IN

LCO 3.6.4.1: Secondary Containment Boundary as shown above.

LCO 3.6.4.2: Required SCIVs as defined by TRM Table T8.2-1.

LCO 3.6.4.3: Required SGT Subsystems: 1A, 1B, 2A, 2B (i.e., all 4).

SURVEILLANCE REQUIREMENTS:

SR 3.6.4.1.1: Required hatches defined by Table T8.2-1.

SR 3.6.4.1.2: Required doors defined by Table T8.2-1.

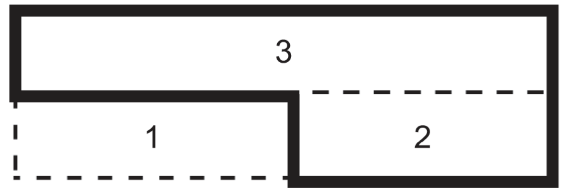
SR 3.6.4.1.3 and SR 3.6.4.1.4: 3 SGT subsystems are required for surveillances. Must test one of the following combinations every 24 months such that all combinations are tested every 96 (+25%) months:

- 1A, 1B, 2A (One U1 SGT subsystem may trip per design.)
- 1A, 1B, 2B (One U1 SGT subsystem may trip per design.)
- 1A, 2A, 2B
- 1B, 2A, 2B

SR 3.6.4.2.1 Required SCIVs defined by Table T8.2-1.

TYPE C

LCO REQUIREMENTS:



Unit	Status Restrictions/Limitations	Refueling Floor Equipment Hatch
1	• In MODE 4 or 5, OR defueled and not conducting OPDRVs. • U1 reactor coolant < 212°F and vented. • No refueling floor airspace to U1 Reactor Building airspace opening exists via the drywell.	IN
2	NONE	OUT

LCO 3.6.4.1:	Secondary Containment Boundary as shown above.

LCO 3.6.4.2:	Required SCIVs as defined by TRM Table T8.2-1.

LCO 3.6.4.3:	Required SGT subsystems: Both U2 subsystems and one U1 subsystem: 2A, 2B, 1A OR 2A, 2B, 1B

SURVEILLANCE REQUIREMENTS:

SR 3.6.4.1.1:	Required hatches defined by Table T8.2-1.

SR 3.6.4.1.2:	Required doors defined by Table T8.2-1.

SR 3.6.4.1.3 and SR 3.6.4.1.4:	2 (of the 3 required by LCO 3.6.4.3) SGT subsystems are required for surveillances. Must test one of the following combinations every 24 months such that all combinations are tested every 120 (+25%) months: • 2A, 2B • 2A, 1A • 2A, 1B • 2B, 1A • 2B, 1B

SR 3.6.4.2.1	Required SCIVs defined by Table T8.2-1.

TABLE T8.2-1 (Sheet 1 of 8)
SECONDARY CONTAINMENT DEVICES

HATCHES (includes penetration devices)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
1	R/F Floor to Unit 2 Stack Monitoring Equipment Room Hatch	P		X	X	
1	Reactor Building 228’ Airtight Equipment Hatch	P			X	X
1	Fuel Pool Cleanup and RWCU Demineralizer Hatch Covers 228’	P				X
1	R/B 205’ 4” Floor Drain Line Screw Cap by RBCCW Surge Tank	P				X
1	R/F 228’ 4” Floor Drain Plug Southwest Corner (elevator vestibule airlock)	P				X
1	HPCI Room Roof Hatch Plug	P	X	X	X	
1	Reactor Building Blowout Panels (164’ T/B)	P	X	X	X	
1	Refueling Floor Skylights	P	X	X	X	X
1-X159	Penetration Blind Flange or Modified Flange with a 2-inch or Smaller Temporary Connection with 1 Inboard and 1 Outboard Manual SCIV	P	X	X	X	
1-X160	Penetration Blind Flange	P	X	X	X	
1-X161	Penetration with Sealed Electrical Box for Temporary Power	P	X	X	X	
1-X162	Penetration Blind Flange	P	X	X	X	

TABLE T8.2-1 (Sheet 2 of 8)
SECONDARY CONTAINMENT DEVICES

HATCHES (includes penetration devices) (continued)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
2	Rx Building 228 Airtight Equipment Hatch	P		X	X	
2	HPCI Room Roof Hatch Plug	P	X			X
2	Reactor Building Blowout Panels 164' T/B	P	X			X
2	Fuel Pool Cleanup and RWCU Demineralizer Hatch Covers 228'	P		X	X	
2	Refueling Floor Skylights	P	X	X	X	X
2-X137	Penetration with Sealed Electrical Box for Temporary Power	P	X			X
2-X138	Penetration Blind Flange or Modified Flange with a 2-inch or Smaller Temporary Connection with 1 Inboard and 1 Outboard Manual SCIV	P	X			X
2-X144(1)	Penetration Blind Flange	P	X			X
2-X144(2)	Penetration Blind Flange	P	X			X

TABLE T8.2-1 (Sheet 3 of 8)
SECONDARY CONTAINMENT DEVICES

DOORS

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
1HMS-7	Railroad Airlock to Hot Machine Shop	P	X	X	X	
1R-23A	Railroad Airlock Outer	P	X	X	X	
1R23B	Railroad Airlock Inner	P	X	X	X	
1R-27	130’ Elevation Airlock Inner	P	X	X	X	
1R-28	130’ Elevation Airlock Outer (fire door)	P	X	X	X	
1R-30A	Railroad Door Outer	P	X	X	X	
1R-30B	Railroad Door Inner	P	X	X	X	
1R-40A	Airlock, R208-A, to Unit 1 Reactor Building El. 164’	P	X	X	X	X
1R-41	Airlock, R208-A, to Unit 1 Turbine Building El. 164’ (fire door)	P	X	X	X	X
1R-42	Airlock, R208-A, to Unit 2 Reactor Building El. 164’ (fire door)	P	X	X	X	X
IR-50	185’ Elevation Ventilation Room	P	X	X	X	
1R-52	Airlock, R311-A, to Unit 1 Reactor Building El. 185’	P		X	X	X
1R-52A	Airlock, R311-A, to Unit 2 Reactor Building El. 185’	P		X	X	X
1R-59	185’ Elevation Ventilation Room Airlock Outer	P	X	X	X	
1R-59A	185’ Elevation Ventilation Room Airlock Inner	P	X	X	X	
1R-60	185’ Elevation Vestibule Airlock Inner	P	X	X	X	
1R-60A	185’ Elevation Vestibule Airlock Outer	P	X	X	X	
1R-62	203’ Ventilation Room Airlock Outer	P	X	X	X	

TABLE T8.2-1 (Sheet 4 of 8)
SECONDARY CONTAINMENT DEVICES

DOORS (continued)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
1R-62A	203' Ventilation Room Airlock Inner	P	X	X	X	
1R-62A	203' Ventilation Room Airlock Inner	P	X	X	X	
1R-63	203' Ventilation Access	P	X	X	X	
1R-64	228' Elevation Vestibule Airlock (fire door)	P				X
1R-64A	228' Elevator Vestibule to R/F Floor	P				X
1R-65	228' R/F Floor Northeast Corner (fire door)	P				X
1R-67	244' Vestibule Airlock Outer	P	X	X	X	
1R-67A	244' Vestibule Airlock Inner	P	X	X	X	
1RW-30	130' Radwaste Airlock Outer (fire door)	P	X	X	X	
1RW-30A	130' Radwaste Airlock Inner	P	X	X	X	
2R-22	Airlock, 2R106, to TIP Drive Area Northwest Reactor Building, El. 130'-0"	P	X			X
2R-23	Airlock, 2R106, to Turbine Building Elev. 130' (fire door)	P	X			X
2R-26	Airlock, 2R108, to Radwaste Building El. 132'-4" (fire door)	P	X			X
2R-28	130' Reactor Building Railroad Double Door	P	X			X
2R-29	Airlock, 2R108, to CRD Cont'l. Piping Area 2R104-A Southwest Reactor Building El. 130'-1"	P	X			X
2R-31	Airlock, 2R112, to Reactor Building El. 130'-0"	P	X			X
2R-31A	Airlock, 2R112, to Hot Machine Shop HMS100	P	X			X
2R-56	185' Access to Reactor Building Supply Fans (double doors to outside)	P	X			X

TABLE T8.2-1 (Sheet 5 of 8)
SECONDARY CONTAINMENT DEVICES

DOORS (continued)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
2R-57	Airlock, 2R305, to Reactor Building Supply Fan Room 2R305 El. 185’	P	X			X
2R-59	Airlock, 2R305, to El. 185’ Operating Floor	P	X			X
2R-61	Airlock, 2R420, to Northwest Stairwell 2R410 El. 203 (fire door)	P	X			X
2R-62	Airlock, 2R420, to Exhaust Fan Ventilation Room 2R419 El. 203’	P	X			X
2R-65	203’ Access to Refueling Floor Supply Fans (double doors to outside)	P	X			X
2R-66	Airlock, 2R421, to Exhaust Fan Ventilation Room 2R419 El. 203’	P	X			X
2R-67	Airlock, 2R421, to RWCU Demin Access El. 203’	P	X			X
2R-68	Airlock, 2R422, to El. 203’ Working Floor 2R401	P	X			X
2R-69	Airlock, 2R422, to Refueling Floor Supply Fan Room 2R415 El. 203’	P	X			X
2R-71	Airlock, 2R511, to Northwest Stairwell El. 228’ (fire door)	P	X	X	X	X
2R-72	Airlock, 2R511, to Refueling Floor El. 228’	P	X	X	X	X
2R-73	Airlock, 2R511, to Reactor Building Roof El. 228’	P	X	X	X	X
2R-74	Airlock, 2R510, to 228’ El. Refueling Floor	P		X	X	
2R-75	Airlock, 2R510, to Southeast Stairwell El. 228’	P		X	X	
2R-76	Airlock, 2R114, to Post Accident Sampling Room, 2R113	P	X			X
2R-77	Airlock, 2R114, to Hot Machine Shop HMS100	P	X			X

TABLE T8.2-1 (Sheet 6 of 8)
SECONDARY CONTAINMENT DEVICES

SECONDARY CONTAINMENT ISOLATION VALVES

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
1T41-F003A	R/F Inboard Vent Supply Isolation	4.2 s	X	X	X	X
1T41-F003B	R/F Outboard Vent Supply Isolation	4.2 s	X	X	X	X
1T41-F011A	R/B Inboard Vent Supply Isolation	5 s	X	X	X	
1T41-F011B	R/B Outboard Vent Supply Isolation	5 s	X	X	X	
1T41-F023A	R/F Inboard Vent Exhaust Isolation	4.2 s	X	X	X	X
1T41-F023B	R/F Outboard Vent Exhaust Isolation	4.2 s	X	X	X	X
1T41-F032A	SGT Inlet from R/B	P/gag				X
1T41-F032B	SGT Inlet from R/B	P/gag				X
1T41-F043A	R/B Accessible Area Inboard Vent Exhaust	5 s	X	X	X	
1T41-F043B	R/B Accessible Area Outboard Vent Exhaust	5 s	X	X	X	
1T41-F044A	R/B Inaccessible Area Inboard Vent Exhaust	5 s	X	X	X	
1T41-F044B	R/B Inaccessible Area Outboard Vent Exhaust	5 s	X	X	X	
1T45-F010	R/F East Side Drains Isolation Valve	P				X
1T45-F011	R/F West Side Drains/Vent Drain Pot Isolation Valve	P				X
1T45-F013	R/F East Side Drains Isolation Valve	P				X
1T45-F014	R/F West Side Drains, Vent Drain Pots, New Fuel Storage Vaults Drains Isolation Valve	P				X
1T45-F015	R/F Cask Wash Down Area Drain Isolation Valve	P				X
1T45-F021	Railroad Airlock Drain Isolation Valve	P	X	X	X	

TABLE T8.2-1 (Sheet 7 of 8)
SECONDARY CONTAINMENT DEVICES

SECONDARY CONTAINMENT ISOLATION VALVES (continued)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
1T45-F060A	Vent Drain Pot Isolation Valve	P				X
1T45-F060B	Vent Drain Pot Isolation Valve	P				X
1T45-F060C	Vent Drain Pot Isolation Valve	P				X
1T48-F081	Primary Cont. 18” Vent Isolation	P/gag				X
1T48-F083	Primary Cont. 2” Vent Isolation	P				X
2T41-F003A	R/F Inboard Vent Supply Isolation	4.2 s	X	X	X	X
2T41-F003B	R/F Outboard Vent Supply Isolation	4.2 s	X	X	X	X
2T41-F011A	R/B Inboard Vent Supply Isolation	5 s	X			X
2T41-F011B	R/B Outboard Vent Supply Isolation	5 s	X			X
2T41-F023A	R/F Inboard Vent Exhaust Isolation	4.2 s	X	X	X	X
2T41-F023B	R/F Outboard Vent Exhaust Isolation	4.2 s	X	X	X	X
2T41-F044A	R/B Inaccessible Area Inboard Vent Exhaust	5 s	X			X
2T41-F044B	R/B Inaccessible Area Outboard Vent Exhaust	5 s	X			X
2T41-FD101	R/F Vent Drain Pot Isolation Valve	P		X	X	
2T41-FD102	R/F Vent Drain Pot Isolation Valve	P		X	X	
2T41-FD103	R/F Vent Drain Pot Isolation Valve	P		X	X	
2T41-FD104	R/F Vent Drain Pot Isolation Valve	P		X	X	
2T41-FD105	R/F Vent Drain Pot Isolation Valve	P		X	X	

TABLE T8.2-1 (Sheet 8 of 8)
SECONDARY CONTAINMENT DEVICES

SECONDARY CONTAINMENT ISOLATION VALVES (continued)

MPL	DESCRIPTION	Passive/Active TIME	A	B1	B2	C
2T41-FD106	R/F Vent Drain Pot Isolation Valve	P		X	X	
2T45-F011	R/F West Side Drains, New Fuel Storage Vaults Drains Isolation Valve	P		X	X	
2T45-F013	R/F Cask Washdown Area Isolation Valve	P		X	X	
2T45-F014	R/F East Side Drains Isolation Valve	P		X	X	
2T45-F015	R/F East Side Drains Isolation Valve	P		X	X	
2T45-F016	R/F Northwest Corner Stairway Drain Isolation Valve	P		X	X	
2T45-F017	R/F West Side Drains Isolation Valve	P		X	X	
2T45-F018	R/F West Side Drains Isolation Valve	P		X	X	
2T45-F019	R/F West Side Drains Isolation Valve	P		X	X	
2T46-F001A	SGT 2A Inlet from R/B	P/gag		X	X	
2T46-F001B	SGT 2B Inlet from R/B	P/gag		X	X	
2T48-F081	Primary Cont. 18" Vent Isolation	P/gag		X[1]	X[1]	
2T48-F083	Primary Cont. 2" Vent Isolation	P		X	X	

NOTE:

1. This valve is not required to be gagged and/or closed in a Type B1/B2 Secondary Configuration which includes the Unit 2 Drywell.

SECONDARY CONTAINMENT EXPANSION

This section does NOT apply to swapping from one containment type to another.

Expansion of an existing secondary containment type to include additional volume and / or a different barrier is sometimes necessary (especially during outages). This expansion is acceptable and is NOT considered a different type of containment, provided the following actions/conditions are taken/maintained:

A. Testing requirements for expanding an existing secondary containment type are as follows:

Expansion Type	Example of Expansion Type (not all inclusive)	Surveillance(s) Required
Volume increase AND boundary change	Type B1, B2, or C expanded to include all or part of drywell of the excluded zone	SR 3.6.4.1.3 AND SR 3.6.4.1.4: • Secondary containment is inoperable when the expansion is implemented, and appropriate TS CONDITION must be entered. Successful completion of these SRs demonstrate secondary containment operability, and the CONDITION is exited at that time. • Perform these SRs using the most limiting combination of SGT trains.
Volume increase ONLY	Type A expanded to include drywell	SR 3.6.4.1.3: • If the expanded configuration involves a volume increase which is **EXACTLY** the same as one that has been previously tested during the past 24 months (+25%), no testing is required. • If conditions of first bullet are not satisfied, secondary containment is inoperable when the expansion is implemented, and appropriate TS CONDITION must be entered. Successful completion of the SR demonstrates secondary containment operability, and the CONDITION is exited at that time. • Perform this SR using the most limiting combination of SGT trains.

B. When expanding secondary containment type B1 or type B2 to include the Unit 2 drywell, or when expanding secondary containment type C to include the Unit 1 drywell, either all or a portion of the drywell becomes part of the secondary containment after the drywell head is removed as explained below:

1. IF the following conditions exist, **ALL** of the drywell is part of secondary containment:
   - the bulkhead manways are opened;
   - the drywell equipment hatches are closed and intact;
   - the personnel airlock is OPERABLE; and
   - applicable primary containment isolation valves are maintained closed so that no additional air paths penetrate the primary containment.

2. IF the following conditions exist, only the portion of the drywell above the bulkhead manways is part of secondary containment:
   - the bulkhead manways are closed and sealed;
   - the drywell equipment hatches are either open or closed; and
   - the personnel airlock is either OPERABLE or inoperable.

T 9.1 BATTERY RESISTANCES

Purpose:

Identify maintenance and OPERABILITY resistance values for Class 1E batteries.

Application:

The maintenance resistance limits for the intercell connections, shown in Table T9.1-1, are the battery manufacturer's recommendations. The limits include both the connector and connector contact resistances. The maintenance resistance limits for the cable connections, also shown in Table T9.1-1, include only the connector and connector contact resistance at one end of a cable. The battery cable connections are intertier or interstep, interrack, and the battery terminals. All cable connections consist of two connections, one for each end of the cable, except for the battery terminal connection which consists of only one connection for each terminal.

The maintenance resistance limit applies to each connection of a connection type and provides an indication that maintenance is required to reduce the contact resistance of an individual connection.

The OPERABILITY resistance limit applies to the overall connection resistance and allows for an increase in connection resistance due to changes in connection tightness and contact surface corrosion. The OPERABILITY limit is calculated for a battery that has reached end-of-life (80% of rated capacity). The OPERABILITY limit for a battery that has any design margin is conservative. Calculation SENH 94-021 provides supporting documentation for these battery resistance limits.

Table T9.1-1
Battery Resistance Limits
(μOhms)

Battery MPL No.	Intercell Connections Maintenance (Each)	Cable Connections Maintenance (Each)	OPERABILITY Limit (Overall)
1R42-S001A	50	25	3980
1R42-S001B	50	25	3980
1R42-S002A	100	50	4480
1R42-S002B	100	50	4480
1R42-S002C	100	50	4480
2R42-S001A	50	25	4080
2R42-S001B	50	25	4080
2R42-S002A	100	50	4480
2R42-S002C	100	50	4480

TABLE T10.1-1 (SHEET 1 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1B21-F013C,G	TS LCO 3.3.3.2 for RPV Pressure Control	N/A
1B21-F022A,B,C,D	TS 3.3.1.1-1 (5.)	LFD-1-RPS-10
1B21-F028A,B,C,D	TS 3.3.1.1-1 (5.)	LFD-1-RPS-10
1B21-K752A	TS 3.3.5.1-1 (4.a.)	LFD-1-ECCS-18
1B21-K752A	TS 3.3.5.1-1 (4.b.)	LFD-1-ECCS-19
1B21-K752A	TS 3.3.5.1-1 (4.c.)	LFD-1-ECCS-20
1B21-K752A	TS 3.3.5.1-1 (4.d.)	LFD-1-ECCS-21
1B21-K752B	TS 3.3.5.1-1 (5.a.)	LFD-1-ECCS-18
1B21-K752B	TS 3.3.5.1-1 (5.b.)	LFD-1-ECCS-19
1B21-K752B	TS 3.3.5.1-1 (5.c.)	LFD-1-ECCS-20
1B21-K752B	TS 3.3.5.1-1 (5.d.)	LFD-1-ECCS-21
1B21-K754A	TS 3.3.5.1-1 (4.a.)	LFD-1-ECCS-18
1B21-K754A	TS 3.3.5.1-1 (4.g.)	LFD-1-ECCS-24
1B21-K754B	TS 3.3.5.1-1 (5.a.)	LFD-1-ECCS-18
1B21-K754B	TS 3.3.5.1-1 (5.g.)	LFD-1-ECCS-24
1B21-K756A	TS 3.3.5.1-1 (4.a.)	LFD-1-ECCS-18
1B21-K756A	TS 3.3.5.1-1 (4.g.)	LFD-1-ECCS-24
1B21-K756B	TS 3.3.5.1-1 (5.a.)	LFD-1-ECCS-18
1B21-K756B	TS 3.3.5.1-1 (5.g.)	LFD-1-ECCS-24
1B21-N004A,B,C,D,E,F,G,H,J,K,L	TRM T3.3.3-1 (5.)	N/A
1B21-N015A,B,C,D	TS 3.3.6.1-1 (1.b.)	LFD-1-PCIS-02
1B21-N027	TS 3.3.3.1-1 (2.d.)	N/A
1B21-N056A,B,C,D	TS 3.3.6.1-1 (1.d.)	LFD-1-PCIS-04
1B21-N078A,B,C,D	TS 3.3.1.1-1 (3.)	LFD-1-RPS-08
1B21-N080A,B,C,D	TS 3.3.1.1-1 (4.)	LFD-1-RPS-09
1B21-N080A,B,C,D	TS 3.3.6.1-1 (2.a.)	LFD-1-PCIS-07
1B21-N080A,B,C,D	TS 3.3.6.1-1 (6.b.)	LFD-1-PCIS-34
1B21-N081A,B,C,D	TS 3.3.6.1-1 (1.a.)	LFD-1-PCIS-01
1B21-N081A,B,C,D	TS 3.3.6.1-1 (5.d.)	LFD-1-PCIS-32
1B21-N081A,B,C,D	TS 3.3.6.2-1 (1.)	LFD-1-SCIS-01
1B21-N085A,B	TS 3.3.3.1-1 (2.a.)	N/A
1B21-N085A,B	TS 3.3.5.1-1 (2.e.)	LFD-1-ECCS-09
1B21-N086A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04

TABLE T10.1-1 (SHEET 2 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1B21-N086A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N087A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N087A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N088A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N088A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N089A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N089A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N090A,B,C,D	TS 3.3.5.1-1 (1.c.)	LFD-1-ECCS-03
1B21-N090A,B,C,D	TS 3.3.5.1-1 (2.c.)	LFD-1-ECCS-07
1B21-N090A,D	TS 3.3.3.1-1 (1.)	N/A
1B21-N090B,C,E,F	TS 3.3.5.1-1 (2.d.)	LFD-1-ECCS-08
1B21-N091A,B,C,D	TRM T3.3.7-1 (1.)	LFD-1-MCREC-02
1B21-N091A,B,C,D	TS 3.3.3.1-1 (2.b.)	N/A
1B21-N091A,B,C,D	TS 3.3.5.1-1 (1.a.)	LFD-1-ECCS-01
1B21-N091A,B,C,D	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05
1B21-N091A,B,C,D	TS 3.3.5.1-1 (3.a.)	LFD-1-ECCS-12
1B21-N091A,C	TS 3.3.5.1-1 (4.a.)	LFD-1-ECCS-18
1B21-N091B,D	TS 3.3.5.1-1 (5.a.)	LFD-1-ECCS-18
1B21-N091A,B,C,D	TS 3.3.5.2-1 (1.)	LFD-1-RCIC-01
1B21-N091A,B,C,D	TS LCO 3.3.4.2.a	LFD-1-RPT-03
1B21-N093A	TS 3.3.5.2-1 (2.)	LFD-1-RCIC-02
1B21-N093A,B	TS 3.3.3.1-1 (2.c.)	N/A
1B21-N093B	TS 3.3.5.1-1 (3.c.)	LFD-1-ECCS-14
1B21-N095A	TS 3.3.5.2-1 (2.)	LFD-1-RCIC-02
1B21-N095A,B	TS 3.3.3.1-1 (2.c.)	N/A
1B21-N095A	TS 3.3.5.1-1 (4.d.)	LFD-1-ECCS-21
1B21-N095B	TS 3.3.5.1-1 (5.d.)	LFD-1-ECCS-21
1B21-N095B	TS 3.3.5.1-1 (3.c.)	LFD-1-ECCS-14
1B21-N120A,B	TS LCO 3.3.4.2.b	LFD-1-RPT-04
1B21-N120A,B,C,D	TS 3.3.6.3-1 (1.)	LFD-1-LLS-01
1B21-N120A,B,C,D	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N122A,B	TS LCO 3.3.4.2.b	LFD-1-RPT-04

TABLE T10.1-1 (SHEET 3 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1B21-N122A,B,C,D	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N123A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N124A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N125A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N126A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N301A,B,C,D,E,F,G,H,J,K,L	TRM T3.3.3-1 (5.)	N/A
1B21-N301A,B,C,D,E,F,G,H,J,K,L	TS 3.3.6.3-1 (3.)	LFD-1-LLS-03
1B21-N302A,B,C,D,E,G,H,J,K,L	TRM T3.3.3-1 (5.)	N/A
1B21-N302A,B,C,D,E,F,G,H,J,K,L	TS 3.3.6.3-1 (3.)	LFD-1-LLS-03
1B21-N620A,B	TS LCO 3.3.4.2.b	LFD-1-RPT-04
1B21-N620A,B,C,D	TS 3.3.6.3-1 (1.)	LFD-1-LLS-01
1B21-N620A,B,C,D	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N621A,B,C,D	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N622A,B,C,D	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N623A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N624A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N625A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N626A,B,C,D	TS 3.3.6.1-1 (1.e.)	LFD-1-PCIS-05
1B21-N641B,C	TS 3.3.5.1-1 (2.d.)	LFD-1-ECCS-08
1B21-N642A,B	TS LCO 3.3.4.2.b	LFD-1-RPT-04
1B21-N643A,B	TS 3.3.6.3-1 (2.)	LFD-1-LLS-02
1B21-N643A,B	TS LCO 3.3.4.2.b	LFD-1-RPT-04
1B21-N678A,B,C,D	TS 3.3.1.1-1 (3.)	LFD-1-RPS-08
1B21-N680A,B,C,D	TS 3.3.1.1-1 (4.)	LFD-1-RPS-09
1B21-N680A,B,C,D	TS 3.3.6.1-1 (2.a.)	LFD-1-PCIS-07
1B21-N680A,B,C,D	TS 3.3.6.1-1 (6.b.)	LFD-1-PCIS-34
1B21-N681A,B,C,D	TS 3.3.6.1-1 (1.a.)	LFD-1-PCIS-01
1B21-N681A,B,C,D	TS 3.3.6.1-1 (5.d.)	LFD-1-PCIS-32
1B21-N681A,B,C,D	TS 3.3.6.2-1 (1.)	LFD-1-SCIS-01
1B21-N682A,B,C,D	TS 3.3.6.1-1 (5.d.)	LFD-1-PCIS-32
1B21-N682A,B,C,D	TS 3.3.6.2-1 (1.)	LFD-1-SCIS-01
1B21-N685A,B	TS 3.3.3.1-1 (2.a.)	N/A

TABLE T10.1-1 (SHEET 4 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1B21-N685A,B	TS 3.3.5.1-1 (2.e.)	LFD-1-ECCS-09
1B21-N686A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N686A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N687A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N687A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N688A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N688A,B,C,D	TS 3.3.6.1-1 (1.c.)	LFD-1-PCIS-03
1B21-N689A,B,C,D	TRM T3.3.7-1 (3.)	LFD-1-MCREC-04
1B21-N690A,B,C,D	TS 3.3.5.1-1 (1.c.)	LFD-1-ECCS-03
1B21-N690A,B,C,D	TS 3.3.5.1-1 (2.c.)	LFD-1-ECCS-07
1B21-N690A,D	TS 3.3.3.1-1 (1.)	N/A
1B21-N690B,C,E,F	TS 3.3.5.1-1 (2.d.)	LFD-1-ECCS-08
1B21-N691A,B,C,D	TRM T3.3.7-1 (1.)	LFD-1-MCREC-02
1B21-N691A,B,C,D	TS 3.3.3.1-1 (2.b.)	N/A
1B21-N691A,B,C,D	TS 3.3.5.1-1 (1.a.)	LFD-1-ECCS-01
1B21-N691A,B,C,D	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05
1B21-N691A,B,C,D	TS 3.3.5.1-1 (3.a.)	LFD-1-ECCS-12
1B21-N691A,C	TS 3.3.5.1-1 (4.a.)	LFD-1-ECCS-18
1B21-N691B,D	TS 3.3.5.1-1 (5.a.)	LFD-1-ECCS-18
1B21-N691A,B,C,D	TS 3.3.5.2-1 (1.)	LFD-1-RCIC-01
1B21-N691A,B,C,D	TS LCO 3.3.4.2.a	LFD-1-RPT-03
1B21-N692A,B,C,D	TS 3.3.5.1-1 (3.a.)	LFD-1-ECCS-12
1B21-N692A,B,C,D	TS 3.3.5.2-1 (1.)	LFD-1-RCIC-01
1B21-N693A	TS 3.3.5.2-1 (2.)	LFD-1-RCIC-02
1B21-N693A,B	TS 3.3.3.1-1 (2.c.)	N/A
1B21-N693B,D	TS 3.3.5.1-1 (3.c.)	LFD-1-ECCS-14
1B21-N694A,B,C,D	TS LCO 3.3.4.2.a.	LFD-1-RPT-03
1B21-N695A	TS 3.3.5.2-1 (2.)	LFD-1-RCIC-02
1B21-N695A,B	TS 3.3.3.1-1 (2.c.)	N/A
1B21-N695A	TS 3.3.5.1-1 (4.d.)	LFD-1-ECCS-21

TABLE T10.1-1 (SHEET 5 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1B21-N695B	TS 3.3.5.1-1 (5.d.)	LFD-1-ECCS-21
1B21-N695B	TS 3.3.5.1-1 (3.c.)	LFD-1-ECCS-14
1B21-R070	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1B21-R604A,B	TS 3.3.3.1-1 (2.b.)	N/A
1B21-R605	TS 3.3.3.1-1 (2.d.)	N/A
1B21-R623A, B	TS 3.3.3.1-1 (2.a.)	N/A
1B21-R623A,B	TS 3.3.3.1-1 (1.)	N/A
1B21-R623A,B	TS 3.3.3.1-1 (2.b.)	N/A
1B31-F023B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1B31-N014A,B,C,D	TRM 3.3.2-1 (3.a.)	LFD-1-CRB-17
1B31-N014A,B,C,D	TRM 3.3.2-1 (3.f.)	LFD-1-CRB-22
1B31-N014A,B,C,D	TS 3.3.1.1-1 (2.b.)	LFD-1-RPS-04
1B31-N024A,B,C,D	TRM 3.3.2-1 (3.a.)	LFD-1-CRB-17
1B31-N024A,B,C,D	TRM 3.3.2-1 (3.f.)	LFD-1-CRB-22
1B31-N024A,B,C,D	TS 3.3.1.1-1 (2.b.)	LFD-1-RPS-04
1B31-N079A,D	TS 3.3.6.1-1 (6.a.)	LFD-1-PCIS-33
1B31-N679A,D	TS 3.3.6.1-1 (6.a.)	LFD-1-PCIS-33
1C11-J600	TS 3.3.2.1-1 (2.)	LFD-1-CRB-07
1C11-J601	TS 3.3.2.1-1 (2.)	LFD-1-CRB-07
1C11-N013A,B,C,D	TS 3.3.1.1-1 (7.b.)	LFD-1-RPS-13
1C11-N013E	TRM T3.3.2-1 (4.)	LFD-1-CRB-23
1C11-N060A,B,C,D	TS 3.3.1.1-1 (7.a.)	LFD-1-RPS-12
1C11-N660A,B,C,D	TS 3.3.1.1-1 (7.a.)	LFD-1-RPS-12
1C32-K624A,B,C	TS LCO 3.3.2.2	LFD-1-RWLH-01
1C32-N004A,B,C	TS LCO 3.3.2.2	LFD-1-RWLH-01
1C32-R070	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A

TABLE T10.1-1 (SHEET 6 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1C41-S1	TS 3.3.6.1-1 (5.c.)	LFD-1-PCIS-31
1C51-K600A,B,C,D	TRM T3.3.2-1 (1.a.)	LFD-1-CRB-09
1C51-K600A,B,C,D	TRM T3.3.2-1 (1.b.)	LFD-1-CRB-10
1C51-K600A,B,C,D	TRM T3.3.2-1 (1.c.)	LFD-1-CRB-11
1C51-K600A,B,C,D	TRM T3.3.2-1 (1.d.)	LFD-1-CRB-12
1C51-K600A,B,C,D	TS 3.3.1.2-1 (1.)	N/A
1C51-K601A,B,C,D,E,F,G,H	TRM T3.3.2-1 (2.a.)	LFD-1-CRB-13
1C51-K601A,B,C,D,E,F,G,H	TRM T3.3.2-1 (2.b.)	LFD-1-CRB-14
1C51-K601A,B,C,D,E,F,G,H	TRM T3.3.2-1 (2.c.)	LFD-1-CRB-15
1C51-K601A,B,C,D,E,F,G,H	TRM T3.3.2-1 (2.d.)	LFD-1-CRB-16
1C51-K601A,B,C,D,E,F,G,H	TS 3.3.1.1-1 (1.a.)	LFD-1-RPS-01
1C51-K601A,B,C,D,E,F,G,H	TS 3.3.1.1-1 (1.b.)	LFD-1-RPS-02
1C51-K614A,B	TS 3.3.2.1-1 (1.a.)	LFD-1-CRB-01
1C51-K614A,B	TS 3.3.2.1-1 (1.b.)	LFD-1-CRB-02
1C51-K614A,B	TS 3.3.2.1-1 (1.c.)	LFD-1-CRB-03
1C51-K614A,B	TS 3.3.2.1-1 (1.d.)	LFD-1-CRB-04
1C51-K614A,B	TS 3.3.2.1-1 (1.e.)	LFD-1-CRB-05
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.a.)	LFD-1-CRB-17
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.b.)	LFD-1-CRB-18
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.c.)	LFD-1-CRB-19
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.d.)	LFD-1-CRB-20
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.e.)	LFD-1-CRB-21
1C51-K615A,B,C,D	TRM 3.3.2-1 (3.f.)	LFD-1-CRB-22
1C51-K615A,B,C,D	TS 3.3.1.1-1 (2.a.)	LFD-1-RPS-03
1C51-K615A,B,C,D	TS 3.3.1.1-1 (2.b.)	LFD-1-RPS-04
1C51-K615A,B,C,D	TS 3.3.1.1-1 (2.c.)	LFD-1-RPS-05
1C51-K615A,B,C,D	TS 3.3.1.1-1 (2.d.)	LFD-1-RPS-06
1C51-K616A,B,	TS 3.3.2.1-1 (1.a.)	LFD-1-CRB-01
1C51-K616A,B	TS 3.3.2.1-1 (1.b.)	LFD-1-CRB-02
1C51-K616A,B	TS 3.3.2.1-1 (1.c.)	LFD-1-CRB-03
1C51-K616A,B	TS 3.3.2.1-1 (1.d.)	LFD-1-CRB-04
1C51-K616A,B	TS 3.3.2.1-1 (1.e.)	LFD-1-CRB-05

TABLE T10.1-1 (SHEET 7 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.a.)	LFD-1-CRB-17
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.b.)	LFD-1-CRB-18
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.c.)	LFD-1-CRB-19
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.d.)	LFD-1-CRB-20
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.e.)	LFD-1-CRB-21
1C51-K617A,B,C,D	TRM 3.3.2-1 (3.f.)	LFD-1-CRB-22
1C51-K617A,B,C,D	TS 3.3.1.1-1 (2.e.)	LFD-1-RPS-07
1C71-K751A,B,C,D,E,F	TS LCO 3.3.8.2 (OVERVOLTAGE)	LFD-1-EPM-01
1C71-K752A,B,C,D,E,F	TS LCO 3.3.8.2 (UNDERVOLTAGE)	LFD-1-EPM-01
1C71-K753A,B,C,D,E,F	TS LCO 3.3.8.2 (UNDERFREQUENCY)	LFD-1-EPM-01
1C71-K756A,B,C,D,E,F	TS LCO 3.3.8.2 (OVERVOLTAGE TIME DELAY)	LFD-1-EPM-01
1C71-N003A,B,C,D	TS SR 3.3.1.1.11	LFD-1-RPS-18
1C71-N003A,B,C,D	TS SR 3.3.4.1.2	LFD-1-RPT-05
1C71-N005A,B,C,D	TS 3.3.1.1-1 (9.)	LFD-1-RPS-15
1C71-N005A,B,C,D	TS LCO 3.3.4.1.a.2	LFD-1-RPT-02
1C71-N006A,B,C,D	TS 3.3.1.1-1 (8.)	LFD-1-RPS-14
1C71-N050A,B,C,D	TS 3.3.1.1-1 (6.)	LFD-1-RPS-11
1C71-N050A,B,C,D	TS 3.3.6.1-1 (2.b.)	LFD-1-PCIS-08
1C71-N050A,B,C,D	TS 3.3.6.2-1 (2.)	LFD-1-SCIS-02
1C71-N650A,B,C,D	TS 3.3.1.1-1 (6.)	LFD-1-RPS-11
1C71-N650A,B,C,D	TS 3.3.6.1-1 (2.b.)	LFD-1-PCIS-08
1C71-N650A,B,C,D	TS 3.3.6.2-1 (2.)	LFD-1-SCIS-02
1C71-S1	TS 3.3.1.1-1 (10.)	LFD-1-RPS-16
1C71-S1	TS 3.3.2.1-1 (3.)	LFD-1-CRB-08
1C71-S3A,B	TS 3.3.1.1-1 (11.)	LFD-1-RPS-17
1C82-S1	TS LCO 3.3.3.2 for RPV Pressure Control	N/A
1C82-S23A	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1C82-S23B,C,D,E,F,G	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1C82-S24A,B,D,E,F,G	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1C82-S24C	TS LCO 3.3.3.2 for RPV Pressure Control	N/A
1C82-S2A,B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1C82-S2B	TS LCO 3.3.3.2 for Support Equipment	N/A
1D11-D042	ODCM 3-1 (3.b.)	N/A

TABLE T10.1-1 (SHEET 8 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1D11-D042	ODCM 3-1 (3.c.)	N/A
1D11-D051	ODCM 3-1 (1.b.)	N/A
1D11-D051	ODCM 3-1 (1.c.)	N/A
1D11-K002	ODCM 2-1 (1.)	LFD-1-PRM-01
1D11-K003	ODCM 2-1 (2.)	N/A
1D11-K600A,B	ODCM 3-1 (3.a.)	LFD-1-PRM-05
1D11-K601, K602	ODCM 3-1 (4.a.)	N/A
1D11-K603A,B,C,D	TRM TLCO 3.3.11	LFD-1-MSLR-01
1D11-K604	ODCM 2-1 (1.)	LFD-1-PRM-01
1D11-K605	ODCM 2-1 (2.)	N/A
1D11-K609A,B,C,D	TS 3.3.6.1-1 (2.d.)	LFD-1-PCIS-10
1D11-K609A,B,C,D	TS 3.3.6.2-1 (3.)	LFD-1-SCIS-03
1D11-K611A,B,C,D	TS 3.3.6.1-1 (2.e.)	LFD-1-PCIS-11
1D11-K611A,B,C,D	TS 3.3.6.2-1 (4.)	LFD-1-SCIS-04
1D11-K615A,B	TRM T3.3.8-1 (1.)	LFD-1-PRM-03
1D11-K615A,B	TRM T3.3.8-1 (2.)	LFD-1-PRM-04
1D11-K619A,B	ODCM 3-1 (1.a.)	LFD-1-PRM-02
1D11-K619A,B	ODCM 3-1 (1.b.)	N/A
1D11-K619A,B	ODCM 3-1 (1.c.)	N/A
1D11-K619A,B	ODCM 3-1 (2.b.)	N/A
1D11-K621A,B	TS 3.3.3.1-1 (5.)	N/A
1D11-K621A,B	TS 3.3.6.1-1 (2.c.)	LFD-1-PCIS-09
1D11-K622A,B,C,D	TRM T3.3.3-1 (4.)	N/A
1D11-K630	TS LCO 3.4.5.b.	N/A
1D11-K751A,B	TRM T3.3.8-1 (2.)	LFD-1-PRM-04
1D11-K752A,B,	ODCM 3-1 (3.a.)	LFD-1-PRM-05
1D11-N003A,B	TS 3.3.3.1-1 (5.)	N/A
1D11-N003A,B	TS 3.3.6.1-1 (2.c.)	LFD-1-PCIS-09
1D11-N006A,B,C,D	TRM TLCO 3.3.11	LFD-1-MSLR-01
1D11-N007	ODCM 2-1 (1.)	LFD-1-PRM-01
1D11-N008	ODCM 2-1 (2.)	N/A

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1D11-N010A,B,C,D	TS 3.3.6.1-1 (2.d.)	LFD-1-PCIS-10
1D11-N010A,B,C,D	TS 3.3.6.2-1 (3.)	LFD-1-SCIS-03
1D11-N012A,B,C,D	TS 3.3.6.1-1 (2.e.)	LFD-1-PCIS-11
1D11-N012A,B,C,D	TS 3.3.6.2-1 (4.)	LFD-1-SCIS-04
1D11-N020A,B	ODCM 3-1 (1.a.)	LFD-1-PRM-02
1D11-N025A,B	ODCM 3-1 (3.d.)	N/A
1D11-N026A,B	ODCM 3-1 (3.d.)	N/A
1D11-N026A,B	U2 ODCM 3-1 (3.d.)	N/A
1D11-N066A,B	TRM T3.3.8-1 (1.)	LFD-1-PRM-03
1D11-N066A,B	TRM T3.3.8-1 (2.)	LFD-1-PRM-04
1D11-N071	ODCM 3-1 (3.a.)	LFD-1-PRM-05
1D11-N072	ODCM 3-1 (3.a.)	LFD-1-PRM-05
1D11-N619A,B	ODCM 3-1 (1.a.)	N/A
1D11-N759	ODCM 3-1 (3.e.)	N/A
1D11-N760	ODCM 3-1 (1.e.)	N/A
1D11-N761	ODCM 3-1 (2.d.)	N/A
1D11-N762	ODCM 3-1 (2.d.)	N/A
1D11-P002	ODCM 3-1 (1.e.)	N/A
1D11-P003A,B	ODCM 3-1 (2.b.)	N/A
1D11-P003A,B	ODCM 3-1 (2.c.)	N/A
1D11-P003A,B	ODCM 3-1 (2.d.)	N/A
1D11-P005	TRM T3.3.3-1 (7.)	N/A
1D11-P006	TRM T3.3.3-1 (6.)	N/A
1D11-P007	TRM T3.3.3-1 (6.)	N/A
1D11-P601	TRM T3.3.3-1 (7.)	N/A
1D11-R001	ODCM 2-1 (1)	N/A
1D11-R013	ODCM 3-1 (3.e.)	N/A
1D11-R013	U2 ODCM 3-1 (3.e.)	N/A
1D11-R014	ODCM 3-1 (1.e.)	N/A
1D11-R015	ODCM 3-1 (2.d.)	N/A
1D11-R016	ODCM 3-1 (2.d.)	N/A
1D11-R619	ODCM 3-1 (1.a.)	N/A
1D11-R622A,B	TRM T3.3.3-1 (4.)	N/A

MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1D11-R625	ODCM 3-1 (3.d.)	N/A
1D11-R625	U2 ODCM 3-1 (3.d.)	N/A
1D11-R631	TRM T3.3.3-1 (6.)	N/A
1D11-R631	TRM T3.3.3-1 (7.)	N/A
1D11-R631	U2 TRM T3.3.3-1 (4.)	N/A
1D11-R763A,B	ODCM 3-1 (2.a.)	N/A
1D11-R764A,B	ODCM 3-1 (2.a.)	N/A
1D21-K002B,D	TRM T3.3.7-1 (4.)	LFD-1-MCREC-05
1D21-N002B,D	TRM T3.3.7-1 (4.)	LFD-1-MCREC-05
1E11-C001B,D	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-C002B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F004B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F006B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F007B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F008	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F009	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F010	TRM T3.3.12-1 (1.)	N/A
1E11-F015B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F017B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F024B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F028B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-F048B	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-K125A,B,	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05
1E11-K125A,B	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-K125A,B	TS 3.3.5.1-1 (2.f.)	LFD-1-ECCS-10
1E11-K126	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05
1E11-K126	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-K126	TS 3.3.5.1-1 (2.f.)	LFD-1-ECCS-10
1E11-K70A,B	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05
1E11-K70A,B	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-K70A,B	TS 3.3.5.1-1 (2.f.)	LFD-1-ECCS-10
1E11-K75A,B	TS 3.3.5.1-1 (2.a.)	LFD-1-ECCS-05

TABLE T10.1-1 (SHEET 11 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1E11-K75A,B	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-K75A,B	TS 3.3.5.1-1 (2.f.)	LFD-1-ECCS-10
1E11-K81A,B	TRM T3.3.12-1 (1.)	N/A
1E11-N007A,B	TS 3.3.3.1-1 (12.)	N/A
1E11-N055A,C	TS 3.3.5.1-1 (4.f.)	LFD-1-ECCS-23
1E11-N055B,D	TS 3.3.5.1-1 (5.f.)	LFD-1-ECCS-23
1E11-N056A,C	TS 3.3.5.1-1 (4.f.)	LFD-1-ECCS-23
1E11-N056B,D	TS 3.3.5.1-1 (5.f.)	LFD-1-ECCS-23
1E11-N082A,B	TS 3.3.5.1-1 (2.g.)	LFD-1-ECCS-11
1E11-N094A,B	TS 3.3.6.1-1 (4.d.)	LFD-1-PCIS-24
1E11-N094A,B,C,D	TRM T3.3.7-1 (2.)	LFD-1-MCREC-03
1E11-N094A,B,C,D	TS 3.3.5.1-1 (1.b.)	LFD-1-ECCS-02
1E11-N094A,B,C,D	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-N094A,B,C,D	TS 3.3.5.1-1 (3.b.)	LFD-1-ECCS-13
1E11-N094A,C	TS 3.3.5.1-1 (4.b.)	LFD-1-ECCS-19
1E11-N094B,D	TS 3.3.5.1-1 (5.b.)	LFD-1-ECCS-19
1E11-N094C,D	TS 3.3.6.1-1 (3.d.)	LFD-1-PCIS-15
1E11-N655A,C	TS 3.3.5.1-1 (4.f.)	LFD-1-ECCS-23
1E11-N655B,D	TS 3.3.5.1-1 (5.f.)	LFD-1-ECCS-23
1E11-N656A,C	TS 3.3.5.1-1 (4.f.)	LFD-1-ECCS-23
1E11-N656B,D	TS 3.3.5.1-1 (5.f.)	LFD-1-ECCS-23
1E11-N682A,B	TS 3.3.5.1-1 (2.g.)	LFD-1-ECCS-11
1E11-N694A,B	TS 3.3.6.1-1 (4.d.)	LFD-1-PCIS-24
1E11-N694A,B,C,D	TRM T3.3.7-1 (2.)	LFD-1-MCREC-03
1E11-N694A,B,C,D	TS 3.3.5.1-1 (1.b.)	LFD-1-ECCS-02
1E11-N694A,B,C,D	TS 3.3.5.1-1 (2.b.)	LFD-1-ECCS-06
1E11-N694A,B,C,D	TS 3.3.5.1-1 (3.b.)	LFD-1-ECCS-13
1E11-N694A,C	TS 3.3.5.1-1 (4.b.)	LFD-1-ECCS-19
1E11-N694B,D	TS 3.3.5.1-1 (5.b.)	LFD-1-ECCS-19
1E11-N694C,D	TS 3.3.6.1-1 (3.d.)	LFD-1-PCIS-15
1E11-R070	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1E11-R071	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A

TABLE T10.1-1 (SHEET 12 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1E11-R602A,B	TS 3.3.3.1-1 (12.)	N/A
1E21-N051A,B	TS 3.3.5.1-1 (1.d.)	LFD-1-ECCS-04
1E21-N052A	TS 3.3.5.1-1 (4.e.)	LFD-1-ECCS-22
1E21-N052B	TS 3.3.5.1-1 (5.e.)	LFD-1-ECCS-22
1E21-N055A	TS 3.3.5.1-1 (4.e.)	LFD-1-ECCS-22
1E21-N055B	TS 3.3.5.1-1 (5.e.)	LFD-1-ECCS-22
1E21-N651A,B	TS 3.3.5.1-1 (1.d.)	LFD-1-ECCS-04
1E21-N652A	TS 3.3.5.1-1 (4.e.)	LFD-1-ECCS-22
1E21-N652B	TS 3.3.5.1-1 (5.e.)	LFD-1-ECCS-22
1E21-N655A	TS 3.3.5.1-1 (4.e.)	LFD-1-ECCS-22
1E21-N655B	TS 3.3.5.1-1 (5.e.)	LFD-1-ECCS-22
1E41-N002	TS 3.3.5.1-1 (3.d.)	LFD-1-ECCS-15
1E41-N003	TS 3.3.5.1-1 (3.d.)	LFD-1-ECCS-15
1E41-N051	TS 3.3.5.1-1 (3.f.)	LFD-1-ECCS-17
1E41-N053	TRM T3.3.5-1 (3.)	LFD-1-ECCS-26
1E41-N055A,B,C,D	TS 3.3.6.1-1 (3.c.)	LFD-1-PCIS-14
1E41-N056B,D	TRM T3.3.5-1 (2.)	LFD-1-ECCS-25
1E41-N057A,B	TS 3.3.6.1-1 (3.a.)	LFD-1-PCIS-12
1E41-N058A,B,C,D	TS 3.3.6.1-1 (3.b.)	LFD-1-PCIS-13
1E41-N058A,B,C,D	TS 3.3.6.1-1 (3.d.)	LFD-1-PCIS-15
1E41-N062B,D	TS 3.3.5.1-1 (3.e.)	LFD-1-ECCS-16
1E41-N070A,B	TS 3.3.6.1-1 (3.i.)	LFD-1-PCIS-20
1E41-N071A,B	TS 3.3.6.1-1 (3.e.)	LFD-1-PCIS-16
1E41-N651	TS 3.3.5.1-1 (3.f.)	LFD-1-ECCS-17
1E41-N653	TRM T3.3.5-1 (3.)	LFD-1-ECCS-26
1E41-N655A,B,C,D	TS 3.3.6.1-1 (3.c.)	LFD-1-PCIS-14
1E41-N656B,D	TRM T3.3.5-1 (2.)	LFD-1-ECCS-25
1E41-N657A,B	TS 3.3.6.1-1 (3.a.)	LFD-1-PCIS-12
1E41-N658A,B,C,D	TS 3.3.6.1-1 (3.b.)	LFD-1-PCIS-13
1E41-N658A,B,C,D	TS 3.3.6.1-1 (3.d.)	LFD-1-PCIS-15
1E41-N662B,D	TS 3.3.5.1-1 (3.e.)	LFD-1-ECCS-16
1E41-N670A,B	TS 3.3.6.1-1 (3.i.)	LFD-1-PCIS-20
1E41-N671A,B	TS 3.3.6.1-1 (3.e.)	LFD-1-PCIS-16

TABLE T10.1-1 (SHEET 13 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1E51-C002	TRM T3.3.5-1 (4.b.)	N/A
1E51-C002-1	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-C002-2	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F007	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F008	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F013	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F045	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F046	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-F524	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1E51-M602A,B	TS 3.3.6.1-1 (4.e.)	LFD-1-PCIS-25
1E51-M602A,B	TS 3.3.6.1-1 (4.f.)	LFD-1-PCIS-25
1E51-M602A,B	TS 3.3.6.1-1 (4.f.)	LFD-1-PCIS-27
1E51-M602A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-M603A,B	TS 3.3.6.1-1 (3.f.)	LFD-1-PCIS-17
1E51-M603A,B	TS 3.3.6.1-1 (3.g.)	LFD-1-PCIS-17
1E51-M603A,B	TS 3.3.6.1-1 (3.g.)	LFD-1-PCIS-19
1E51-M603A,B	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19
1E51-N051	TRM T3.3.5-1 (7.a.)	LFD-1-ECCS-29
1E51-N051	TRM T3.3.5-1 (7.b.)	LFD-1-ECCS-29
1E51-N056A,C	TRM T3.3.5-1 (5.)	LFD-1-ECCS-27
1E51-N057A,B	TS 3.3.6.1-1 (4.a.)	LFD-1-PCIS-21
1E51-N058A,B,C,D	TS 3.3.6.1-1 (4.b.)	LFD-1-PCIS-22
1E51-N058A,B,C,D	TS 3.3.6.1-1 (4.d.)	LFD-1-PCIS-24
1E51-N060	TS 3.3.5.2-1 (3.)	LFD-1-RCIC-03
1E51-N061	TS 3.3.5.2-1 (3.)	LFD-1-RCIC-03
1E51-N061A,B	TS 3.3.6.1-1 (4.h.)	LFD-1-PCIS-28
1E51-N062A,B	TS 3.3.5.2-1 (4.)	LFD-1-RCIC-04
1E51-N063A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-N063C,D	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19
1E51-N064A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-N064C,D	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19

TABLE T10.1-1 (SHEET 14 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1E51-N066A,B	TS 3.3.6.1-1 (4.e.)	LFD-1-PCIS-25
1E51-N066C,D	TS 3.3.6.1-1 (3.f.)	LFD-1-PCIS-17
1E51-N083	TRM T3.3.5-1 (6.)	LFD-1-ECCS-28
1E51-N085A,B,C,D	TS 3.3.6.1-1 (4.c.)	LFD-1-PCIS-23
1E51-N651	TRM T3.3.5-1 (7.a.)	LFD-1-ECCS-29
1E51-N651	TRM T3.3.5-1 (7.b.)	LFD-1-ECCS-29
1E51-N656A,C	TRM T3.3.5-1 (5.)	LFD-1-ECCS-27
1E51-N657A,B	TS 3.3.6.1-1 (4.a.)	LFD-1-PCIS-21
1E51-N658A,B,C,D	TS 3.3.6.1-1 (4.b.)	LFD-1-PCIS-22
1E51-N658A,B,C,D	TS 3.3.6.1-1 (4.d.)	LFD-1-PCIS-24
1E51-N661A,B	TS 3.3.6.1-1 (4.b.)	LFD-1-PCIS-28
1E51-N663A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-N663C,D	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19
1E51-N664A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-N664C,D	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19
1E51-N665A,B	TS 3.3.6.1-1 (4.g.)	LFD-1-PCIS-27
1E51-N665C,D	TS 3.3.6.1-1 (3.h.)	LFD-1-PCIS-19
1E51-N666A,B	TS 3.3.6.1-1 (4.e.)	LFD-1-PCIS-25
1E51-N666C,D	TS 3.3.6.1-1 (3.f.)	LFD-1-PCIS-17
1E51-N683	TRM T3.3.5-1 (6.)	LFD-1-ECCS-28
1E51-N685A,B,C,D	TS 3.3.6.1-1 (4.c.)	LFD-1-PCIS-23
1E51-R070	TS LCO 3.3.3.2 for RCIC for RPV Make-up	N/A
1G11-K023	ODCM 2-1 (3.a.)	N/A
1G11-K600	TS LCO 3.4.5.a	N/A
1G11-K601	TS LCO 3.4.5.a	N/A
1G11-M600	TS LCO 3.4.5.a	N/A
1G11-M601	TS LCO 3.4.5.a	N/A
1G11-N001	TS LCO 3.4.5.a	N/A
1G11-N002	TS LCO 3.4.5.a	N/A
1G11-N003	TS LCO 3.4.5.a	N/A
1G11-N074A,B	TS LCO 3.4.5.a	N/A
1G11-N079	ODCM 2-1 (1.)	LFD-1-PRM-01

TABLE T10.1-1 (SHEET 15 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1G11-R037	ODCM 2-1(3.a.)	N/A
1G11-R045	ODCM 2-1 (3.b.)	N/A
1G11-R345	ODCM 2-1 (3.a.)	N/A
1G11-R600	TS LCO 3.4.5.a	N/A
1G31-N061A,D,E,H,J,M	TS 3.3.6.1-1 (5.b.)	LFD-1-PCIS-30
1G31-N062A,D,E,H,J,M	TS 3.3.6.1-1 (5.a.)	LFD-1-PCIS-29
1G31-N062A,D,E,H,J,M	TS 3.3.6.1-1 (5.b.)	LFD-1-PCIS-30
1G31-N661A,D,E,H,J,M	TS 3.3.6.1-1 (5.b.)	LFD-1-PCIS-30
1G31-N662A,D,E,H,J,M	TS 3.3.6.1-1 (5.a.)	LFD-1-PCIS-29
1G31-N662A,D,E,H,J,M	TS 3.3.6.1-1 (5.b.)	LFD-1-PCIS-30
1G31-N663A,D,E,H,J,M	TS 3.3.6.1-1 (5.b.)	LFD-1-PCIS-30
1H11-P603	TRM T3.3.3-1 (3.)	N/A
1H21-P4103	TSR 3.3.10.4.a	N/A
1H21-P4103	TSR 3.3.10.7.a	N/A
1H21-P4104	TSR 3.3.10.4.b	N/A
1H21-P4104	TSR 3.3.10.7.b	N/A
1L51-N005	U2 TRM T3.3.6-1 (1.d.)	N/A
1L51-N006	U2 TRM T3.3.6-1 (2.b.)	N/A
1L51-N007	U2 TRM T3.3.6-1 (2.a.)	N/A
1L51-N008	U2 TRM T3.3.6-1 (2.c.)	N/A
1L51-N105	U2 TRM T3.3.6-1 (4.a.)	N/A
1N11-N042A,B,C	TRM TLCO 3.3.13	N/A
1N30-F005	TSR 3.3.10.2 a	N/A
1N30-F005	TSR 3.3.10.6	N/A
1N30-F006	TSR 3.3.10.2 a	N/A
1N30-F006	TSR 3.3.10.6	N/A
1N30-F007	TSR 3.3.10.2 a	N/A
1N30-F007	TSR 3.3.10.6	N/A
1N30-F008	TSR 3.3.10.2 a	N/A
1N30-F008	TSR 3.3.10.6	N/A
1N30-F009	TSR 3.3.10.3	N/A
1N30-F009	TSR 3.3.10.6	N/A

TABLE T10.1-1 (SHEET 16 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1N30-F010	TSR 3.3.10.3	N/A
1N30-F010	TSR 3.3.10.6	N/A
1N30-F011	TSR 3.3.10.3	N/A
1N30-F011	TSR 3.3.10.6	N/A
1N30-F012	TSR 3.3.10.3	N/A
1N30-F012	TSR 3.3.10.6	N/A
1N30-F016	TSR 3.3.10.2 b	N/A
1N30-F016	TSR 3.3.10.6	N/A
1N30-F017	TSR 3.3.10. 2 b	N/A
1N30-F017	TSR 3.3.10.6	N/A
1N30-F018	TSR 3.3.10. 2 b	N/A
1N30-F018	TSR 3.3.10.6	N/A
1N30-F019	TSR 3.3.10. 2 b	N/A
1N30-F019	TSR 3.3.10.6	N/A
1N30-F012	TSR 3.3.10.3	N/A
1N30-F012	TSR 3.3.10.6	N/A
1N30-F016	TSR 3.3.10.2 b	N/A
1N30-F016	TSR 3.3.10.6	N/A
1N30-F017	TSR 3.3.10. 2 b	N/A
1N30-F017	TSR 3.3.10.6	N/A
1N30-F018	TSR 3.3.10. 2 b	N/A
1N30-F019	TSR 3.3.10.6	N/A
1N32-F4501A	TSR 3.3.10.1	N/A

TABLE T10.1-1 (SHEET 17 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1N32-F4501A	TSR 3.3.10.5	N/A
1N32-F4501B	TSR 3.3.10.1	N/A
1N32-F4501B	TSR 3.3.10.5	N/A
1N32-F4502A	TSR 3.3.10.1	N/A
1N32-F4502A	TSR 3.3.10.5	N/A
1N32-F4502B	TSR 3.3.10.1	N/A
1N32-F4502B	TSR 3.3.10.5	N/A
1N32-F4503A	TSR 3.3.10.1	N/A
1N32-F4503A	TSR 3.3.10.5	N/A
1N32-F4503B	TSR 3.3.10.1	N/A
1N32-F4503B	TSR 3.3.10.5	N/A
1N32-F4521A	TSR 3.3.10.1	N/A
1N32-F4521A	TSR 3.3.10.5	N/A
1N32-F4521B	TSR 3.3.10.1	N/A
1N32-F4521B	TSR 3.3.10.5	N/A
1N32-F4522A	TSR 3.3.10.1	N/A
1N32-F4522A	TSR 3.3.10.5	N/A
1N32-F4522B	TSR 3.3.10.1	N/A
1N32-F4522B	TSR 3.3.10.5	N/A
1N32-F4523A	TSR 3.3.10.1	N/A
1N32-F4523A	TSR 3.3.10.5	N/A
1N32-F4523B	TSR 3.3.10.1	N/A
1N32-F4523B	TSR 3.3.10.5	N/A
1N32-F4531A	TSR 3.3.10.5	N/A
1N32-F4531B	TSR 3.3.10.5	N/A
1N32-F4532A	TSR 3.3.10.5	N/A
1N32-F4532B	TSR 3.3.10.5	N/A
1N32-F4533A	TSR 3.3.10.5	N/A
1N32-F4533B	TSR 3.3.10.5	N/A
1N32-F4541A	TSR 3.3.10.5	N/A
1N32-F4541B	TSR 3.3.10.5	N/A
1N32-F4542A	TSR 3.3.10.5	N/A

TABLE T10.1-1 (SHEET 18 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1N32-F4542B	TSR 3.3.10.5	N/A
1N32-F4543A	TSR 3.3.10.5	N/A
1N32-F4543B	TSR 3.3.10.5	N/A
1N62-N009A,B	TRM TLCO 3.3.9	N/A
1N62-R603	TRM TLCO 3.3.9	N/A
1P33-P001A,B	T 3.3.3-1 (8.) (9.)	N/A
1P33-R601A,B	T 3.3.3-1 (8.) (9.)	N/A
1P33-R603A,B	T 3.3.3-1 (8.)	
1P33-R604A,B	T 3.3.3-1 (9.)	N/A
1P41-C001B	TS LCO 3.3.3.2 for Support Equipment	N/A
1P41-R578	ODCM 2-1 (4.)	N/A
1P41-R580	ODCM 2-1 (4.)	N/A
1P42-R002A,B	ODCM 2-1 (4.)	N/A
1P42-R200A,B	ODCM 2-1 (4.)	N/A
1P62-R501	ODCM 2-1 (3.b.)	N/A
1P62-R504	ODCM 2-1 (3.b.)	N/A
1P62-R505	ODCM 2-1 (3.b.)	N/A
1R11-R676	TS 3.3.3.1-1 (11.a.) for “1A” DG	N/A
1R11-R677	TS 3.3.3.1-1 (11.a.) for “1B” DG	N/A
1R11-R678	TS 3.3.3.1-1 (11.a.) for “1C” DG	N/A
1R43-R-601A	TS 3.3.3.1-1 (11.c.) for “1A” DG	N/A
1R43-R601B	TS 3.3.3.1-1 (11.c.) for “1B” DG	N/A
1R43-R601C	TS 3.3.3.1-1 (11.c.) for “1C” DG	N/A
1R43-R602A	TS 3.3.3.1-1 (11.c.) for “1A” DG	N/A
1R43-R602B	TS 3.3.3.1-1 (11.c.) for “1B” DG	N/A
1R43-R602C	TS 3.3.3.1-1 (11.c.) for “1C” DG	N/A
1R43-R615A	TS 3.3.3.1-1 (11.d.) for “1A” DG	N/A
1R43-R615B	TS 3.3.3.1-1 (11.d.) for “1B” DG	N/A
1R43-R615C	TS 3.3.3.1-1 (11.d.) for “1C” DG	N/A
1R43-R653	TS 3.3.3.1-1 (11.b.) for “1A” DG	N/A
1R43-R654	TS 3.3.3.1-1 (11.b.) for “1B” DG	N/A
1R43-R655	TS 3.3.3.1-1 (11.b.) for “1C” DG	N/A

TABLE T10.1-1 (SHEET 19 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1R43-R766A	TS LCO 3.3.3.2 for “1A” DG	N/A
1R43-R766B	TS LCO 3.3.3.2 for “1B” DG	N/A
1R43-R766B	U2 TS LCO 3.3.3.2 for “1B” DG	N/A
1R43-R766C	TS LCO 3.3.3.2 for “1C” DG	N/A
1R43-R769A	TS LCO 3.3.3.2 for “1A” DG	N/A
1R43-R769B	TS LCO 3.3.3.2 for “1B” DG	N/A
1R43-R769B	U2 TS LCO 3.3.3.2 for “1B” DG	N/A
1R43-R769C	TS LCO 3.3.3.2 for “1C” DG	N/A
1S32-K206-1,2	TS 3.3.8.1-1 (3.a.)	LFD-1-LOP-03
1S32-K206-3,6	TS 3.3.8.1-1 (1.a.)	LFD-1-LOP-01
1S32-K206-3,6	TS 3.3.8.1-1 (1.b.)	LFD-1-LOP-01
1S32-K206-4,5	TS 3.3.8.1-1 (2.a.)	LFD-1-LOP-02
1S32-K206-4,5	TS 3.3.8.1-1 (2.b.)	LFD-1-LOP-02
1S32-K207-1,2	TS 3.3.8.1-1 (3.b.)	LFD-1-LOP-03
1S32-K220-1,2	TS 3.3.8.1-1 (3.a.)	LFD-1-LOP-03
1S32-K220-3,6	TS 3.3.8.1-1 (1.a.)	LFD-1-LOP-01
1S32-K220-3,6	TS 3.3.8.1-1 (1.b.)	LFD-1-LOP-01
1S32-K220-4,5	TS 3.3.8.1-1 (2.a.)	LFD-1-LOP-02
1S32-K220-4,5	TS 3.3.8.1-1 (2.b.)	LFD-1-LOP-02
1S32-K221-1,2	TS 3.3.8.1-1 (3.b.)	LFD-1-LOP-03
1S32-K227-1,2	TS 3.3.8.1-1 (3.a.)	LFD-1-LOP-03
1S32-K227-3,6	TS 3.3.8.1-1 (1.a.)	LFD-1-LOP-01
1S32-K227-3,6	TS 3.3.8.1-1 (1.b.)	LFD-1-LOP-01
1S32-K227-4,5	TS 3.3.8.1-1 (2.a.)	LFD-1-LOP-02
1S32-K227-4,5	TS 3.3.8.1-1 (2.b.)	LFD-1-LOP-02
1S32-K228-1,2	TS 3.3.8.1-1 (3.b.)	LFD-1-LOP-03
1T41-K009	ODCM 3-1 (1.d.)	N/A
1T41-N040A,B	ODCM 3-1 (1.d.)	N/A
1T41-N041A,B	ODCM 3-1 (1.d.)	N/A
1T41-R621	ODCM 3-1 (1.d.)	N/A
1T47-N001A,B,J,K	TS 3.3.3.1-1 (10.)	N/A
1T47-N003	TS 3.3.3.1-1 (10.)	N/A

TABLE T10.1-1 (SHEET 20 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1T47-N009	TS 3.3.3.1-1 (10.)	N/A
1T47-R611	TS 3.3.3.1-1 (10.)	N/A
1T47-R611	TS 3.3.3.1-1 (9.)	N/A
1T47-R612	TS 3.3.3.1-1 (10.)	N/A
1T47-R612	TS 3.3.3.1-1 (9.)	N/A
1T48-N003A,B	TS 3.3.3.1-1 (4.c.)	N/A
1T48-N008A,B	TRM T3.3.3-1 (2.)	N/A
1T48-N009A,B,C,D	TS 3.3.3.1-1 (9.)	N/A
1T48-N010A,B	TS 3.3.3.1-1 (3.a.)	N/A
1T48-N020A,B	TS 3.3.3.1-1 (4.b.)	N/A
1T48-N021A,B	TS 3.3.3.1-1 (3.b.)	N/A
1T48-N023A,B	TS 3.3.3.1-1 (4.a.)	N/A
1T48-N301A	TS 3.3.3.1-1 (9.)	N/A
1T48-N302A	TS 3.3.3.1-1 (9.)	N/A
1T48-N303A	TS 3.3.3.1-1 (9.)	N/A
1T48-N304A	TS 3.3.3.1-1 (9.)	N/A
1T48-N305A	TS 3.3.3.1-1 (9.)	N/A
1T48-N306A	TS 3.3.3.1-1 (9.)	N/A
1T48-N307A	TS 3.3.3.1-1 (9.)	N/A
1T48-N308A	TS 3.3.3.1-1 (9.)	N/A
1T48-N309A	TS 3.3.3.1-1 (9.)	N/A
1T48-N310A	TS 3.3.3.1-1 (9.)	N/A
1T48-N311A	TS 3.3.3.1-1 (9.)	N/A
1T48-R070	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1T48-R072	TS LCO 3.3.3.2 for RHR (SDC and SPC)	N/A
1T48-R601A,B	TS 3.3.3.1-1 (4.c.)	N/A
1T48-R601A,B	TS 3.3.3.1-1 (5.)	N/A
1T48-R607A,B	TS 3.3.3.1-1 (3.b)	N/A
1T48-R607A,B	TS 3.3.3.1-1 (4.b.)	N/A
1T48-R608	TRM T3.3.3-1 (2.)	N/A
1T48-R608	TS 3.3.3.1-1 (4.a.)	N/A

TABLE T10.1-1 (SHEET 21 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
1T48-R609	TRM T3.3.3-1 (2.)	N/A
1T48-R609	TS 3.3.3.1-1 (4.a.)	N/A
1T48-R622A,B	TS 3.3.3.1-1 (3.a.)	N/A
1T48-R647	TS 3.3.3.1-1 (9.)	N/A
1U61-N101A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N102A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N103A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N104A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N105A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N106A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N107A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N108A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N109A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N110A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N111A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N112A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N113A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N114A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N115A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1U61-N116A,B,C,D	TS 3.3.6.1-1 (1.f.)	LFD-1-PCIS-06
1Y22-N008A (Auto Sampler)	ODCM 2-1 (5.a)	N/A
1Y22-K101	ODCM 2-1 (5.b)	N/A
1Z41-N015A,B	TRM T3.3.7-1 (5.)	LFD-1-MCREC-06
1Z41-N015A,B	TS LCO 3.3.7.1	LFD-1-MCREC-01
1Z41-N015A,B	U2 TRM T3.3.7-1 (5.)	LFD-2-MCREC-06
1Z41-N015A,B	U2 TS 3.3.7.1	LFD-2-MCREC-01
1Z41-R615A,B	TRM T3.3.7-1 (5.)	LFD-1-MCREC-06
1Z41-R615A,B	TS LCO 3.3.7.1	LFD-1-MCREC-01
1Z41-R615A,B	U2 TRM T3.3.7-1 (5.)	LFD-2-MCREC-06
1Z41-R615A,B	U2 TS 3.3.7.1	LFD-2-MCREC-01
2R43-M01	TS LCO 3.3.3.2 for “1B” DG	N/A
2R43-M01	U2 TS LCO 3.3.3.2 for “1B” DG	N/A

TABLE T10.1-1 (SHEET 22 OF 22)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY MPL

MPL NUMBER(S)	SPECIFICATION	LOSS OF FUNCTION DIAGRAMS
SEE TRM TABLE T10.3-1	TS 3.3.3.1-1 (6.)	N/A
TSV-1	TS LCO 3.3.4.1.a.1	LFD-1-RPT-01
TSV-2	TS LCO 3.3.4.1.a.1	LFD-1-RPT-01
TSV-3	TS LCO 3.3.4.1.a.1	LFD-1-RPT-01
TSV-4	TS LCO 3.3.4.1.a.1	LFD-1-RPT-01

TABLE T10.2-1 (SHEET 1 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
ODCM 2-1 (1.)	1D11-K002	LFD-1-PRM-01
ODCM 2-1 (1.)	1D11-K604	LFD-1-PRM-01
ODCM 2-1 (1.)	1D11-N007	LFD-1-PRM-01
ODCM 2-1 (1.)	1D11-R001	N/A
ODCM 2-1 (1.)	1G11-N079	LFD-1-PRM-01
ODCM 2-1 (2.)	1D11-K003	N/A
ODCM 2-1 (2.)	1D11-K605	N/A
ODCM 2-1 (2.)	1D11-N008	N/A
ODCM 2-1 (3.a.)	1G11-K023	N/A
ODCM 2-1 (3.a.)	1G11-R037	N/A
ODCM 2-1 (3.a.)	1G11-R345	N/A
ODCM 2-1 (3.b.)	1G11-R045	N/A
ODCM 2-1 (3.b.)	1P62-R501	N/A
ODCM 2-1 (3.b.)	1P62-R504	N/A
ODCM 2-1 (3.b.)	1P62-R505	N/A
ODCM 2-1 (4.)	1P41-R578	N/A
ODCM 2-1 (4.)	1P41-R580	N/A
ODCM 2-1 (4.)	1P42-R002A,B	N/A
ODCM 2-1 (4.)	1P42-R00A,B	N/A
ODCM 2-1 (5.a)	1Y22-N008A (Auto Sampler)	N/A
ODCM 2-1 (5.b)	1Y22-K101	N/A
ODCM 3-1 (1.a.)	1D11-K619A,B	LFD-1-PRM-02
ODCM 3-1 (1.a.)	1D11-N020A,B	LFD-1-PRM-02
ODCM 3-1 (1.a.)	1D11-N619A,B	N/A
ODCM 3-1 (1.a)	1D11-R619	N/A
ODCM 3-1 (1.b.)	1D11-D051	N/A
ODCM 3-1 (1.b.)	1D11-K619A,B	N/A
ODCM 3-1 (1.c.)	1D11-D051	N/A
ODCM 3-1 (1.c.)	1D11-K619A,B	N/A
ODCM 3-1 (1.d.)	1T41-K009	N/A
ODCM 3-1 (1.d.)	1T41-N040A,B	N/A
ODCM 3-1 (1.d.)	1T41-N041A,B	N/A
ODCM 3-1 (1.d.)	1T41-R621	N/A
ODCM 3-1 (1.e.)	1D11-N760	N/A

TABLE T10.2-1 (SHEET 2 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
ODCM 3-1 (1.e.)	1D11-P002	N/A
ODCM 3-1 (1.e.)	1D11-R014	N/A
ODCM 3-1 (2.a.)	1D11-R763A,B	N/A
ODCM 3-1 (2.a.)	1D11-R764A,B	N/A
ODCM 3-1 (2.b.)	1D11-K619A,B	N/A
ODCM 3-1 (2.b.)	1D11-P003A,B	N/A
ODCM 3-1 (2.c.)	1D11-P003A,B	N/A
ODCM 3-1 (2.d.)	1D11-N761	N/A
ODCM 3-1 (2.d.)	1D11-N762	N/A
ODCM 3-1 (2.d.)	1D11-P003A,B	N/A
ODCM 3-1 (2.d.)	1D11-R015	N/A
ODCM 3-1 (2.d.)	1D11-R016	N/A
ODCM 3-1 (3.a.)	1D11-K600A,B	LFD-1-PRM-05
ODCM 3-1 (3.a.)	1D11-K752A,B	LFD-1-PRM-05
ODCM 3-1 (3.a.)	1D11-N071	LFD-1-PRM-05
ODCM 3-1 (3.a.)	1D11-N072	LFD-1-PRM-05
ODCM 3-1 (3.b.)	1D11-D042	N/A
ODCM 3-1 (3.c.)	1D11-D042	N/A
ODCM 3-1 (3.d.)	1D11-N025A,B	N/A
ODCM 3-1 (3.d.)	1D11-N026A,B	N/A
ODCM 3-1 (3.d.)	1D11-R625	N/A
ODCM 3-1 (3.e.)	1D11-N759	N/A
ODCM 3-1 (3.e.)	1D11-R013	N/A
ODCM 3-1 (4.a.)	1D11-K601,K602	N/A
TRM 3.3.2-1 (3.a.)	1B31-N014A,B,C,D	LFD-1-CRB-17
TRM 3.3.2-1 (3.a.)	1B31-N024A,B,C,D	LFD-1-CRB-17
TRM 3.3.2-1 (3.a.)	1C51-K615A,B,C,D	LFD-1-CRB-17
TRM 3.3.2-1 (3.a.)	1C51-K617A,B,C,D	LFD-1-CRB-17
TRM 3.3.2-1 (3.b.)	1C51-K615A,B,C,D	LFD-1-CRB-18
TRM 3.3.2-1 (3.b.)	1C51-K617A,B,C,D	LFD-1-CRB-18
TRM 3.3.2-1 (3.c.)	1C51-K615A,B,C,D	LFD-1-CRB-19
TRM 3.3.2-1 (3.c.)	1C51-K617A,B,C,D	LFD-1-CRB-19
TRM 3.3.2-1 (3.d.)	1C51-K615A,B,C,D	LFD-1-CRB-20

TABLE T10.2-1 (SHEET 3 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TRM 3.3.2-1 (3.d)	1C51-K617A,B,C,D	LFD-1-CRB-20
TRM 3.3.2-1 (3.e.)	1C51-K615A,B,C,D	LFD-1-CRB-21
TRM 3.3.2-1 (3.e.)	1C51-K617A,B,C,D	LFD-1-CRB-21
TRM 3.3.2-1 (3.f.)	1B31-N014A,B,C,D	LFD-1-CRB-22
TRM 3.3.2-1 (3.f.)	1B31-N024A,B,C,D	LFD-1-CRB-22
TRM 3.3.2-1 (3.f.)	1C51-K615A,B,C,D	LFD-1-CRB-22
TRM 3.3.2-1 (3.f.)	1C51-K617A,B,C,D	LFD-1-CRB-22
TRM T3.3.12-1-(1.)	1E11-F010	N/A
TRM T3.3.12-1 (1.)	1E11-K81A,B	N/A
TRM T3.3.2.-1 (1.a.)	1C51-K600A,B,C,D	LFD-1-CRB-09
TRM T3.3.2-1 (1.b.)	1C51-K600A,B,C,D	LFD-1-CRB-10
TRM T3.3.2-1 (1.c.)	1C51-K600A,B,C,D	LFD-1-CRB-11
TRM T3.3.2-1 (1.d.)	1C51-K600A,B,C,D	LFD-1-CRB-12
TRM T3.3.2-1 (2.a.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-CRB-13
TRM T3.3.2-1 (2.b.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-CRB-14
TRM T3.3.2-1 (2.c.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-CRB-15
TRM T3.3.2-1 (2.d.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-CRB-16
TRM T3.3.2-1 (4.)	1C11-N013E	LFD-1-CRB-23
TRM T3.3.3-1 (2.)	1T48-N008A,B	N/A
TRM T3.3.3-1 (2.)	1T48-R608	N/A
TRM T3.3.3-1 (2.)	1T48-R609	N/A
TRM T3.3.3-1 (3.)	1H11-P603	N/A
TRM T3.3.3-1 (4.)	1D11-K622A,B,C,D	N/A
TRM T3.3.3-1 (4.)	1D11-R622A,B	N/A
TRM T3.3.3-1 (5.)	1B21-N004A,B,C,D,E,F,G,H,J,K,L	N/A
TRM T3.3.3-1 (5.)	1B21-N0301A,B,C,D,E,F,G,H,J,K,L	N/A
TRM T3.3.3-1 (5.)	1B21-N0302A,B,C,D,E,F,G,H,J,K,L	N/A
TRM T3.3.3-1 (6.)	1D11-P006	N/A
TRM T3.3.3-1 (6.,)	1D11-P007	N/A
TRM T3.3.3-1 (6.)	1D11-R631	N/A
TRM T3.3.3-1 (7.)	1D11-P005	N/A
TRM T3.3.3-1 (7.)	1D11-P601	N/A
TRM T3.3.3-1 (7.)	1D11-R361	N/A

TABLE T10.2-1 (SHEET 4 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TRM T3.3.3-1 (8.) (9.)	1P33-P001A,B	N/A
TRM T3.3.3-1 (8.) (9.)	1P33-R601A,B	N/A
TRM T3.3.3-1 (8.)	1P33-R603A,B	N/A
TRM T3.3.3-1 (9.)	1P33-R604A,B	N/A
TRM T3.3.5-1 (2.)	1E41-N056B,D	LFD-1-ECCS-25
TRM T3.3.5-1 (2.)	1E41-N656B,D	LFD-1-ECCS-25
TRM T3.3.5-1 (3.)	1E41-N053	LFD-1-ECCS-26
TRM T3.3.5-1 (3.)	1E41-N653	LFD-1-ECCS-26
TRM T3.3.5-1 (4.b.)	1E51-C002	N/A
TRM T3.3.5-1 (5.)	1E51-N056A,C	LFD-1-ECCS-27
TRM T3.3.5-1 (5.)	1E51-N656A,C	LFD-1-ECCS-27
TRM T3.3.5-1 (6.)	1E51-N083	LFD-1-ECCS-28
TRM T3.3.5-1 (6.)	1E51-N683	LFD-1-ECCS-28
TRM T3.3.5-1 (7.a.)	1E51-N051	LFD-1-ECCS-29
TRM T3.3.5-1 (7.a.)	1E51-N651	LFD-1-ECCS-29
TRM T3.3.5-1 (7.b.)	1E51-N051	LFD-1-ECCS-29
TRM T3.3.5-1 (7.b.)	1E51-N651	LFD-1-ECCS-29
TRM T3.3.7-1 (1.)	1B21-N091A,B,C,D	LFD-1-MCREC-02
TRM T3.3.7-1 (1.)	1B21-N691A,B,C,D	LFD-1-MCREC-02
TRM T3.3.7-1 (2.)	1E11-N094A,B,C,D	LFD-1-MCREC-03
TRM T3.3.7-1 (2.)	1E11-N694A,B,C,D	LFD-1-MCREC-03
TRM T3.3.7-1 (3.)	1B21-N086A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N087A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N088A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N089A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N686A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N687A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N688A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (3.)	1B21-N689A,B,C,D	LFD-1-MCREC-04
TRM T3.3.7-1 (4.)	1D21-K002B,D	LFD-1-MCREC-05
TRM T3.3.7-1 (4.)	1D21-N002B,D	LFD-1-MCREC-05
TRM T3.3.7-1 (5.)	1Z41-N015A,B	LFD-1-MCREC-06
TRM T3.3.7-1 (5.)	1Z41-R615A,B	LFD-1-MCREC-06
TRM T3.3.8-1 (1.)	1D11-K615A,B	LFD-1-PRM-03

MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TRM T3.3.8-1 (1.)	1D11-N066A,B	LFD-1-PRM-03
TRM T3.3.8-1 (2.)	1D11-K615A,B	LFD-1-PRM-04
TRM T3.3.8-1 (2.)	1D11-K751A,B	LFD-1-PRM-04
TRM T3.3.8-1 (2.)	1D11-N066A,B	LFD-1-PRM-04
TRM TLCO 3.3.11	1D11-K603A,B,C,D	LFD-1-MSLR-01
TRM TLCO 3.3.11	1D11-N006A,B,C,D	LFD-1-MSLR-01
TRM TLCO 3.3.13	IN11-N042A,B,C	N/A
TRM TLCO 3.3.9	1N62-N009A,B	N/A
TRM TLCO 3.3.9	1N62-R603	N/A
TS 3.3.1.1-1 (1.a.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-RPS-01
TS 3.3.1.1-1 (1.b.)	1C51-K601A,B,C,D,E,F,G,H	LFD-1-RPS-02
TS 3.3.1.1-1 (10.)	1C71-S1	LFD-1-RPS-16
TS 3.3.1.1-1 (11.)	1C71-S3A,B	LFD-1-RPS-17
TS 3.3.1.1-1 (2.a.)	1C51-K615A,B,C,D	LFD-1-RPS-03
TS 3.3.1.1-1 (2.b.)	1B31-N014A,B,C,D	LFD-1-RPS-04
TS 3.3.1.1-1 (2.b.)	1B31-N024A,B,C,D	LFD-1-RPS-04
TS 3.3.1.1-1 (2.b.)	1C51-K615A,B,C,D	LFD-1-RPS-04
TS 3.3.1.1-1 (2.c.)	1C51-K615A,B,C,D	LFD-1-RPS-05
TS 3.3.1.1-1 (2.d.)	1C51-K615A,B,C,D	LFD-1-RPS-06
TS 3.3.1.1-1 (2.e.)	1C51-K617A,B,C,D	LFD-1-RPS-07
TS 3.3.1.1-1 (3.)	1B21-N078A,B,C,D	LFD-1-RPS-08
TS 3.3.1.1-1 (3.)	1B21-N678A,B,C,D	LFD-1-RPS-08
TS 3.3.1.1-1 (4.)	1B21-N080A,B,C,D	LFD-1-RPS-09
TS 3.3.1.1-1 (4.)	1B21-N680A,B,C,D	LFD-1-RPS-09
TS 3.3.1.1-1 (5.)	1B21-F022A,B,C,D	LFD-1-RPS-10
TS 3.3.1.1-1 (5.)	1B21-F028A,B,C,D	LFD-1-RPS-10
TS 3.3.1.1-1 (6.)	1C71-N050A,B,C,D	LFD-1-RPS-11
TS 3.3.1.1-1 (6.)	1C71-N650A,B,C,D	LFD-1-RPS-11
TS 3.3.1.1-1 (7.a.)	1C11-N060A,B,C,D	LFD-1-RPS-12
TS 3.3.1.1-1 (7.a.)	1C11-N660A,B,C,D	LFD-1-RPS-12
TS 3.3.1.1-1 (7.b.)	1C11-N013A,B,C,D	LFD-1-RPS-13
TS 3.3.1.1-1 (8.)	1N31-N011	LFD-1-RPS-14
TS 3.3.1.1-1 (8.)	1N31-N012	LFD-1-RPS-14

TABLE T10.2-1 (SHEET 6 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.1.1-1 (8.)	1N31-N013	LFD-1-RPS-14
TS 3.3.1.1-1 (8.)	1N31-N014	LFD-1-RPS-14
TS 3.3.1.1-1 (9.)	1C71-N005A,B,C,D	LFD-1-RPS-15
TS 3.3.1.2-1 (1.)	1C51-K600A,B,C,D	N/A
TS 3.3.2.1-1 (1.a.)	1C51-K614A,B	LFD-1-CRB-01
TS 3.3.2.1-1 (1.a.)	1C51-K616A,B	LFD-1-CRB-01
TS 3.3.2.1-1 (1.b.)	1C51-K614A,B	LFD-1-CRB-02
TS 3.3.2.1-1 (1.b.)	1C51-K616A,B	LFD-1-CRB-02
TS 3.3.2.1-1 (1.c.)	1C51-K614A,B	LFD-1-CRB-03
TS 3.3.2.1-1 (1.c.)	1C51-K616A,B	LFD-1-CRB-03
TS 3.3.2.1-1 (1.d.)	1C51-K614A,B	LFD-1-CRB-04
TS 3.3.2.1-1 (1.d.)	1C51-K616A,B	LFD-1-CRB-04
TS 3.3.2.1-1 (1.e.)	1C51-K614A,B	LFD-1-CRB-05
TS 3.3.2.1-1 (1.e.)	1C51-K616A,B	LFD-1-CRB-05
TS 3.3.2.1-1 (2.)	1C11-J600	LFD-1-CRB-07
TS 3.3.2.1-1 (2.)	1C11-J601	LFD-1-CRB-07
TS 3.3.2.1-1 (3.)	1C71-S1	LFD-1-CRB-08
TS 3.3.3.1-1 (1.)	1B21-N090A,D	N/A
TS 3.3.3.1-1 (1.)	1B21-N690A,D	N/A
TS 3.3.3.1-1 (1.)	1B21-R623A,B	N/A
TS 3.3.3.1-1 (10.)	1T47-N001A,B,J,K	N/A
TS 3.3.3.1-1 (10.)	1T47-N003	N/A
TS 3.3.3.1-1 (10.)	1T47-N009	N/A
TS 3.3.3.1-1 (10.)	1T47-R611	N/A
TS 3.3.3.1-1 (10.)	1T47-R612	N/A
TS 3.3.3.1-1 (11.a.) for “1A” DG	1R11-R676	N/A
TS 3.3.3.1-1 (11.a.) for “1B” DG	1R11-R677	N/A
TS 3.3.3.1-1 (11.a.) for “1C” DG	1R11-R678	N/A
TS 3.3.3.1-1 (11.b.) for “1A” DG	1R43-R653	N/A
TS 3.3.3.1-1 (11.b.) for “1B” DG	1R43-R654	N/A
TS 3.3.3.1-1 (11.b.) for “1C” DG	1R43-R655	N/A
TS 3.3.3.1-1 (11.c.) for “1A” DG	1R43-R601A	N/A

TABLE T10.2-1 (SHEET 7 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.3.1-1 (11.c.) for “1B” DG	1R43-R601B	N/A
TS 3.3.3.1-1 (11.c.) for “1C” DG	1R43-R601C	N/A
TS 3.3.3.1-1 (11.c.) for “1A” DG	1R43-R602A	N/A
TS 3.3.3.1-1 (11.c.) for “1B” DG	1R43-R602B	N/A
TS 3.3.3.1-1 (11.c.) for “1C” DG	1R43-R602C	N/A
TS 3.3.3.1-1 (11.d.) for “1A” DG	1R43-R615A	N/A
TS 3.3.3.1-1 (11.d.) for “1B” DG	1R43-R615B	NA
TS 3.3.3.1-1 (11.d.) for “1C” DG	1R43-R615C	N/A
TS 3.3.3.1-1 (12.)	1E11-N007A,B	N/A
TS 3.3.3.1-1 (12.)	1E11-R602A,B	N/A
TS 3.3.3.1-1 (2.a.)	1B21-N085A,B	N/A
TS 3.3.3.1-1 (2.a.)	1B21-N685A,B	N/A
TS 3.3.3.1-1 (2.a.)	1B21-R623A, B	N/A
TS 3.3.3.1-1 (2.b.)	1B21-N091A,B,C,D	N/A
TS 3.3.3.1-1 (2.b.)	1B21-N691A,B,C,D	N/A
TS 3.3.3.1-1 (2.b.)	1B21-R604A,B	N/A
TS 3.3.3.1-1 (2.b.)	1B21-R623A,B	N/A
TS 3.3.3.1-1 (2.c.)	1B21-N093A,B	N/A
TS 3.3.3.1-1 (2.c.)	1B21-N095A,B	N/A
TS 3.3.3.1-1 (2.c.)	1B21-N693A,B	N/A
TS 3.3.3.1-1 (2.c.)	1B21-N695A,B	N/A
TS 3.3.3.1-1 (2.d.)	1B21-N027	N/A
TS 3.3.3.1-1 (2.d.)	1B21-R605	N/A
TS 3.3.3.1-1 (3.a.)	1T48-N010A,B	N/A
TS 3.3.3.1-1 (3.a.)	1T48-R622A,B	N/A
TS 3.3.3.1-1 (3.b.)	1T48-N021A,B	N/A
TS 3.3.3.1-1 (3.b.)	1T48-R607A,B	N/A
TS 3.3.3.1-1 (4.a.)	1T48-N023A,B	N/A
TS 3.3.3.1-1 (4.a.)	1T48-R608	N/A
TS 3.3.3.1-1 (4.a)	1T48-R609	N/A
TS 3.3.3.1-1 (4.b.)	1T48-N020A,B	N/A
TS 3.3.3.1-1 (4.b.)	1T48-R607A,B	N/A

TABLE T10.2-1 (SHEET 8 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.3.1-1 (4.c.)	1T48-N003A,B	N/A
TS 3.3.3.1-1 (4.c.)	1T48-R601A,B	N/A
TS 3.3.3.1-1 (5.)	1D11-K621A,B	N/A
TS 3.3.3.1-1 (5.)	1D11-N003A,B	N/A
TS 3.3.3.1-1 (5.)	1T48-R601A,B	N/A
TS 3.3.3.1-1 (6.)	SEE TRM TABLE T10.3-1	N/A
TS 3.3.3.1-1 (9.)	1T47-R611	N/A
TS 3.3.3.1-1 (9.)	1T47-R612	N/A
TS 3.3.3.1-1 (9.)	1T48-N009A,B,C,D	N/A
TS 3.3.3.1-1 (9.)	1T48-N301A	N/A
TS 3.3.3.1-1 (9.)	1T48-N302A	N/A
TS 3.3.3.1-1 (9.)	1T48-N303A	N/A
TS 3.3.3.1-1 (9.)	1T48-N304A	N/A
TS 3.3.3.1-1 (9.)	1T48-N305A	N/A
TS 3.3.3.1-1 (9.)	1T48-N306A	N/A
TS 3.3.3.1-1 (9.)	1T48-N307A	N/A
TS 3.3.3.1-1 (9.)	1T48-N308A	N/A
TS 3.3.3.1-1 (9.)	1T48-N309A	N/A
TS 3.3.3.1-1 (9.)	1T48-N310A	N/A
TS 3.3.3.1-1 (9.)	1T48-N311A	N/A
TS 3.3.3.1-1 (9.)	1T48-R647	N/A
TS 3.3.5.1-1 (1.a.)	1B21-N091A,B,C,D	LFD-1-ECCS-01
TS 3.3.5.1-1 (1.a.)	1B21-N691A,B,C,D	LFD-1-ECCS-01
TS 3.3.5.1-1 (1.b.)	1E11-N094A,B,C,D	LFD-1-ECCS-02
TS 3.3.5.1-1 (1.b.)	1E11-N694A,B,C,D	LFD-1-ECCS-02
TS 3.3.5.1-1 (1.c.)	1B21-N090A,B,C,D	LFD-1-ECCS-03
TS 3.3.5.1-1 (1.c.)	1B21-N090A,B,C,D	LFD-1-ECCS-03
TS 3.3.5.1-1 (1.d.)	1E21-N051A,B	LFD-1-ECCS-04
TS 3.3.5.1-1 (1.d)	1E21-N651A,B	LFD-1-ECCS-04
TS 3.3.5.1-1 (2.a.)	1B21-N091A,B,C,D	LFD-1-ECCS-05
TS 3.3.5.1-1 (2.a.)	1B21-N691A,B,C,D	LFD-1-ECCS-05
TS 3.3.5.1-1 (2.a.)	1E11-K125,A,B	LFD-1-ECCS-05
TS 3.3.5.1-1 (2.a.)	1E11-K126	LFD-1-ECCS-05

TABLE T10.2-1 (SHEET 9 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.5.1-1 (2.a.)	1E11-K70A,B	LFD-1-ECCS-05
TS 3.3.5.1-1 (2.a.)	1E11-K75A,B	LFD-1-ECCS-05
TS 3.3.5.1-1 (2.b.)	1E11-K125A,B	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.b.)	1E11-K126	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.b.)	1E11-K70A,B	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.b.)	1E11-K75A,B	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.b.)	1E11-N094A,B,C,D	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.b.)	1E11-N694A,B,C,D	LFD-1-ECCS-06
TS 3.3.5.1-1 (2.c.)	1B21-N090A,B,C,D	LFD-1-ECCS-07
TS 3.3.5.1-1 (2.c.)	1B21-N690A,B,C,D	LFD-1-ECCS-07
TS 3.3.5.1-1 (2.d.)	1B21-N090B,C,E,F	LFD-1-ECCS-08
TS 3.3.5.1-1 (2.d.)	1B21-N641B,C	LFD-1-ECCS-08
TS 3.3.5.1-1 (2.d.)	1B21-N690B,C,E,F	LFD-1-ECCS-08
TS 3.3.5.1-1 (2.e.)	1B31-N085A,B	LFD-1-ECCS-09
TS 3.3.5.1-1 (2.e.)	1B21-N685A,B	LFD-1-ECCS-09
TS 3.3.5.1-1 (2.f.)	1E11-K125A,B	LFD-1-ECCS-10
TS 3.3.5.1-1 (2.f.)	1E11-K126	LFD-1-ECCS-10
TS 3.3.5.1-1 (2.f.)	1E11-K70A,B	LFD-1-ECCS-10
TS 3.3.5.1-1 (2.f.)	1E11-K75A,B	LFD-1-ECCS-10
TS 3.3.5.1-1 (2.g.)	1E11-N082A,B	LFD-1-ECCS-11
TS 3.3.5.1-1 (2.g.)	1E11-N682A,B	LFD-1-ECCS-11
TS 3.3.5.1-1 (3.a.)	1B21-N091A,B,C,D	LFD-1-ECCS-12
TS 3.3.5.1-1 (3.a.)	1B21-N691A,B,C,D	LFD-1-ECCS-12
TS 3.3.5.1-1 (3.a.)	1B21-N692A,B,C,D	LFD-1-ECCS-12
TS 3.3.5.1-1 (3.b.)	1E11-N094A,B,C,D	LFD-1-ECCS-13
TS 3.3.5.1-1 (3.b.)	1E11-N694A,B,C,D	LFD-1-ECCS-13
TS 3.3.5.1-1 (3.c.)	1B21-N093B	LFD-1-ECCS-14
TS 3.3.5.1-1 (3.c.)	1B21-N095B	LFD-1-ECCS-14
TS 3.3.5.1-1 (3.c.)	1B21-N693B,D	LFD-1-ECCS-14
TS 3.3.5.1-1 (3.c.)	1B21-N695B	LFD-1-ECCS-14
TS 3.3.5.1-1 (3.d.)	1E41-N002	LFD-1-ECCS-15
TS 3.3.5.1-1 (3.d.)	1E41-N003	LFD-1-ECCS-15
TS 3.3.5.1-1 (3.e.)	1E41-N062B,D	LFD-1-ECCS-16
TS 3.3.5.1-1 (3.e.)	1E41-N662B,D	LFD-1-ECCS-16

TABLE T10.2-1 (SHEET 10 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.5.1-1 (3.f.)	1E41-N051	LFD-1-ECCS-17
TS 3.3.5.1-1 (3.f.)	1E41-N651	LFD-1-ECCS-17
TS 3.3.5.1-1 (4.a.)	1B21-K752A	LFD-1-ECCS-18
TS 3.3.5.1-1 (4.a.)	1B21-K754A	LFD-1-ECCS-18
TS 3.3.5.1-1 (4.a.)	1B21-K756A	LFD-1-ECCS-18
TS 3.3.5.1-1 (4.a.)	1B21-N091A,C	LFD-1-ECCS-18
TS 3.3.5.1-1 (4.a.)	1B21-N691A,C	LFD-1-ECCS-18
TS 3.3.5.1-1 (4.b.)	1B21-K752A	LFD-1-ECCS-19
TS 3.3.5.1-1 (4.b.)	1E11-N094A,C	LFD-1-ECCS-19
TS 3.3.5.1-1 (4.b.)	1E11-N694A,C	LFD-1-ECCS-19
TS 3.3.5.1-1 (4.c.)	1B21-K752A	LFD-1-ECCS-20
TS 3.3.5.1-1 (4.d.)	1B21-K752A	LFD-1-ECCS-21
TS 3.3.5.1-1 (4.d.)	1B21-N095A	LFD-1-ECCS-21
TS 3.3.5.1-1 (4.d.)	1B21-N695A	LFD-1-ECCS-21
TS 3.3.5.1-1 (4.e.)	1E21-N052A	LFD-1-ECCS-22
TS 3.3.5.1-1 (4.e.)	1E21-N055A	LFD-1-ECCS-22
TS 3.3.5.1-1 (4.e.)	1E21-N652A	LFD-1-ECCS-22
TS 3.3.5.1-1 (4.e.)	1E21-N655A	LFD-1-ECCS-22
TS 3.3.5.1-1 (4.f.)	1E11-N055A,C	LFD-1-ECCS-23
TS 3.3.5.1-1 (4.f.)	1E11-N056A,C	LFD-1-ECCS-23
TS 3.3.5.1-1 (4.f.)	1E11-N655A,C	LFD-1-ECCS-23
TS 3.3.5.1-1 (4.f.)	1E11-N656A,C	LFD-1-ECCS-23
TS 3.3.5.1-1 (4.g.)	1B21-K754A	LFD-1-ECCS-24
TS 3.3.5.1-1 (4.g.)	1B21-K756A	LFD-1-ECCS-24
TS 3.3.5.1-1 (5.a.)	1B21-K752B	LFD-1-ECCS-18
TS 3.3.5.1-1 (5.a.)	1B21-K754B	LFD-1-ECCS-18
TS 3.3.5.1-1 (5.a.)	1B21-K756B	LFD-1-ECCS-18
TS 3.3.5.1-1 (5.a.)	1B21-N091B,D	LFD-1-ECCS-18
TS 3.3.5.1-1 (5.a.)	1B21-N691B,D	LFD-1-ECCS-18
TS 3.3.5.1-1 (5.b.)	1B21-K752B	LFD-1-ECCS-19
TS 3.3.5.1-1 (5.b.)	1E11-N094B,D	LFD-1-ECCS-19
TS 3.3.5.1-1 (5.b.)	1E11-N694B,D	LFD-1-ECCS-19

TABLE T10.2-1 (SHEET 11 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.5.1-1 (5.c.)	1B21-K752B	LFD-1-ECCS-20
TS 3.3.5.1-1 (5.d.)	1B21-K752B	LFD-1-ECCS-21
TS 3.3.5.1-1 (5.d.)	1B21-N095B	LFD-1-ECCS-21
TS 3.3.5.1-1 (5.d.)	1B21-N695B	LFD-1-ECCS-21
TS 3.3.5.1-1 (5.e.)	1E21-N052B	LFD-1-ECCS-22
TS 3.3.5.1-1 (5.e.)	1E21-N055B	LFD-1-ECCS-22
TS 3.3.5.1-1 (5.e.)	1E21-N652B	LFD-1-ECCS-22
TS 3.3.5.1-1 (5.e.)	1E21-N655B	LFD-1-ECCS-22
TS 3.3.5.1-1 (5.f.)	1E11-N055B,D	LFD-1-ECCS-23
TS 3.3.5.1-1 (5.f.)	1E11-N056B,D	LFD-1-ECCS-23
TS 3.3.5.1-1 (5.f.)	1E11-N655B,D	LFD-1-ECCS-23
TS 3.3.5.1-1 (5.f.)	1E11-N656B,D	LFD-1-ECCS-23
TS 3.3.5.1-1 (5.g.)	1B21-K754B	LFD-1-ECCC-24
TS 3.3.5.1-1 (5.g.)	1B21-K756B	LFD-1-ECCS-24
TS 3.3.5.2-1 (1.)	1B21-N091A,B,C,D	LFD-1-RCIC-01
TS 3.3.5.2-1 (1.)	1B21-N691A,B,C,D	LFD-1-RCIC-01
TS 3.3.5.2-1 (1.)	1B21-N692A,B,C,D	LFD-1-RCIC-01
TS 3.3.5.2-1 (2.)	1B21-N093A	LFD-1-RCIC-02
TS 3.3.5.2-1 (2.)	1B21-N095A	LFD-1-RCIC-02
TS 3.3.5.2-1 (2.)	1B21-N693A	LFD-1-RCIC-02
TS 3.3.5.2-1 (2.)	1B21-N695A	LFD-1-RCIC-02
TS 3.3.5.2-1 (3.)	1E51-N060	LFD-1-RCIC-03
TS 3.3.5.2-1 (3.)	1E51-N061	LFD-1-RCIC-03
TS 3.3.5.2-1 (4.)	1E51-N062A,B	LFD-1-RCIC-04
TS 3.3.6.1-1 (1.a.)	1B21-N081A,B,C,D	LFD-1-PCIS-01
TS 3.3.6.1-1 (1.a.)	1B21-N681A,B,C,D	LFD-1-PCIS-01
TS 3.3.6.1-1 (1.b.)	1B21-N015A,B,C,D	LFD-1-PCIS-02
TS 3.3.6.1-1 (1.c.)	1B21-N086A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N087A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N088A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N089A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N686A,B,C,D	LFD-1-PCIS-03

TABLE T10.2-1 (SHEET 12 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.6.1-1 (1.c.)	1B21-N687A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N688A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.c.)	1B21-N689A,B,C,D	LFD-1-PCIS-03
TS 3.3.6.1-1 (1.d.)	1B21-N056A,B,C,D	LFD-1-PCIS-04
TS 3.3.6.1-1 (1.e.)	1B21-N123A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N124A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N125A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N126A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N623A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N624A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N625A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.e.)	1B21-N626A,B,C,D	LFD-1-PCIS-05
TS 3.3.6.1-1 (1.f.)	1U61-N101A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N102A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N103A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N104A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N105A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N106A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N107A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N108A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N109,A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N110A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N111A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N112A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N113A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N114A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N115A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (1.f.)	1U61-N116A,B,C,D	LFD-1-PCIS-06
TS 3.3.6.1-1 (2.a.)	1B21-N080A,B,C,D	LFD-1-PCIS-07
TS 3.3.6.1-1 (2.a.)	1B21-N680A,B,C,D	LFD-1-PCIS-07
TS 3.3.6.1-1 (2.b.)	1C71-N050A,B,C,D	LFD-1-PCIS-08
TS 3.3.6.1-1 (2.b.)	1C71-N650A,B,C,D	LFD-1-PCIS-08

TABLE T10.2-1 (SHEET 13 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.6.1-1 (2.c.)	1D11-K621A,B	LFD-1-PCIS-09
TS 3.3.6.1-1 (2.c.)	1D11-N003A,B	LFD-1-PCIS-09
TS 3.3.6.1-1 (2.d.)	1D11-K609A,B,C,D	LFD-1-PCIS-10
TS 3.3.6.1-1 (2.d.)	1D11-N010A,B,C,D	LFD-1-PCIS-10
TS 3.3.6.1-1 (2.e.)	1D11-K611A,B,C,D	LFD-1-PCIS-11
TS 3.3.6.1-1 (2.e.)	1D11-N012A,B,C,D	LFD-1-PCIS-11
TS 3.3.6.1-1 (3.a.)	1E11-N057A,B	LFD-1-PCIS-12
TS 3.3.6.1-1 (3.a.)	1E41-N657A,B	LFD-1-PCIS-12
TS 3.3.6.1-1 (3.b.)	1E41-N058A,B,C,D	LFD-1-PCIS-13
TS 3.3.6.1-1 (3.b.)	1E41-N658A,B,C,D	LFD-1-PCIS-13
TS 3.3.6.1-1 (3.c.)	1E41-N055A,B,C,D	LFD-1-PCIS-14
TS 3.3.6.1-1 (3.c.)	1E41-N655A,B,C,D	LFD-1-PCIS-14
TS 3.3.6.1-1 (3.d.)	1E11-N094C,D	LFD-1-PCIS-15
TS 3.3.6.1-1 (3.d.)	1E11-N694C,D	LFD-1-PCIS-15
TS 3.3.6.1-1 (3.d.)	1E41-N058A,B,C,D	LFD-1-PCIS-15
TS 3.3.6.1-1 (3.d.)	1E41-N658A,B,C,D	LFD-1-PCIS-15
TS 3.3.6.1-1 (3.e.)	1E41-N071A,B	LFD-1-PCIS-16
TS 3.3.6.1-1 (3.e.)	1E41-N671A,B	LFD-1-PCIS-16
TS 3.3.6.1-1 (3.f.)	1E51-M603A,B	LFD-1-PCIS-17
TS 3.3.6.1-1 (3.f.)	1E51-N066C,D	LFD-1-PCIS-17
TS 3.3.6.1-1 (3.f.)	1E51-N666C,D	LFD-1-PCIS-17
TS 3.3.6.1-1 (3.g.)	1E51-M603A,B	LFD-1-PCIS-17
TS 3.3.6.1-1 (3.g.)	1E51-M603A,B	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-M603A,B	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-N063C,D	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-N064C,D	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-N663C,D	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-N664C,D	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.h.)	1E51-N665C,D	LFD-1-PCIS-19
TS 3.3.6.1-1 (3.i.)	1E41-N070A,B	LFD-1-PCIS-20
TS 3.3.6.1-1 (3.i.)	1E41-N670A,B	LFD-1-PCIS-20
TS 3.3.6.1-1 (4.a.)	1E51-N057A,B	LFD-1-PCIS-21

TABLE T10.2-1 (SHEET 14 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.6.1-1 (4.a.)	1E51-N657A,B	LFD-1-PCIS-21
TS 3.3.6.1-1 (4.b.)	1E51-N058A,B,C,D	LFD-1-PCIS-22
TS 3.3.6.1-1 (4.b.)	1E51-N658A,B,C,D	LFD-1-PCIS-22
TS 3.3.6.1-1 (4.c.)	1E51-N085A,B,C,D	LFD-1-PCIS-23
TS 3.3.6.1-1 (4.c.)	1E51-N085A,B,C,D	LFD-1-PCIS-23
TS 3.3.6.1-1 (4.d.)	1E11-N094A,B	LFD-1-PCIS-24
TS 3.3.6.1-1 (4.d.)	1E11-N694A,B	LFD-1-PCIS-24
TS 3.3.6.1-1 (4.d.)	1E51-N058A,B,C,D	LFD-1-PCIS-24
TS 3.3.6.1-1 (4.d.)	1E51-N658A,B,C,D	LFD-1-PCIS-24
TS 3.3.6.1-1 (4.e.)	1E51-M602A,B	LFD-1-PCIS-25
TS 3.3.6.1-1 (4.e.)	1E51-N066A,B,	LFD-1-PCIS-25
TS 3.3.6.1-1 (4.e.)	1E51-N666A,B	LFD-1-PCIS-25
TS 3.3.6.11 (4.f.)	1E51-M602A,B	LFD-1-PCIS-25
TS 3.3.6.1-1 (4.f.)	1E51-M602A,B,	LFD-1-PCIS-25
TS 3.3.6.1-1 (4.g.)	1E51-M602A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.g.)	1E51-N063A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.g.)	1E51-N064A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.g.)	1E51-N663A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.g.)	1E51-N664A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.g.)	1E51-N665A,B	LFD-1-PCIS-27
TS 3.3.6.1-1 (4.h.)	1E51-N061A,B	LFD-1-PCIS-28
TS 3.3.6.1-1 (4.h.)	1E51-N661A,B	LFD-1-PCIS-28
TS 3.3.6.1-1 (5.a.)	1G31-N062A,D,E,H,J,M	LFD-1-PCIS-29
TS 3.3.6.1-1 (5.a.)	1G31-N662A,D,E,H,J,M	LFD-1-PCIS-29
TS 3.3.6.1-1 (5.b.)	1G31-N061A,D,E,H,J,M	LFD-1-PCIS-30
TS 3.3.6.1-1 (5.b.)	1G31-N062A,D,E,H,J,M	LFD-1-PCIS-30
TS 3.3.6.1-1 (5.b.)	1G31-N661A,D,E,H,J,M	LFD-1-PCIS-30
TS 3.3.6.1-1 (5.b.)	1G31-N662A,D,E,H,J,M	LFD-1-PCIS-30
TS 3.3.6.1-1 (5.b.)	1G31-N663A,D,E,H,J,M	LFD-1-PCIS-30
TS 3.3.6.1-1 (5.c.)	1C41-S1	LFD-1-PCIS-31
TS 3.3.6.1-1 (5.d.)	1B21-N081A,B,C,D	LFD-1-PCIS-32
TS 3.3.6.1-1 (5.d.)	1B21-N681A,B,C,D	LFD-1-PCIS-32

TABLE T10.2-1 (SHEET 15 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.6.1-1 (5.d.)	1B21-N682A,B,C,D	LFD-1-PCIS-32
TS 3.3.6.1-1 (6.a.)	1B31-N079A,D	LFD-1-PCIS-33
TS 3.3.6.1-1 (6.a.)	1B31-N679A,D	LFD-1-PCIS-33
TS 3.3.6.1-1 (6.b.)	1B21-N080A,B,C,D	LFD-1-PCIS-34
TS 3.3.6.1-1 (6.b.)	1B21-N680A,B,C,D	LFD-1-PCIS-34
TS 3.3.6.2-1 (1.)	1B21-N081A,B,C,D	LFD-1-SCIS-01
TS 3.3.6.2-1 (1.)	1B21-N681A,B,C,D	LFD-1-SCIS-01
TS 3.3.6.2-1 (1.)	1B21-N682A,B,C,D	LFD-1-SCIS-01
TS 3.3.6.2-1 (2.)	1C71-N050A,B,C,D	LFD-1-SCIS-02
TS 3.3.6.2-1 (2.)	1C71-N650A,B,C,D	LFD-1-SCIS-02
TS 3.3.6.2-1 (3.)	1D11-K609A,B,C,D	LFD-1-SCIS-03
TS 3.3.6.2-1 (3.)	1D11-N010A,B,C,D	LFD-1-SCIS-03
TS 3.3.6.2-1 (4.)	1D11-K611A,B,C,D	LFD-1-SCIS-04
TS 3.3.6.2-1 (4.)	1D11-N012A,B,C,D	LFD-1-SCIS-04
TS 3.3.6.3-1 (1.)	1B21-N120A,B,C,D	LFD-1-LLS-01
TS 3.3.6.3-1 (1.)	1B21-N620A,B,C,D	LFD-1-LLS-01
TS 3.3.6.3-1 (2.)	1B21-N120A,B,C,D	LFD-1-LLS-02
TS 3.3.6.3-1 (2.)	1B21-N122A,B,C,D	LFD-1-LLS-02
TS 3.3.6.3-1 (2.)	1B21-N620A,B,C,D	LFD-1-LLS-02
TS 3.3.6.3-1 (2.)	1B21-N621A,B,C,D	LFD-1-LLS-02
TS 3.3.6.3-1 (2.)	1B21-N622A,B,C,D	LFD-1-LLS-02
TS 3.3.6.3-1 (2.)	1B21-N643A, B	LFD-1-LLS-02
TS 3.3.6.3-1 (3.)	1B21-N301A,B,C,D,E,F,G,H,J,K,L	LFD-1-LLS-03
TS 3.3.6.3-1 (3.)	1B21-N302A,B,C,D,E,F,G,H,J,K,L	LFD-1-LLS-03
TS 3.3.8.1-1 (1.a.)	1S32-K206-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (1.a.)	1S32-K220-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (1.a.)	1S32-K227-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (1.b.)	1S32-K206-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (1.b.)	1S32-K220-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (1.b.)	1S32-K227-3,6	LFD-1-LOP-01
TS 3.3.8.1-1 (2.a.)	1S32-K206-4,5	LFD-1-LOP-02
TS 3.3.8.1-1 (2.a.)	1S32-K220-4,5	LFD-1-LOP-02

TABLE T10.2-1 (SHEET 16 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS 3.3.8.1-1 (2.a.)	1S32-K227-4,5	LFD-1-LOP-02
TS 3.3.8.1-1 (2.b.)	1S32-K206-4,5	LFD-1-LOP-02
TS 3.3.8.1-1 (2.b.)	1S32-K220-4,5	LFD-1-LOP-02
TS 3.3.8.1-1 (2.b.)	1S32-K227-4,5	LFD-1-LOP-02
TS 3.3.8.1-1 (3.a.)	1S32-K206-1,2	LFD-1-LOP-03
TS 3.3.8.1-1 (3.a.)	1S32-K220-1,2	LFD-1-LOP-03
TS 3.3.8.1-1 (3.a.)	1S32-K227-1,2	LFD-1-LOP-03
TS 3.3.8.1-1 (3.b.)	1S32-K207-1,2	LFD-1-LOP-03
TS 3.3.8.1-1 (3.b.)	1S32-K221-1,2	LFD-1-LOP-03
TS 3.3.8.1-1 (3.b.)	1S32-K228-1,2	LFD-1-LOP-03
TS LCO 3.3.2.2	1C32-K624A,B,C	LFD-1-RWLH-01
TS LCO 3.3.2.2	1C32-N004A,B,C	LFD-1-RWLH-01
TS LCO 3.3.3.2 for “1A” DG	1R43-R766A	N/A
TS LCO 3.3.3.2 for “1A” DG	1R43-R769A	N/A
TS LCO 3.3.3.2 for “1B” DG	1R43-R766B	N/A
TS LCO 3.3.3.2 for “1B” DG	1R43-R769B	N/A
TS LCO 3.3.3.2 for “1B” DG	2R43-M01	N/A
TS LCO 3.3.3.2 for “1C” DG	1R43-R766C	N/A
TS LCO 3.3.3.2 for “1C” DG	1R43-R769C	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1B21-R070	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1C82-S23B,C,D,E,F,G	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-C002-1	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-C002-2	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F007	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F008	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F013	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F045	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F046	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-F524	N/A
TS LCO 3.3.3.2 for RCIC for RPV Make-up	1E51-R070	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1B31-F023B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1C32-R070	N/A

TABLE T10.2-1 (SHEET 17 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1C82-S23A	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1C82-S24A,B,D,E,F,G	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1C82-S2A,B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-C001B,D	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-C002B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F004B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F006B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F007B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F008	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F009	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F015B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F017B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F024B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F028B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-F048B	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-R070	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1E11-R071	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1T48-R070	N/A
TS LCO 3.3.3.2 for RHR (SDC and SPC)	1T48-R072	N/A
TS LCO 3.3.3.2 for RPV Pressure Control	1B21-F013C,G	N/A
TS LCO 3.3.3.2 for RPV Pressure Control	1C82-S1	N/A
TS LCO 3.3.3.2 for PRV Pressure Control	1C82-S24C	N/A
TS LCO 3.3.3.2 for Support Equipment	1C82-S2B	N/A
TS LCO 3.3.3.2 for Support Equipment	1P41-C001B	N/A
TS LCO 3.3.4.1.a.1	TSV-1	LFD-1-RPT-01
TS LCO 3.3.4.1.a.1	TSV-2	LFD-1-RPT-01
TS LCO 3.3.4.1.a.1	TSV-3	LFD-1-RPT-01
TS LCO 33.4.1.a.1	TSV-4	LFD-1-RPT-01
TS LCO 3.3.4.1.a.2	1C71-N005A,B,C,D	LFD-1-RPT-02
TS LCO 3.3.4.2.a	1B21-N091A,B,C,D	LFD-1-RPT-03
TS LCO 3.3.4.2.a	1B21-N691A,B,C,D	LFD-1-RPT-03
TS LCO 3.3.4.2.a	1B21-N692A,B,C,D	LFD-1-RPT-03

TABLE T10.2-1 (SHEET 18 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TS LCO 3.3.4.2.a.	1B21-N694A,B,C,D	LFD-1-RPT-03
TS LCO 3.3.4.2.b	1B21-N120A,B	LFD-1-RPT-04
TS LCO 3.3.4.2.b	1B21-N122A,B	LFD-1-RPT-04
TS LCO 3.3.4.2.b	1B21-N620A,B	LFD-1-RPT-04
TS LCO 3.3.4.2.b	1B21-N642A,B	LFD-1-RPT-04
TS LCO 3.3.4.2.b	1B21-N643A,B	LFD-1-PRT-04
TS LCO 3.3.7.1	1Z41-N015A,B	LFD-1-MCREC-01
TS LCO 3.3.7.1	1Z41-R615A,B	LFD-1-MCREC-01
TS LCO 3.3.8.2 (OVERVOLTAGE)	1C71-K751A,B,C,D,E,F	LFD-1-EPM-01
TS LCO 3.3.8.2 (OVERVOLTAGE TIME DELAY)	1C71-K756A,B,C,D	LFD-1-EPM-01
TS LCO 3.3.8.2 (UNDERFREQUENCY)	1C71-K753A,B,C,D,E,F	LFD-1-EPM-01
TS LCO 3.3.8.2 (UNDERVOLTAGE)	1C71-K752A,B,C,D,E,F	LFD-1-EPM-01
TS LCO 3.4.5.a	1G11-K600	N/A
TS LCO 3.4.5.a	1G11-K601	N/A
TS LCO 3.4.5.a	1G11-M600	N/A
TS LCO 3.4.5.a	1G11-M601	N/A
TS LCO 3.4.5.a	1G11-N001	N/A
TS LCO 3.4.5.a	1G11-N002	N/A
TS LCO 3.4.5.a	1G11-N003	N/A
TS LCO 3.4.5.a	1G11-N074A	N/A
TS LCO 3.4.5.a	1G11-N074B	N/A
TS LCO 3.4.5.a	1G11-R600	N/A
TS LCO 3.4.5.b.	1D11-K630	N/A
TS SR 3.3.1.1.11	1C71-N003A,B,C,D	LFD-1-RPS-18
TS SR 3.3.4.1.2	1C71-N003A,B,C,D	LFD-1-RPT-05
TSR 3.3.10.1	1N32-F4521A	N/A
TSR 3.3.10.1	1N32-F4521B	N/A
TSR 3.3.10.1	1N32-F4522A	N/A
TSR 3.3.10.1	1N32-F4522B	N/A
TSR 3.3.10.1	1N32-F4523A	N/A
TSR 3.3.10.1	1N32-F4523B	N/A
TSR 3.3.10.1	1N32-F4501A	N/A

TABLE T10.2-1 (SHEET 19 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TSR 3.3.10.1	1N32-F4501B	N/A
TSR 3.3.10.1	1N32-F4502A	N/A
TSR 3.3.10.1	1N32-F4502B	N/A
TSR 3.3.10.1	1N32-F4503A	N/A
TSR 3.3.10.1	1N32-F4503B	N/A
TSR 3.3.10.2 a	1N30-F005	N/A
TSR 3.3.10.2 a	1N30-F006	N/A
TSR 3.3.10.2 a	1N30-F007	N/A
TSR 3.3.10.2 a	1N30-F008	N/A
TSR 3.3.10.2 b	1N30-F016	N/A
TSR 3.3.10.2 b	1N30-F017	N/A
TSR 3.3.10.2 b	1N30-F018	N/A
TSR 3.3.10.2 b	1N30-F019	N/A
TSR 3.3.10.3	1N30-F009	N/A
TSR 3.3.10.3	1N30-F010	N/A
TSR 3.3.10.3	1N30-F011	N/A
TSR 3.3.10.3	1N30-F012	N/A
TSR 3.3.10.4.a	1H21-P4103	N/A
TSR 3.3.10.4.b	1H21-P4104	N/A
TSR 3.3.10.5	1N32-F4521A	N/A
TSR 3.3.10.5	1N32-F4521B	N/A
TSR 3.3.10.5	1N32-F4522A	N/A
TSR 3.3.10.5	1N32-F4522B	N/A
TSR 3.3.10.5	1N32-F4523A	N/A
TSR 3.3.10.5	1N32-F4523B	N/A
TSR 3.3.10.5	1N32-F4501A	N/A
TSR 3.3.10.5	1N32-F4501B	N/A
TSR 3.3.10.5	1N32-F4502A	N/A
TSR 3.3.10.5	1N32-F4502B	N/A

TABLE T10.2-1 (SHEET 20 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
TSR 3.3.10.5	1N32-F4503A	N/A
TSR 3.3.10.5	1N32-F4503B	N/A
TSR 3.3.10.5	1N32-F4531A	N/A
TSR 3.3.10.5	1N32-F4531B	N/A
TSR 3.3.10.5	1N32-F4532A	N/A
TSR 3.3.10.5	1N32-F4532B	N/A
TSR 3.3.10.5	1N32-F4533A	N/A
TSR 3.3.10.5	1N32-F4533B	N/A
TSR 3.3.10.5	1N32-F4541A	N/A
TSR 3.3.10.5	1N32-F4541B	N/A
TSR 3.3.10.5	1N32-F4542A	N/A
TSR 3.3.10.5	1N32-F4542B	N/A
TSR 3.3.10.5	1N32-F4543A	N/A
TSR 3.3.10.5	1N32-F4543B	N/A
TSR 3.3.10.6	1N30-F005	N/A
TSR 3.3.10.6	1N30-F006	N/A
TSR 3.3.10.6	1N30-F007	N/A
TSR 3.3.10.6	1N30-F008	N/A
TSR 3.3.10.6	1N30-F016	N/A
TSR 3.3.10.6	1N30-F017	N/A
TSR 3.3.10.6	1N30-F018	N/A
TSR 3.3.10.6	1N30-F019	N/A
TSR 3.3.10.6	1N30-F009	N/A
TSR 3.3.10.6	1N30-F010	N/A
TSR 3.3.10.6	1N30-F011	N/A
TSR 3.3.10.6	1N30-F012	N/A
TSR 3.3.10.7.a	1H21-P4103	N/A
TSR 3.3.10.7.b	1H21-P4104	N/A
U2 ODCM 3-1 (3.d)	1D110N026A, B	N/A
U2 ODCM 3-1 (3.d.)	1D11-R625	N/A
U2 ODCM 3-1 (3.e.)	1D11-R013	N/A
U2 TRM T3.3.3-1 (4.)	1D11-R631	N/A

TABLE T10.2-1 (SHEET 21 OF 21)
MASTER EQUIPMENT CROSS REFERENCE – SORTED BY SPECIFICATION

SPECIFICATION	MPL NUMBER(S)	LOSS OF FUNCTION DIAGRAMS
U2 TRM T3.3.6-1 (1.d.)	1L51-N005	N/A
U2 TRM T3.3.6-1 (2.a)	1LF51-N007	N/A
U2 TRM T3.3.6-1 (2.b.)	1L51-N006	N/A
U2 TRM T3.3.6-1 (2.c.)	1L51-N008	N/A
U2 TRM T3.3.6-1 (4.a.)	1L51-N105	N/A
U2 TRM T3.3.7-1 (5.)	1Z41-N015A,B	LFD-2-MCREC-06
U2 TRM T3.3.7-1 (5.)	1Z41-R615A,B	LFD-2-MCREC-06
U2 TS 3.3.7.1	1Z41-N015A,B	LFD-2-MCREC-01
U2 TS 3.3.7.1	1Z41-R615A,B	LFD-2-MCREC-01
U2 TS LCO 3.3.3.2 for “1B” DG	1R43-R766B	N/A
U2 TS LCO 3.3.3.2 for “1B” DG	1R43-R769B	N/A
U2 TS LCO 3.3.3.2 for “1B” DG	2R43-M01	N/A

TABLE T10.3-1 (Sheet 1 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function	Required Channels[a]	Sensor	Indicator
1. Reactor Steam Dome Pressure	2	1B21-N090A	1B21-R623A 1B21-N690A
		1B21-N090D	1B21-R623B 1B21-N690D
2. Vessel Level			
a. -317 to -17	2	1B21-N085A	1B21-N685A 1B21-R623A
		1B21-N085B	1B21-N685B 1B21-R623B
b. -150 to +60	2[b]	1B21-N091A	1B21-N691A 1B21-R604A
		1B21-N091B	1B21-N691B 1B21-R604B
		1B21-N091C	1B21-N691C 1B21-R623A
		1B21-N091D	1B21-N691D 1B21-R623B
c. 0 to +60	2[c]	1B21-N093A 1B21-N093B 1B21-N095A 1B21-N095B	1B21-N693A 1B21-N693B 1B21-N695A 1B21-N695B
d. 0 to +400	1	1B21-N027	1B21-R605

(a) A channel consists of a sensor and at least one indication of that sensed variable.

(b) One from system A (N091A & C) and one from system B (N091B &D).

(c) One from system A (N093A & N095B) and one from system B (N093B & N095A).

TABLE T10.3-1 (Sheet 2 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function	Required Channels[a]	Sensor	Indicator
3. Suppression Pool Water Level			
a. 0 to 300	2	1T48-N010A 1T48-N010B	1T48-R622A 1T48-R622B
b. 133 to 163	2	1T48-N021A 1T48-N021B	1T48-R607A 1T48-R607B
4. Drywell Pressure			
a. -10 to +90	2	1T48-N023A 1T48-N023B	1T48-R608 1T48-R609
b. -5 to +5	2	1T48-N020A 1T48-N020B	1T48-R607A 1T48-R607B
c. 0 to +250	2	1T48-N003A 1T48-N003B	1T48-R601A 1T48-R601B
5. Drywell Area Radiation (High Range)	2	1D11-N003A	1D11-K621A 1T48-R601A
		1D11-N003B	1D11-K621B 1T48-R601B

TABLE T10.3-1 (Sheet 3 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

<u>Function</u>

6. Primary Containment Isolation Valve (PCIV) Position[(d)]

1B21-F022A	1E11-F015B
1B21-F022B	1E11-F016A
1B21-F022C	1E11-F016B
1B21-F022D	1E11-F026A
1B21-F028A	1E11-F026B
1B21-F028B	1E11-F028A
1B21-F028C	1E11-F028B
1B21-F028D	
1B21-F016	
1B21-F019	
	1E21-F015A
1B31-F019	1E21-F015B
1B31-F020	
Tip ball valve associated with 1C51-J004A	1E41-F002
Tip ball valve associated with 1C51-J004B	1E41-F003
Tip ball valve associated with 1C51-J004C	
Tip ball valve associated with 1C51-J004D	1E41-F012
	1E41-F042
1D11-F050	1E41-F104
1D11-F051	1E41-F111
1D11-F052	
1D11-F053	
	1E51-F007
	1E51-F008
	1E51-F019
1E11-F008	1E51-F104
1E11-F011A	1E51-F105
1E11-F011B	1G11-F003
1E11-F015A	1G11-F004

(d) Control room indication of the listed valve positions satisfies the Technical Specifications requirement. Inoperabilities must be addressed individually for the applicable penetration flow path.

TABLE T10.3-1 (Sheet 4 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function

6. PCIV Position (Continued)

1G11-F019	
1G11-F020	
1G31-F001	1T48-F319
1G31-F004	1T48-F320
1P33-F002	1T48-F324
1P33-F003	
1P33-F004	1T48-F326
1P33-F005	
1P33-F006	1T48-F332A
1P33-F007	1T48-F332B
1P33-F010	1T48-F333A
1P33-F011	1T48-F333B
1P33-F012	1T48-F334A
1P33-F013	1T48-F334B
1P33-F014	1T48-F335A
1P33-F015	1T48-F335B
	1T48-F338
	1T48-F339
	1T48-F340
	1T48-F341
1P70-F002	
1P70-F003	
1P70-F004	
1P70-F005	
1P70-F066	
1P70-F067	
1T48-F103	
1T48-F104	
1T48-F118A	
1T48-F118B	
1T48-F307	
1T48-F308	
1T48-F309	
1T48-F318	

TABLE T10.3-1 (Sheet 5 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function	Required Channels[a]	Sensor	Indicator
7. Drywell Hydrogen Concentration	2	1P33-P001A	1P33-R604A
			1P33-R601A
		1P33-P001B	1P33-R604B
			1P33-R601B
8. Drywell O_2 Concentration	2	1P33-P001A	1P33-R603A
			1P33-R601A
		1P33-P001B	1P33-R603B
			1P33-R601B
9. Suppression Pool Water Temp	2[e]		
	Quadrant A:	1T48-N009A	1T47-R611
		1T48-N301A	1T48-R647
		1T48-N302A	1T48-R647
		1T48-N310A	1T48-R647
		1T48-N311A	1T48-R647

(a) A channel consists of a sensor and at least one indication of that sensed variable.

(e) Suppression Pool Water Temperature constitutes one Function. The N009 series constitutes one channel of this Function and the N300 series constitutes the second channel of this Function. One OPERABLE N300 series sensor in each of the four quadrants is sufficient for that channel to be OPERABLE. For the Specification requirement for two channels to be satisfied, a minimum of one N009 series instrument and one N300 series instrument in each quadrant must be OPERABLE.

TABLE T10.3-1 (Sheet 6 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function	Required Channels[a]	Sensor	Indicator
9. Suppression Pool Water Temp (Continued)			
	Quadrant B:	1T48-N009B	1T47-R612
		1T48-N303A	1T48-R647
		1T48-N304A	1T48-R647
		1T48-N305A	1T48-R647
	Quadrant C:	1T48-N009C	1T47-R611
		1T48-N306A	1T48-R647
		1T48-N307A	1T48-R647
	Quadrant D:	1T48-N009D	1T47-R612
		1T48-N308A	1T48-R647
		1T48-N309A	1T48-R647
10. Drywell Temp (in vicinity of reference leg)	6	1T47-N001B	1T47-R612
		1T47-N009	1T47-R611
		1T47-N001J	1T47-R611
		1T47-N001K	1T47-R611
		1T47-N003	1T47-R612
		1T47-N001A	1T47-R612
11. DG Parameters			
a. Output Voltage			
1A	1		1R11-R676
1B	1		1R11-R677
1C	1		1R11-R678

(a) A channel consists of a sensor and at least one indication of that sensed variable.

TABLE T10.3-1 (Sheet 7 of 7)
QUALIFIED POST ACCIDENT MONITORING INSTRUMENTATION

Function	Required Channels[(a)]	Sensor	Indicator
11. DG Parameters (Continued)			
b. Output Current			
1A	1		1R43-R653
1B	1		1R43-R654
1C	1		1R43-R655
c. Output Power			
1A	1		1R43-R601A
1B	1		1R43-R601B
1C	1		1R43-R601C
Output Power (Reactive)			
1A	1		1R43-R602A
1B	1		1R43-R602B
1C	1		1R43-R602C
d. Battery Voltage			
1A	1		1R43-R615A
1B	1		1R43-R615B
1C	1		1R43-R615C
12. RHR Service Water Flow	2	1E11-N007A 1E11-N007B	1E11-R602A 1E11-R602B

(a) A channel consists of a sensor and at least one indication of that sensed variable.

T 11.0 LOSS OF FUNCTION DIAGRAMS

A. Purpose

Loss of Function Diagrams (LFDs) provide a means for evaluating the affects of the loss of one or more instrument channels on the capability of the associated instrument logic to perform its intended safety function. In fulfilling this purpose, the LFDs provide the following:

- The number of channels associated with a given instrument function.

- The configuration of the instrument channels in the trip systems.

- The number and combinations of channels required to be operable in order for instrument function capability to be maintained.

B. General Rules for Use:

- LFDs are "channel-based," that is, they are designed to be used to determine instrument function capability given a loss of one or more channels. For the purposes of determining loss of function, the LFDs show what constitutes a channel. However, in identifying the beginning and end of a channel for the purpose of determining channel functional test scope, the LFD should not be used for this purpose; instead, the TRM definition "Channel Functional Test Scope" should be used.

- As in typical elementary logic, the energy trace is from the sensor to the actuated device. Consequently, inoperability of a component in the energy trace can directly or indirectly affect the ability of a downstream component in the trace to function. However, the opposite is not always true; that is, the downstream component since it does not provide input to the upstream component does not affect the ability of the upstream component to function. As such, loss of a component anywhere other than in the channel cannot in all cases be traced back to evaluate the affect of the loss on a channel(s). Consequently, since the LFDs are "channel-based," in such cases, the LFD cannot be used to determine instrument function capability. Instead, the elementary logic must be consulted to determine the affect of the loss on the supported system.

- LFDs are designed to be used with the instrumentation specifications found in the Technical Specifications, the TRM, and the ODCM. Typically, an LFD is provided for each instrumentation specification line item. However, some instruments provide more than one instrument function and an LFD may not provide sufficient information to ascertain all of the functions provided by the instrument. In order to identify all instrument functions performed by a particular instrument, Table 10.1-1, Master Equipment Cross Reference, Sorted by MPL, must be consulted. For a given MPL, this sort will identify all LFDs for the instrument functions that are served by the instrument.
- The complete logic from sensor to the actuation logic/actuated device is not reflected in the LFDs. A dashed line is used to denote cases where the logic

was not included. Elementary diagrams used to develop the LFD are referenced on the LFD in the event information on the omitted logic is needed.

- The drawings show the channels and the trip logics associated with a particular instrument function and how the channels and the trip logics are related in the trip systems.

- The LFDs are ordered alphabetically by the system abbreviation and then sequentially by the sketch number.

- The LFD sketches are condensed elementaries and, therefore, the same rules of use that apply to elementaries also apply to the LFDs.

- The loss of function statement typically found at the bottom of the LFD identifies the channel combinations required to be operable in order for instrument function capability as defined in the instrumentation specification to be maintained. In some cases, the associated instrument specification contains an action statement that requires tripping the inoperable channel within a prescribed period of time. The LFD takes credit for this requirement in that it specifies for these cases that in order for instrument function to be maintained, the prescribed combinations of channels must be either operable or maintained in the tripped condition.

- The following is a list of abbreviations and their meanings used in the drawings that may be unfamiliar to the user:

  AU - Alarm Unit
  EPM - RPS Electric Power Monitoring
  ITU - Indicating Trip Unit
  LRM - Log Radiation Monitor
  MTU - Master Trip Unit
  PRM - Process Radiation Monitoring
  PS - Pressure Switch
  RWLH - Reactor Water Level High
  RIS - Radiation Indicating Switch
  SAU - Single Alarm Unit
  STU - Slave Trip Unit

T 11.0 LOSS OF FUNCTION DIAGRAMS

LIST OF DIAGRAMS

Diagram No.	Title	Revision No.
LFD-1-CRB-01 (1 sheet)	TS 3.3.2.1-1, Item 1.a, Control Rod Block, Rod Block Monitor, Low Power Range - Upscale	12
LFD-1-CRB-02 (1 sheet)	TS 3.3.2.1-1, Item 1.b, Control Rod Block, Rod Block Monitor, Intermediate Power Range - Upscale	12
LFD-1-CRB-03 (1 sheet)	TS 3.3.2.1-1, Item 1.c, Control Rod Block, Rod Block Monitor, High Power Range - Upscale	12
LFD-1-CRB-04 (1 sheet)	TS 3.3.2.1-1, Item 1.d, Control Rod Block, Rod Block Monitor - Inop	12
LFD-1-CRB-05 (1 sheet)	TS 3.3.2.1-1, Item 1.e, Control Rod Block, Rod Block Monitor - Downscale	12
LFD-1-CRB-06 (1 sheet)	N/A	12
LFD-1-CRB-07 (1 sheet)	TS 3.3.2.1-1, Item 2, Control Rod Block, Rod Worth Minimizer	
LFD-1-CRB-08 (1 sheet)	TS 3.3.2.1-1, Item 3, Control Rod Block, Reactor Mode Switch - Shutdown Position	
LFD-1-CRB-09 (1 sheet)	TRM T3.3.2-1, Item 1.a, Control Rod Block Instrumentation, SRM - Detector Not Full In	60
LFD-1-CRB-10 (1 sheet)	TRM T3.3.2-1, Item 1.b, Control Rod Block Instrumentation, SRM - Upscale	60
LFD-1-CRB-11 (1 sheet)	TRM T3.3.2-1, Item 1.c, Control Rod Block Instrumentation, SRM - Inoperative	60
LFD-1-CRB-12 (1 sheet)	TRM T3.3.2-1, Item 1.d, Control Rod Block Instrumentation, SRM - Downscale	60
LFD-1-CRB-13 (1 sheet)	TRM T3.3.2-1, Item 2.a, Control Rod Block Instrumentation, IRM - Detector Not Full In	60
LFD-1-CRB-14 (1 sheet)	TRM T3.3.2-1, Item 2.b, Control Rod Block Instrumentation, IRM - Upscale	60
LFD-1-CRB-15 (1 sheet)	TRM T3.3.2-1, Item 2.c, Control Rod Block Instrumentation, IRM - Inoperative	60

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-CRB-16 (1 sheet)	TRM T3.3.2-1, Item 2.d, Control Rod Block Instrumentation, IRM - Downscale	60
LFD-1-CRB-17 (1 sheet)	TRM T3.3.2-1, Item 3.a, Control Rod Block Instrumentation, APRM - Simulated Thermal Power - Upscale	60
LFD-1-CRB-18 (1 sheet)	TRM T3.3.2-1, Item 3.b, Control Rod Block Instrumentation, APRM - Simulated Thermal Power - Upscale (Setdown)	60
LFD-1-CRB-19 (1 sheet)	TRM T3.3.2-1, Item 3.c, Control Rod Block Instrumentation, APRM - Inoperative	60
LFD-1-CRB-20 (1 sheet)	TRM T3.3.2-1, Item 3.d, Control Rod Block Instrumentation, APRM - Neutron Flux - Downscale	60
LFD-1-CRB-21 (1 sheet)	TRM T3.3.2-1, Item 3.e, Control Rod Block Instrumentation, APRM - Low LPRM Count	60
LFD-1-CRB-22 (1 sheet)	TRM T3.3.2-1, Item 3.f, Control Rod Block Instrumentation, APRM - Reactor Recirculation Flow - Upscale	60
LFD-1-CRB-23 (1 sheet)	TRM T3.3.2-1, Item 4, Control Rod Block Instrumentation, SDV Level - High	60
LFD-1-ECCS-01 (1 sheet)	TS 3.3.5.1-1, Item 1.a, Core Spray System RWL - Low Low Low, Level 1	6
LFD-1-ECCS-02 (1 sheet)	TS 3.3.5.1-1, Item 1.b, Core Spray System Drywell Pressure - High	
LFD-1-ECCS-03 (1 sheet)	TS 3.3.5.1-1, Item 1.c, Core Spray System Reactor Steam Dome Pressure - Low	
LFD-1-ECCS-04 (1 sheet)	TS 3.3.5.1-1, Item 1.d, Core Spray System Core Spray Pump Discharge Flow - Low	
LFD-1-ECCS-05 (1 sheet)	TS 3.3.5.1-1, Item 2.a, LPCI System RWL - Low Low Low, Level 1	6
LFD-1-ECCS-06 (1 sheet)	TS 3.3.5.1-1, Item 2.b, LPCI System Drywell Pressure - High	

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-ECCS-07 (1 sheet)	TS 3.3.5.1-1, Item 2.c, LPCI System Reactor Steam Dome Pressure - Low	
LFD-1-ECCS-08 (1 sheet)	TS 3.3.5.1-1, Item 2.d, LPCI System Reactor Steam Dome Pressure - Low Recirc Disch Valve Permissive	
LFD-1-ECCS-09 (1 sheet)	TS 3.3.5.1-1, Item 2.e, LPCI System Reactor Vessel Shroud, Level 0	
LFD-1-ECCS-10 (1 sheet)	TS 3.3.5.1-1, Item 2.f, LPCI System LPCI Pump Start - Time Delay Relay	
LFD-1-ECCS-11 (1 sheet)	TS 3.3.5.1-1, Item 2.g, LPCI System LPCI Pump Discharge Flow - Low (Bypass)	
LFD-1-ECCS-12 (1 sheet)	TS 3.3.5.1-1, Item 3.a, HPCI System RWL - Low Low, Level 2	6
LFD-1-ECCS-13 (1 sheet)	TS 3.3.5.1-1, Item 3.b, HPCI Initiation Drywell Pressure - High	
LFD-1-ECCS-14 (1 sheet)	TS 3.3.5.1-1 , Item 3.c, HPCI System Reactor Vessel Water Level - High, Level 8	
LFD-1-ECCS-15 (1 sheet)	TS 3.3.5.1-1, Item 3.d, HPCI System Condensate Storage Tank Level - Low	
LFD-1-ECCS-16 (1 sheet)	TS 3.3.5.1-1, Item 3.e, HPCI System Suppression Pool Water Level - High	
LFD-1-ECCS-17 (1 sheet)	TS 3.3.5.1-1, Item 3.f, HPCI System HPCI Pump Disch Flow - Low (Bypass)	
LFD-1-ECCS-18 (1 sheet)	TS 3.3.5.1-1, Item 4.a/5.a, ADS Trip System RWL - Low, Low, Low - Level 1	6
LFD-1-ECCS-19 (1 sheet)	TS 3.3.5.1-1, Item 4.b/5.b, ADS Trip System Drywell Pressure - High	
LFD-1-ECCS-20 (1 sheet)	TS 3.3.5.1-1, Item 4.c/5.c, ADS Trip System ADS Initiation Timer	
LFD-1-ECCS-21 (1 sheet)	TS 3.3.5.1-1, Item 4.d/5.d, ADS Trip System RWL - Low, Level 3 (Confirmatory)	

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-ECCS-22 (1 sheet)	TS 3.3.5.1-1, Item 4.e/5.e, ADS Trip System Core Spray Pump Discharge Press - High	
LFD-1-ECCS-23 (1 sheet)	TS 3.3.5.1-1, Item 4.f/5.f, ADS Trip System LPCI Pump Discharge Pressure - High	
LFD-1-ECCS-24 (1 sheet)	TS 3.3.5.1-1, Item 4.g/5.g, ADS Trip System ADS Low Water LVL Actuation Timer	
LFD-1-ECCS-25 (1 sheet)	TRM T3.3.5-1, Item 2, HPCI Turbine Trip HPCI Turbine Exhaust Pressure - High	60
LFD-1-ECCS-26 (1 sheet)	TRM T3.3.5-1, Item 3, HPCI Turbine Trip HPCI Pump Suction Pressure - Low	60
LFD-1-ECCS-27 (1 sheet)	TRM T3.3.5-1, Item 5, RCIC Turbine Trip RCIC Turbine Exhaust Pressure - High	60
LFD-1-ECCS-28 (1 sheet)	TRM T3.3.5-1, Item 6, RCIC Turbine Trip RCIC Pump Suction Pressure - Low	60
LFD-1-ECCS-29 (1 sheet)	TRM T3.3.5-1, Items 7.a and 7.b, RCIC Pump Discharge Flow - High, Low	82
LFD-1-EPM-01 (1 sheet)	TS 3.3.8.2, RPS Electric Power Monitor Trips	33
LFD-1-LLS-01 (2 sheets)	TS 3.3.6.3-1, Item 1, Low-Low Set Instrumentation - Reactor Steam Dome Pressure - High	
LFD-1-LLS-02 (2 sheets)	TS 3.3.6.3-1, Item 2, Low-Low Set Instrumentation - Low-Low Set Pressure Setpoints	
LFD-1-LLS-03 (2 sheets)	TS 3.3.6.3-1, Item 3, Low-Low Set Instrumentation - Tailpipe Pressure Switch	
LFD-1-LOP-01 (3 sheets)	TS 3.3.8.1-1, Items 1.a and 1.b, 4.16 kV Emergency Bus, Loss of Voltage and Time Delay	
LFD-1-LOP-02 (3 sheets)	TS 3.3.8.1-1, Items 2.a and 2.b, 4.16 kV Emergency Bus, Degraded Voltage and Time Delay	

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-LOP-03 (1 sheet)	TS 3.3.8.1-1, Items 3.a and 3.b, 4.16 KV Emergency Bus, Degraded Voltage Annunciation and Time Delay	63
LFD-1-MCREC-01 (1 sheet)	TS 3.3.7.1, MCREC System Initiation Control Room Air Inlet Radiation - High	
LFD-1-MCREC-02 (1 sheet)	TRM T3.3.7-1, Item 1, MCREC System Instrumentation, Reactor Vessel Water Level - Low Low Low, Level 1	60
LFD-1-MCREC-03 (1 sheet)	TRM T3.3.7-1, Item 2, MCREC System Instrumentation, Drywell Pressure - High	60
LFD-1-MCREC-04 (1 sheet)	TRM T3.3.7-1, Item 3, MCREC System Instrumentation, Main Steam Line Flow - High	60
LFD-1-MCREC-05 (1 sheet)	TRM T3.3.7-1, Item 4, MCREC System Instrumentation, Refueling Floor Area Radiation - High	60
LFD-1-MCREC-06 (1 sheet)	TRM T3.3.7-1, Item 5, MCREC System Instrumentation, Main Control Room Intake Radiation - Downscale	
LFD-1-MSLR-01 (2 sheets)	TRM T3.3.11, Main Steam Line Radiation High - High	0/60
LFD-1-PCIS-01 (2 sheets)	TS 3.3.6.1-1, Item 1.a, Main Steam Line Isolation - Reactor Vessel Water Level - Low Low Low, Level 1	
LFD-1-PCIS-02 (2 sheets)	TS 3.3.6.1-1, Item 1.b, Main Steam Line Isolation - Main Steam Line Pressure - Low	
LFD-1-PCIS-03 (2 sheets)	TS 3.3.6.1-1, Item 1.c, Main Steam Line Isolation - Main Steam Line Flow - High	
LFD-1-PCIS-04 (2 sheets)	TS 3.3.6.1-1, Item 1.d, Main Steam Line Isolation - Condenser Vacuum - Low	
LFD-1-PCIS-05 (2 sheets)	TS 3.3.6.1-1, Item 1.e, Main Steam Line Isolation - Main Steam Tunnel Temperature - High	

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-PCIS-06 (4 sheets)	TS 3.3.6.1-1, Item 1.f, Main Steam Line Isolation - Turbine Building Area Temperature - High	
LFD-1-PCIS-07 (1 sheet)	TS 3.3.6.1-1, Item 2.a, Primary Containment Isolation, Reactor Vessel Water Level - Low, Level 3	20
LFD-1-PCIS-08 (1 sheet)	TS 3.3.6.1-1, Item 2.b, Primary Containment Isolation, Drywell Pressure - High	33
LFD-1-PCIS-09 (1 sheet)	TS 3.3.6.1-1, Item 2.c, Primary Containment Isolation, Drywell Radiation - High	
LFD-1-PCIS-10 (1 sheet)	TS 3.3.6.1-1, Item 2.d, Primary Containment Isolation, Reactor Building Exhaust Radiation - High	24
LFD-1-PCIS-11 (1 sheet)	TS 3.3.6.1-1, Item 2.e, Primary Containment Isolation, Refueling Floor Exhaust Radiation - High	53
LFD-1-PCIS-12 (1 sheet)	TS 3.3.6.1-1, Item 3.a, HPCI System Isolation - HPCI Steam Line Flow - High	
LFD-1-PCIS-13 (1 sheet)	TS 3.3.6.1-1, Item 3.b, HPCI System Isolation - HPCI Steam Supply Line Pressure - Low	
LFD-1-PCIS-14 (1 sheet)	TS 3.3.6.1-1, Item 3.c, HPCI System Isolation - HPCI Turbine Exhaust Diaphragm Pressure - High	
LFD-1-PCIS-15 (1 sheet)	TS 3.3.6.1-1, Item 3.d, HPCI System Isolation - Drywell Pressure - High	
LFD-1-PCIS-16 (1 sheet)	TS 3.3.6.1-1, Item 3.e, HPCI System Isolation - HPCI Pipe Penetration Room Temperature - High	
LFD-1-PCIS-17 (1 sheet)	TS 3.3.6.1-1, Items 3.f and 3.g, HPCI System Isolation - Suppression Pool Area Ambient Temperature - High, <u>and</u> Suppression Pool Area Temperature - Time Delay Relays	
LFD-1-PCIS-18	N/A	
LFD-1-PCIS-19 (1 sheet)	TS 3.3.6.1-1, Items 3.h and 3.g, HPCI System Isolation - Suppression Pool Area Differential Temperature - High, <u>and</u> Suppression Pool Area Temperature - Time Delay Relays	

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-PCIS-20 (1 sheet)	TS 3.3.6.1-1, Item 3.i, HPCI System Isolation - Emergency Area Cooler Temperature - High	
LFD-1-PCIS-21 (1 sheet)	TS 3.3.6.1-1, Item 4.a, RCIC System Isolation RCIC Steam Line Flow - High	
LFD-1-PCIS-22 (1 sheet)	TS 3.3.6.1-1, Item 4.b, RCIC System Isolation RCIC Steam Supply Line Pressure - Low	
LFD-1-PCIS-23 (1 sheet)	TS 3.3.6.1-1, Item 4.c, RCIC System Isolation RCIC Turbine Exhaust Diaphragm Pressure - High	
LFD-1-PCIS-24 (1 sheet)	TS 3.3.6.1-1, Item 4.d, RCIC System Isolation Drywell Pressure - High	
LFD-1-PCIS-25 (1 sheet)	TS 3.3.6.1-1, Items 4.e and f, RCIC System Isolation RCIC Suppression Pool Ambient Area Temperature - High, and Suppression Pool Area Temperature - Time Delay Relays	
LFD-1-PCIS-26	N/A	
LFD-1-PCIS-27 (1 sheet)	TS 3.3.6.1-1, Items 4.f and g, RCIC System Isolation Suppression Pool Area Temperature Time Delay Relays, and RCIC Suppression Pool Area Differential Temperature - High	
LFD-1-PCIS-28 (1 sheet)	TS 3.3.6.1-1, Item 4.h, RCIC System Isolation Emergency Area Cooler Temperature - High	
LFD-1-PCIS-29 (1 sheet)	TS 3.3.6.1-1, Item 5.a, RWCU System Isolation Area Temperature - High	
LFD-1-PCIS-30 (2 sheets)	TS 3.3.6.1-1, Item 5.b, RWCU System Isolation Area Ventilation Differential Temperature - High	
LFD-1-PCIS-31 (1 sheet)	TS 3.3.6.1-1, Item 5.c, RWCU System Isolation SLC System Initiation	
LFD-1-PCIS-32 (1 sheet)	TS 3.3.6.1-1, Item 5.d, RWCU System Isolation Reactor Vessel Water Level - Low Low, Level 2	
LFD-1-PCIS-33 (1 sheet)	TS 3.3.6.1-1, Item 6.a, RHR SDC System Isolation, Reactor Steam Dome Pressure - High	

List of Diagrams (Continued)

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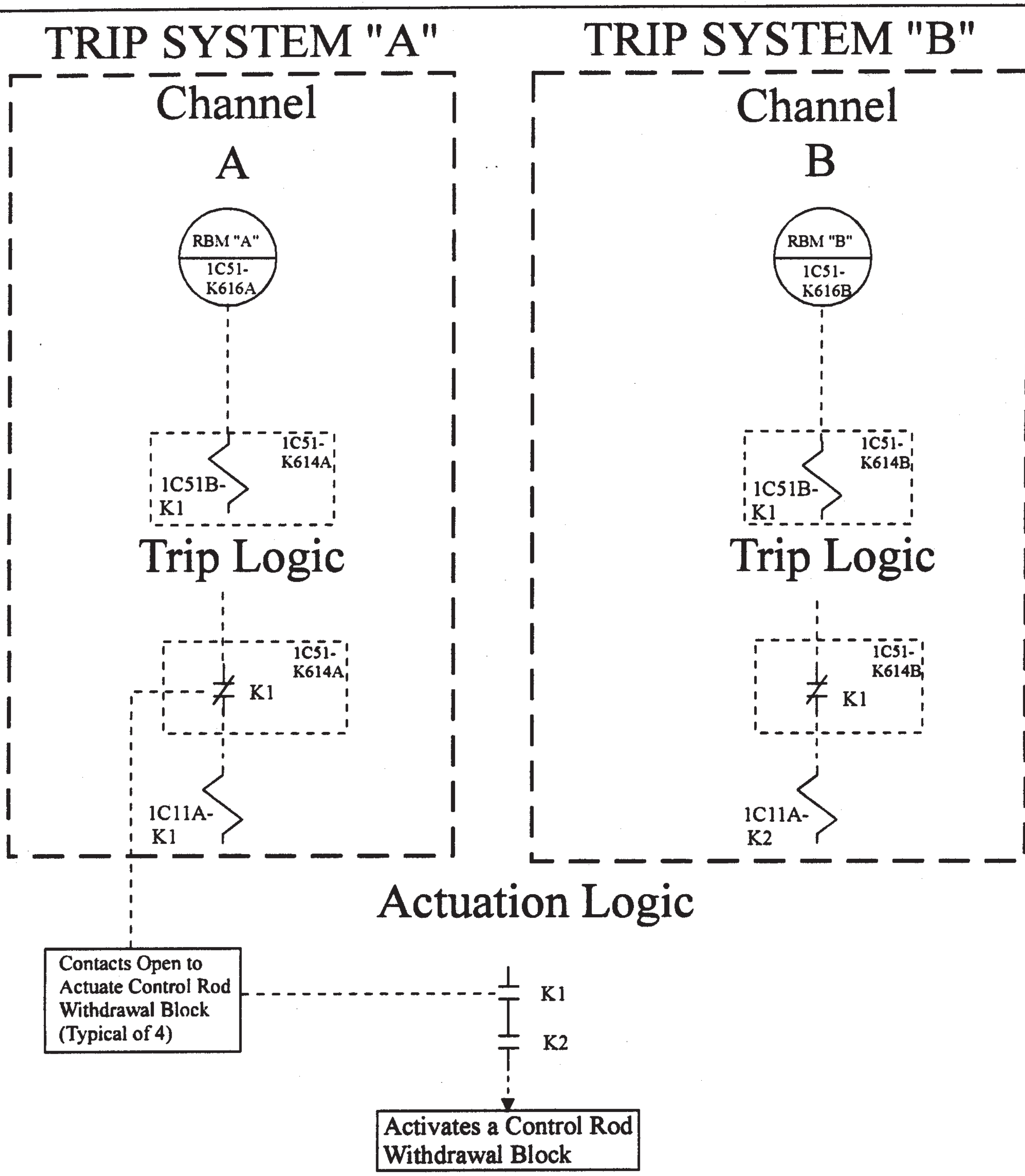
LFD-1-PCIS-34 (1 sheet)	TS 3.3.6.1-1, Item 6.b, RHR SDC System Isolation, Reactor Vessel Water Level - Low, Level 3	26
LFD-1-PRM-01 (1 sheet)	ODCM 2-1, Item 1, Liquid Radwaste Effluent Line Radiation High	
LFD-1-PRM-02 (1 sheet)	ODCM 3-1, Item 1.a, Reactor Building Vent Stack Monitoring System, Radiation High	
LFD-1-PRM-03 (1 sheet)	TRM T3.3.8-1, Item 1, Offgas System Isolation Post-Treatment Radiation Upscale	60
LFD-1-PRM-04 (1 sheet)	TRM T3.3.8-1, Item 2, Offgas System Isolation Post-Treatment Radiation Monitor Downscale	60
LFD-1-PRM-05 (1 sheet)	ODCM 3-1, Item 3.a, Main Stack Monitoring System, Noble Gas Activity Monitor	
LFD-1-RCIC-01 (1 sheet)	TS 3.3.5.2-1, Item 1, RCIC System Reactor Vessel Water Level - Low Low, Level 2	6
LFD-1-RCIC-02 (1 sheet)	TS 3.3.5.2-1, Item 2, RCIC System Reactor Vessel Water Level - High, Level 8	
LFD-1-RCIC-03 (1 sheet)	TS 3.3.5.2-1, Item 3, RCIC System Condensate Storage Tank Level - Low	
LFD-1-RCIC-04 (1 sheet)	TS 3.3.5.2-1, Item 4, RCIC System Suppression Pool Water Level - High	
LFD-1-RPS-01 (1 sheet)	TS 3.3.1.1-1, Item 1.a, Reactor Protection System Instrumentation - IRM Neutron Flux - High	
LFD-1-RPS-02 (1 sheet)	TS 3.3.1.1-1, Item 1.b, Reactor Protection System Instrumentation - IRM Inop	
LFD-1-RPS-03 (1 sheet)	TS 3.3.1.1-1, Item 2.a, Reactor Protection System Instrumentation - APRM Neutron Flux - High (Setdown)	12

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-RPS-04 (1 sheet)	TS 3.3.1.1-1, Item 2.b, Reactor Protection System Instrumentation - Simulated Thermal Power -High	12
LFD-1-RPS-05 (1 sheet)	TS 3.3.1.1-1, Item 2.c, Reactor Protection System Instrumentation - Neutron Flux - High	12
LFD-1-RPS-06 (1 sheet)	TS 3.3.1.1-1, Item 2.d, Reactor Protection System Instrumentation - APRM Inop	12
LFD-1-RPS-07 (1 sheet)	TS 3.3.1.1-1, Item 2.e, Reactor Protection System Instrumentation - APRM Two-out-of-Four Voter Circuit	12
LFD-1-RPS-07a (1 sheet)	TS 3.3.1.1-1, Item 2.f, Reactor Protection System Instrumentation - OPRM Upscale	26
LFD-1-RPS-08 (1 sheet)	TS 3.3.1.1-1, Item 3, Reactor Protection System Instrumentation - Reactor Vessel Steam Dome Pressure - High	
LFD-1-RPS-09 (1 sheet)	TS 3.3.1.1-1, Item 4, Reactor Protection System Instrumentation - Reactor Vessel Water Level - Low, Level 3	
LFD-1-RPS-10 (1 sheet)	TS 3.3.1.1-1, Item 5, Reactor Protection System Instrumentation - Main Steam Isolation Valve - Closure	
LFD-1-RPS-11 (1 sheet)	TS 3.3.1.1-1, Item 6, Reactor Protection System Instrumentation, Drywell Pressure - High	
LFD-1-RPS-12 (1 sheet)	TS 3.3.1.1-1, Item 7.a, Reactor Protection System Instrumentation - Scram Discharge Volume Water Level - High, Resistance Temperature Detector	
LFD-1-RPS-13 (1 sheet)	TS 3.3.1.1-1, Item 7.b, Reactor Protection System Instrumentation - Scram Discharge Volume Water Level - High, Float Switch	
LFD-1-RPS-14 (1 sheet)	TS 3.3.1.1-1, Item 8, Reactor Protection System Instrumentation - Turbine Stop Valve - Closure	66
LFD-1-RPS-15 (1 sheet)	TS 3.3.1.1-1, Item 9, Reactor Protection System Instrumentation - Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	33

List of Diagrams (Continued)

Diagram No.	Title	Revision No.
LFD-1-RPS-16 (1 sheet)	TS 3.3.1.1-1, Item 10, Reactor Protection System Instrumentation, Reactor Mode Switch - Shutdown Position	
LFD-1-RPS-17 (1 sheet)	TS 3.3.1.1-1, Item 11, Reactor Protection System Instrumentation, Manual Scram	
LFD-1-RPS-18 (1 sheet)	TS SR 3.3.1.1.11, Reactor Protection System Instrumentation Bypass, Items 8 and 9	33
LFD-1-RPT-01 (1 sheet)	TS 3.3.4.1.a.1, EOC-RPT, TSV Closure	
LFD-1-RPT-02 (1 sheet)	TS 3.3.4.1.a.2, EOC-RPT, TCV Fast Closure	
LFD-1-RPT-03 (1 sheet)	TS 3.3.4.2.a, Reactor Vessel Water Level - ATWS-RPT Level	6
LFD-1-RPT-04 (1 sheet)	TS 3.3.4.2.b, ATWS-RPT, Reactor Steam Dome Pressure - High	
LFD-1-RPT-05 (1 sheet)	TS SR 3.3.4.1.2, EOC-RPT Instrumentation Bypass Below 28 Percent Power	33
LFD-1-RWLH-01 (1 sheet)	TS 3.3.2.2, Feedwater and Main Turbine Trip High Water Level Instrumentation	
LFD-1-SCIS-01 (1 sheet)	TS 3.3.6.2-1, Item 1, Reactor Vessel Water Level - Low Low, Level 2	
LFD-1-SCIS-02 (1 sheet)	TS 3.3.6.2-1, Item 2, Drywell Pressure - High	
LFD-1-SCIS-03 (1 sheet)	TS 3.3.6.2-1, Item 3, Secondary Containment Isolation Reactor Building Exhaust Radiation - High	
LFD-1-SCIS-04 (1 sheet)	TS 3.3.6.2-1, Item 4, R/F Exhaust Radiation - High	



Minimum Channel Requirements for System Initiation Capability:

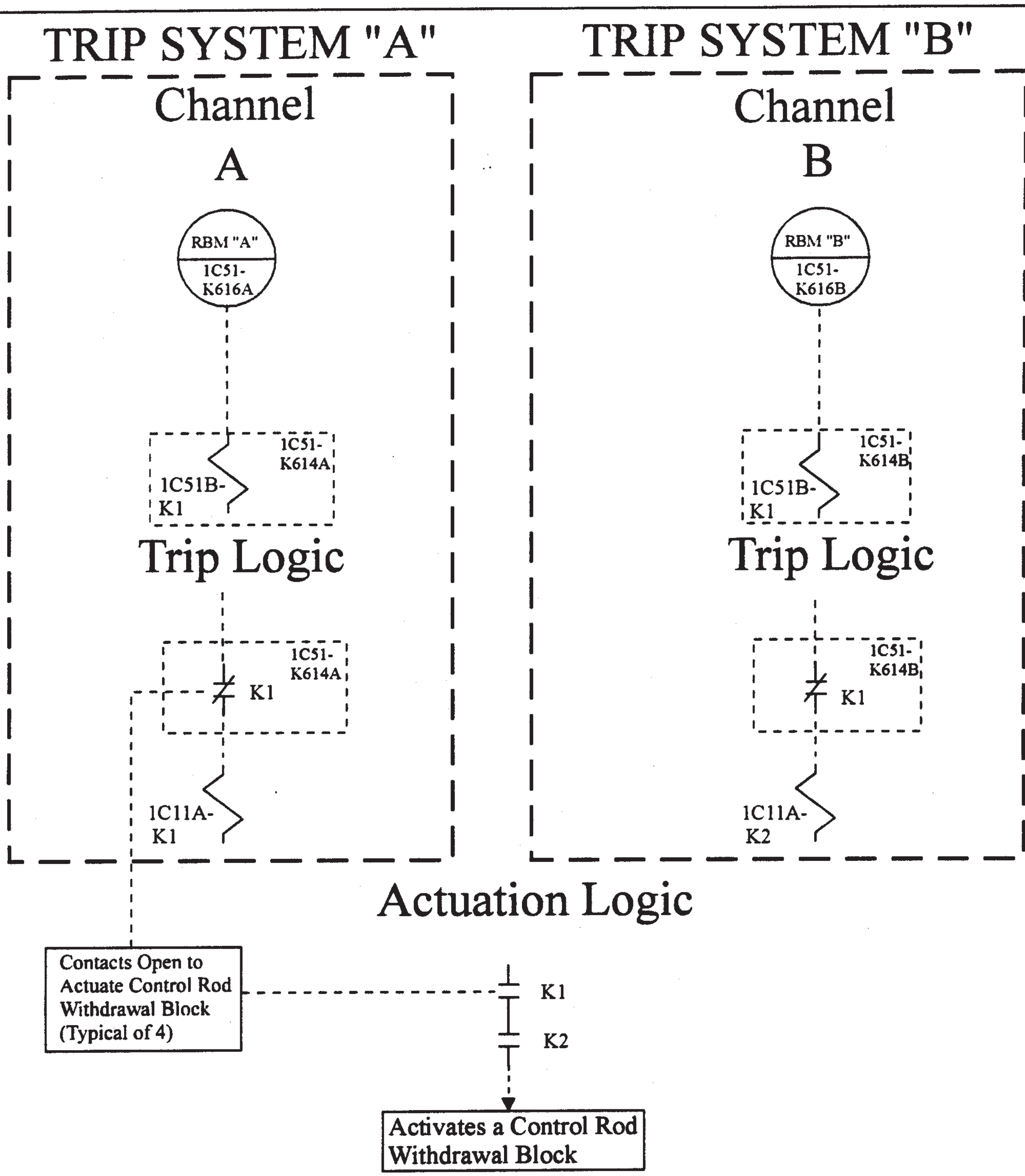
In order to maintain Control Rod Withdrawal Block capability on an RBM Low Power Range - Upscale condition, one channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-17828
H-17831
H-44709
H-44710
H-44713

Prepared By: [signature]

Reviewed By: [signature]

LFD-1-CRB-01
TS 3.3.2.1-1, Item 1.a Control Rod Block, Rod Block Monitor Low Power Range - Upscale
TRM Rev. 12



Minimum Channel Requirements for System Initiation Capability:

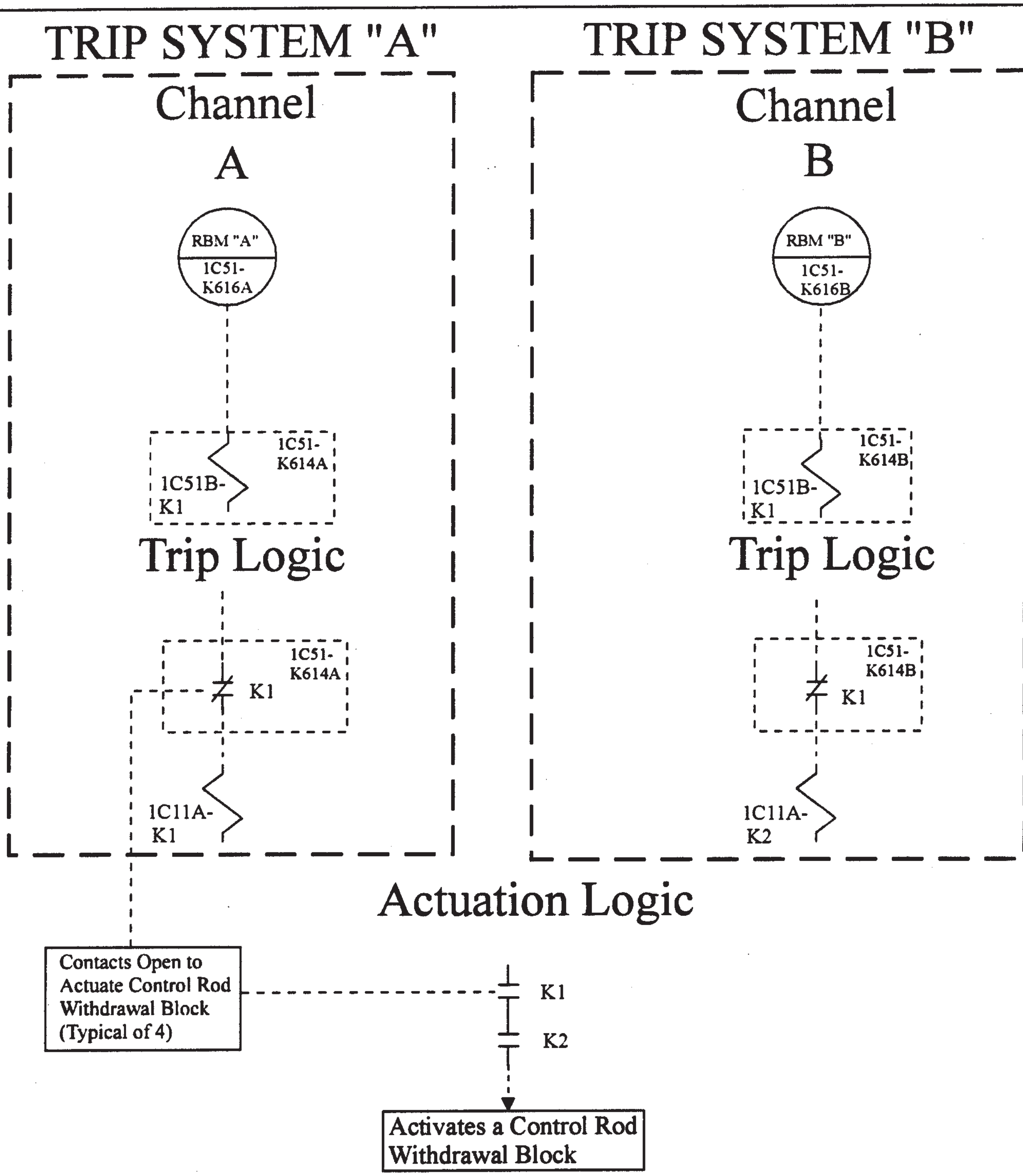
In order to maintain Control Rod Withdrawal Block capability on an RBM Intermediate Power Range - Upscale condition, one channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-17828
H-17831
H-44709
H-44710
H-44713

Prepared By: [signature]

Reviewed By: [signature]

LFD-1-CRB-02
TS 3.3.2.1-1, Item 1.b Control Rod Block, Rod Block Monitor Intermediate Power Range - Upscale
TRM Rev. 12



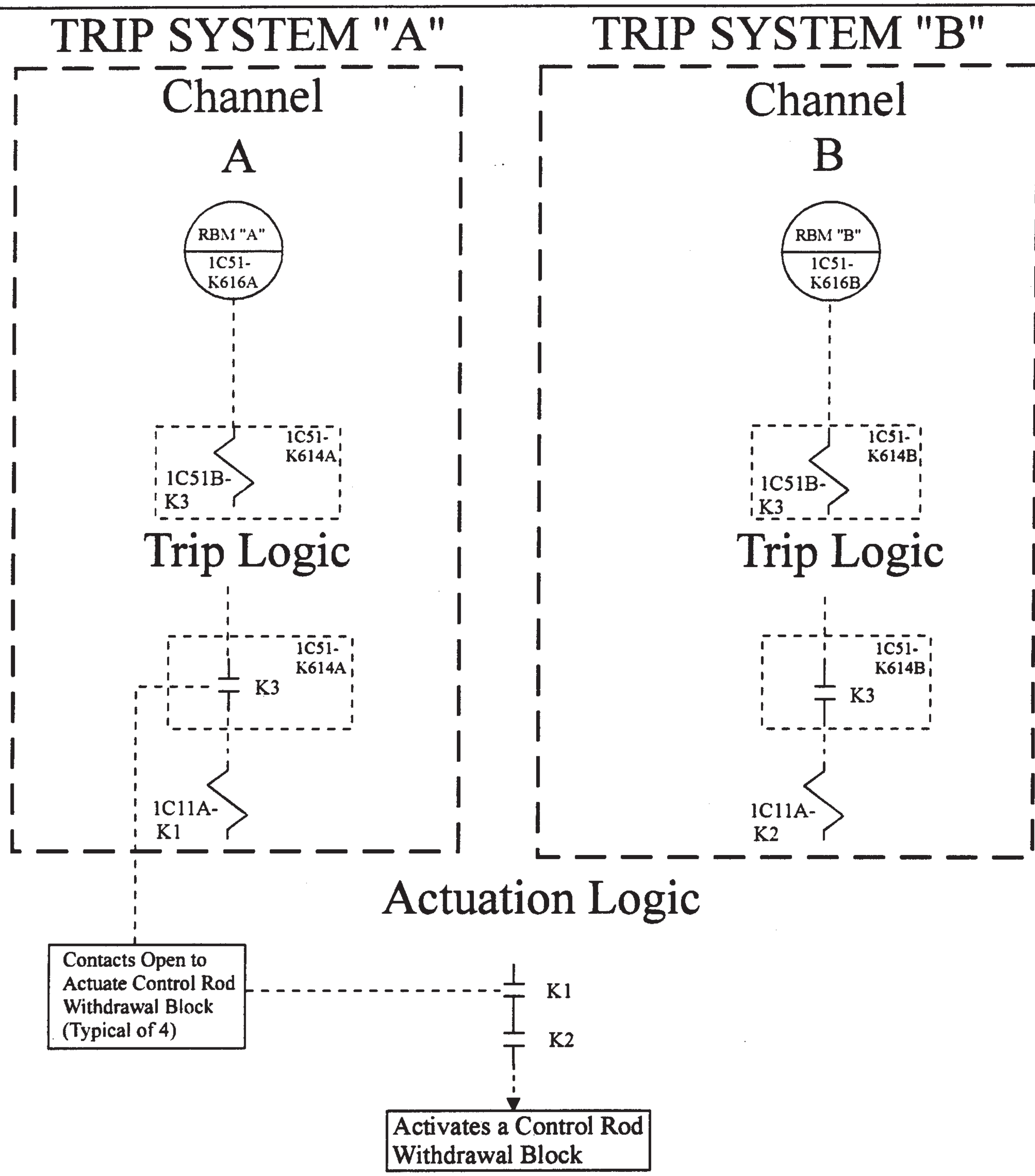
Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an RBM High Power Range - Upscale condition, one channel must be operable or maintained in the tripped condition.

LFD-1-CRB-03
TS 3.3.2.1-1, Item 1.c Control Rod Block, Rod Block Monitor High Power Range - Upscale
TRM Rev. 12

Elem. Ref.
17828
17831
H-44709
H-44710
H-44713

Prepared By: [signature]
Reviewed By: [signature]



Minimum Channel Requirements for System Initiation Capability:

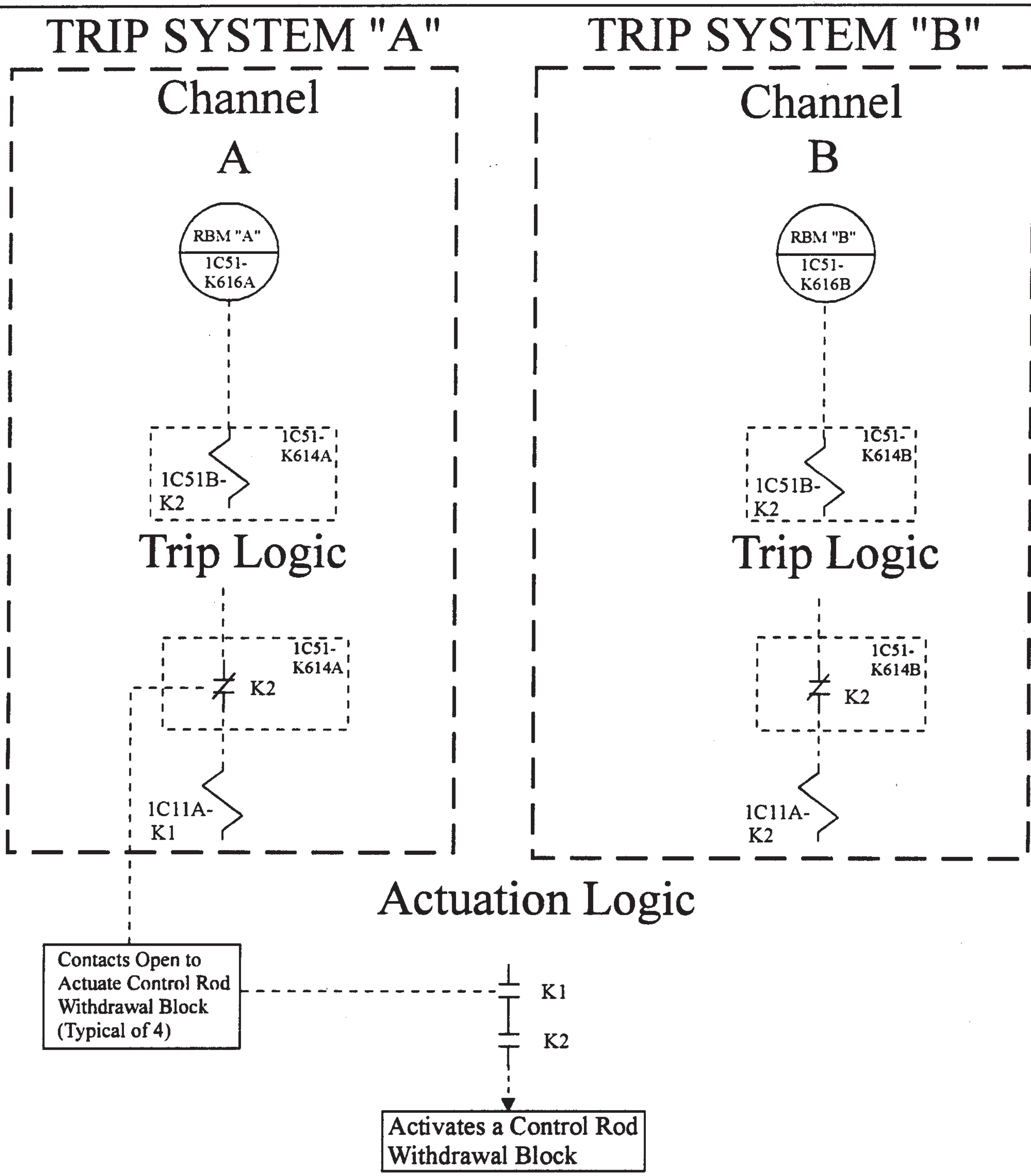
In order to maintain Control Rod Withdrawal Block capability on an RBM Inoperable condition, one channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-17828
H-17831
H-44709
H-44710
H-44713

Prepared By: Wayne
Reviewed By: C Sorenson

LFD-1-CRB-04
TS 3.3.2.1-1, Item 1.d
Control Rod Block,
Rod Block Monitor
Inop

TRM Rev. 12



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an RBM Downscale condition, one channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-17828
H-17831
H-44709
H-44710
H-44713

Prepared By:
Reviewed By:

LFD-1-CRB-05

TS 3.3.2.1-1, Item 1.e
Control Rod Block,
Rod Block Monitor -
Downscale

TRM Rev. 12

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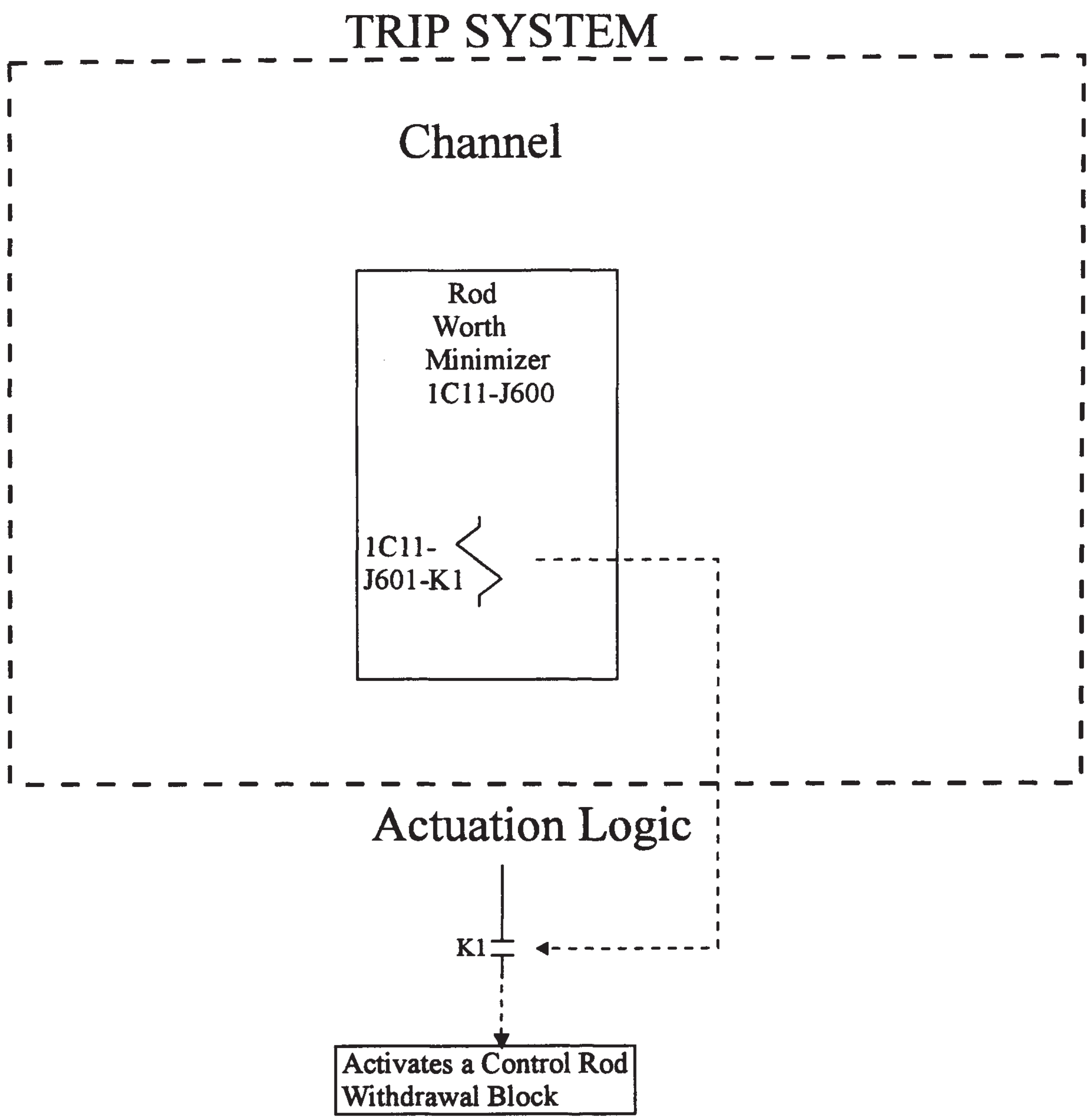


Minimum Channel Requirements for System Initiation Capability:
In order to maintain Control Rod Withdrawal Block capability associated with the Rod Worth Minimizer, one channel must be operable or maintained in the tripped condition.

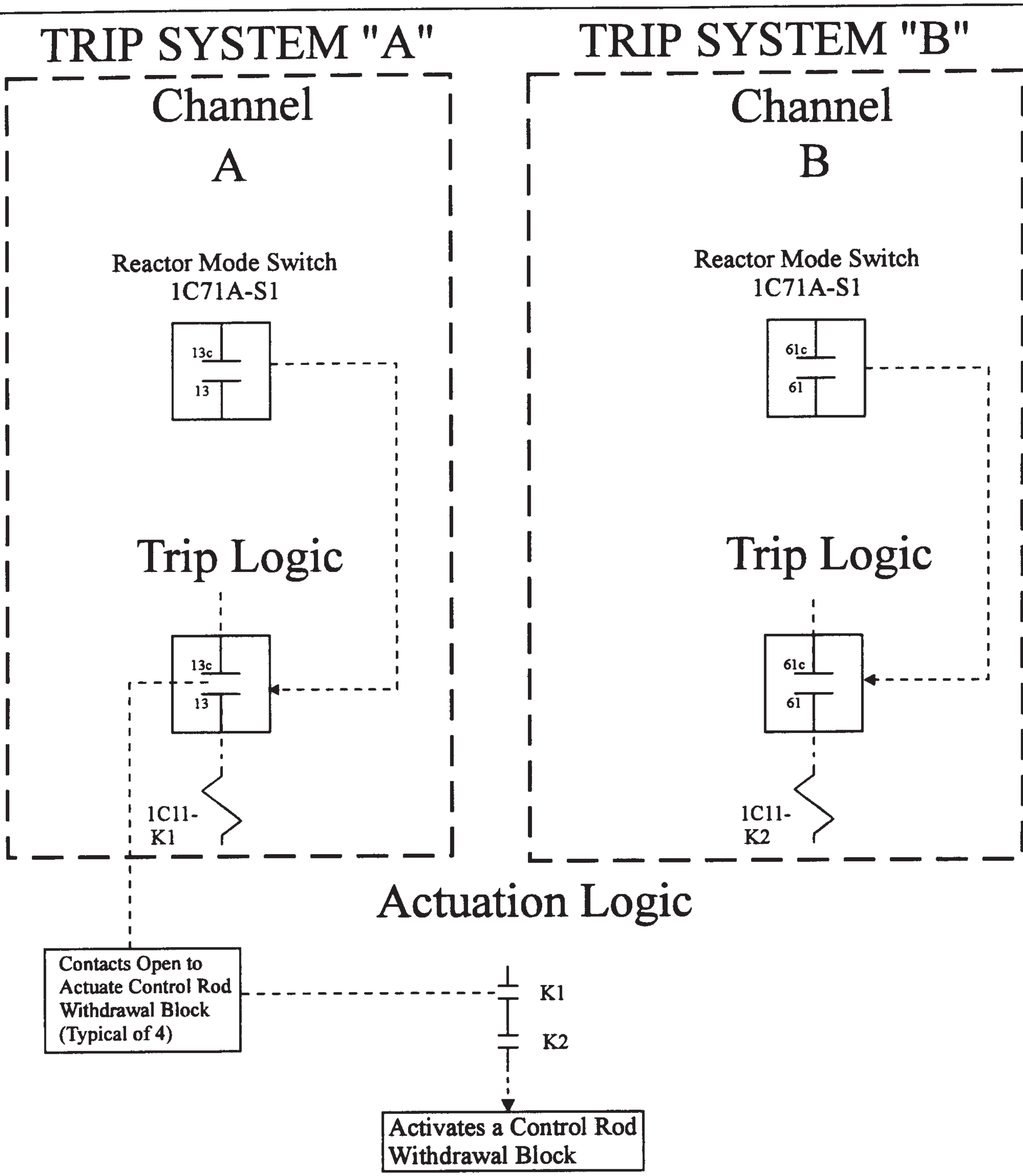
Elem. Ref.	H-17831 H-17117

Prepared By: Roger Clark
Reviewed By: S. R. Bruns

LFD-1-CRB-07

TS 3.3.2.1-1, Item 2
Control Rod Block,
Rod Worth Minimizer

Rev. 0 12/8/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on Reactor Mode Switch in Shutdown, one channel must be operable or maintained in the tripped condition.

LFD-1-CRB-08

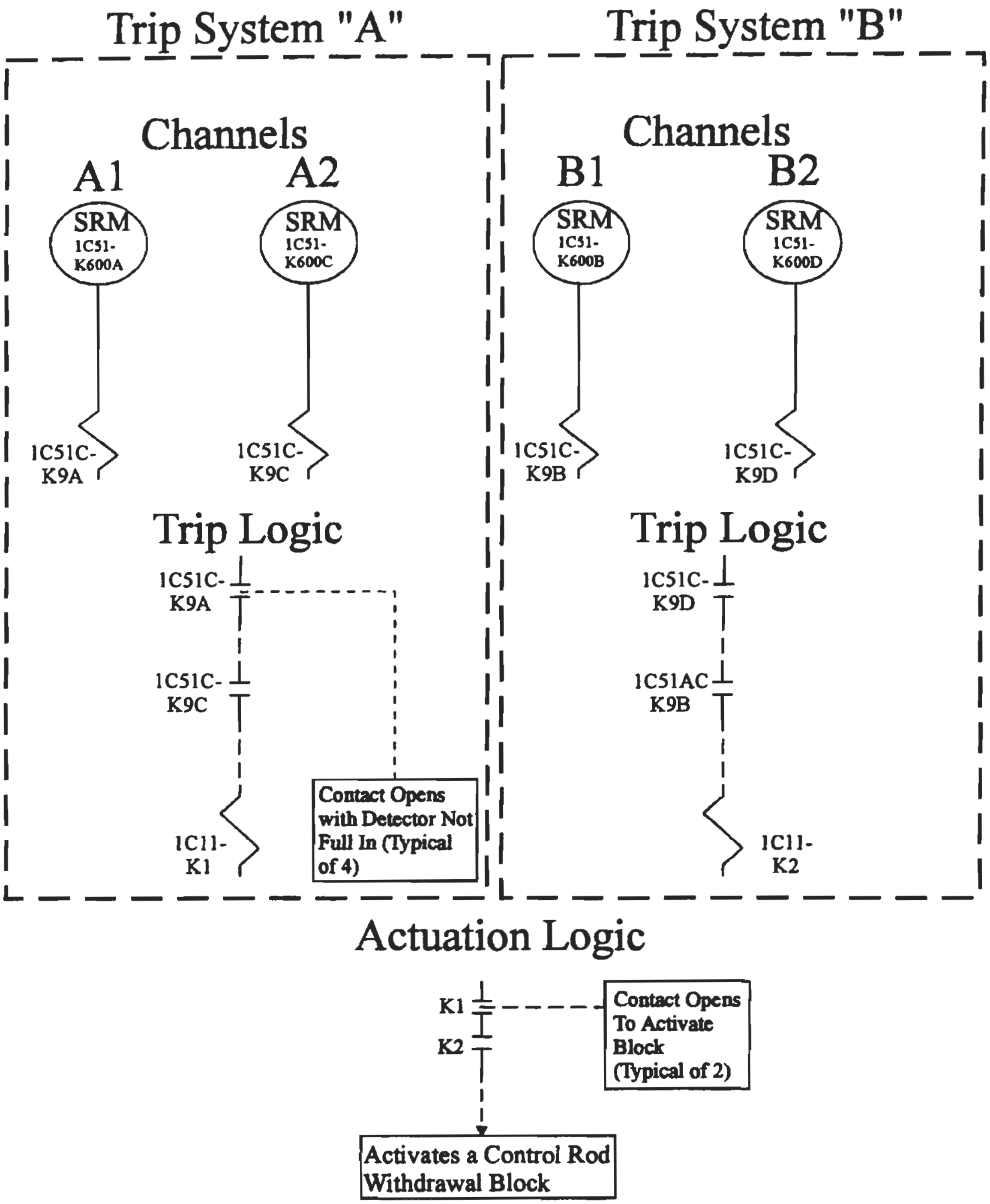
TS 3.3.2.1-1, Item 3
Control Rod Block,
Reactor Mode Switch -
Shutdown Position

Elem. Ref.
H-17828
H-17831

Prepared By: Royce Clark

Reviewed By: S. R. Brown

Rev. 0 12/8/94



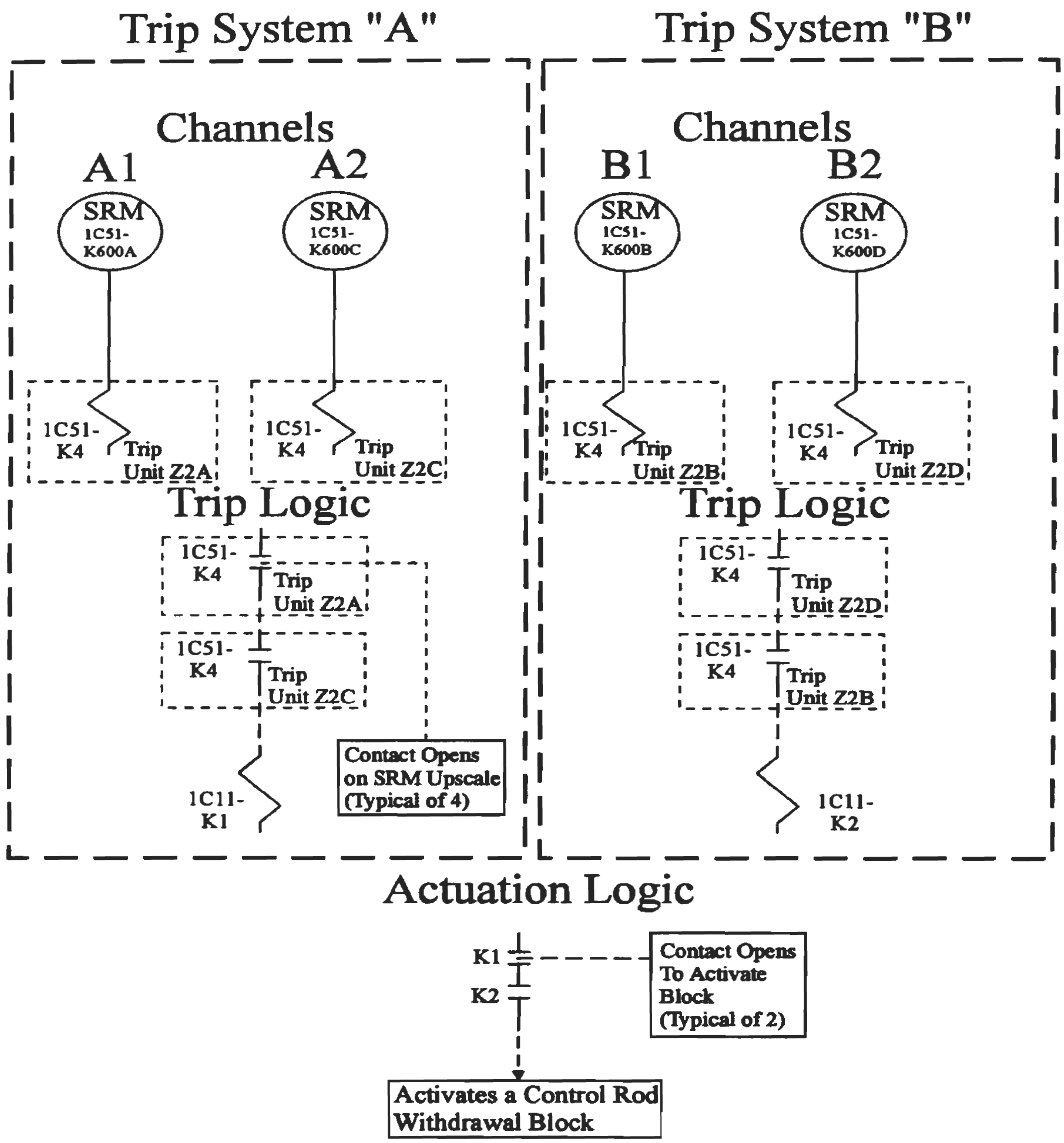
<u>Minimum Channel Requirements for System Initiation Capability</u>

In order to maintain Control Rod Withdrawal Block capability on an SRM detector-not-full-in condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.
H-17122
H-17123
H-17175
H-17828
H-17831

Prepared By: RLC
Reviewed By: [signature]

LFD-1-CRB-09
TRM T3.3.2-1, Item 1.a
Control Rod Block Instrumentation, SRM - Detector Not Full In
TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

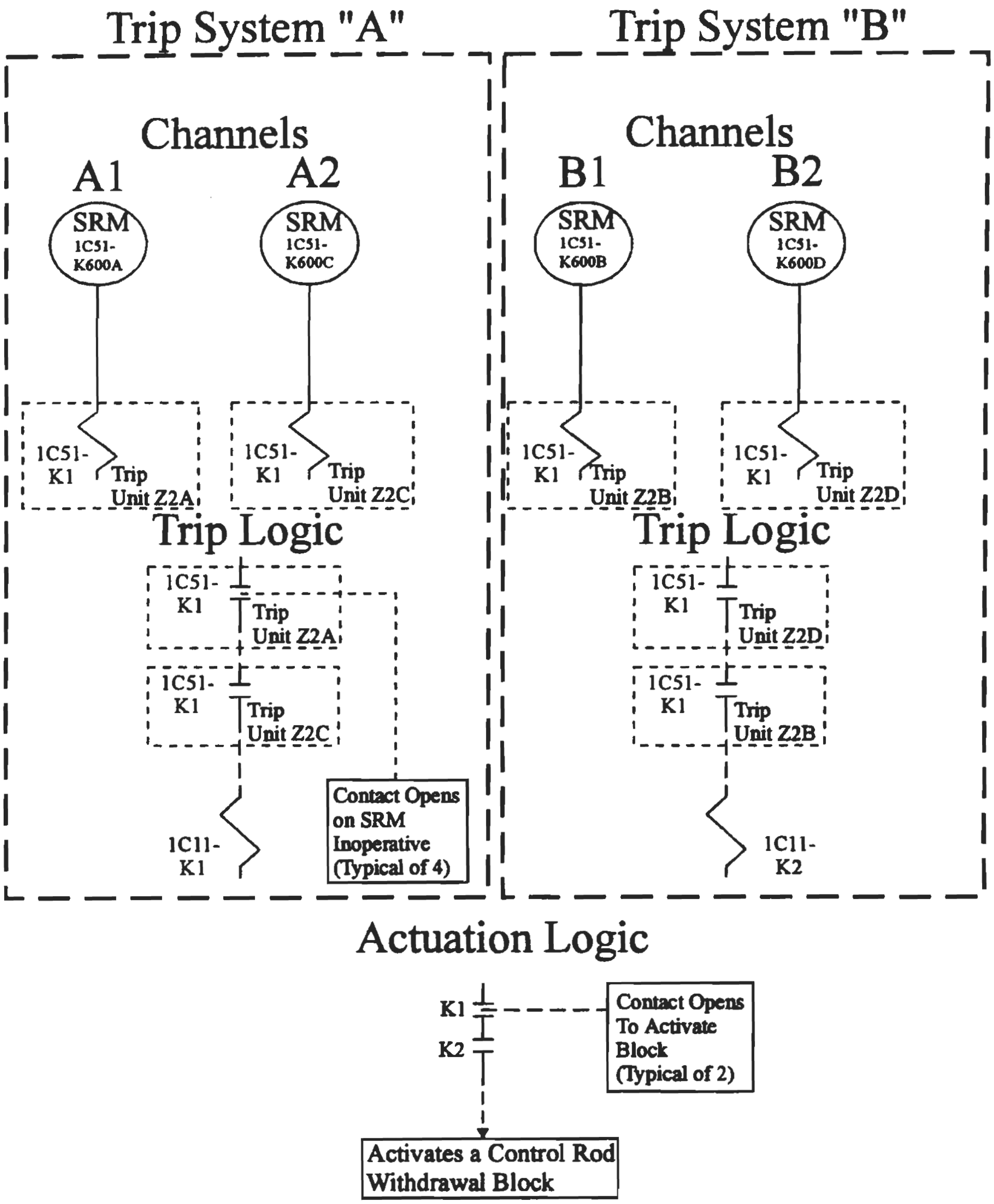
In order to maintain Control Rod Withdrawal Block capability on an SRM upscale condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.
H-17167
H-17175
H-17828
H-17831

Prepared By: RLC

Reviewed By: [signature]

LFD-1-CRB-10
TRM T3.3.2-1, Item 1.b Control Rod Block Instrumentation, SRM - Upscale
TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

In order to maintain Control Rod Withdrawal Block capability on an SRM inoperative condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.
H-17167
H-17175
H-17828
H-17831

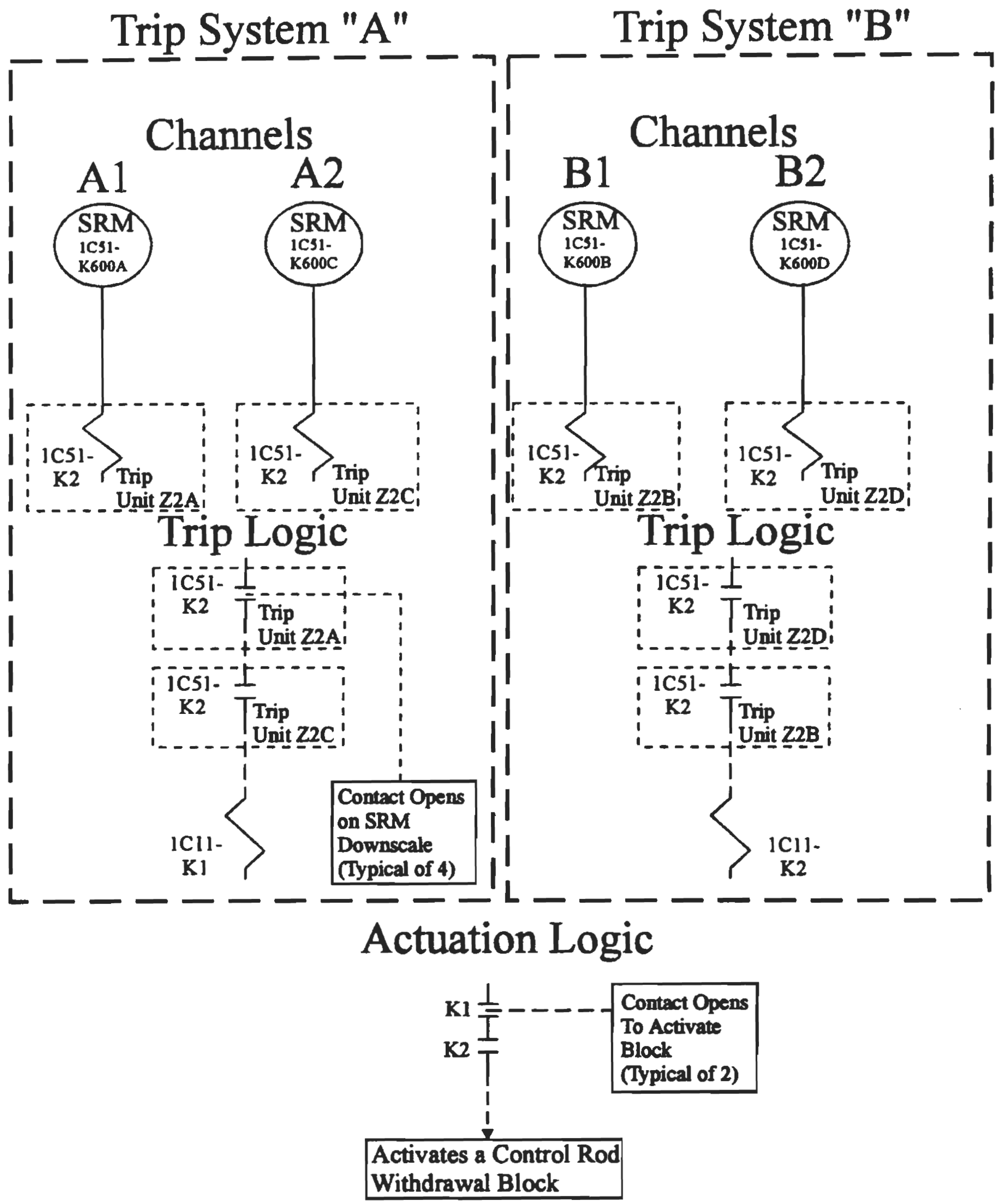
Prepared By: DLC

Reviewed By: [signature]

LFD-1-CRB-11

TRM T3.3.2-1, Item 1.c Control Rod Block Instrumentation, SRM - Inoperative

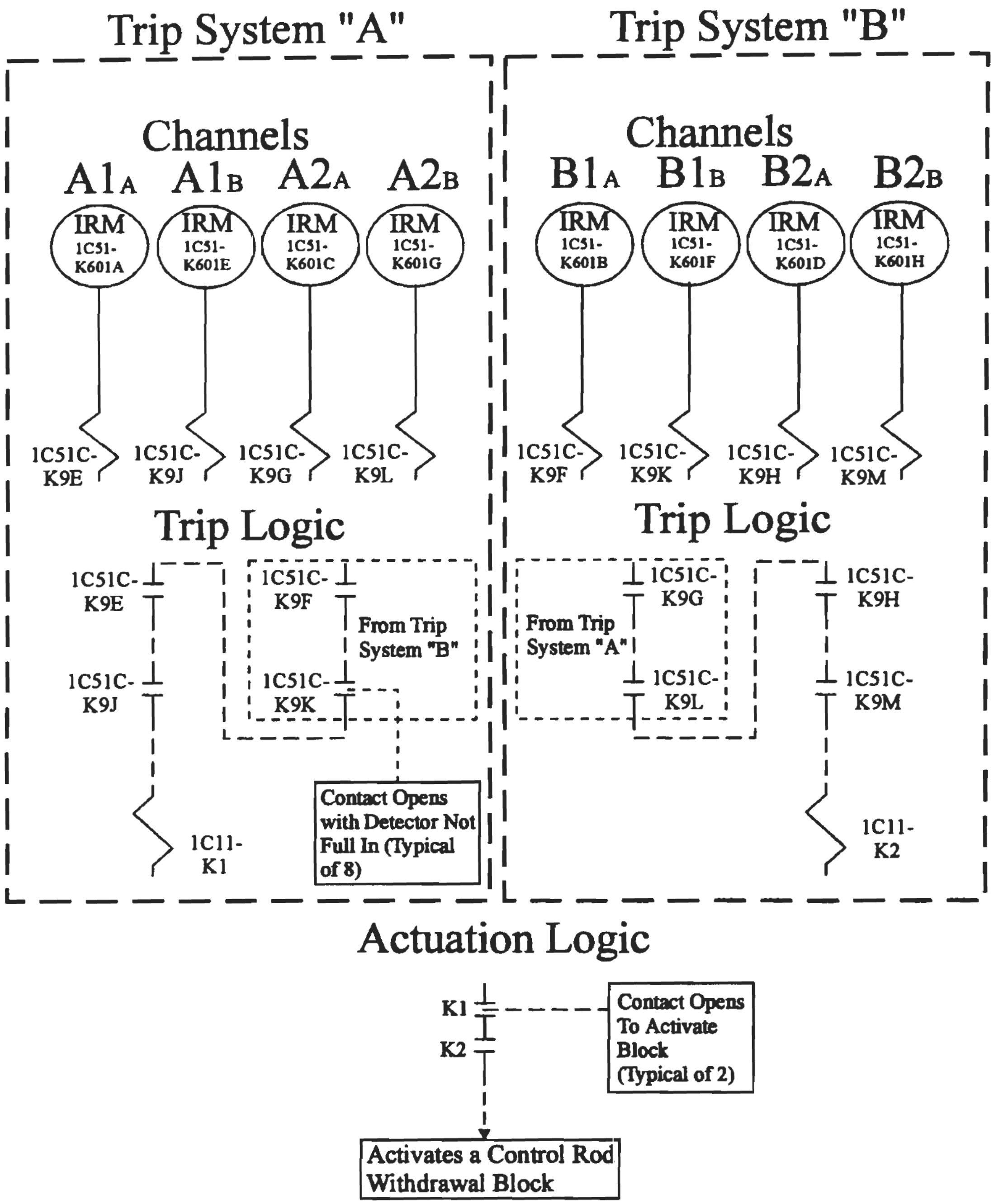
TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

In order to maintain Control Rod Withdrawal Block capability on an SRM downscale condition, one channel must be functional or maintained in the tripped condition.

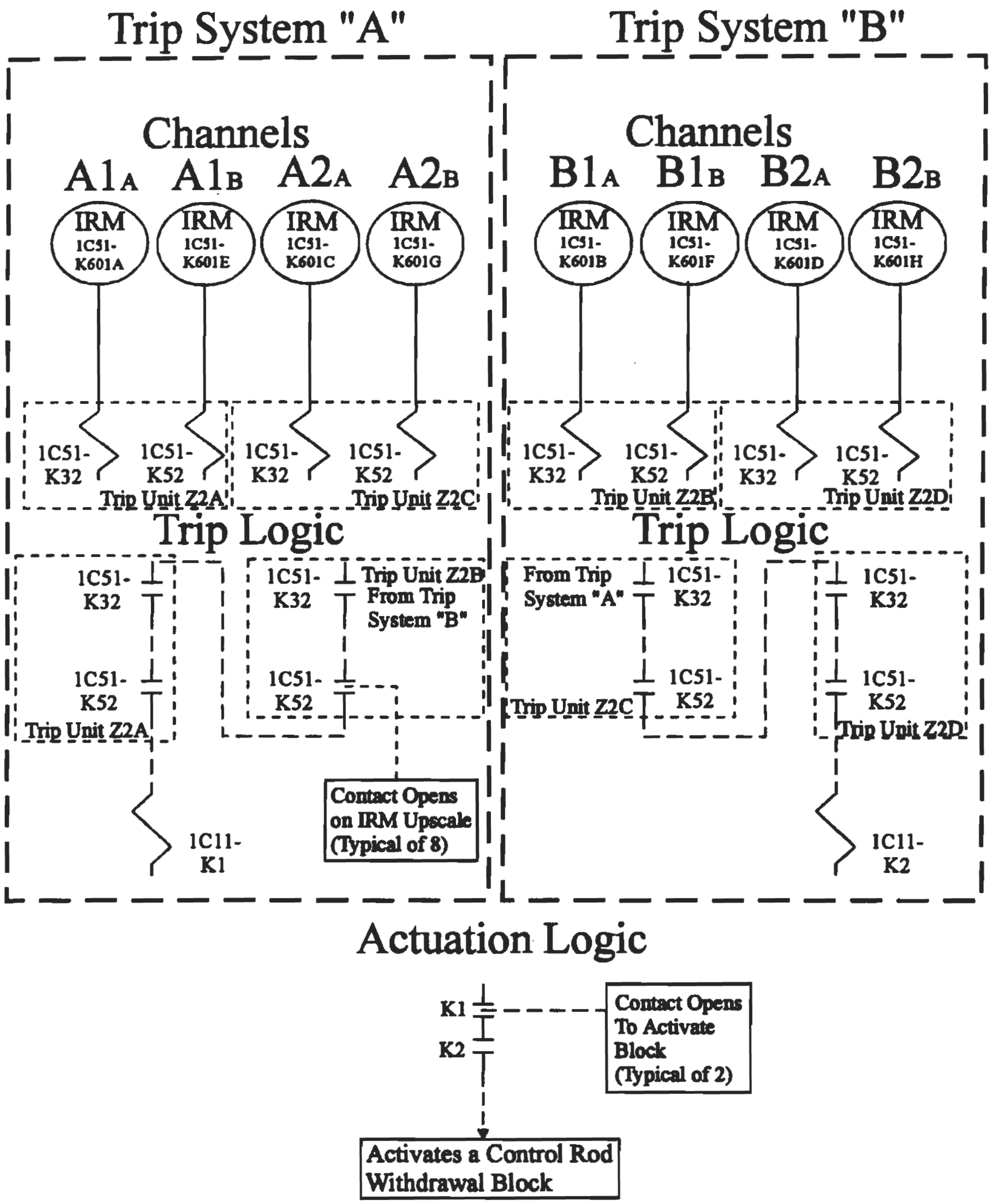
Elem. Ref. H-17167 H-17175 H-17828 H-17831	Prepared By: [signature] Reviewed By: [signature]	LFD-1-CRB-12 TRM T3.3.2-1, Item 1.d Control Rod Block Instrumentation, SRM - Downscale TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

In order to maintain Control Rod Withdrawal Block capability on an IRM not full in condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.		
H-17124 H-17125 H-17175 H-17828 H-17831	Prepared By: RLC Reviewed By: [signature]	LFD-1-CRB-13 TRM T3.3.2-1, Item 2.a Control Rod Block Instrumentation, IRM - Detector Not Full In TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

In order to maintain Control Rod Withdrawal Block capability on an IRM upscale condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.
H-17169
H-17170
H-17175
H-17828
H-17831

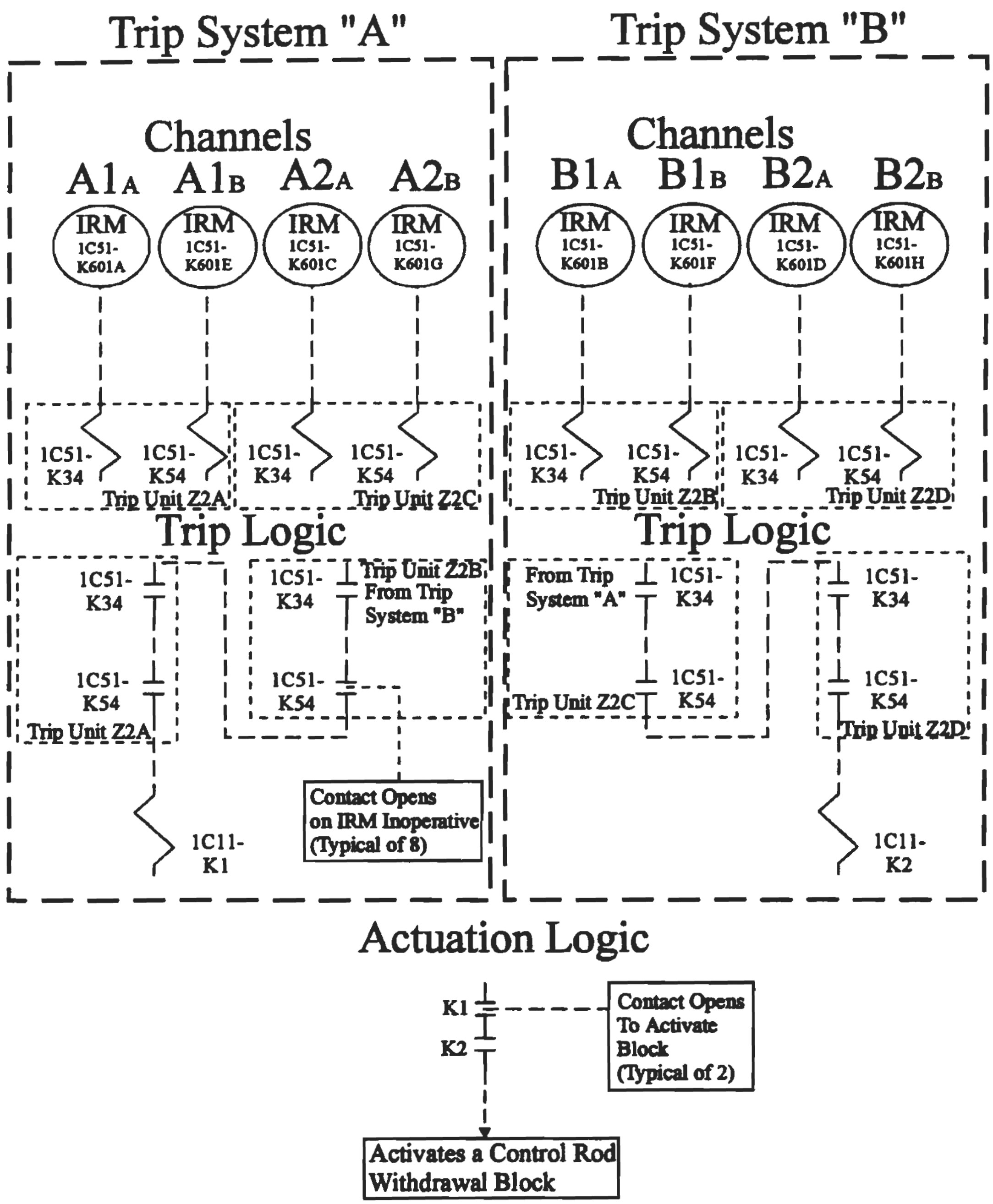
Prepared By: RLC

Reviewed By: [signature]

LFD-1-CRB-14

TRM T3.3.2-1, Item 2.b
Control Rod Block Instrumentation,
IRM - Upscale

TRM REV. 60



Minimum Channel Requirements for System Initiation Capability

In order to maintain Control Rod Withdrawal Block capability on an IRM inoperative condition, one channel must be functional or maintained in the tripped condition.

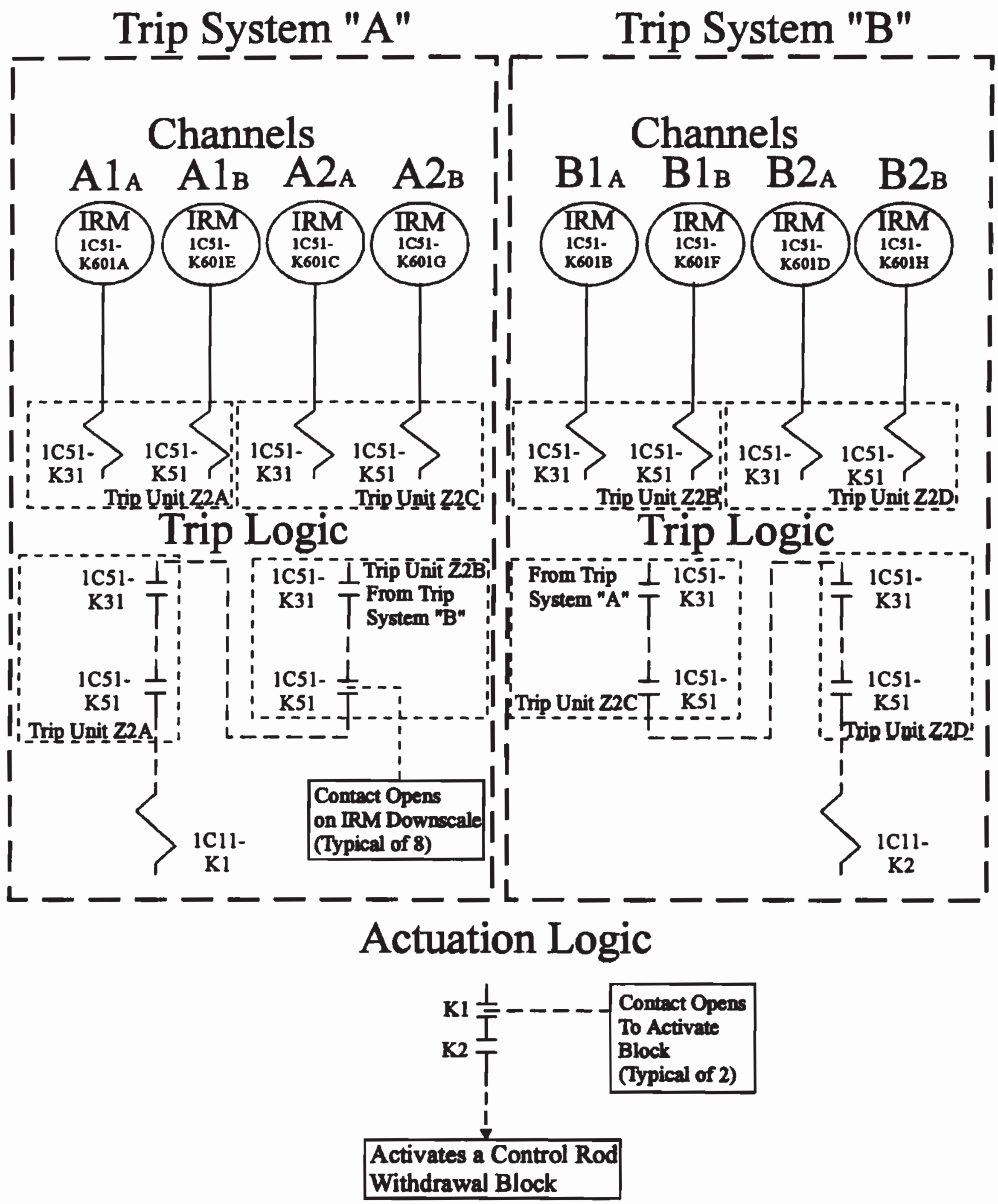
Elem. Ref.	
H-17169	H-17175
H-17170	H-17828
H-17171	H-17831
H-17172	

Prepared By: RLC

Reviewed By: [signature]

LFD-1-CRB-15

TRM T3.3.2-1, Item 2.c
Control Rod Block Instrumentation, IRM - Inoperative



<u>Minimum Channel Requirements for System Initiation Capability</u>

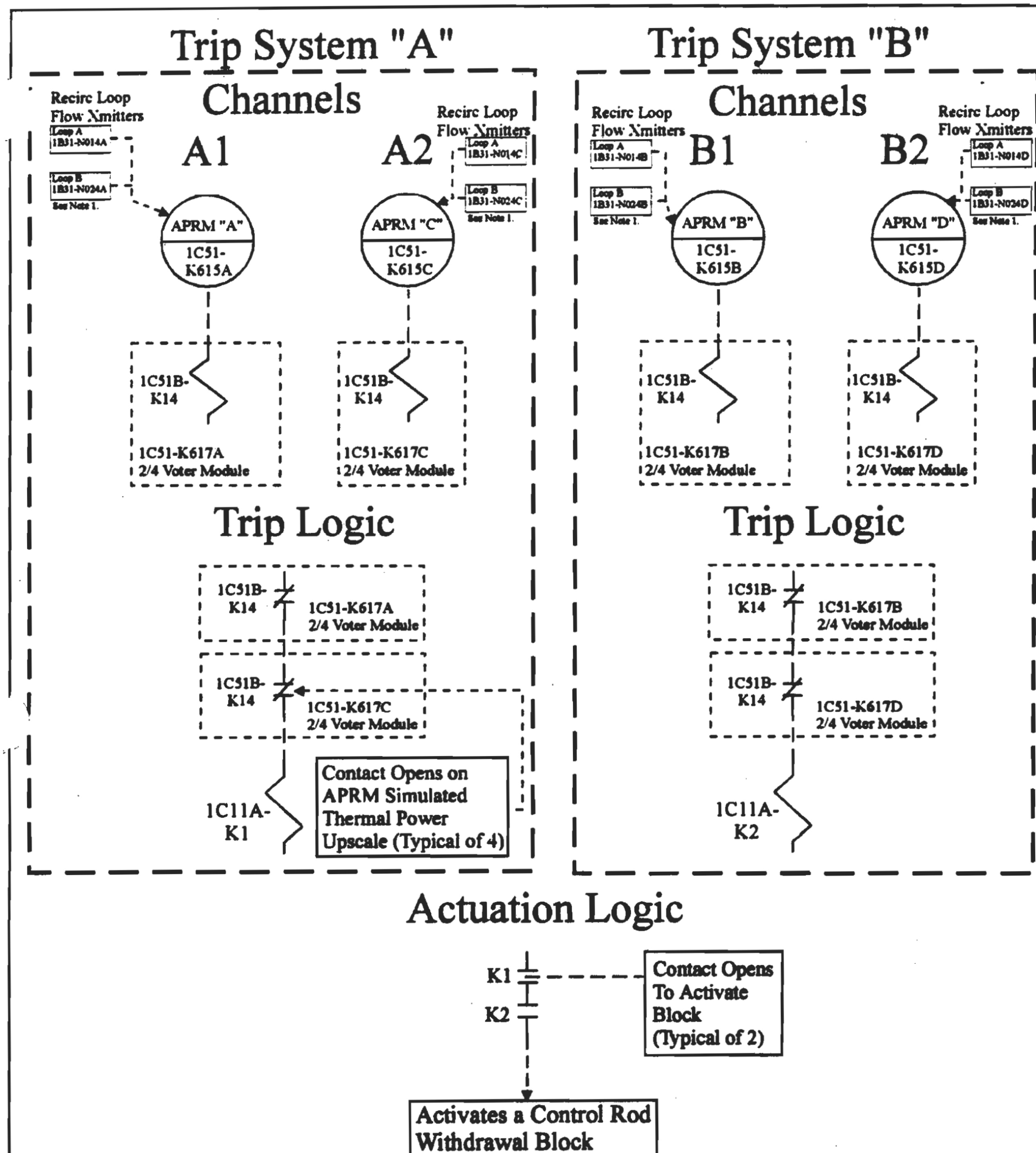
In order to maintain Control Rod Withdrawal Block capability on an IRM downscale condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.
H-17169
H-17170
H-17175
H-17828
H-17831

Prepared By: DLC

Reviewed By: [signature]

LFD-1-CRB-16
TRM T3.3.2-1, Item 2.d Control Rod Block Instrumentation, IRM - Downscale
TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Simulated Thermal Power Upscale condition, one channel must be functional or maintained in the tripped condition.

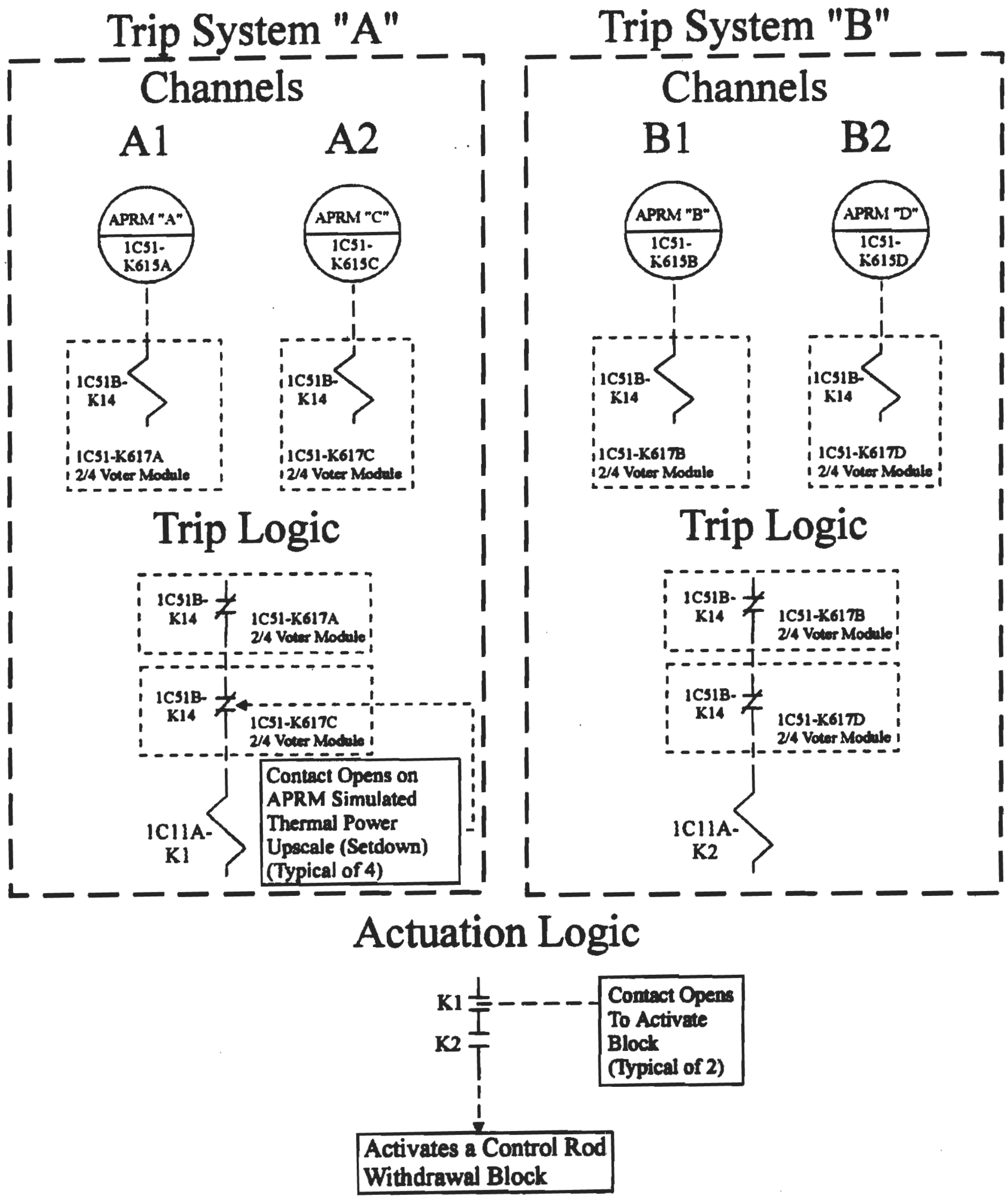
Note 1: For the STP Upscale function of an APRM to be considered operable, both of the associated Recirc Flow transmitters must be operable.

LFD-1-CRB-17
TRM T3.3.2-1, Item 3.a Control Rod Block Instrumentation, APRM - Simulated Thermal Power Upscale
TRM REV. 60

Elem. Ref.
H-17828 H-44707
H-17831 H-44708
H-44705 H-44713
H-44706

Prepared By: TLC

Reviewed By: [signature]



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Simulated Thermal Power Upscale (Setdown) condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.	
H-17828	H-44707
H-17831	H-44708
H-44705	H-44713
H-44706	

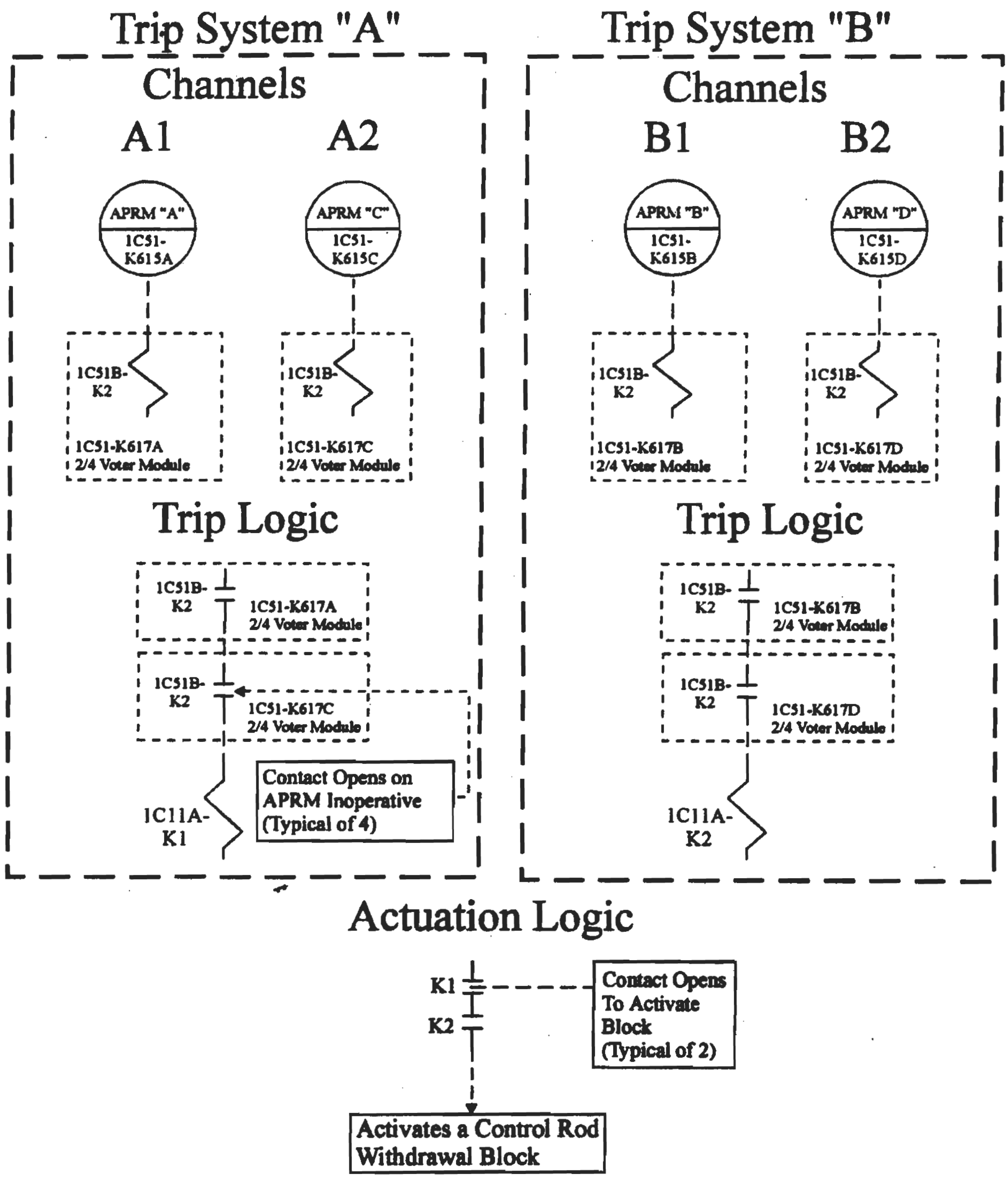
Prepared By: RLC

Reviewed By: [signature]

LFD-1-CRB-18

TRM T3.3.2-1, Item 3.b
Control Rod Block Instrumentation, APRM - Simulated Thermal Power Upscale (Setdown)

TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Inoperative condition, one channel must be functional or maintained in the tripped condition.

Elem. Ref.	
H-17828	H-44707
H-17831	H-44708
H-44705	H-44713
H-44706	

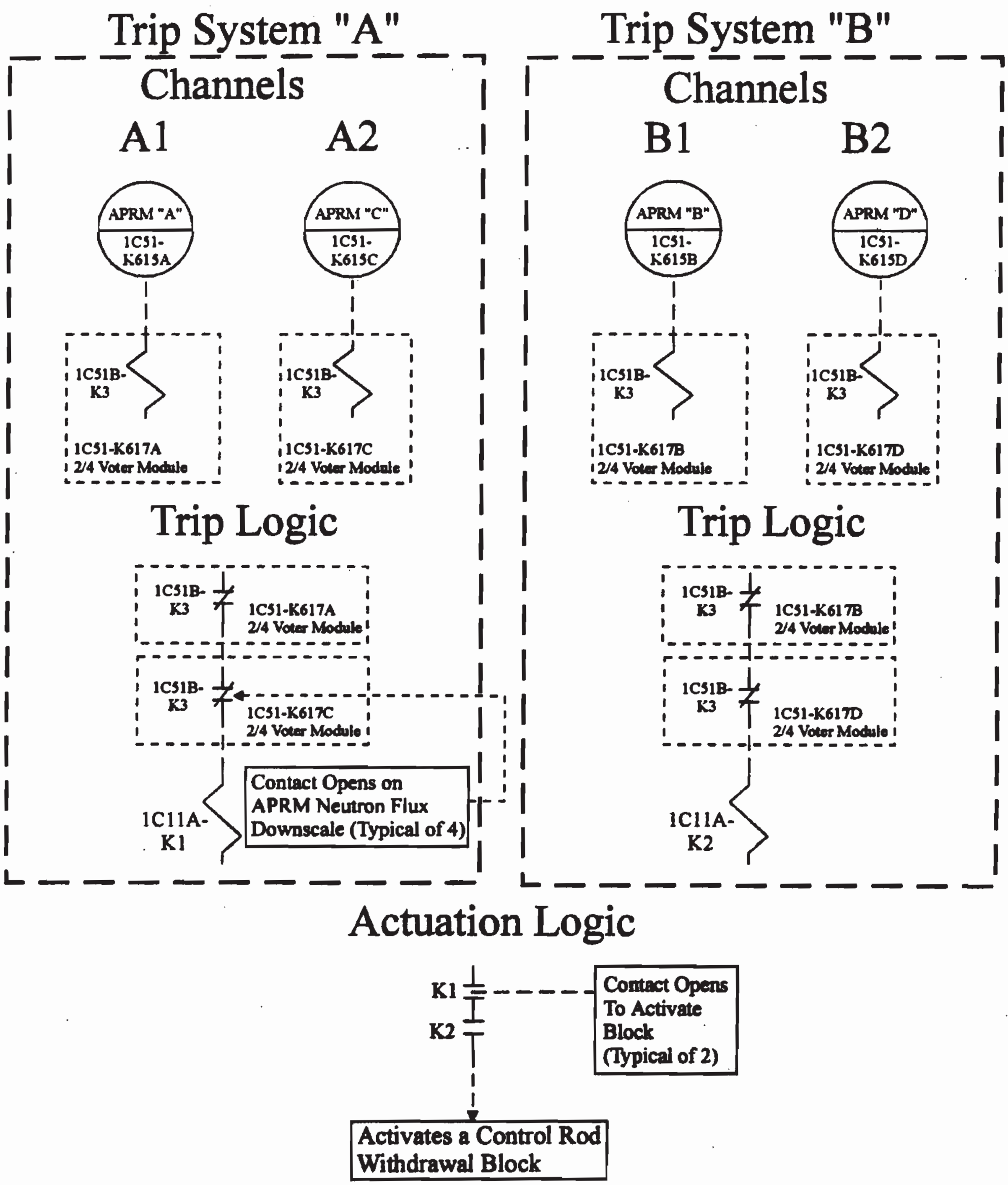
Prepared By: RLC

Reviewed By: [signature]

LFD-1-CRB-19

TRM T3.3.2-1, Item 3.c
Control Rod Block Instrumentation, APRM - Inoperative

TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Neutron Flux Downscale condition, one channel must be functional or maintained in the tripped condition.

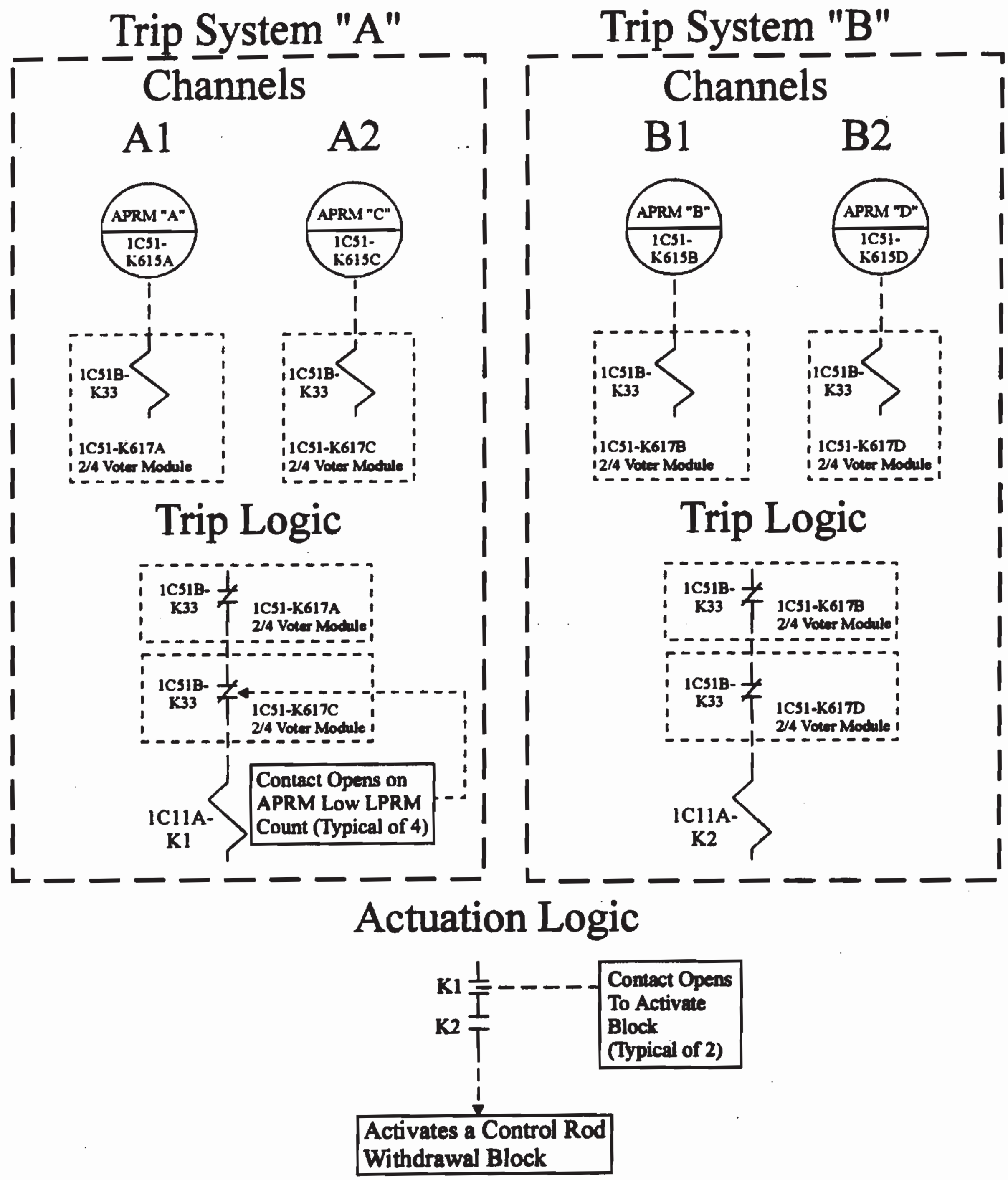
Elem. Ref.	
H-17828	H-44707
H-17831	H-44708
H-44705	H-44713
H-44706	

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-CRB-20

TRM T3.3.2-1, Item 3.d
Control Rod Block Instrumentation, APRM - Neutron Flux Downscale

TRM REV. 60



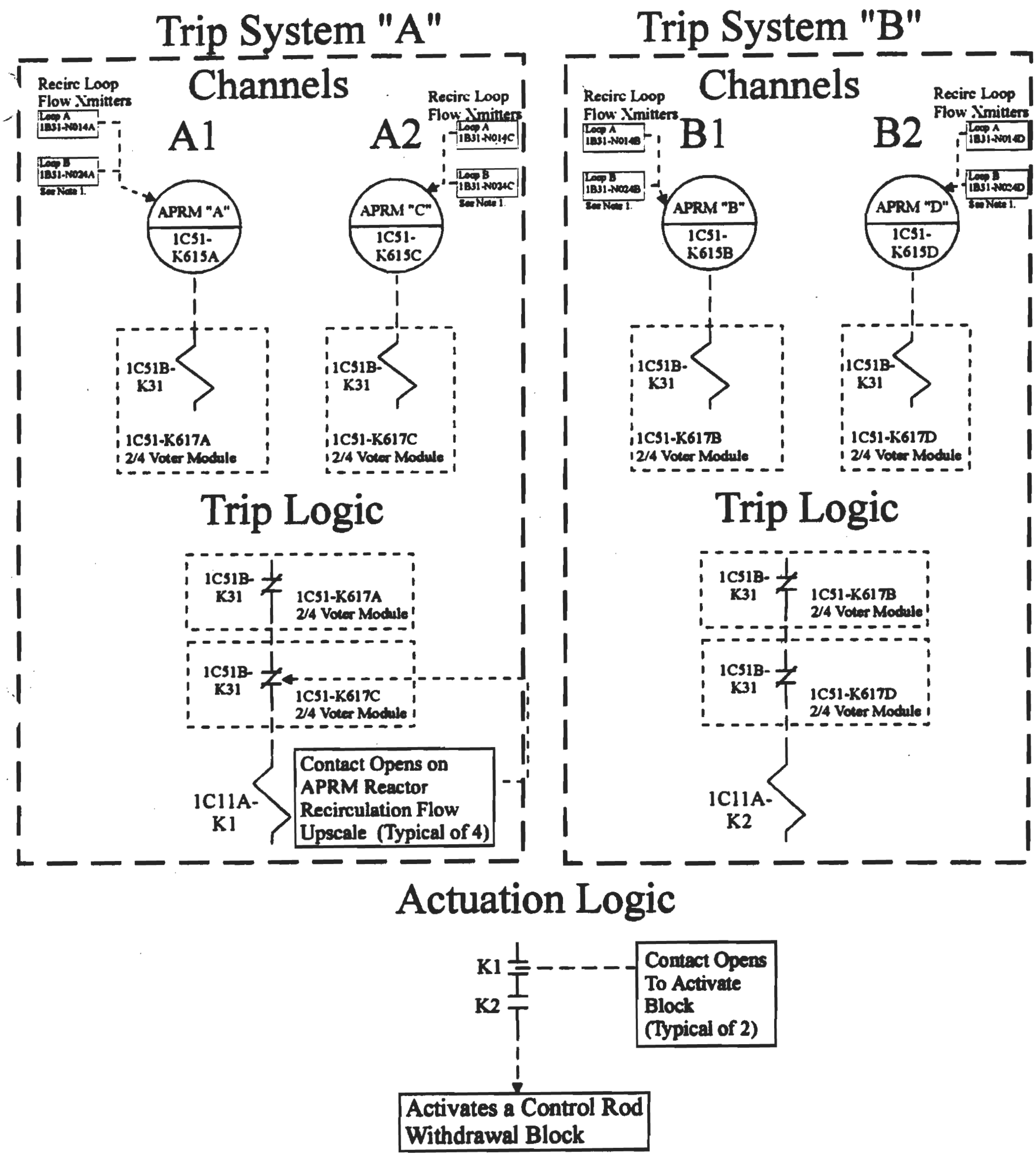
Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Low LPRM Count condition, one channel must be functional or maintained in the tripped condition.

LFD-1-CRB-21
TRM T3.3.2-1, Item 3.e Control Rod Block Instrumentation, APRM - Low LPRM Count
TRM REV. 60

Elem. Ref.
H-17828 H-44707
H-17831 H-44708
H-44705 H-44713
H-44706

Prepared By: DLC
Reviewed By: [signature]



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on an APRM Reactor Recirculation Flow Upscale condition, one channel must be functional or maintained in the tripped condition.

LFD-1-CRB-22

TRM T3.3.2-1, Item 3.f Control Rod Block Instrumentation, APRM - Reactor Recirculation Flow Upscale

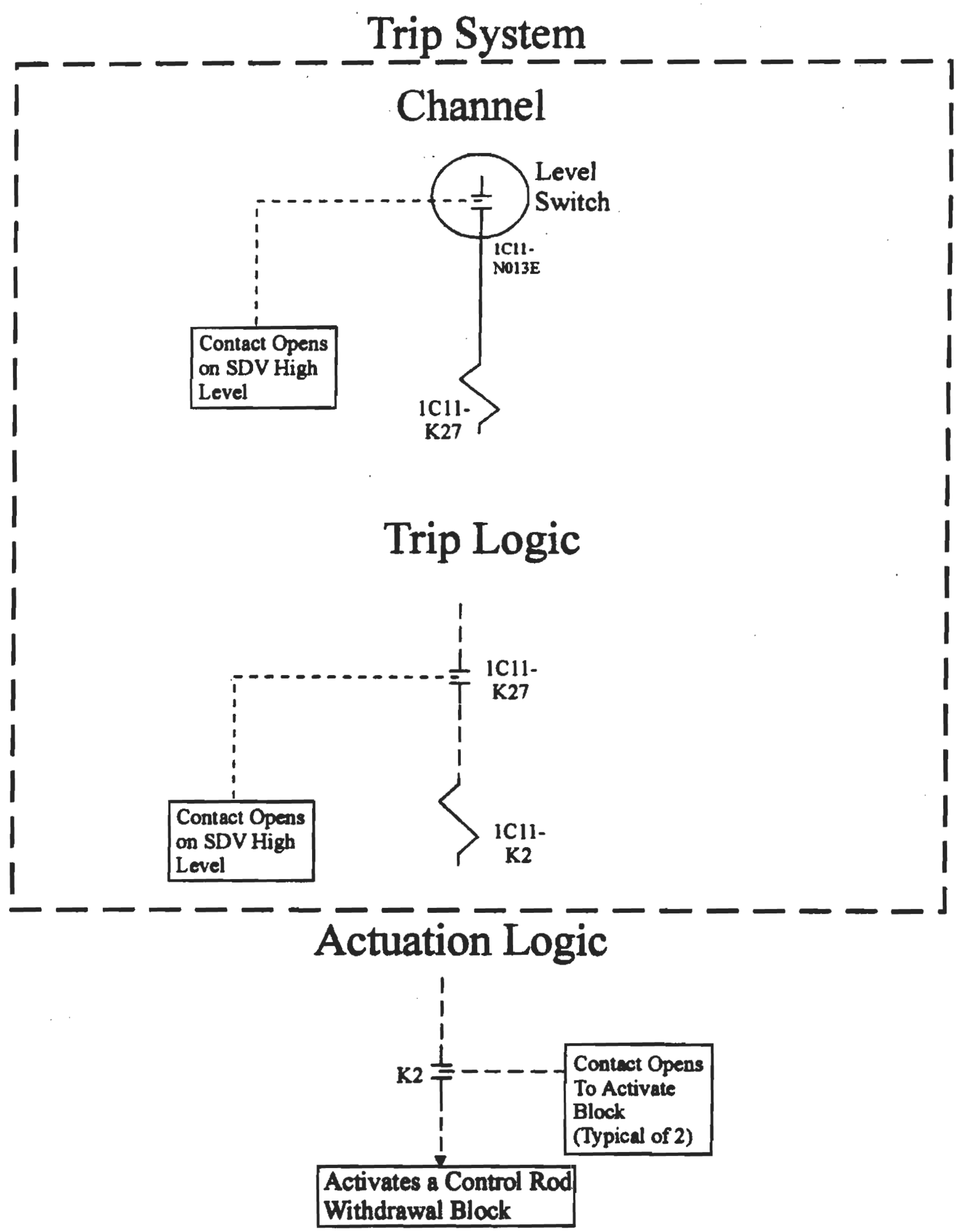
TRM REV. 60

Elem. Ref.
H-17828 H-44707
H-17831 H-44708
H-44705 H-44713
H-44706

Note 1: For the Reactor Recirc ulation Flow Upscale function of an APRM to be considered operable, both of the associated Recirc Flow transmitters must be operable.

Prepared By: TLC

Reviewed By: [illegible]



Minimum Channel Requirements for System Initiation Capability:

In order to maintain Control Rod Withdrawal Block capability on a Scram Discharge Volume high level condition, the one channel must be functional or maintained in the tripped condition.

Elem. Ref.

H-17828
H-17831
H-17832

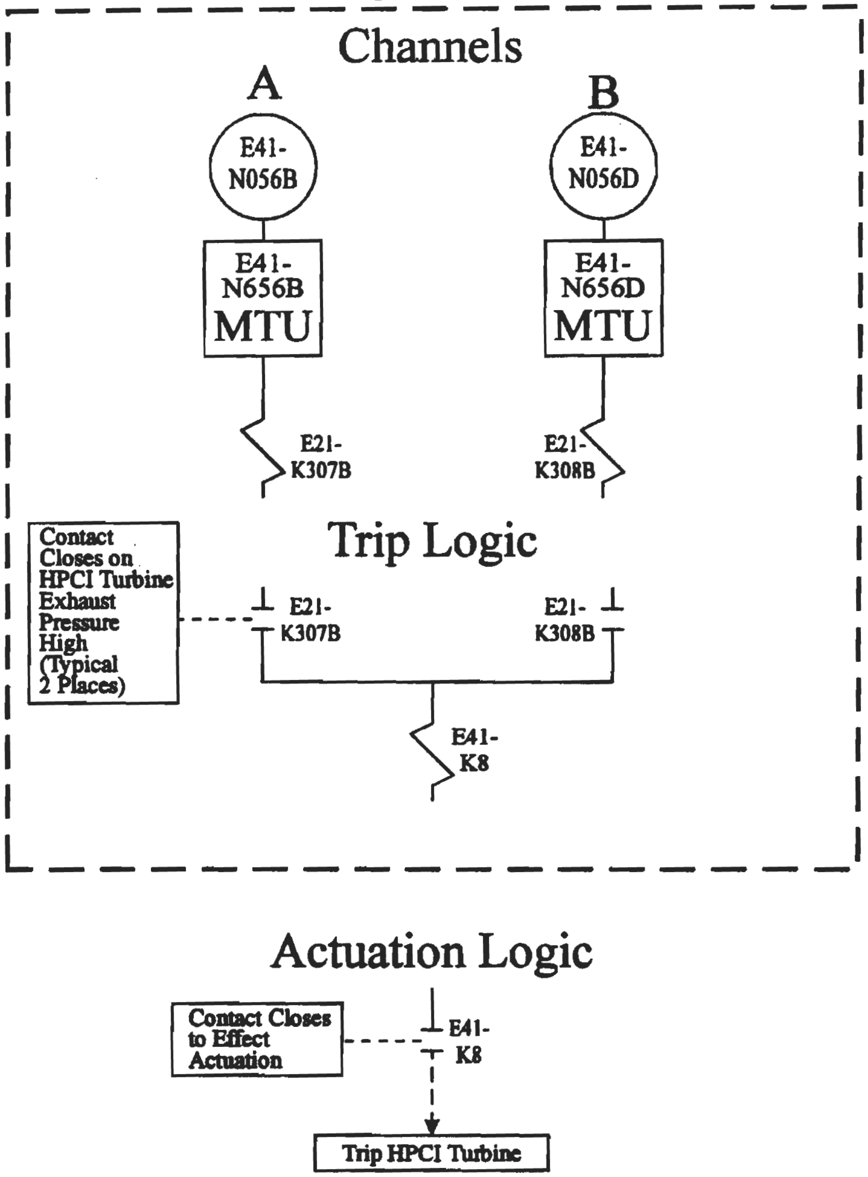
Prepared By: DLC
Reviewed By: [signature]

LFD-1-CRB-23

TRM T3.3.2-1, Item 4
Control Rod Block Instrumentation, SDV Level - High

TRM REV. 60

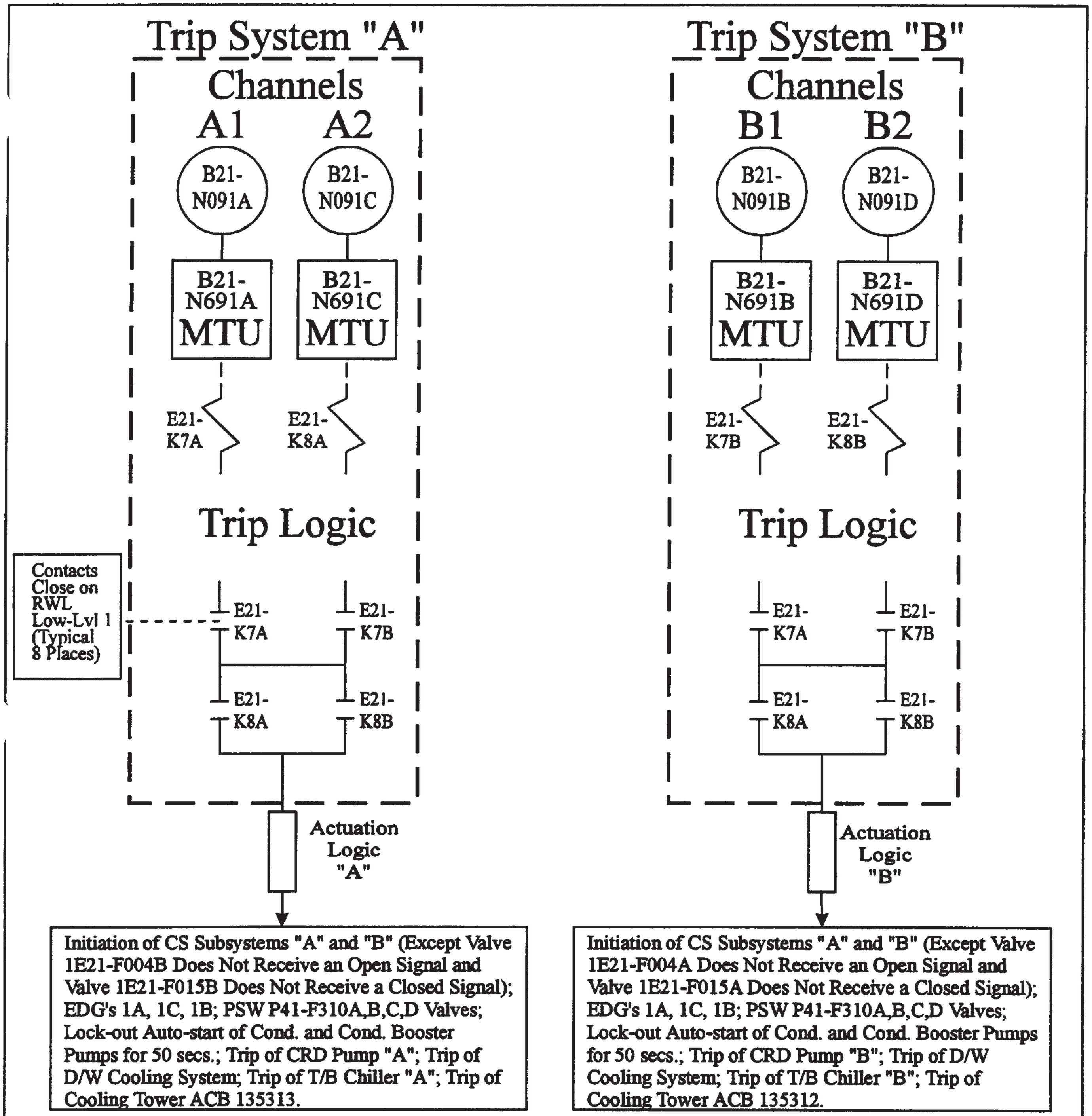
Trip System



Minimum Channel Requirements for System Trip Capability:

In order to maintain HPCI turbine trip capability with regard to a HPCI turbine exhaust pressure-high signal, at least one channel must be functional.

Elem. Ref. H-17159 H-17160 H-19824	Prepared By: DLC Reviewed By:	LFD-1-ECCS-25 TRM T3.3.5-1, Item 2 HPCI Turbine Trip HPCI Turbine Exhaust Pressure-High TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain initiation capability for Core Spray, the EDG's, the PSW turbine building isolation valves, and the above noted load shed and sequence logic on a RWL-Level 1 signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.

H-13380	H-17102	H-19826
H-13385	H-17109	H-19829
H-17047	H-17114	H-19830
H-17101	H-19823	

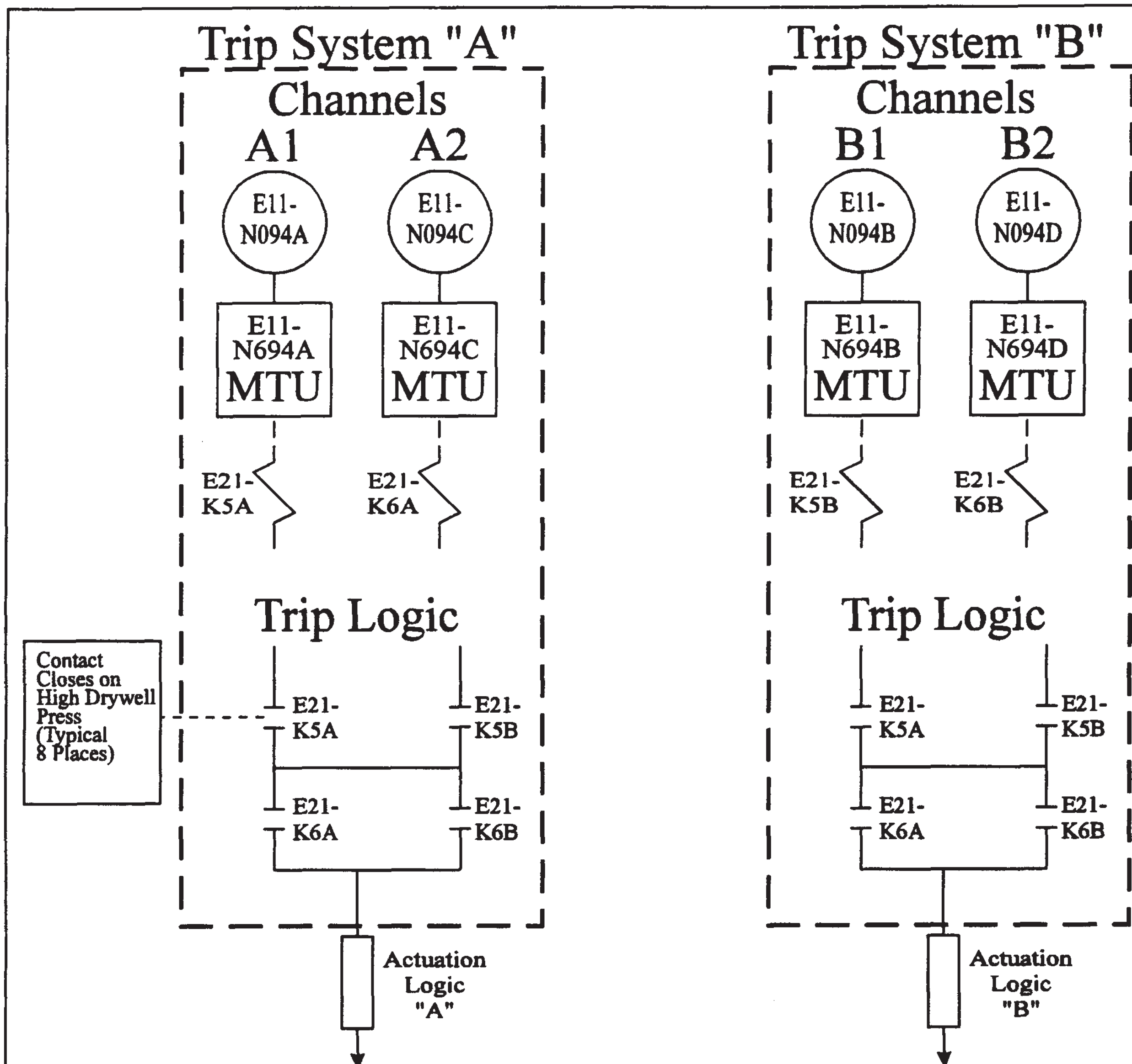
Prepared By:

Reviewed By:

LFD-1-ECCS-01

TS 3.3.5.1-1, Item 1.a
Core Spray System
RWL-Low Low Low,
Level 1

TRM Rev. 6



Initiation of CS Subsystems "A" and "B" (Except Valve 1E21-F004B Does Not Receive an Open Signal and Valve 1E21-F015B Does Not Receive a Closed Signal); EDG's 1A, 1C, 1B; PSW P41-F310A,B,C,D Valves; Lock-out Auto-start of Cond. and Cond. Booster Pumps for 50 secs.; Trip of CRD Pump "A"; Trip of D/W Cooling System; Trip of T/B Chiller "A"; Trip of Cooling Tower ACB 135313.

Initiation of CS Subsystems "A" and "B" (Except Valve 1E21-F004A Does Not Receive an Open Signal and Valve 1E21-F015A Does Not Receive a Closed Signal); EDG's 1A, 1C, 1B; PSW P41-F310A,B,C,D Valves; Lock-out Auto-start of Cond. and Cond. Booster Pumps for 50 secs.; Trip of CRD Pump "B"; Trip of D/W Cooling System; Trip of T/B Chiller "B"; Trip of Cooling Tower ACB 135312.

Minimum Channel Requirements for System Initiation Capability:

In order to maintain initiation capability for Core Spray, the EDG'S, the PSW turbine building isolation valves,and the above noted load shed and sequence logic on a Drywell Pressure-High signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.		
H-13380	H-17101	H-17114
H-13385	H-17102	H-19827
H-17047	H-17109	H-19830

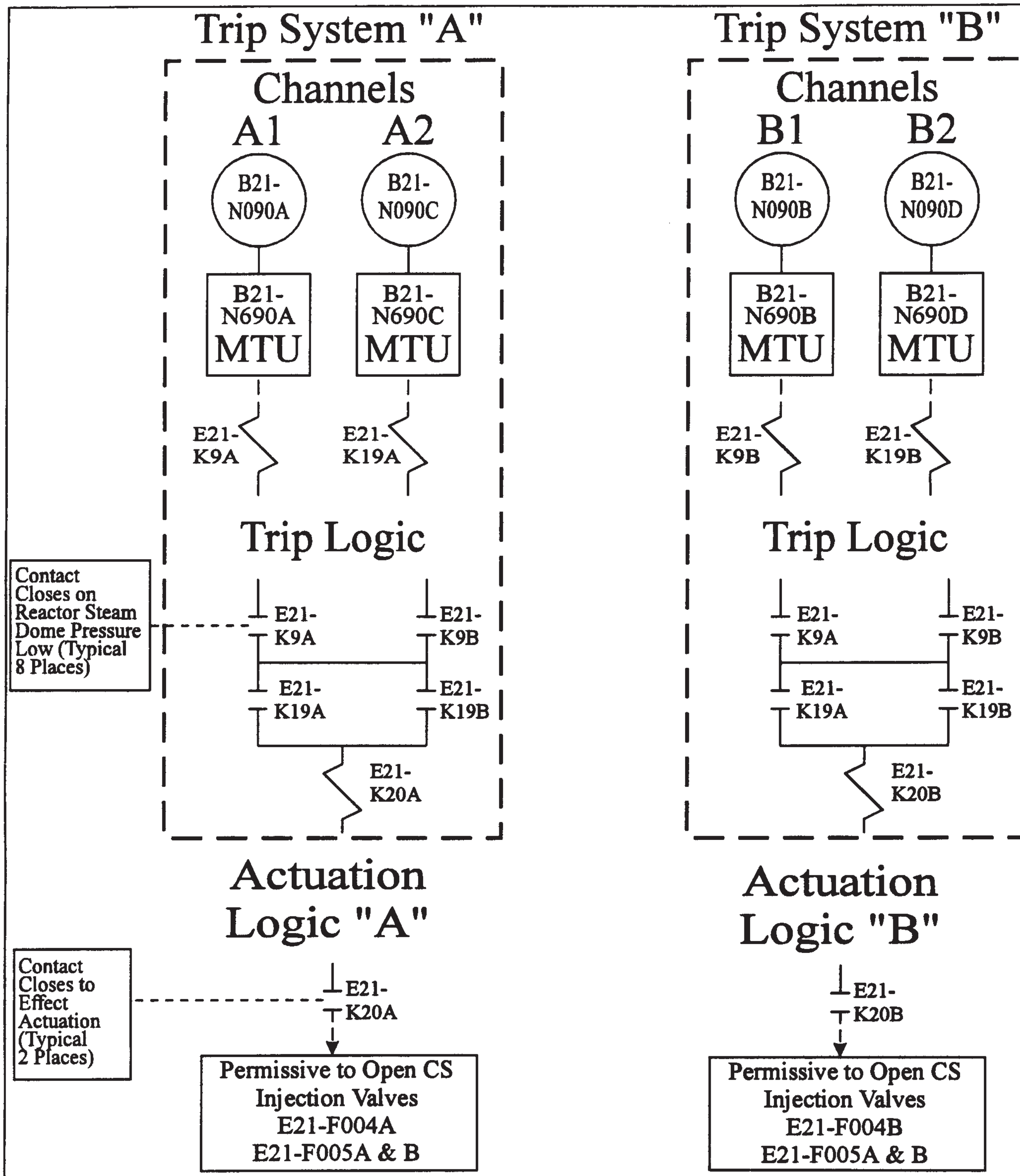
Prepared By: S. R. Bruner

Reviewed By: [signature]

LFD-1-ECCS-02

TS 3.3.5.1-1, Item 1.b
Core Spray System
Drywell Pressure-High

Rev. 0 3/16/95



Minimum Channel Requirements for System Initiation Capability:

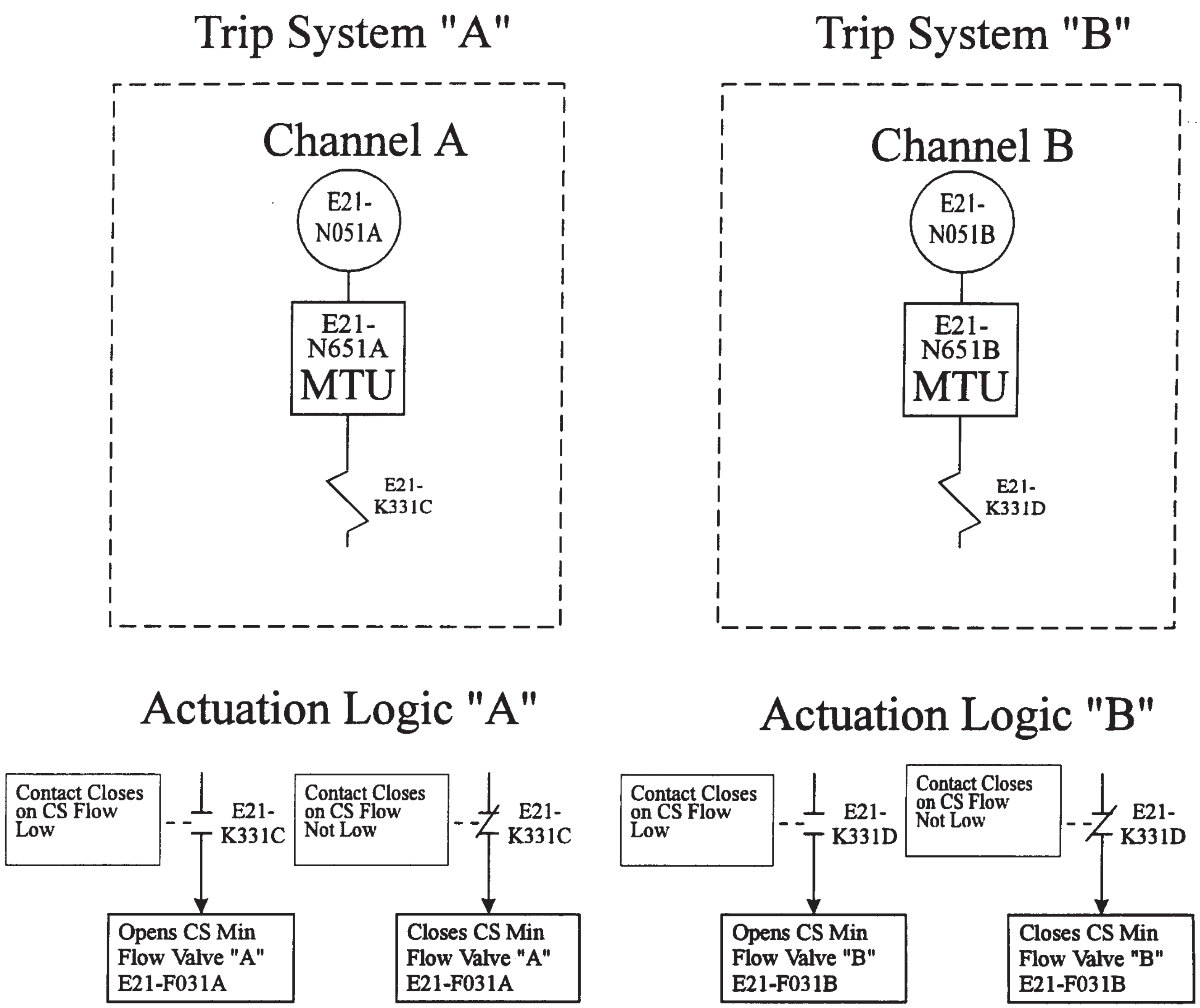
In order to maintain Core Spray system initiation capability on a Reactor Steam Dome Pressure-Low signal, channels in one of the following combinations must be either operable or maintained in the tripped condition for modes 4 and 5 only. Credit cannot be taken for tripped channels in modes 1, 2, and 3.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.
H-17109
H-19827
H-19830

Prepared By: JDB
Reviewed By: JCR

LFD-1-ECCS-03	
TS 3.3.5.1-1, Item 1.c Core Spray System Reactor Steam Dome Pressure-Low	
Rev. 0	11/16/94



Minimum Channel Requirements for System Initiation Capabilities:

In order to maintain Core Spray system initiation capability with regard to minimum flow valve operability, channel A or B must be operable.

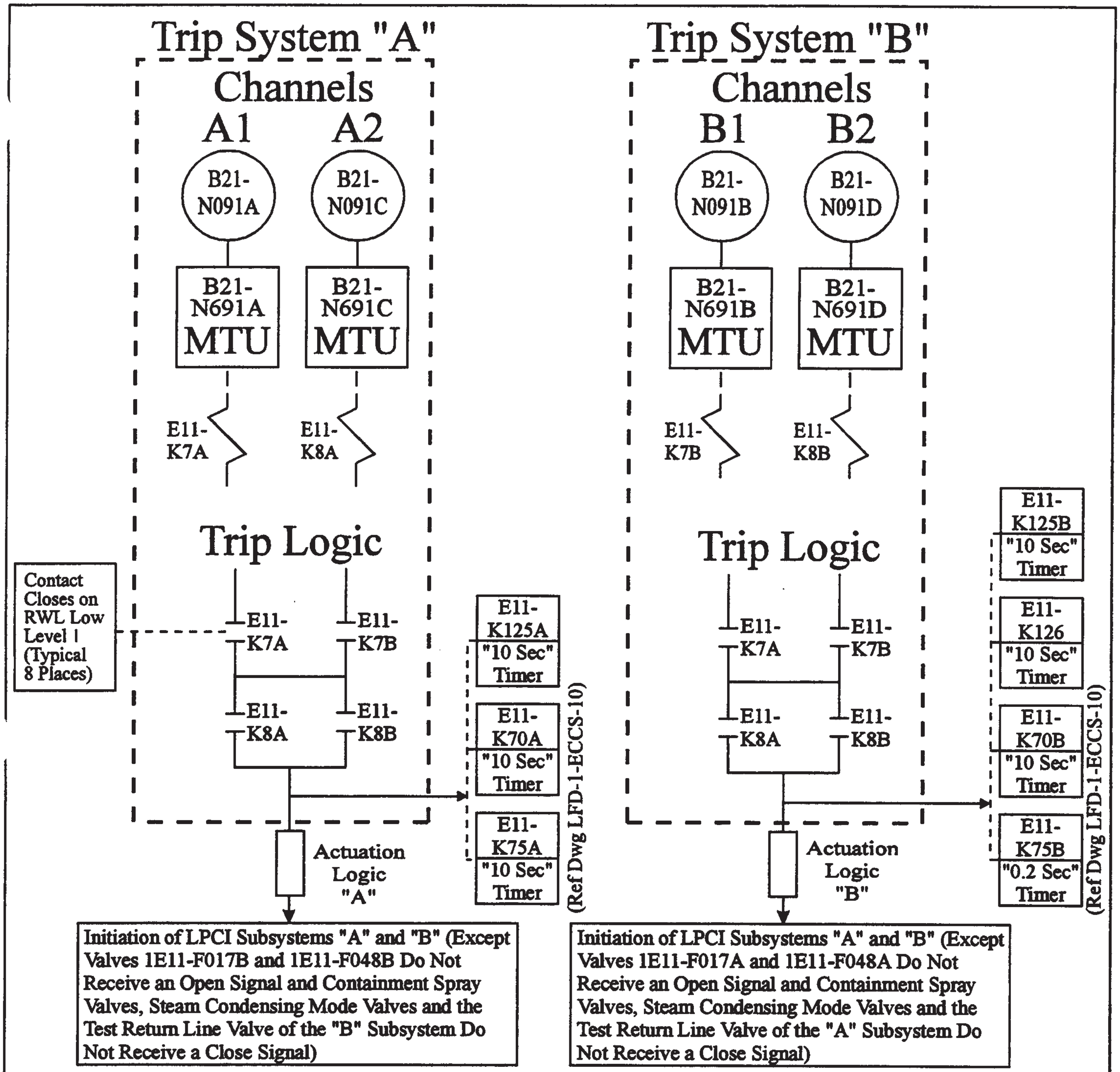
Elem. Ref.
H-19828
H-19831
H-17111

Prepared By: DPC
Reviewed By: [illegible]

LFD-1-ECCS-04

TS 3.3.5.1-1, Item 1.d
Core Spray System
Core Spray Pump
Discharge Flow-Low

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain initiation capability for the LPCI system on a RWL-Level 1 signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.

H-17763	H-19826
H-17766	H-19829
H-19823	H-19830

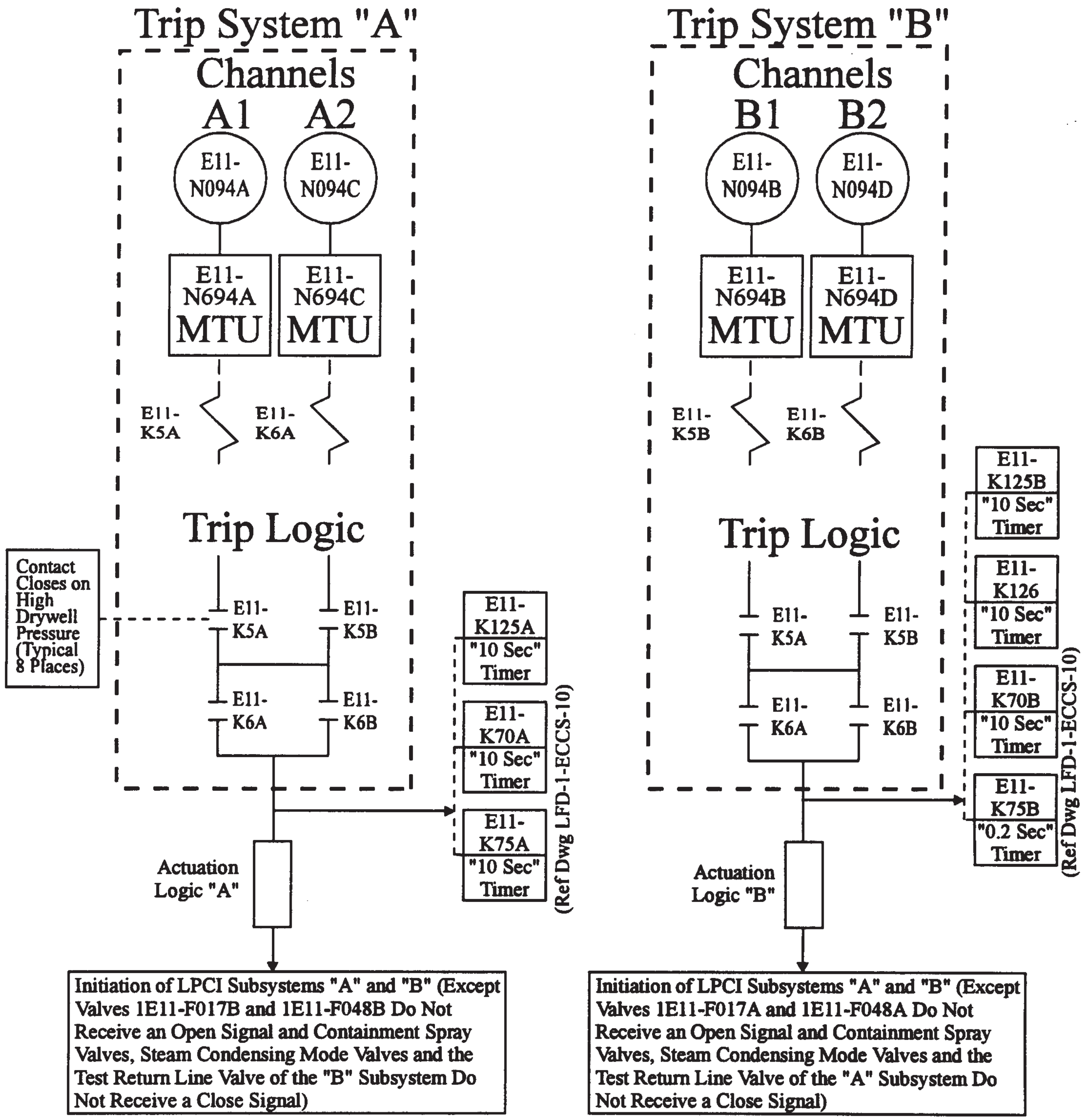
Prepared By:

Reviewed ~~By:~~

LFD-1-ECCS-05

TS 3.3.5.1-1, Item 2.a
LPCI System
RWL- Low Low Low,
Level 1

TRM Rev. 6



Minimum Channel Requirements for System Initiation Capability:

In order to maintain initiation capability for the LPCI system on a Drywell Pressure-High signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

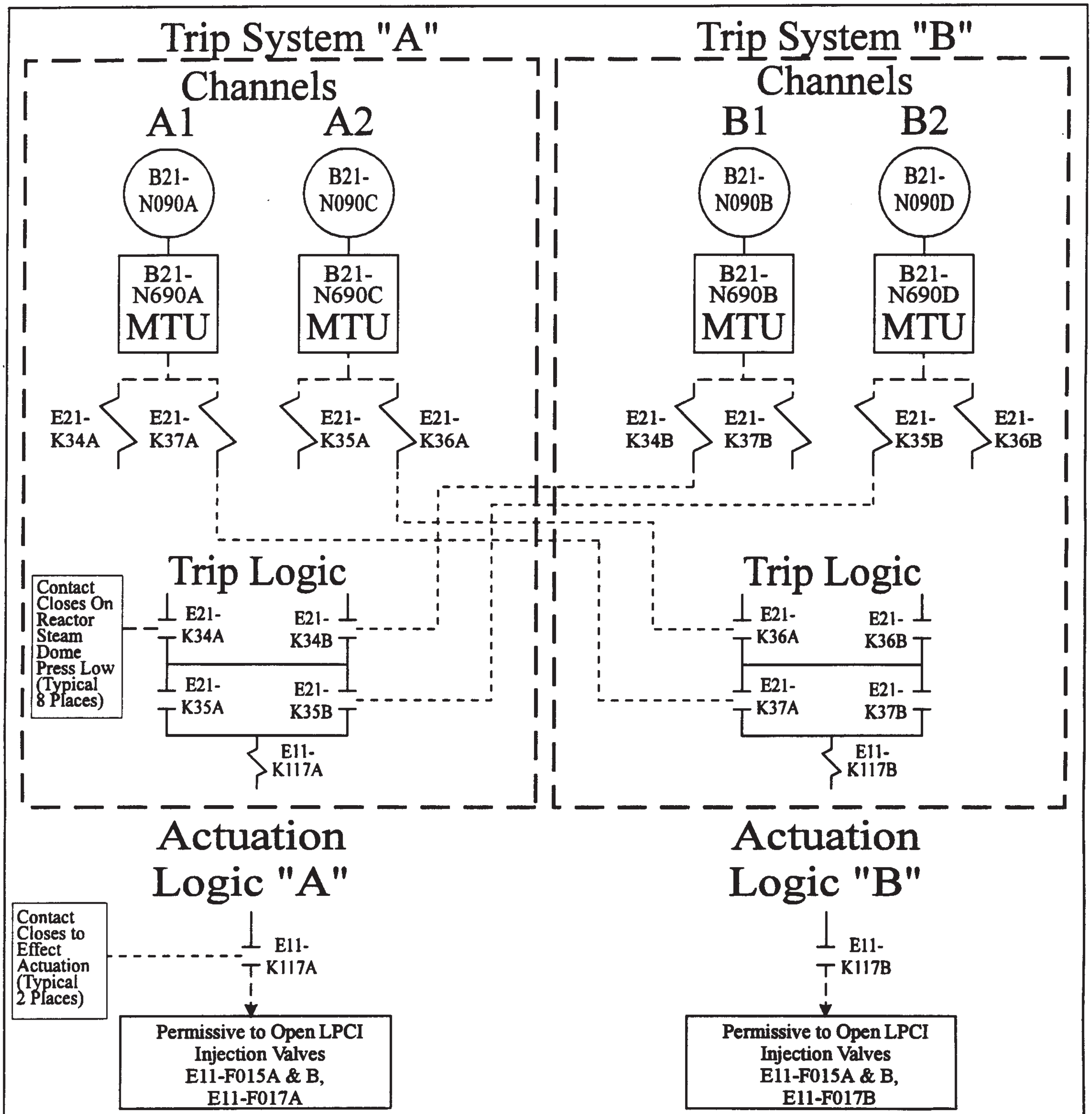
Elem. Ref.
H-19827
H-19830
H-17763
H-17766

Prepared By: S. K. Bunn
Reviewed By: [signature]

LFD-1-ECCS-06

TS 3.3.5.1-1, Item 2.b
LPCI System
Drywell Pressure-High

Rev. 0 3/16/95



Minimum Channel Requirements for System Initiation Capability:

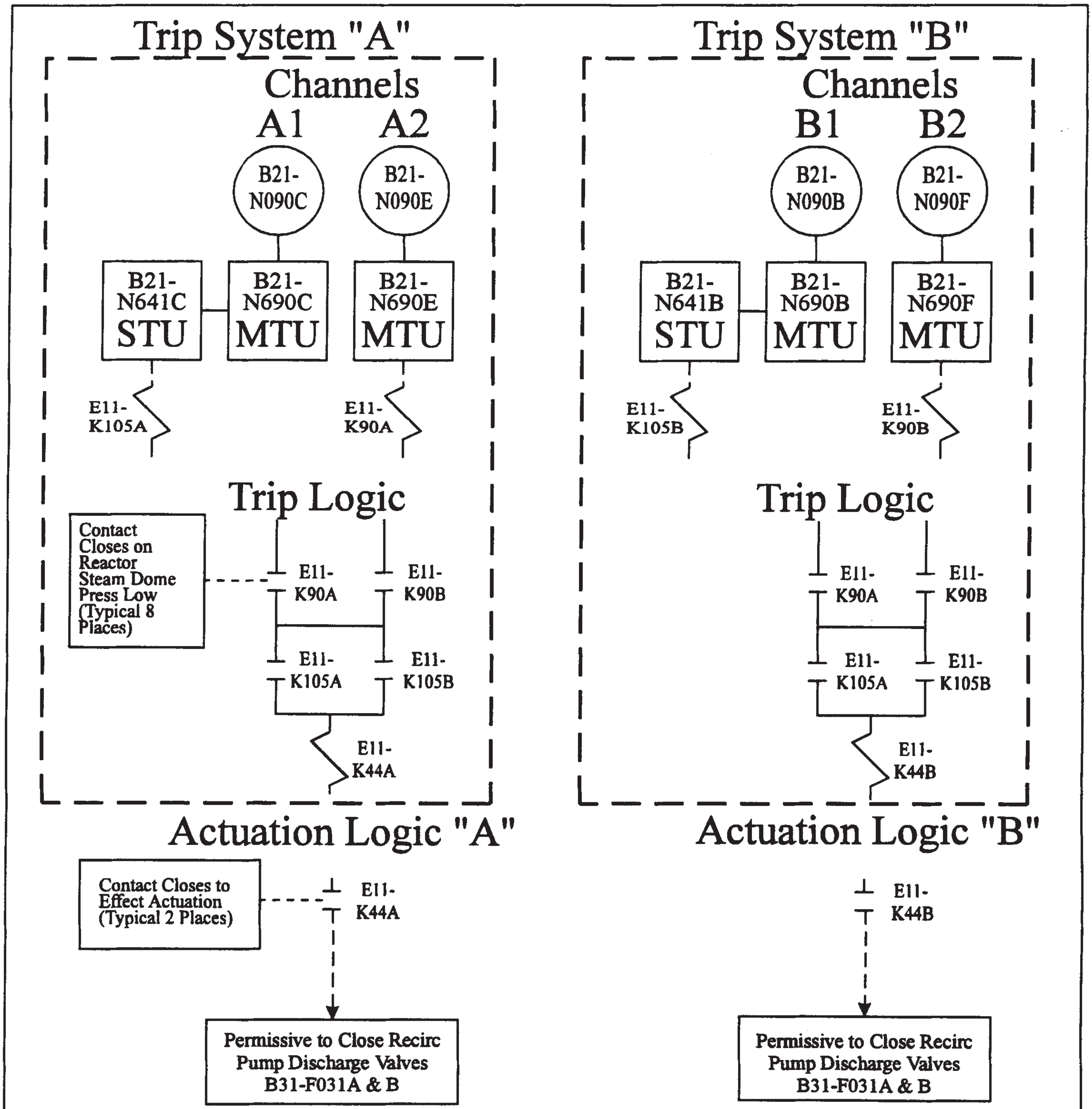
In order to maintain LPCI system initiation capability on a Reactor Steam Dome Pressure-Low signal, channels in one of the following combinations must be either operable or maintained in the tripped condition for modes 4 and 5. Credit cannot be taken for tripped channels in modes 1, 2, and 3.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.
H-19827
H-19830
H-17109
H-17763
H-17766

Prepared By: JDB
Reviewed By: [illegible]

LFD-1-ECCS-07
TS 3.3.5.1-1, Item 2.c
LPCI System
Reactor Steam Dome
Pressure-Low
Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order for a Recirc Pump Disch Valve close permissive to be capable of initiating on a Reactor Steam Dome Pressure Low signal, channels in one of the following combinations must be operable.

A1 & A2
A1 & B1
B2 & A2
B1 & B2

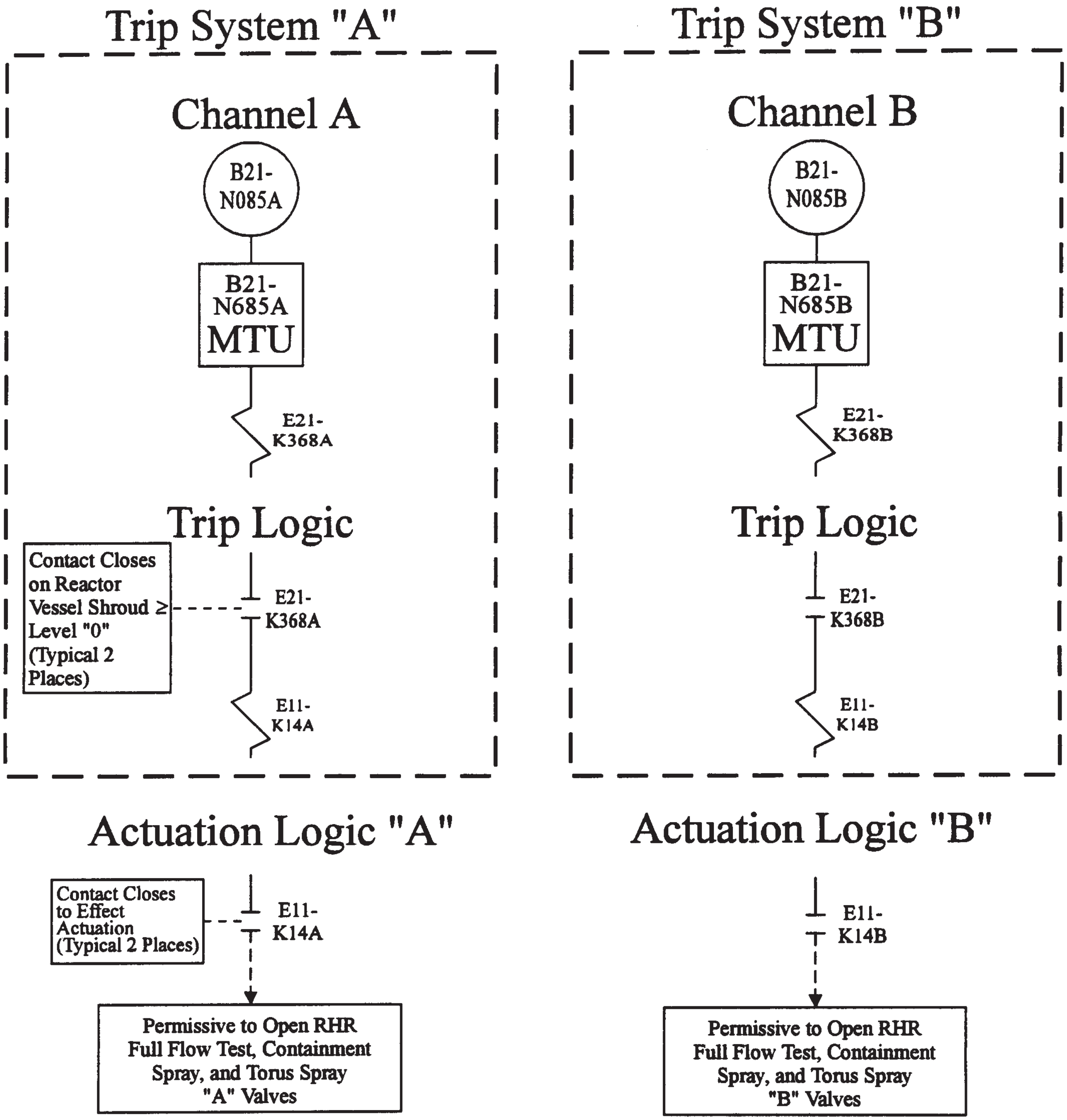
Elem. Ref.
H-19827
H-19830
H-17765
H-17768

Prepared By: JOB
Reviewed By: QDR

LFD-1-ECCS-08

TS 3.3.5.1-1, Item 2.d
LPCI System
Reactor Steam Dome Pressure-Low
Recirc Disch Valve Permissive

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain LPCI mode initiation capability (i.e., automatically securing other modes of RHR) with Reactor Water Level at or below Level-0, at least one channel must be operable or maintained in the tripped condition.

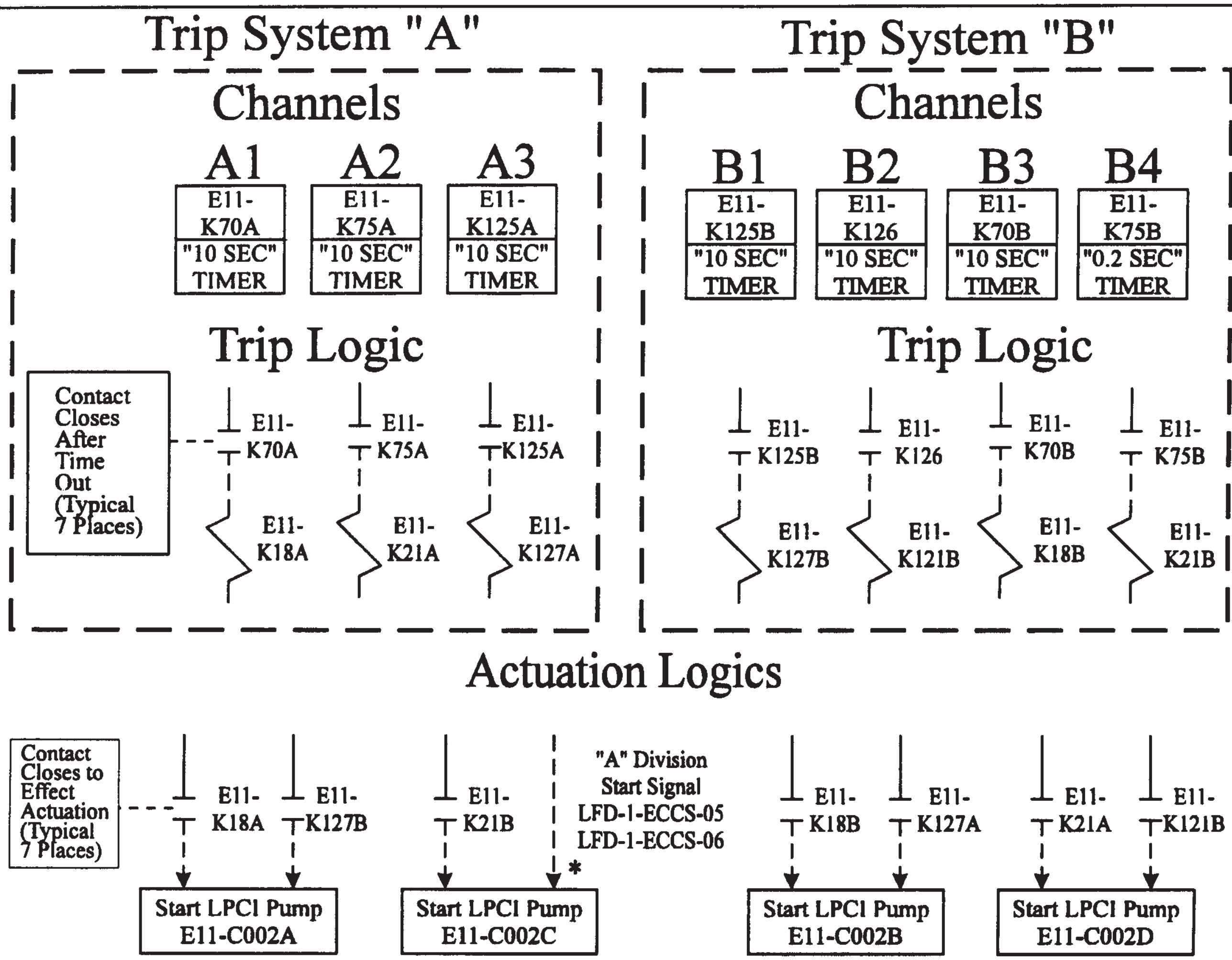
Elem. Ref.
H-19823
H-19826
H-17763
H-17766
H-17772
H-17774

Prepared By: JSB
Reviewed By: SDR

LFD-1-ECCS-09

TS 3.3.5.1-1, Item 2.e
LPCI System
Reactor Vessel Shroud
Level-0

Rev. 0 11/16/94



* No timer is associated with the "A" division start signal for pump E11-C002C, consequently, even if channel "B4" is inoperable, pump E11-C002C is still capable of being started provided the "A" division initiation logic is operable.

Minimum Channel Requirements for System Initiation Capability:

In order to maintain LPCI initiation capability with regard to the LPCI Pump Start Timers, one of the following combinations of channels is required to be operable:

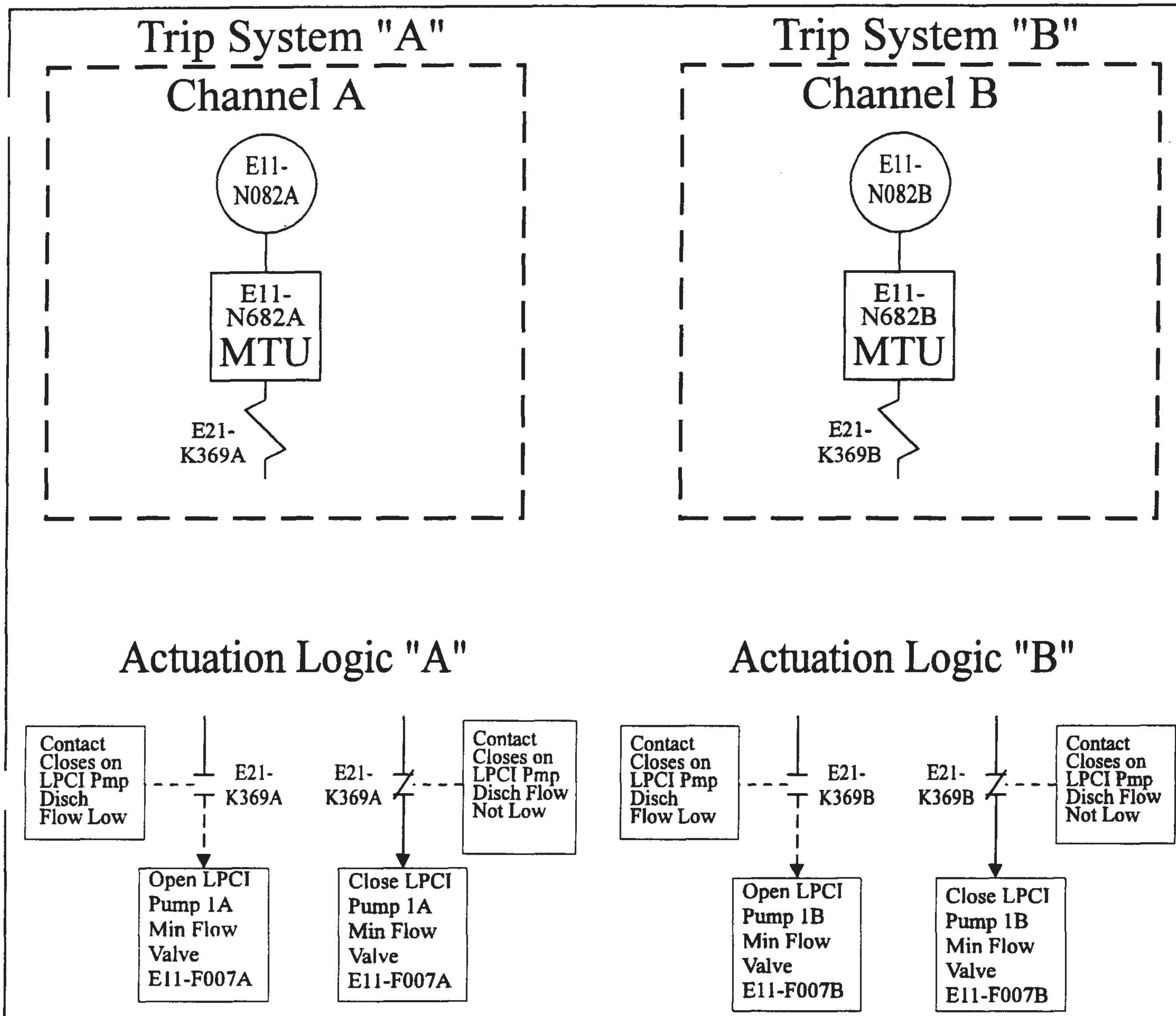
(A1 or B1) and (* or B4)
or
(A2 or B2) and (A3 or B3)

It is noted that when a timer fails such that it would actuate faster than required, the possibility exists of the pump associated with the failed timer overloading the associated Emergency Diesel Generator thereby affecting two low pressure ECCS pumps unless the pump is prevented from starting.

Elem. Ref.
H-17764
H-17765
H-17767
H-17768
H-17782

Prepared By: S.G. Brunson
Reviewed By: [signature]

LFD-1-ECCS-10	
TS 3.3.5.1-1, Item 2.f LPCI System LPCI Pump Start-Time Delay Relay	
Rev. 0	3/30/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain LPCI initiation capability regarding minimum flow protection, at least one of the two channels must be operable.

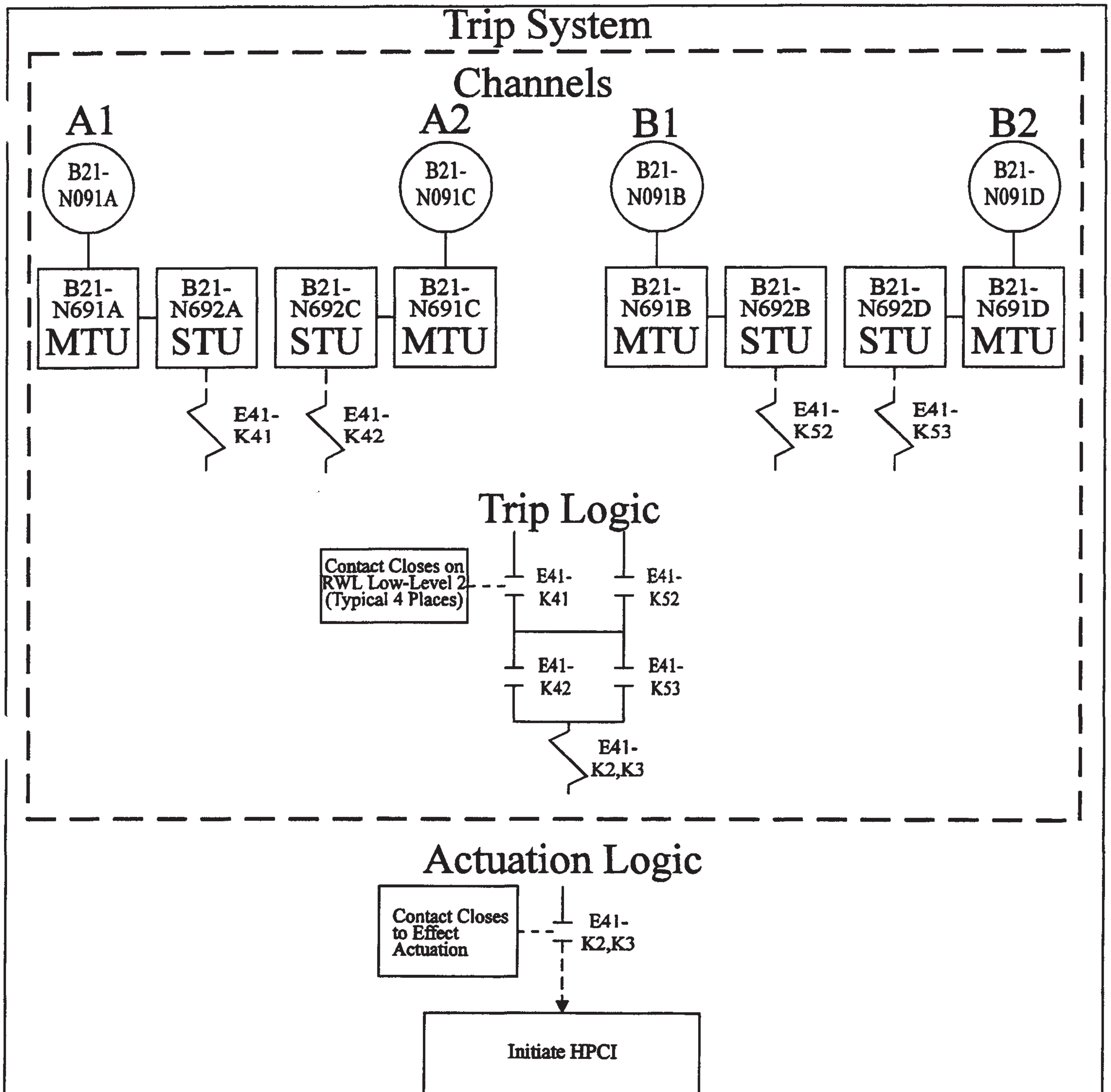
Elem. Ref.
H-19823
H-19826
H-17763
H-17766
H-17773
H-17775

Prepared By: OPC
Reviewed By: CCR

LFD-1-ECCS-11

TS 3.3.5.1-1, Item 2.g
LPCI System
LPCI Pump Discharge
Flow-Low (Bypass)

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

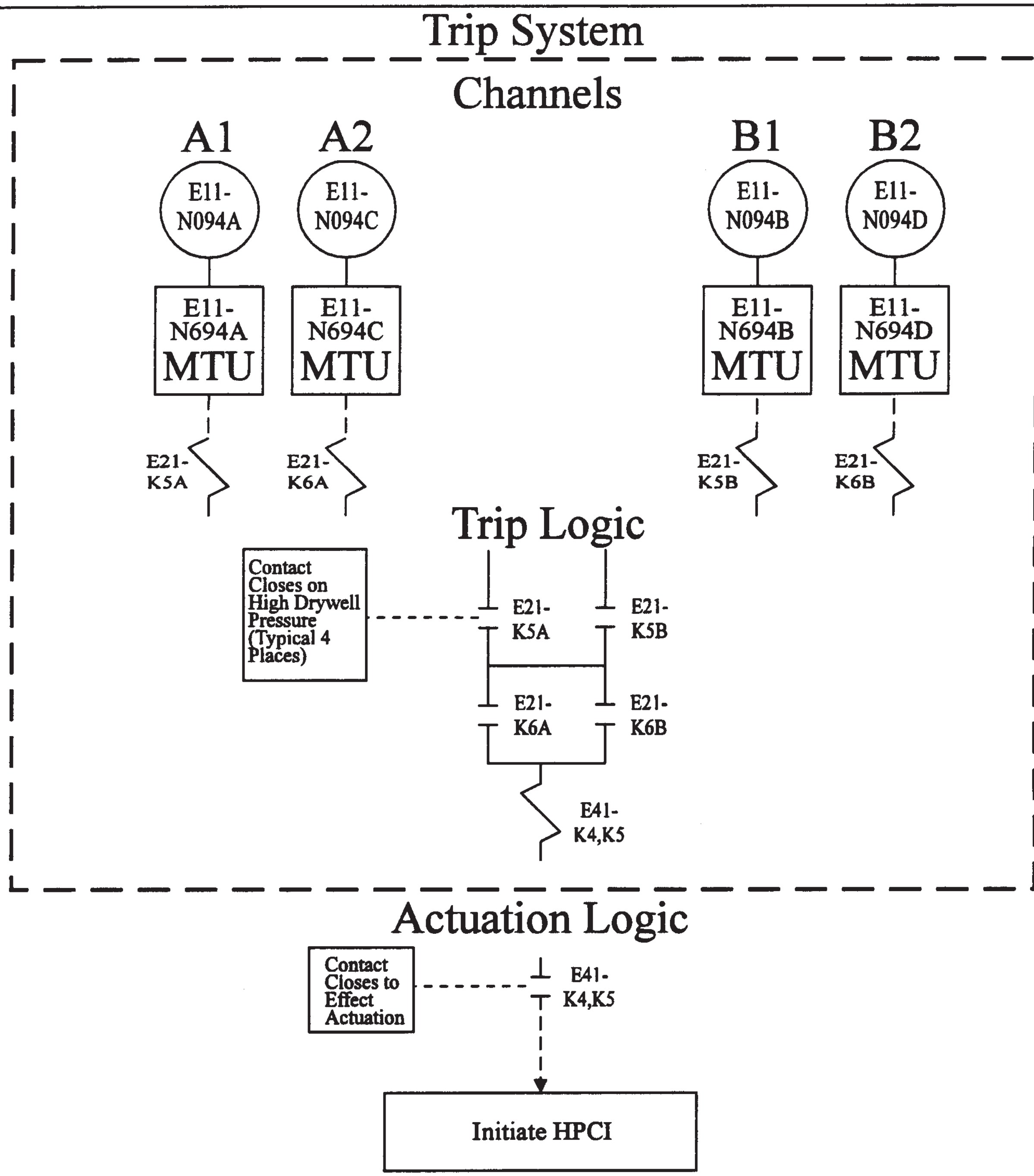
In order to maintain HPCI Initiation capability on Reactor Water Low Level-2, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.	
H-17159	H-19826
H-17160	H-19829
H-19823	H-19830

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-ECCS-12
TS 3.3.5.1-1, Item 3.a HPCI System RWL-Low Low, Level 2
TRM Rev. 6



Minimum Channel Requirement for System Initiaton Capability:

In order to maintain HPCI initiation capability on High Drywell Pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

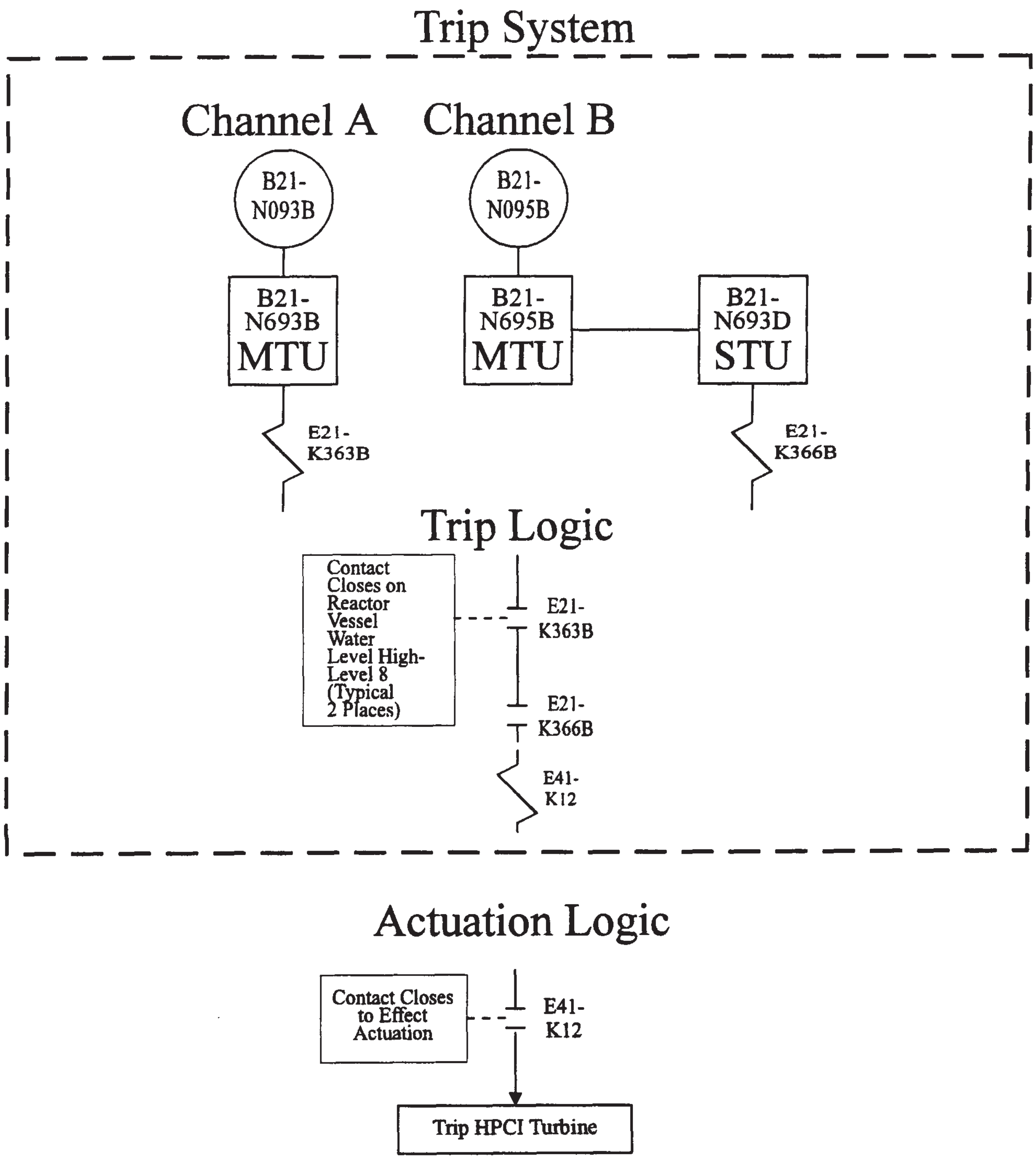
A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.
H-19827
H-19830
H-17109
H-17159

Prepared By: JDB

Reviewed By: SEP

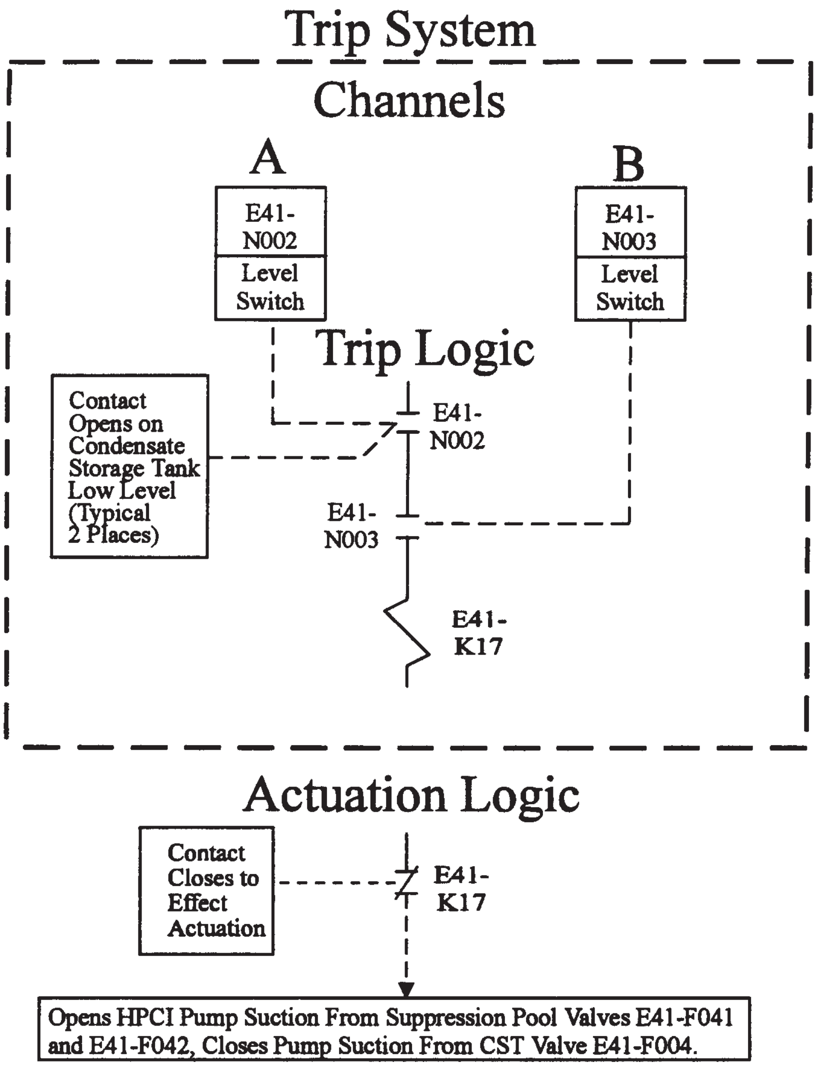
LFD-1-ECCS-13	
TS 3.3.5.1-1, Item 3.b HPCI Initiation Drywell Pressure High	
Rev. 0	11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to ensure a HPCI turbine trip on a RPV Water Level High-Level 8 signal, both channels must be operable.

Elem. Ref.	LFD-1-ECCS-14
H-17159 H-17160 H-19826	TS 3.3.5.1-1, Item 3.c HPCI System Reactor Vessel Water Level-High, Level 8
Prepared By: DPC Reviewed By:	Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the ability to automatically transfer the HPCI pump suction from the CST to the Suppression Pool on a Low Condensate Storage Tank Water Level signal, one of the channels must be either operable or maintained in the tripped condition.

Elem. Ref.

H-17159
H-17163
H-17164

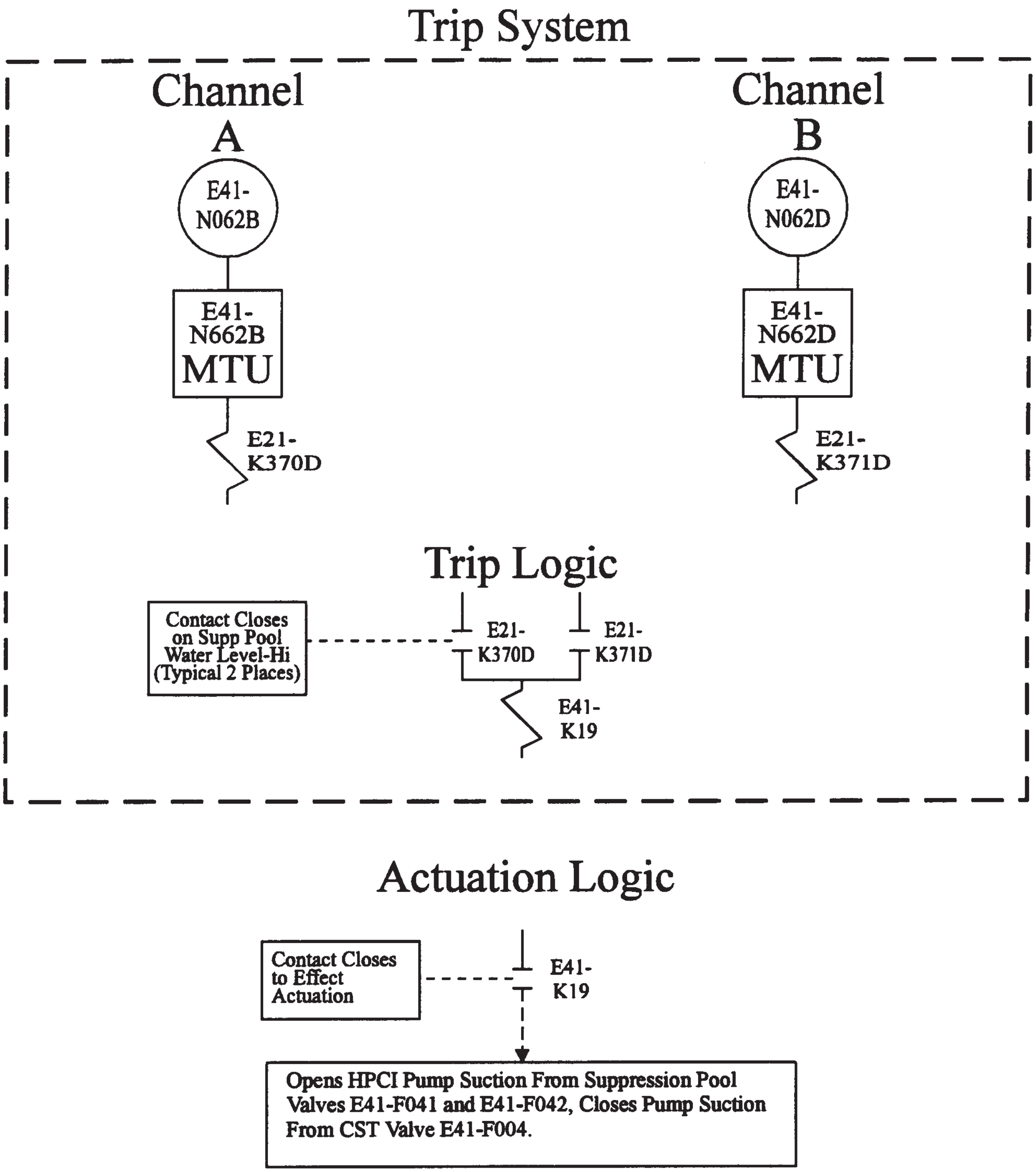
Prepared By: JDB

Reviewed By: G.L.K

LFD-1-ECCS-15

TS 3.3.5.1-1, Item 3.d
HPCI System
Condensate Storage Tank
Level-Low

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the ability to automatically transfer the HPCI pump suction from the CST to the Suppression Pool on a Suppression Pool Water Level-High signal, at least one channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-19832
H-17159
H-17163
H-17164

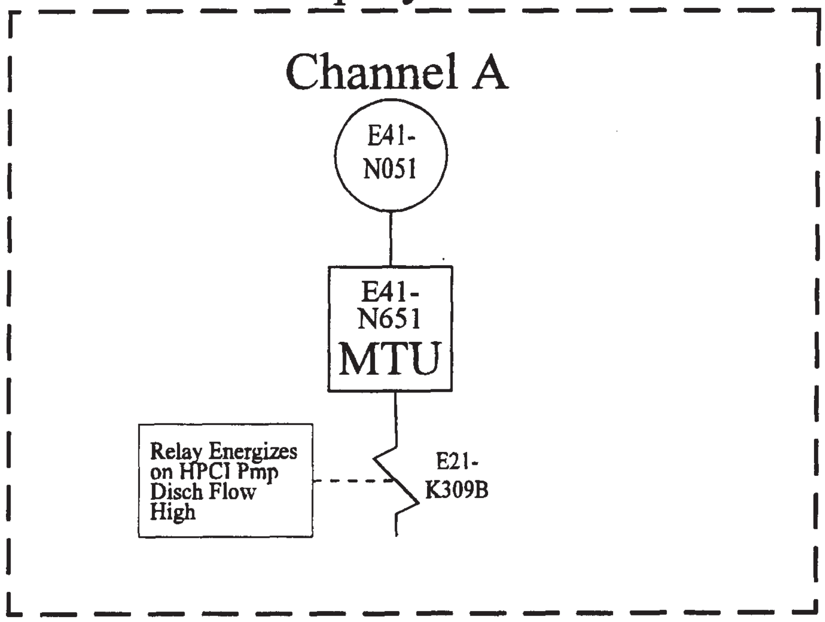
Prepared By: JSB
Reviewed By: CSR

LFD-1-ECCS-16

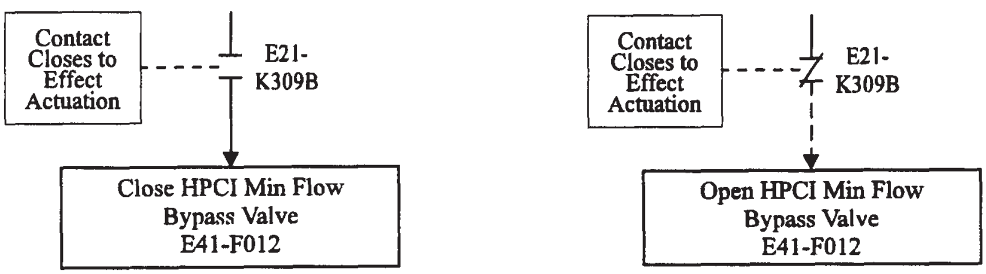
TS 3.3.5.1-1, Item 3.e
HPCI System
Suppression Pool
Water Level-High

Rev. 0 11/16/94

Trip System



Trip Logic



Minimum Channel Requirements for System Initiation Capability:

In order to maintain HPCI Initiation capability regarding minimum flow protection, this channel must be operable.

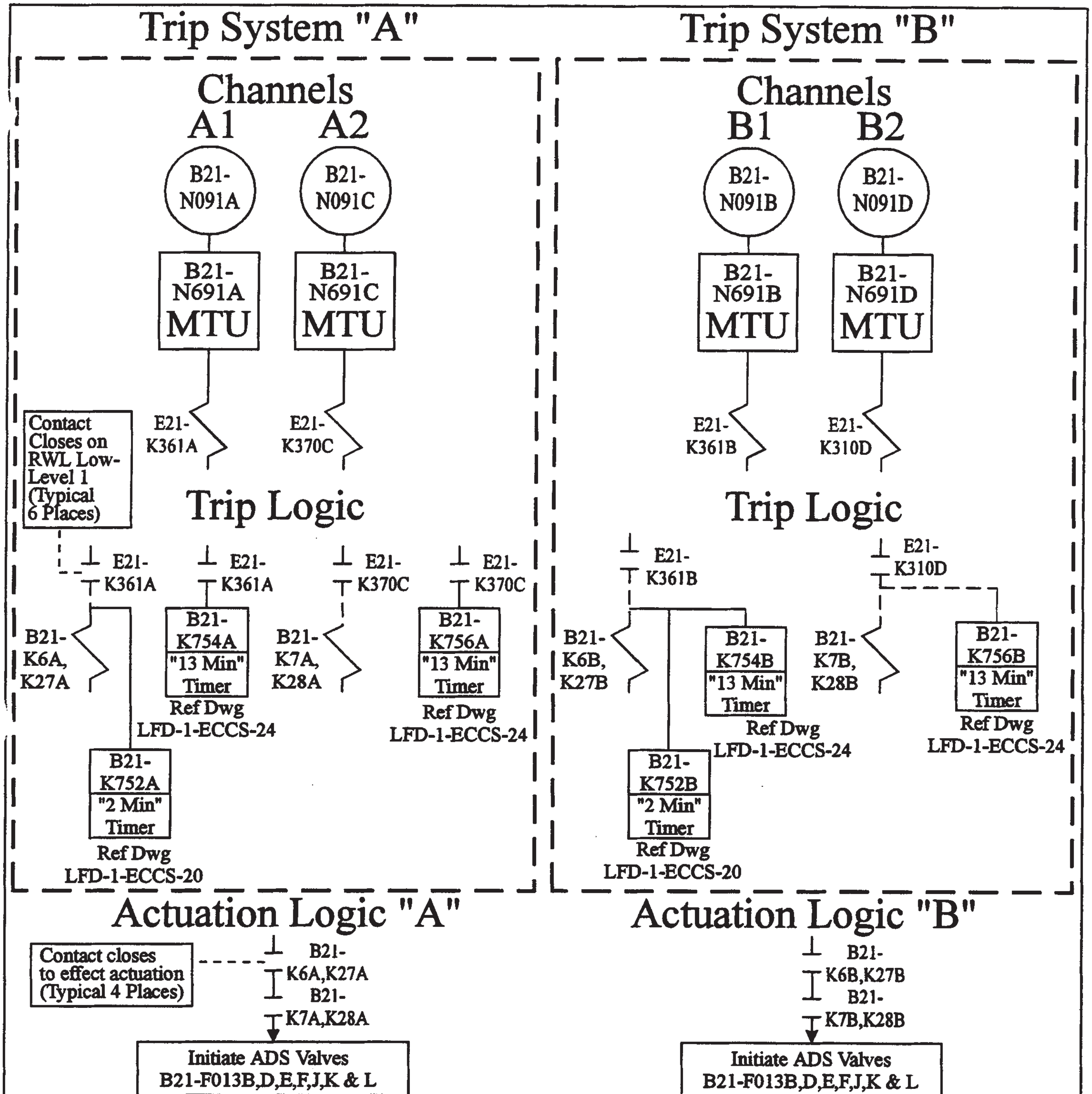
Elem. Ref.
H-19824
H-17159
H-17163

Prepared By: OFC
Reviewed By: JCK

LFD-1-ECCS-17

TS 3.3.5.1-1, Item 3.f
HPCI System
HPCI Pump Disch Flow-Low
(Bypass)

Rev. 0 11/16/94



Minimum Channel Requirements for System Initation Capability:

In order to maintain ADS initiation capability on a RWL-Level 1 signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
B1 and B2

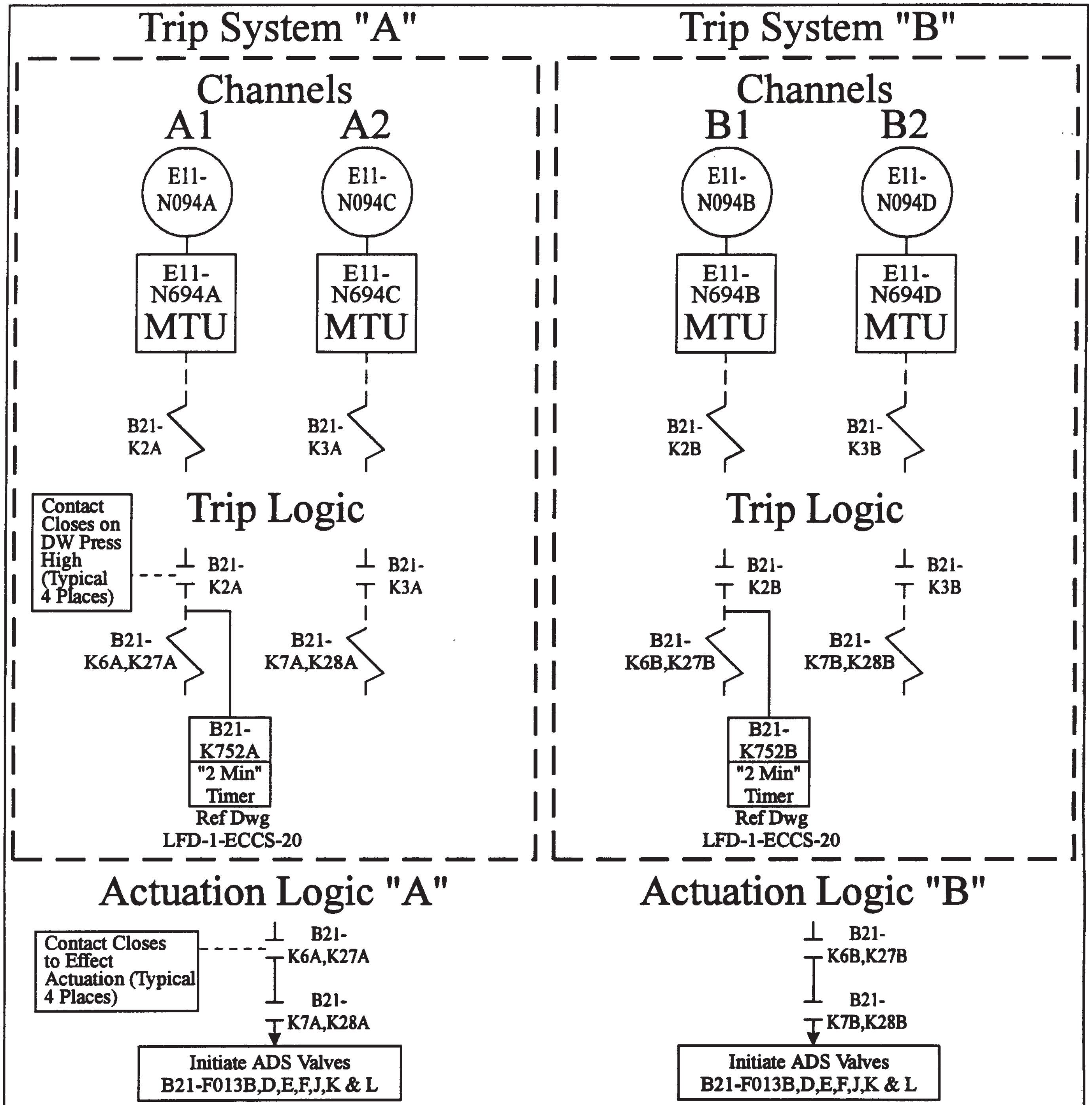
Elem. Ref.	
H-17754	H-19826
H-17755	H-19829
H-17759	H-19830
H-19823	

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-ECCS-18

TS 3.3.5.1-1, Item 4.a/5.a
ADS Trip system
RWL- Low, Low, Low
Level 1

TRM Rev. 6

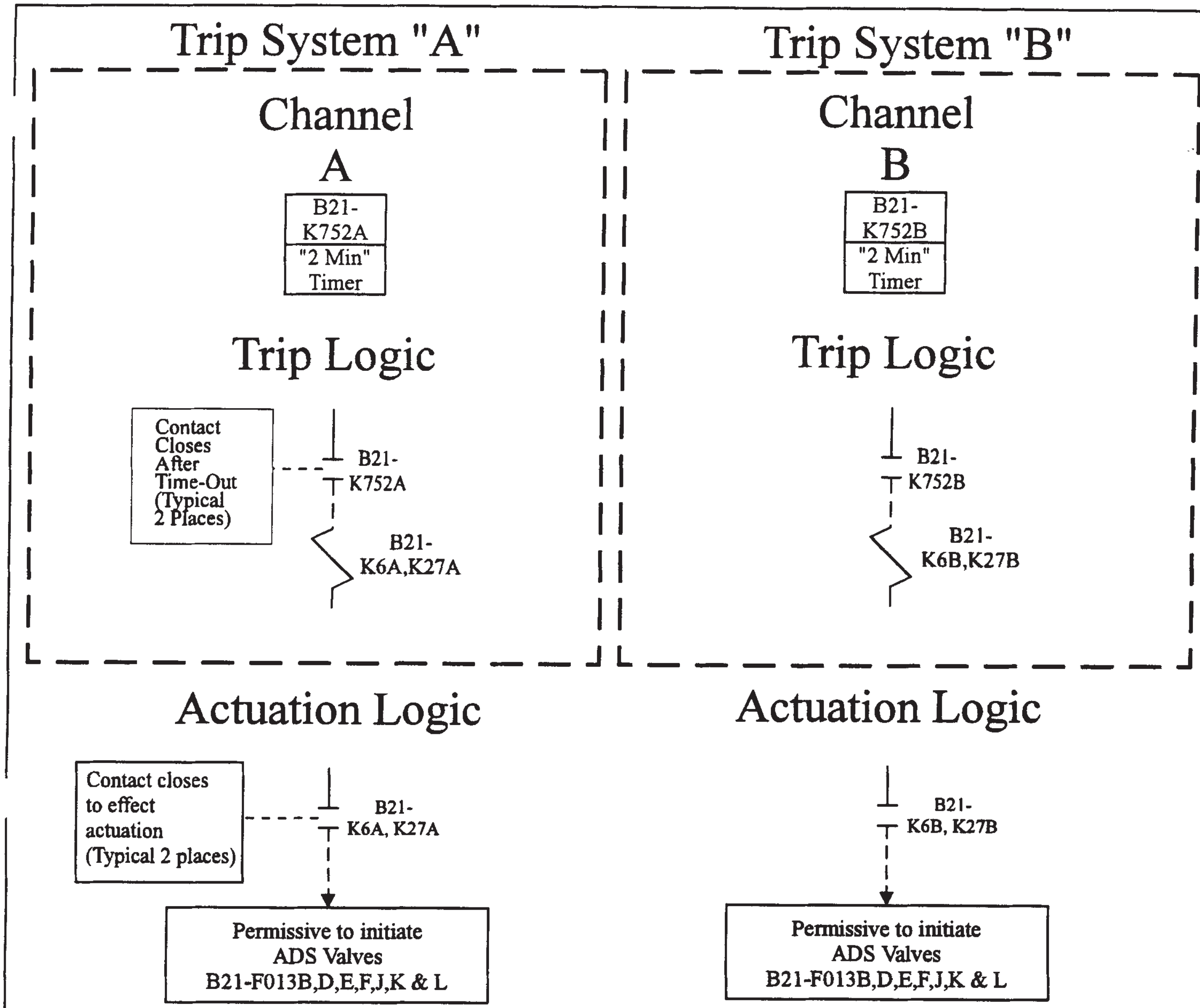


<u>Minimum Channel Requirements for System Initiation Capability:</u>

In order to maintain ADS initiation on a Drywell Pressure - High signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
B1 and B2

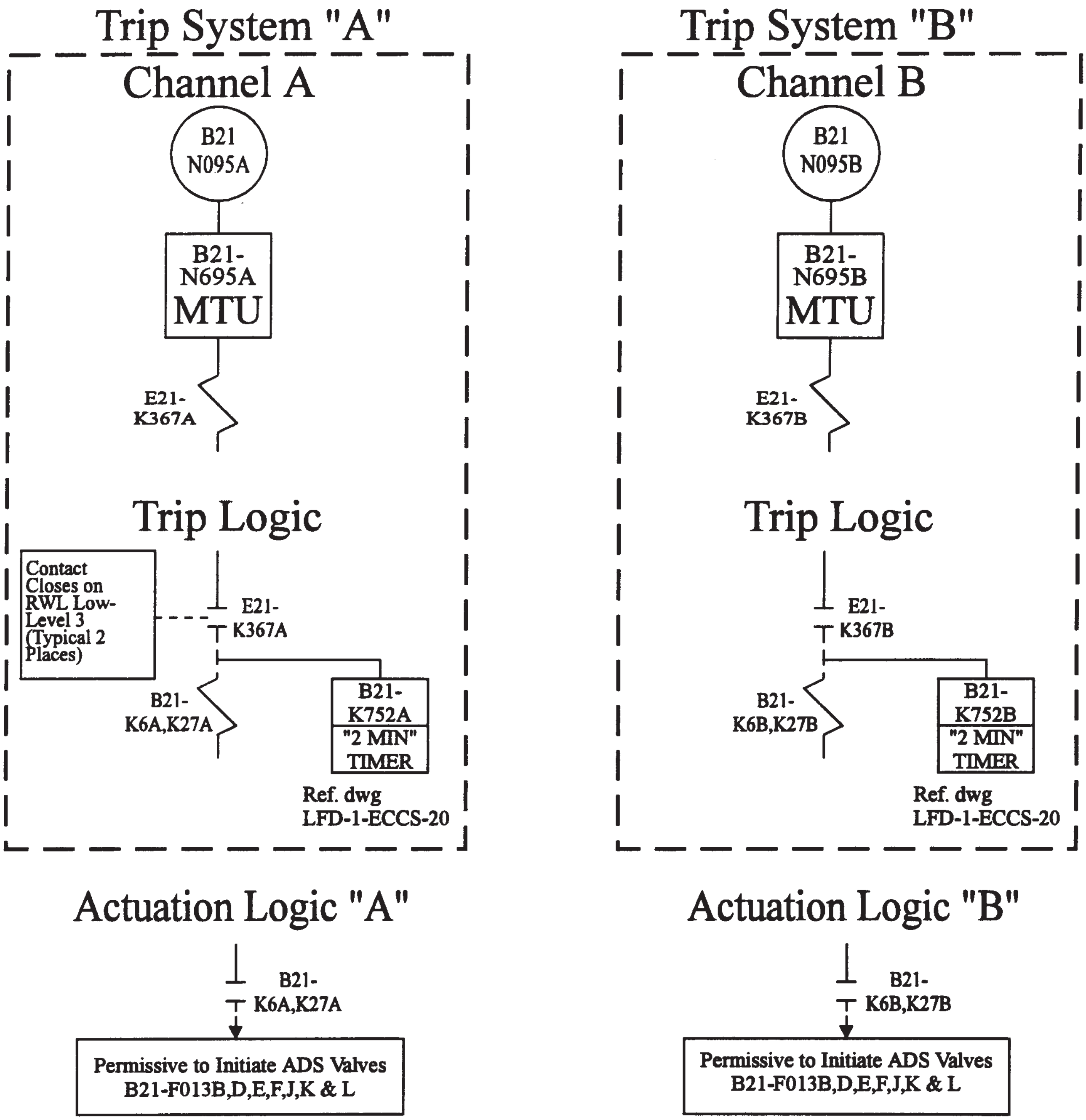
Elem. Ref. H-19827 H-19830 H-17754 H-17755	Prepared By: JSB Reviewed By: GER	LFD-1-ECCS-19 TS 3.3.5.1-1, Item 4.b/5.b ADS Trip System Drywell Pressure-High Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain ADS initiation capability on a "2 Minute" Timer Permissive signal, either channel A or B and its associated logic must be operable.

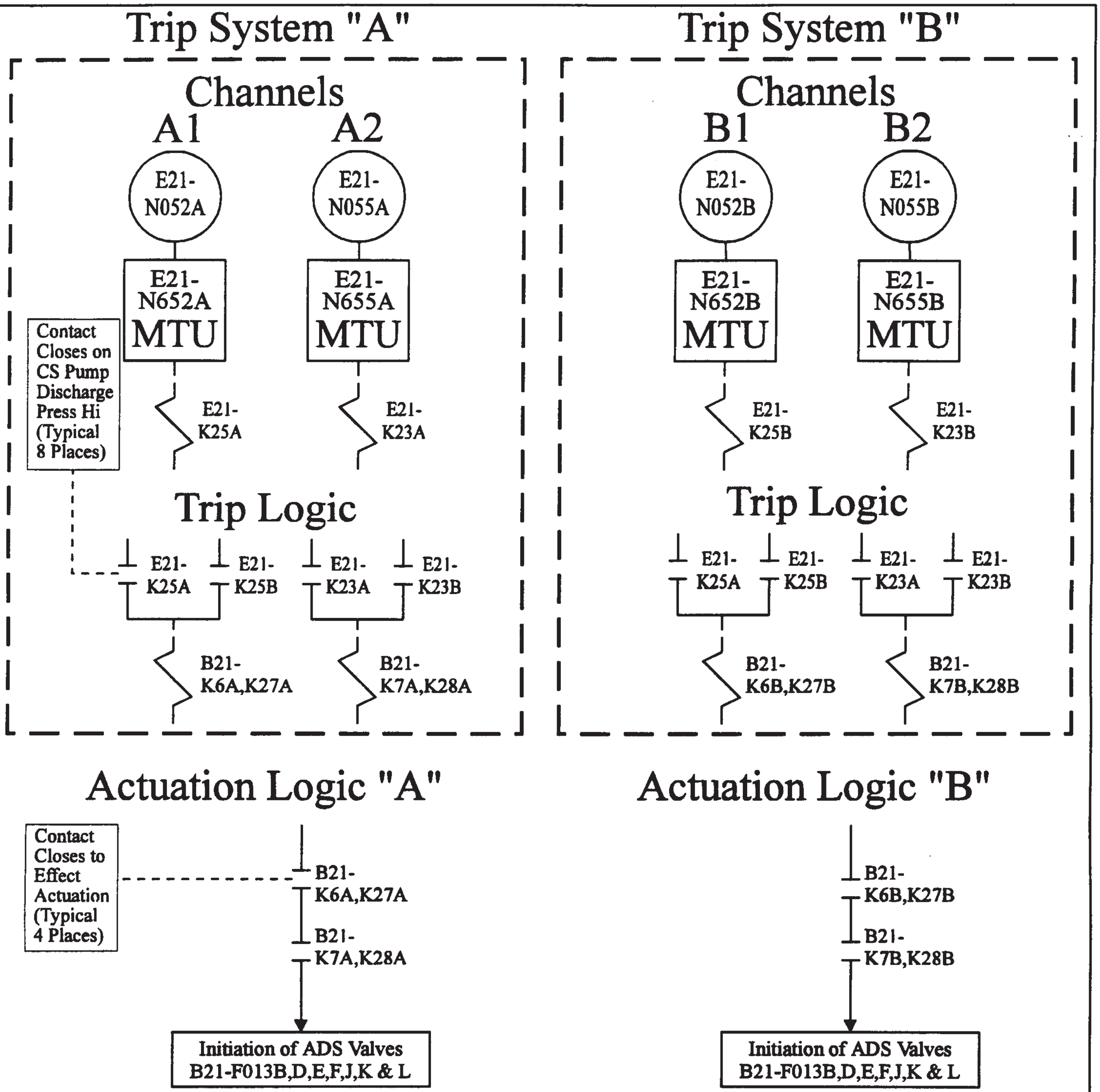
Elem. Ref. H-17754 H-17755	Prepared By: JDB Reviewed By: [illegible]	LFD-1-ECCS-20 TS 3.3.5.1-1, Item 4.c/5.c ADS Trip System ADS Initiation Timer Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain ADS initiation capability due to a RWL-Level 3 Confirmation signal, either channel A or B must be operable or maintained in the tripped condition.

Elem. Ref.		
H-17754 H-17755 H-19823 H-19826	Prepared By: JDB Reviewed By: JCR	LFD-1-ECCS-21 TS 3.3.5.1-1, Item 4.d/5.d ADS Trip System RWL-Low Level 3 (Confirmatory) Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain ADS initiation capability for a Core Spray Pump Discharge Pressure-High permissive, channels in one of the following combinations must be operable.

A1 and A2
A1 and B2
B1 and A2
B1 and B2

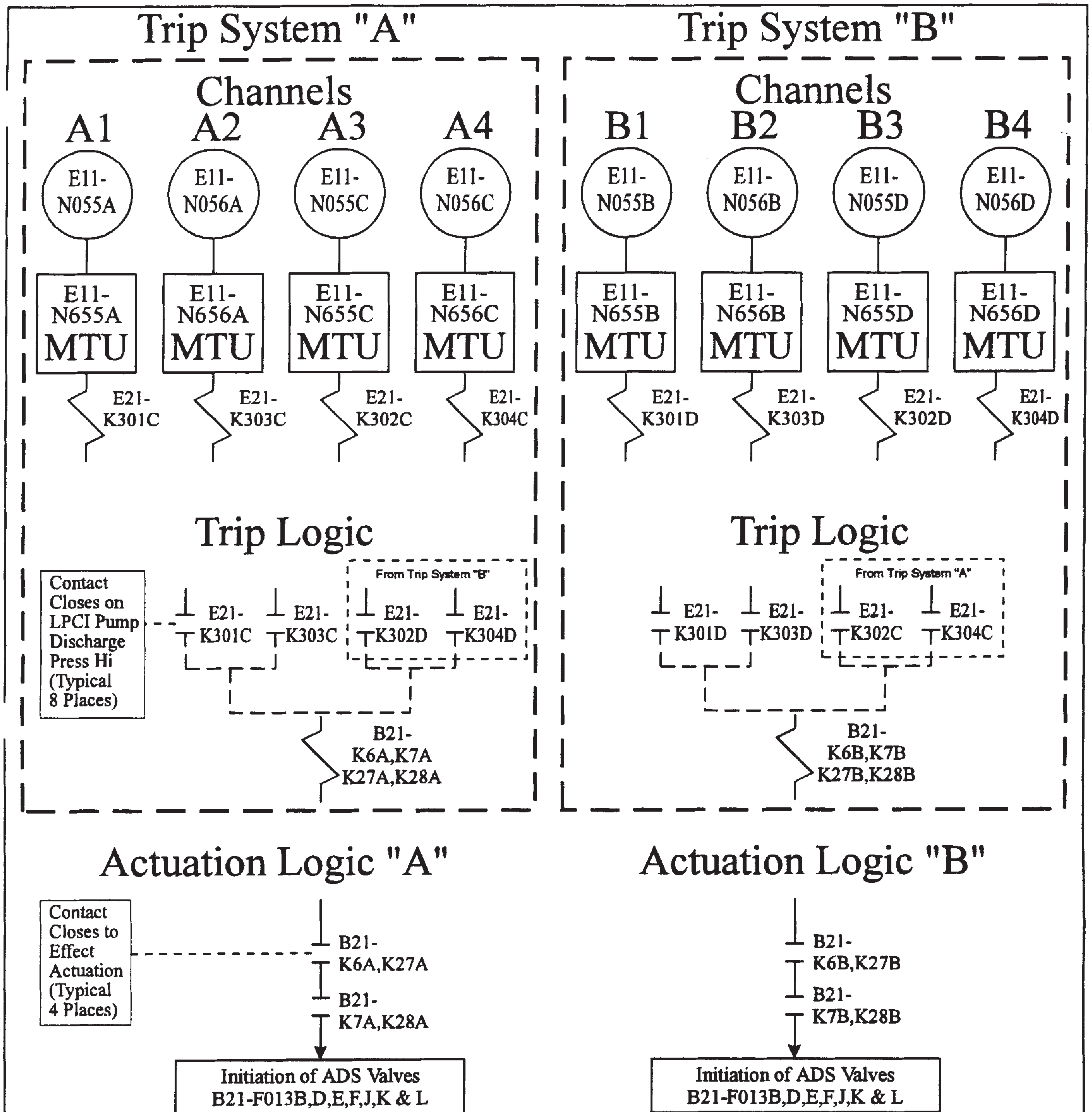
Elem. Ref.
H-19828
H-19831
H-17109
H-17754
H-17755

Prepared By: JDB
Reviewed By: JLR

LFD-1-ECCS-22

TS 3.3.5.1-1, Item 4.e/5.e
ADS Trip System
Core Spray Pump Discharge
Press-High

Rev. 0 11/16/94



Minimum Channel Requirements for System Initation Capability:

In order to maintain ADS initiation capability for a LPCI Pump Discharge Pressure-High signal, at least one channel must be operable.

Elem. Ref.
H-17754
H-17755
H-17764
H-17767
H-19827
H-19830

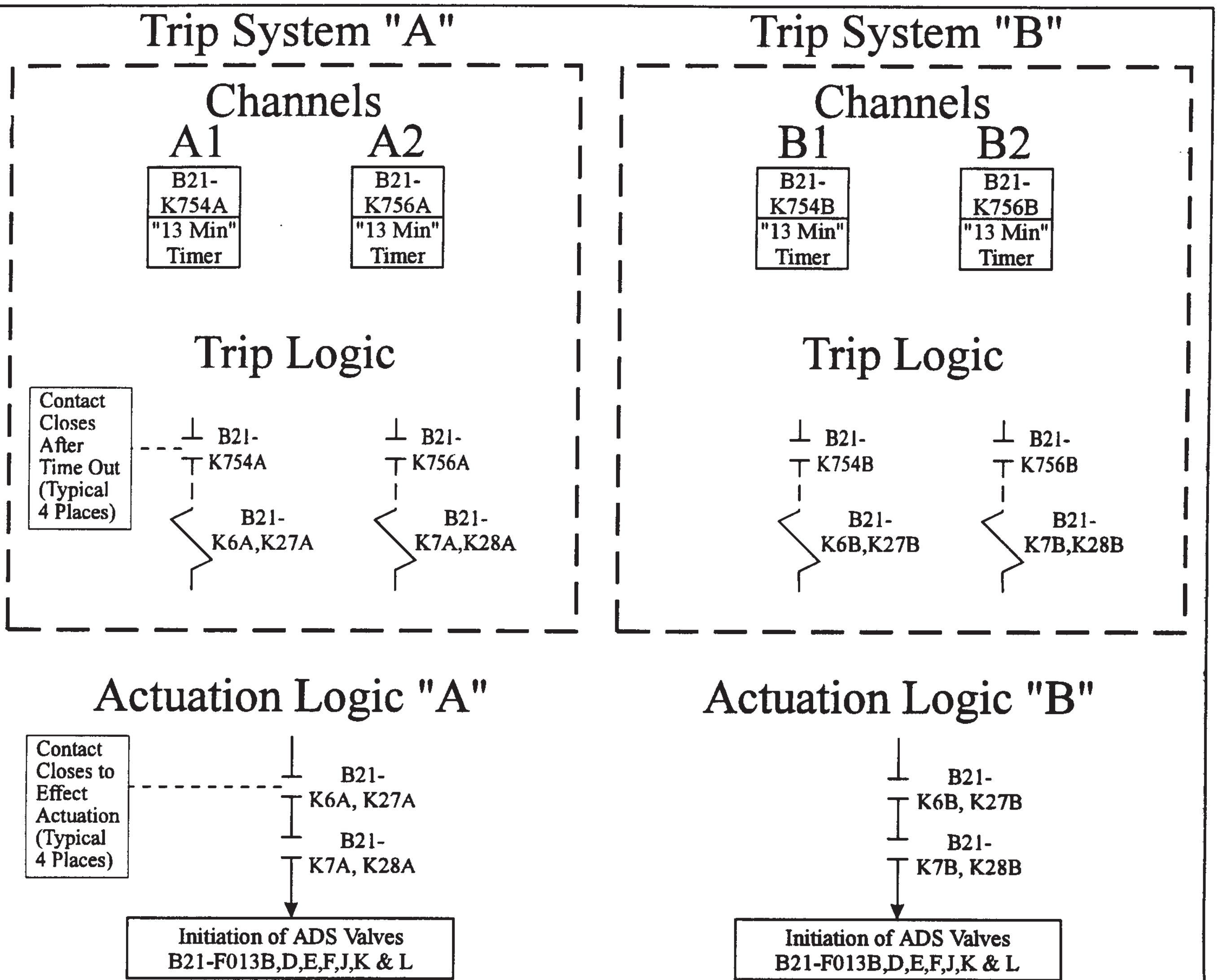
Prepared By: JSG

Reviewed By: GLK

LFD-1-ECCS-23

TS 3.3.5.1-1, Item 4.f/5.f
ADS Trip system
LPCI Pump Discharge
Pressure-High

Rev. 0 11/16/94

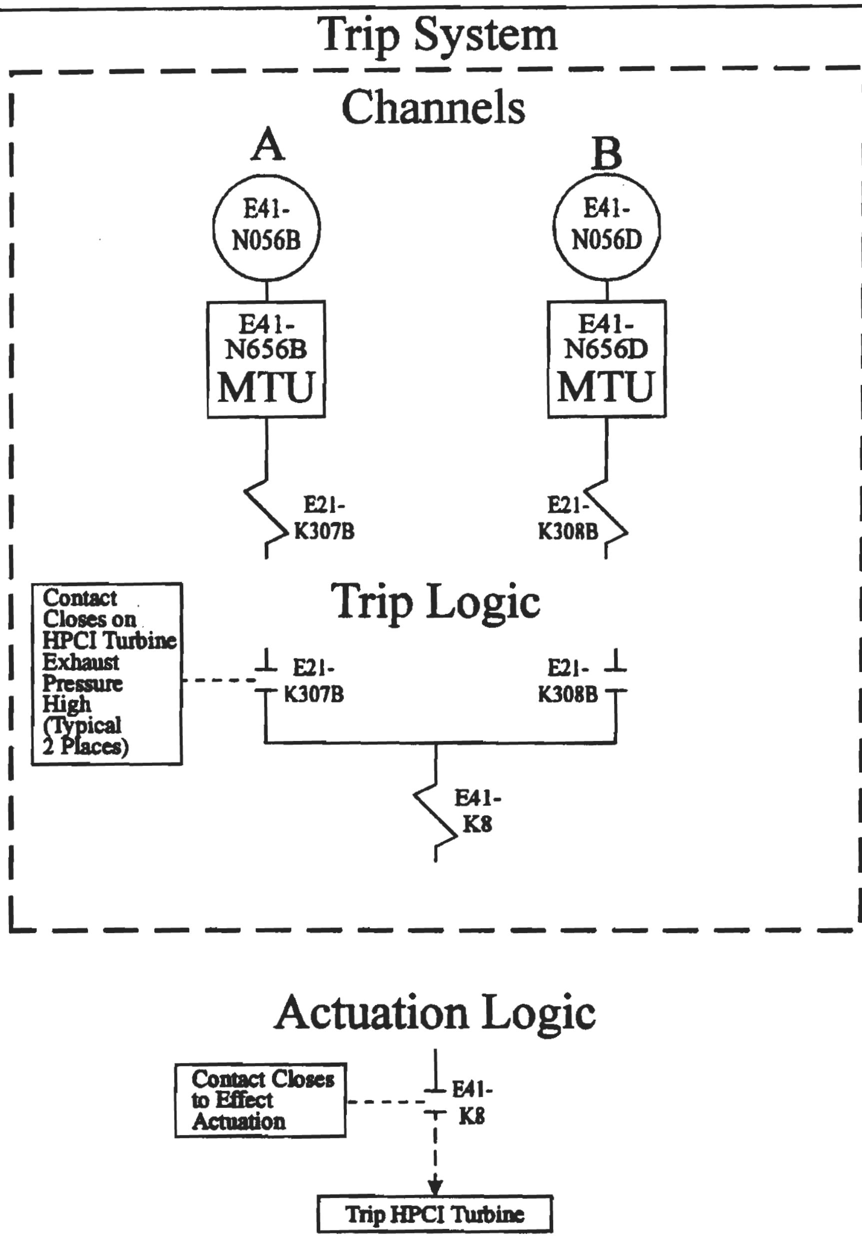


Minimum Channel Requirements for System Initiation Capability:

In order to maintain ADS initiation capability with regard to the ADS low water level timers, one of the following channel combinations must be operable:

A1 and A2
B1 and B2

Elem. Ref. H-17754 H-17755 H-17759	
Prepared By: Reviewed By:	LFD-1-ECCS-24
	TS 3.3.5.1-1, Item 4.g/5.g ADS Trip System ADS Low Water LVL Actuation Timer
	Rev. 0 11/16/94



Minimum Channel Requirements for System Trip Capability:

In order to maintain HPCI turbine trip capability with regard to a HPCI turbine exhaust pressure-high signal, at least one channel must be functional.

Elem. Ref.
H-17159
H-17160
H-19824

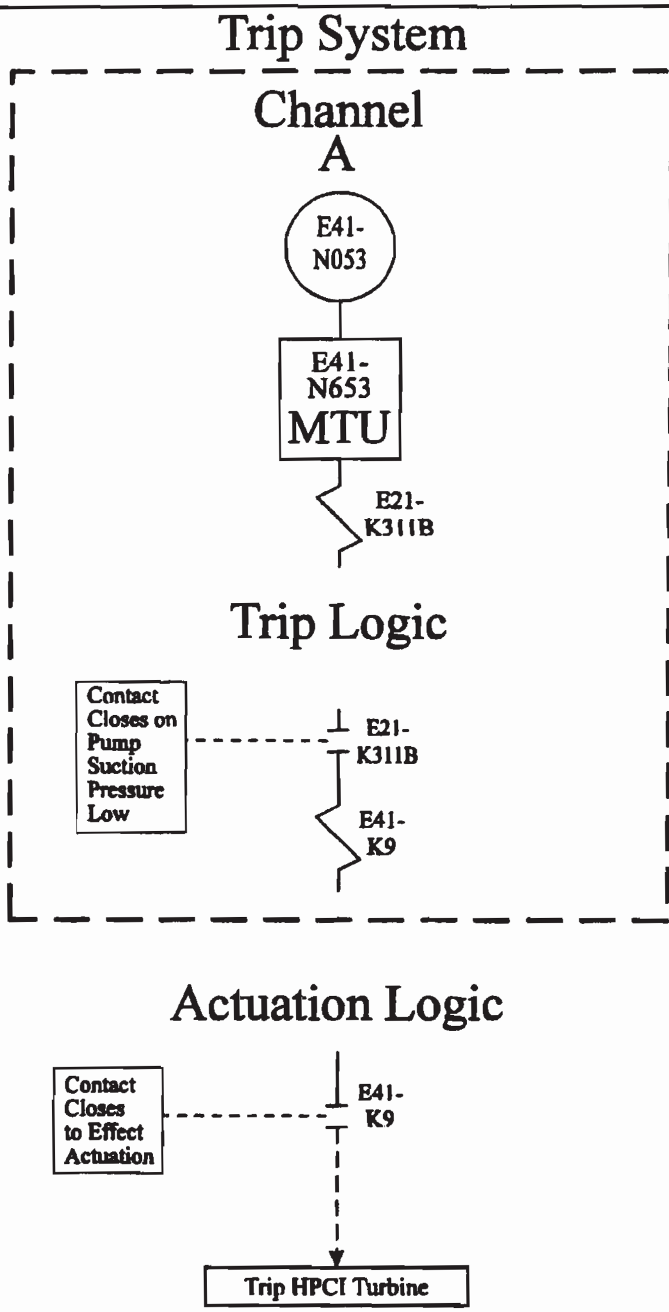
Prepared By: DLC

Reviewed By:

LFD-1-ECCS-25

TRM T3.3.5-1, Item 2
HPCI Turbine Trip
HPCI Turbine Exhaust
Pressure-High

TRM REV. 60

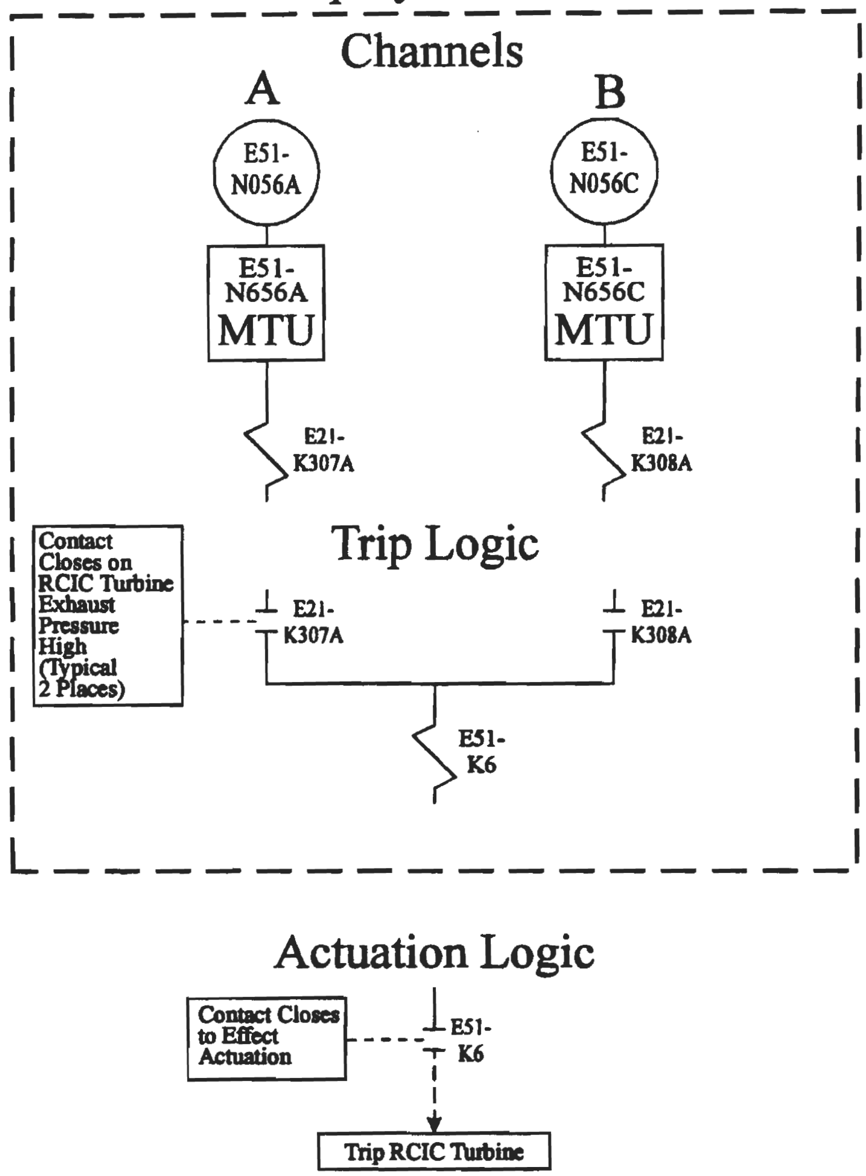


Minimum Channel Requirements for System Trip Capability:

In order to maintain HPCI turbine trip capability with regard to a HPCI pump suction pressure-low signal, this channel must functional.

Elem. Ref.		
H-17159 H-17160 H-19824	Prepared By: TLC Reviewed By:	LFD-1-ECCS-26 TRM T3.3.5-1, Item 3 HPCI Turbine Trip HPCI Pump Suction Pressure-Low TRM REV. 60

Trip System "A"

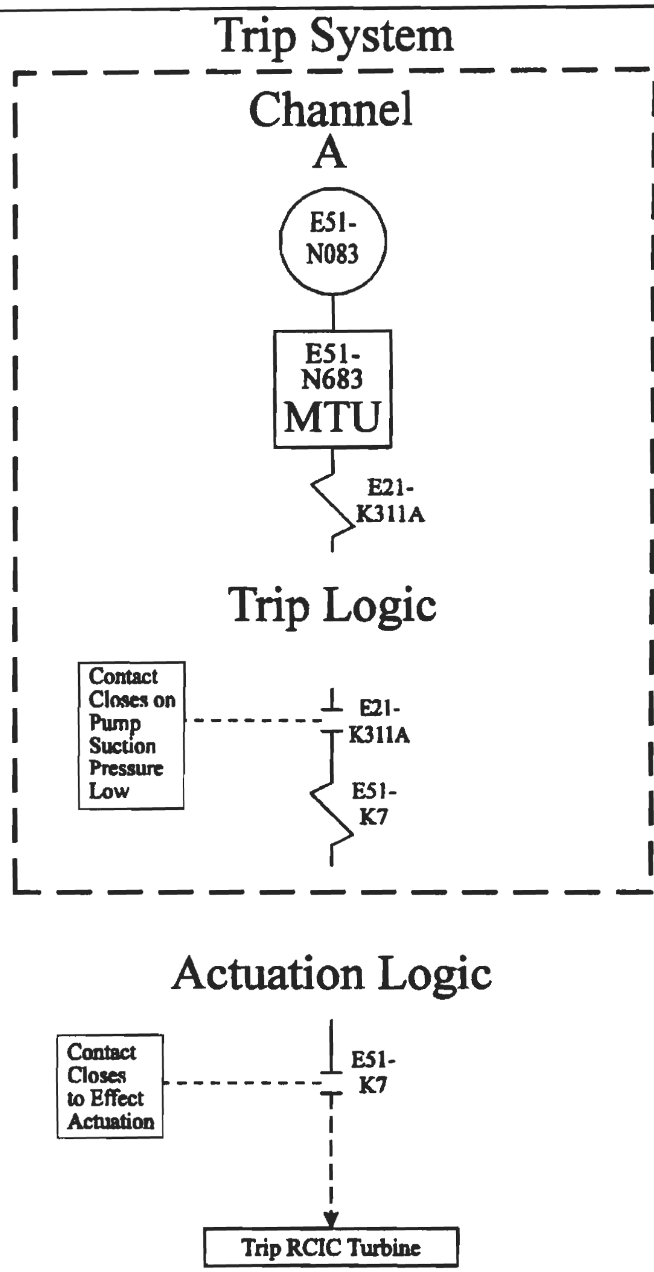


<u>Minimum Channel Requirements for System Trip Capability:</u>

In order to maintain RCIC turbine trip capability with regard to a RCIC turbine exhaust pressure-high signal, at least one channel must be functional.

Elem. Ref. H-17148 H-17153 H-19821	Prepared By: TLC Reviewed By: [signature]

LFD-1-ECCS-27
TRM T3.3.5-1, Item 5 RCIC Turbine Trip RCIC Turbine Exhaust Pressure-High
TRM REV. 60



Minimum Channel Requirements for System Trip Capability:

In order to maintain RCIC turbine trip capability with regard to a RCIC pump suction pressure-low signal, this channel must be functional.

Elem. Ref.

H-17148
H-17153
H-19821

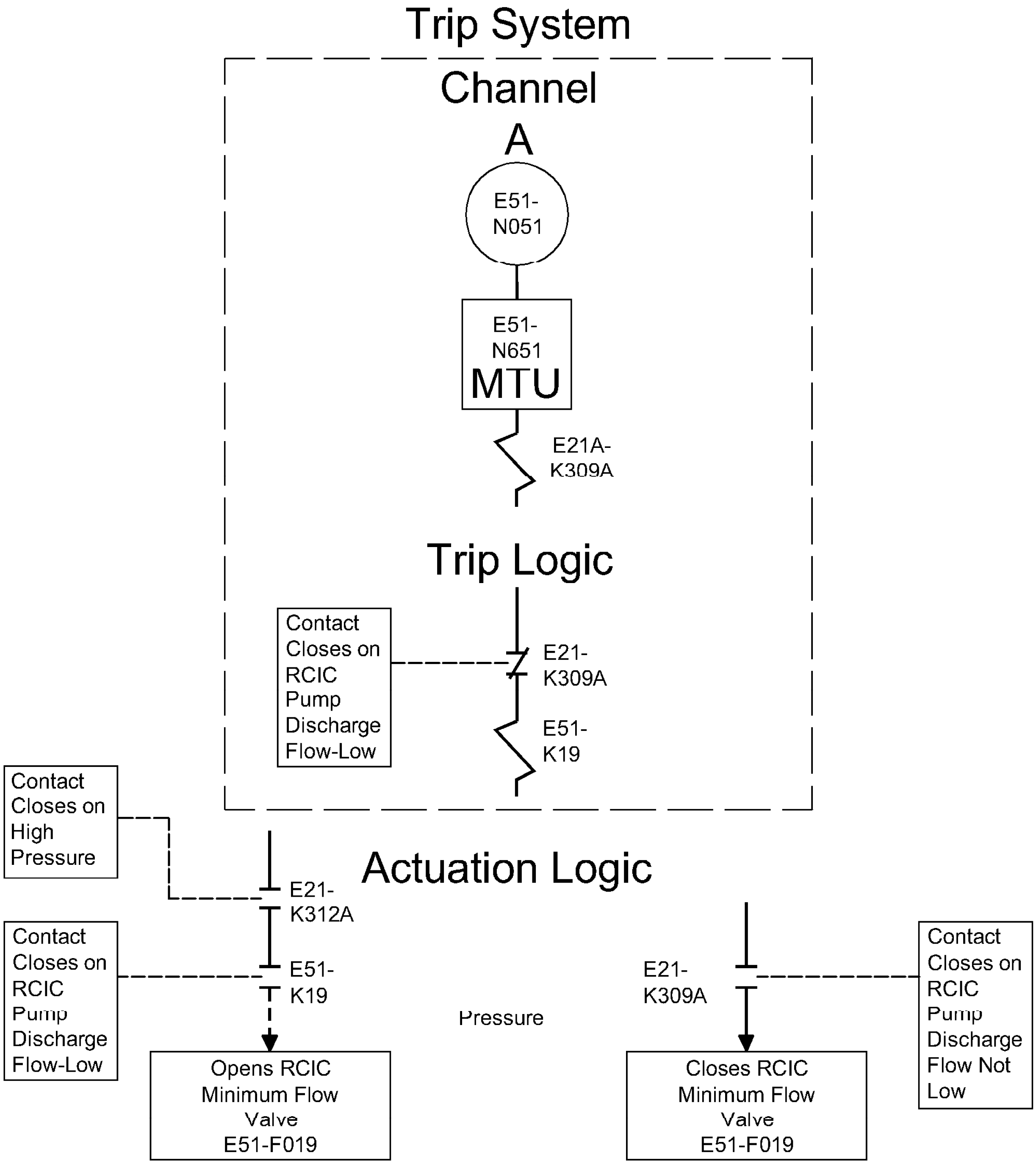
Prepared By: RLC

Reviewed By:

LFD-1-ECCS-28

TRM T3.3.5-1, Item 6
RCIC Turbine Trip,
RCIC Pump Suction
Pressure-Low

TRM REV. 60



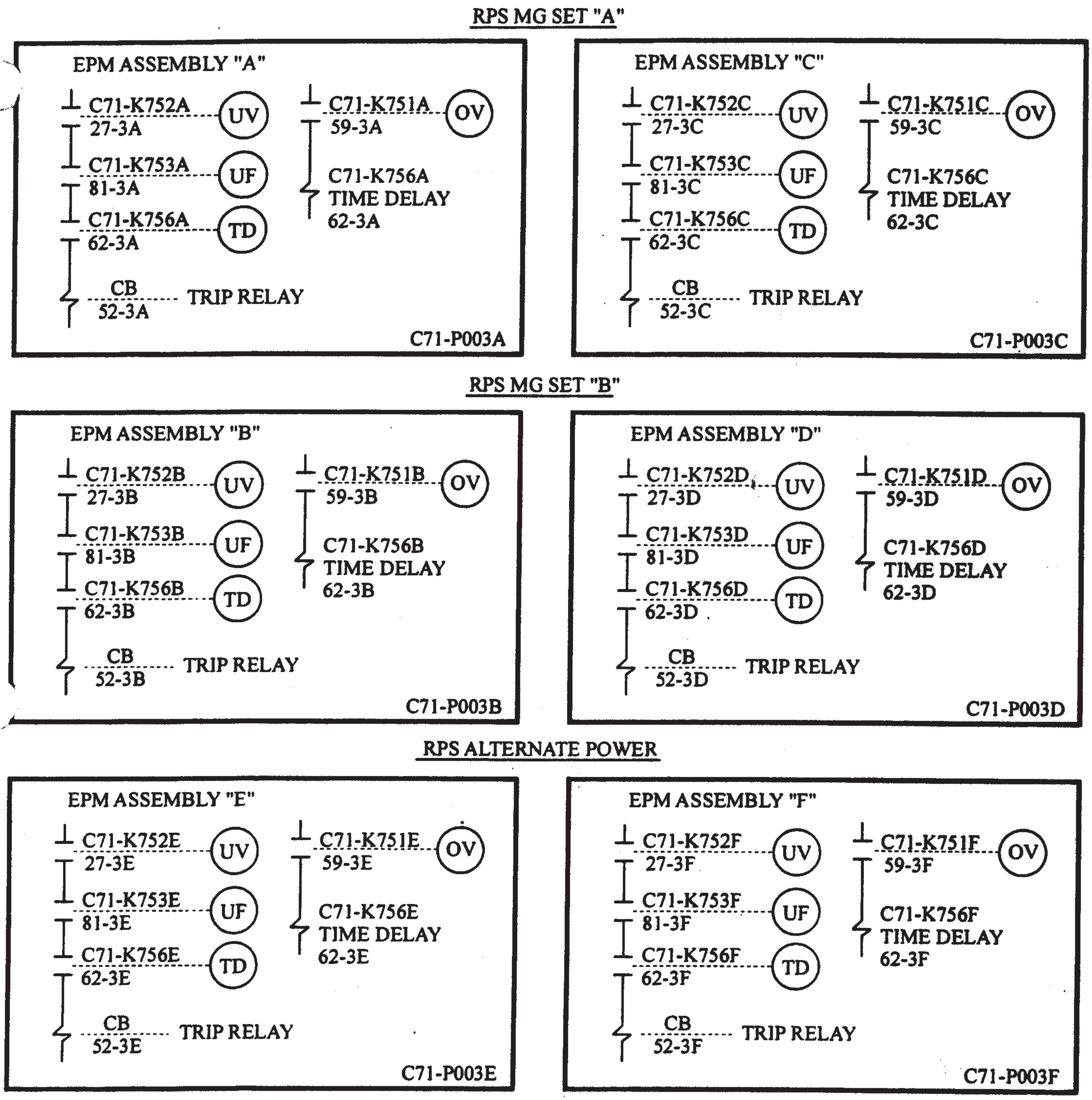
Minimum Channel Requirements for System Initiation Capability:

In order to maintain RCIC initiation capability with regard to minimum flow functionality, this channel must be functional.

Elem. Ref.
H-17148
H-17152
H-19821

LFD-1-ECCS-29

TRM T3.3.5-1,
Items 7.a and 7.b,
RCIC Pump Discharge
Flow-High, Low

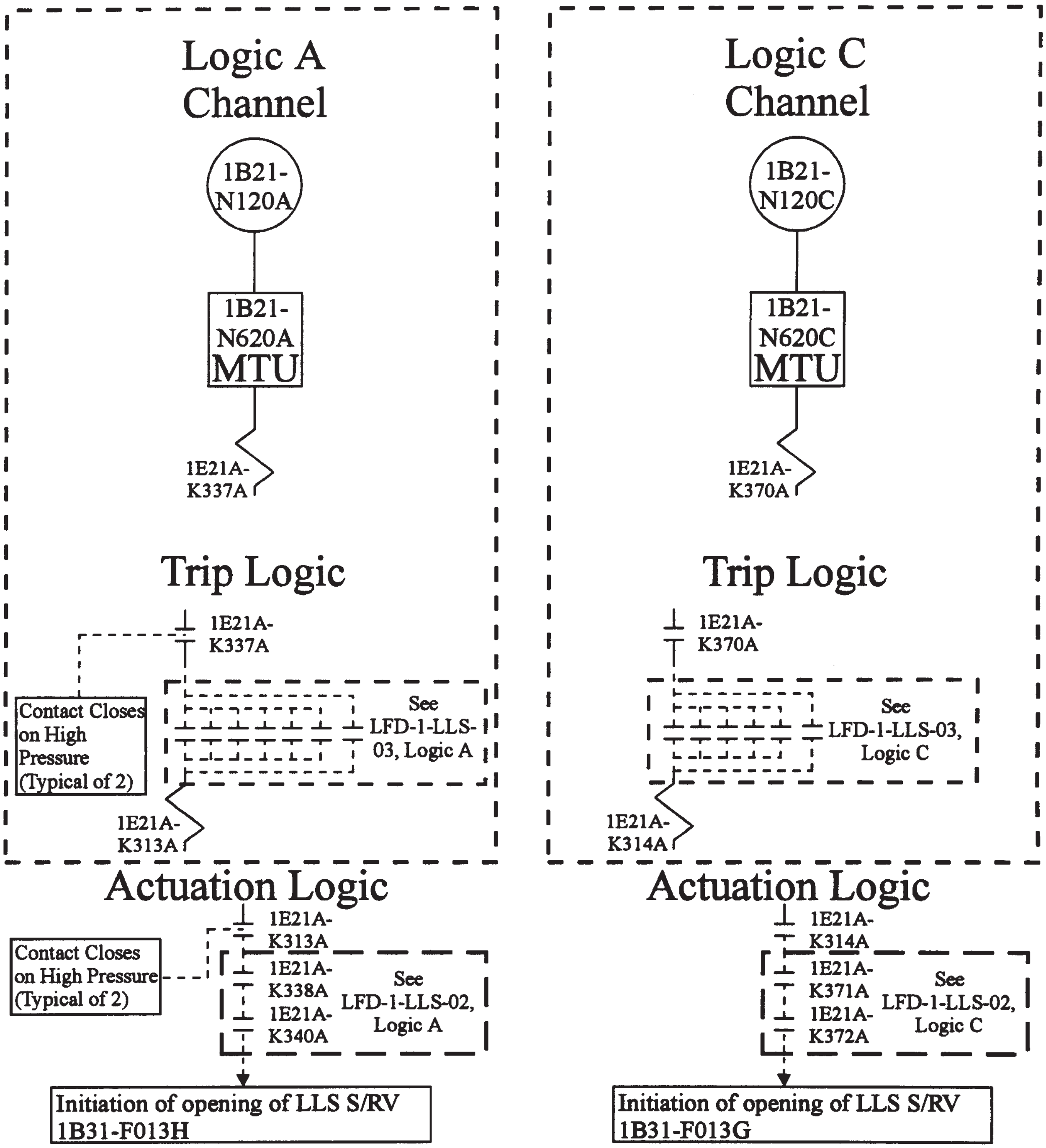


Minimum Channel Requirements for System Initiation Capability:

In order to maintain RPS-EPM trip capability, one EPM assembly for each of the inservice power supplies must be operable.

Elem. Ref. H-17197 H-17499	Prepared By: Reviewed By:	LFD-1-EPM-01 TS 3.3.8.2 RPS Electric Power Monitor Trips TRM Rev. 33

Division I



Minimum Channel Requirements for System Initiation Capability:

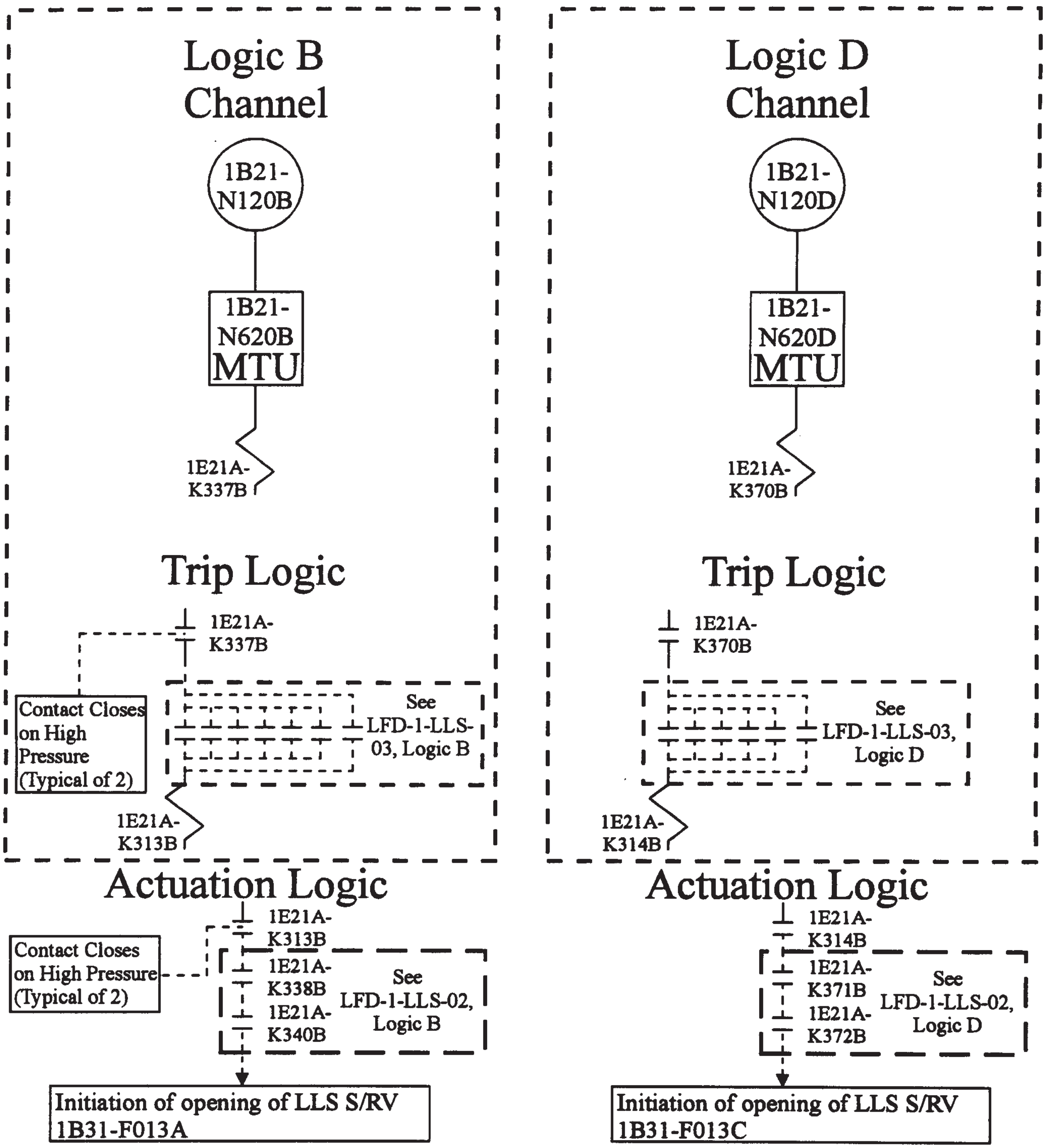
See Sheet 2 of 2.

Elem. Ref.
H-17755 H-19823
H-19822 H-19833

Prepared By:
Reviewed By:

LFD-1-LLS-01
Sheet 1 of 2
TS 3.3.6.3-1, Item 1
Low-Low Set Instrumentation-Reactor Steam Dome Pressure - High
Rev. 0 11/30/94

Division II



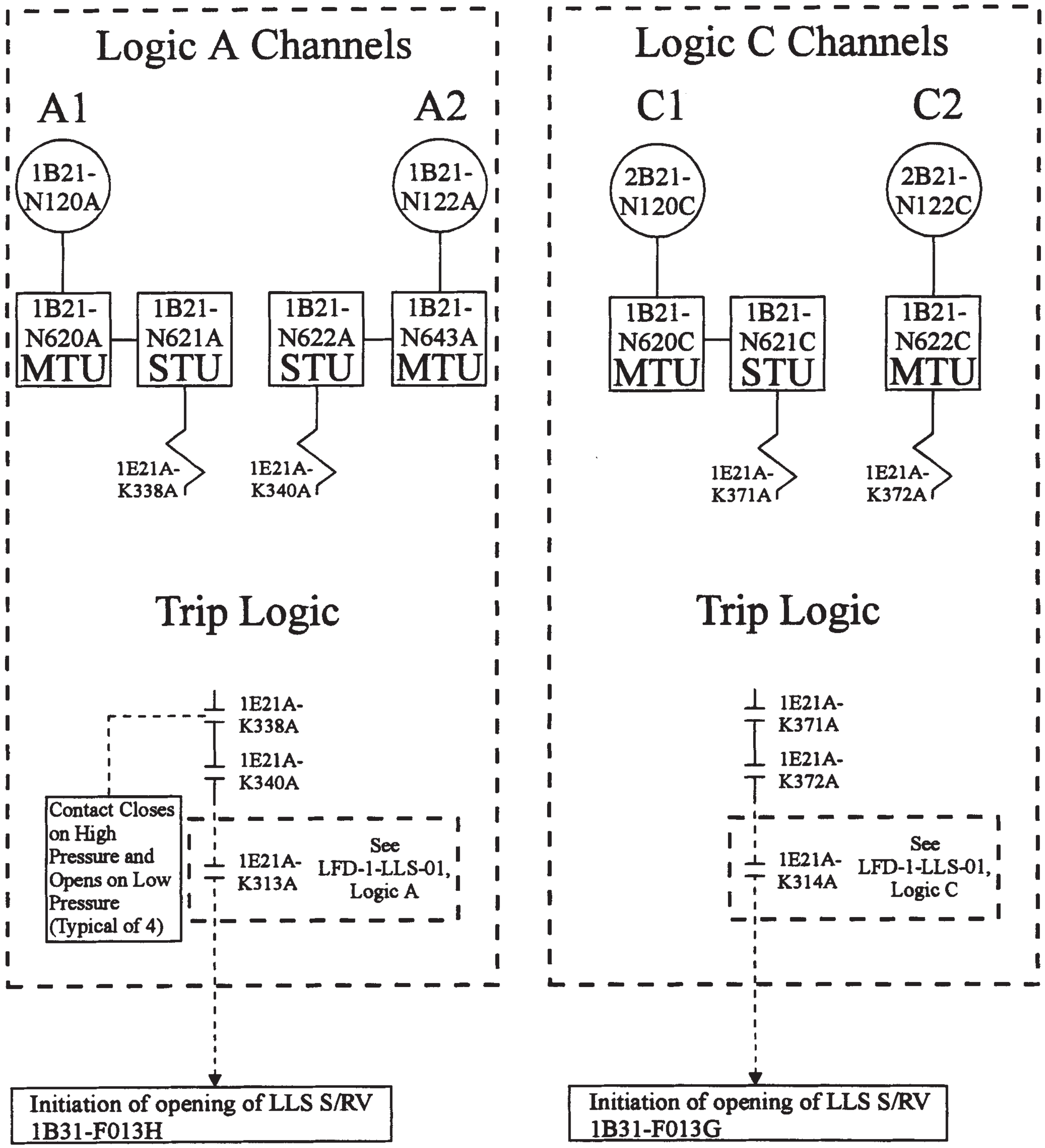
<u>Minimum Channel Requirements for System Initiation Capability:</u>

In order to maintain the capability to initiate a LLS S/RV, its associated reactor steam dome pressure Logic AND its associated Logic from LFD-1-LLS-02 AND LFD-1-LLS-03 must be operable.

Elem. Ref.
H-17755 H-19826
H-19825 H-19834

LFD-1-LLS-01
Sheet 2 of 2
TS 3.3.6.3-1, Item 1
Low-Low Set Instrumentation-Reactor Steam Dome Pressure - High
Rev. 0 11/30/94

Division I



Minimum Channel Requirements for System Initiation Capability:

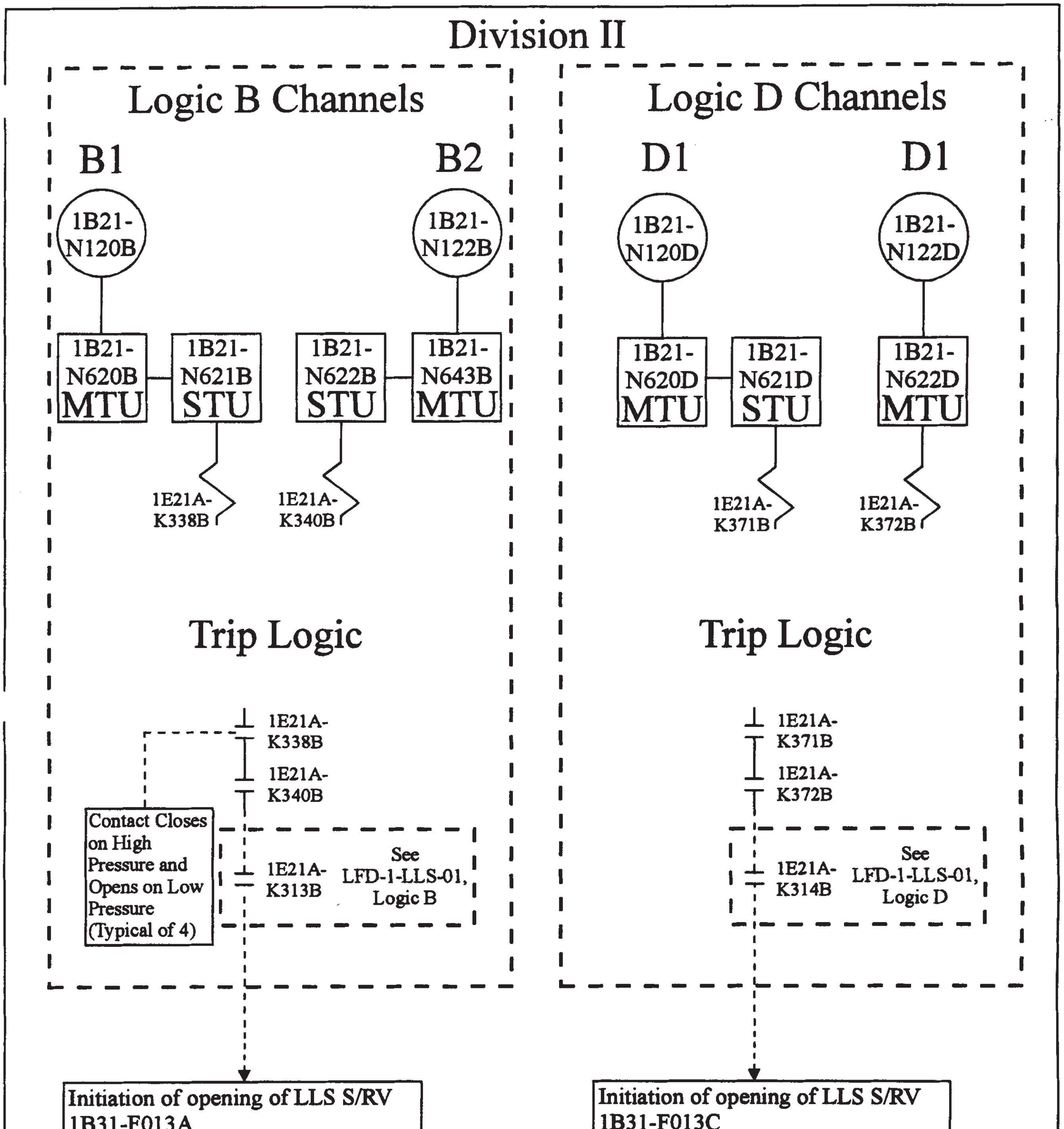
See Sheet 2 of 2.

Elem. Ref.
H-17755 H-19823
H-19822 H-19833

Prepared By: [signature]

Reviewed By: [signature]

LFD-1-LLS-02
Sheet 1 of 2
TS 3.3.6.3-1, Item 2 Low-Low Set Instrumentation-Low-Low Set Pressure Setpoints
Rev. 0 12/1/94



Minimum Channel Requirements for System Initiation Capability:

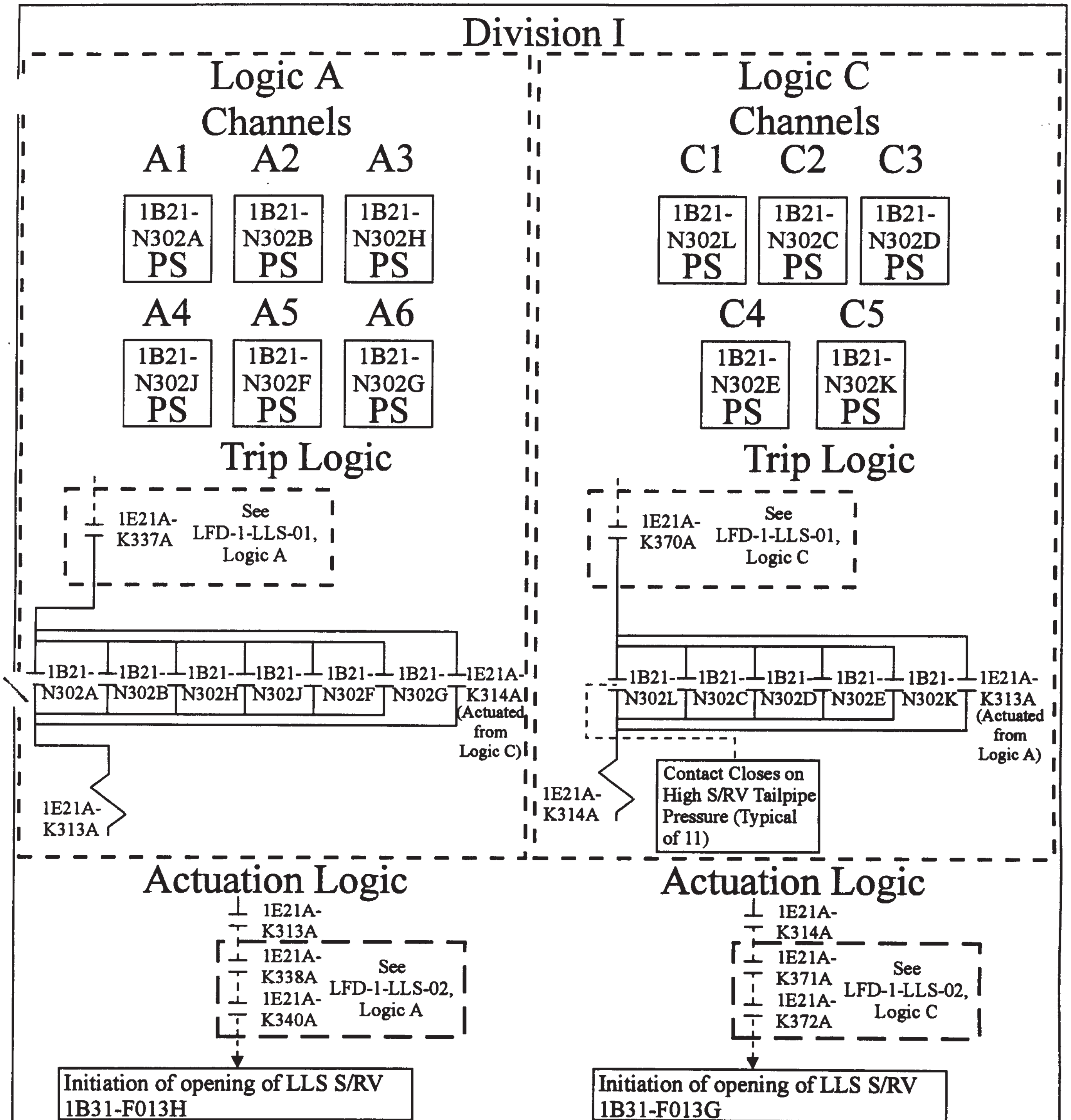
In order to maintain the capability to initiate a LLS S/RV, its associated low-low set pressure setpoint Logic AND its associated Logic from LFD-1-LLS-01 AND LFD-1-LLS-03 must be operable.

Elem. Ref.	
H-17755	H-19826
H-19825	H-19834

LFD-1-LLS-02
Sheet 2 of 2

TS 3.3.6.3-1, Item 2
Low-Low Set Instrumentation-
Low-Low Set
Pressure Setpoints

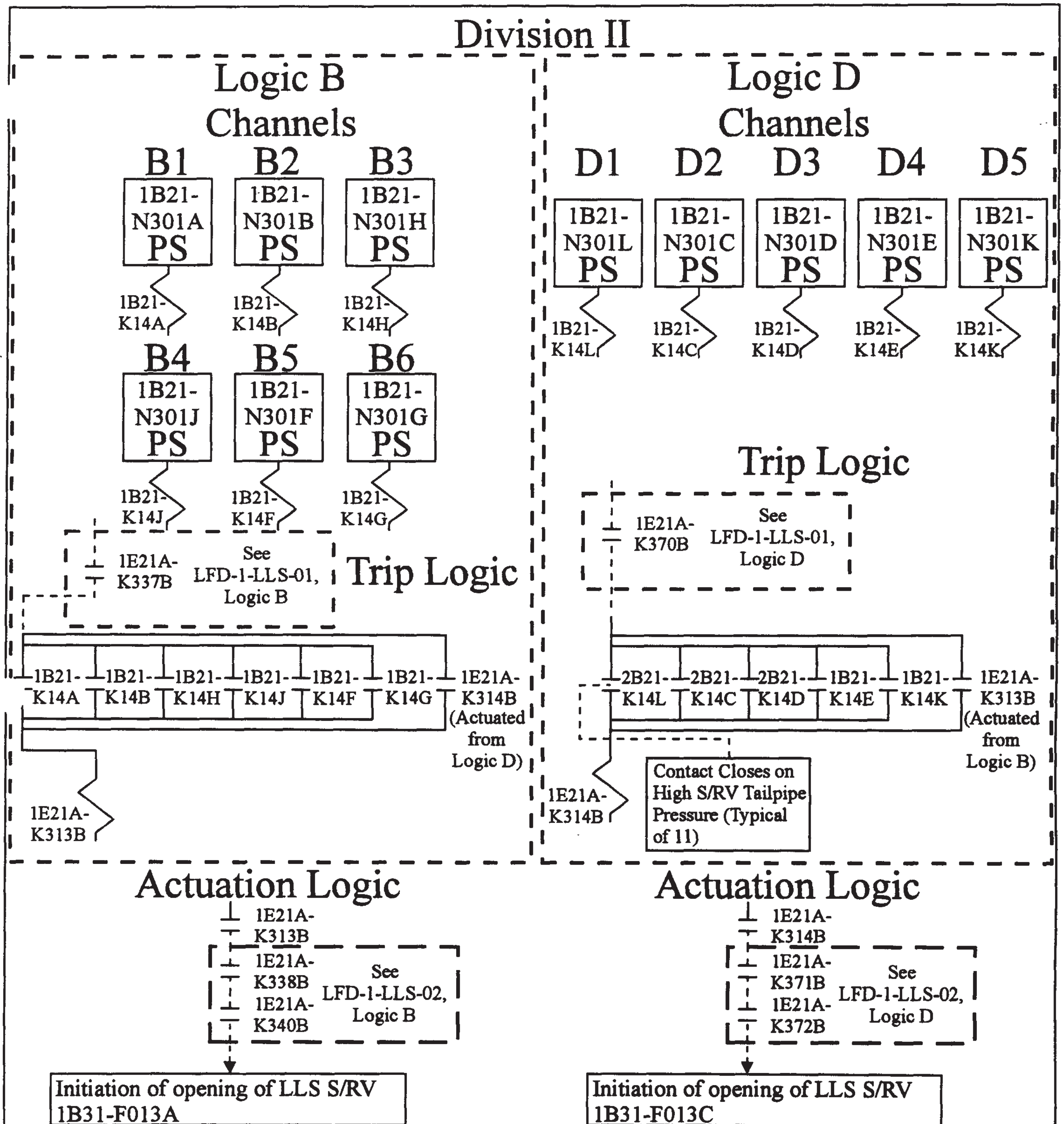
Rev. 0 12/1/94



Minimum Channel Requirements for LLS S/RV Initiation Capability:

See Sheet 2 of 2.

Elem. Ref. H-17755 H-19833	LFD-1-LLS-03 Sheet 1 of 2
Prepared By: [signature]	TS 3.3.6.3-1, Item 3
Reviewed By: [signature]	Low-Low Set Instrumentation - Tailpipe Pressure Switch
	Rev. 0 12/1/94



Minimum Channel Requirements for LLS S/RV Initiation Capability:

In order to maintain the capability to initiate a LLS S/RV, its associated tailpipe pressure switch Logic AND its associated Logic from LFD-1-LLS-01 AND LFD-1-LLS-02 must be operable. The tailpipe pressure switch Logic is operable if at least one pressure switch is operable OR at least one pressure switch AND Reactor Steam Dome Pressure - High channel in the opposite Logic in the same Division are operable.

Elem. Ref.
H-17755
H-19606
H-19834

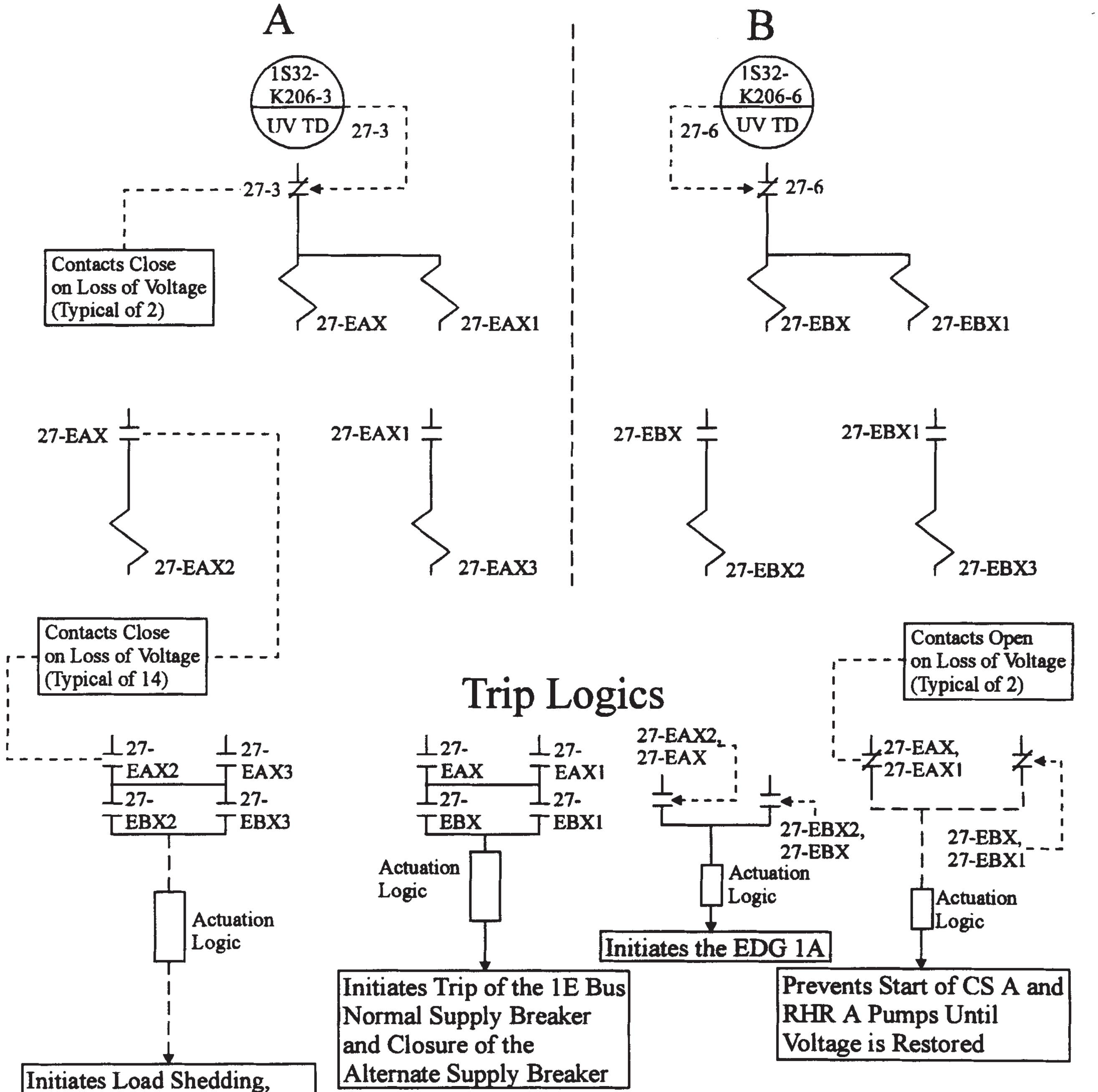
LFD-1-LLS-03
Sheet 2 of 2

TS 3.3.6.3-1, Item 3
Low-Low Set Instrumentation - Tailpipe Pressure Switch

Rev. 0 12/1/94

Trip System: 1E 4.16KV Bus

Channels



Minimum Channel Requirements for System Initiation Capability

See Sheet 3 for minimum channel requirements.

Elem. Ref.		
H-13382	H-17111	H-17768
H-13412	H-17763	H-17776
H-17109	H-17764	

Prepared By: [signature]

Reviewed By: [signature]

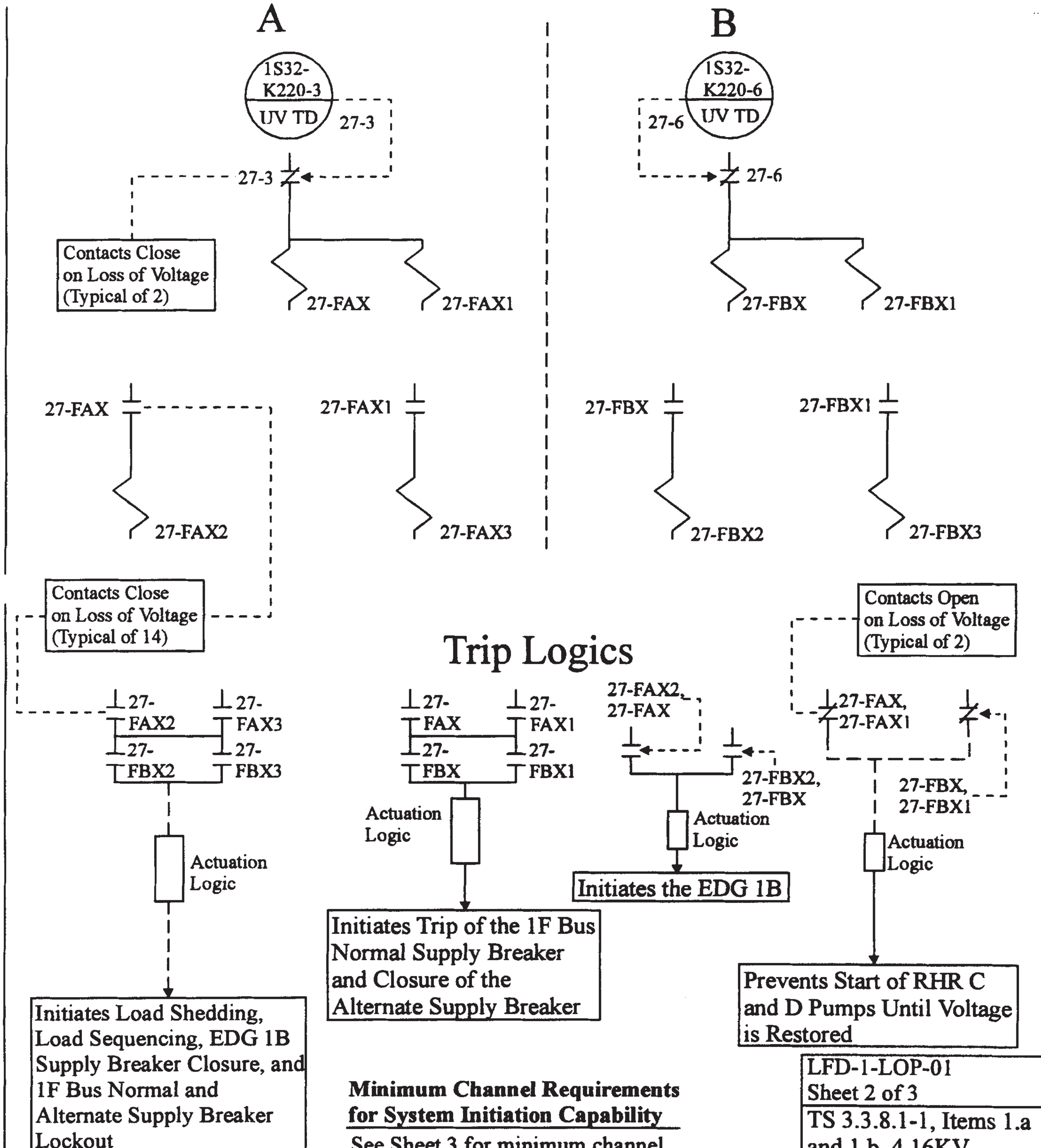
LFD-1-LOP-01
Sheet 1 of 3

TS 3.3.8.1-1, Items 1.a and 1.b, 4.16KV Emergency Bus, Loss of Voltage and Time Delay

Rev. 0 12/16/94

Trip System: 1F 4.16KV Bus

Channels



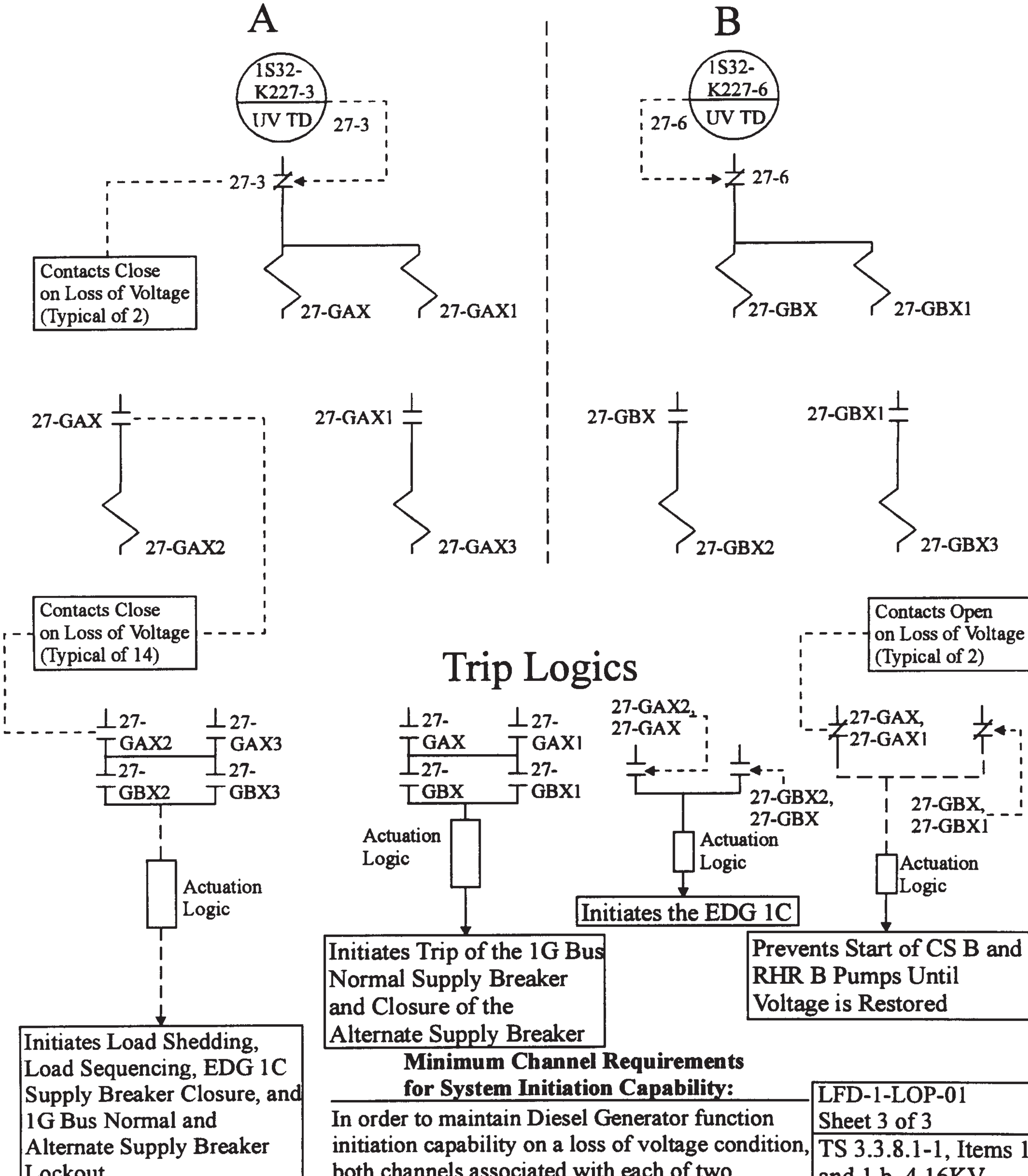
Minimum Channel Requirements for System Initiation Capability

See Sheet 3 for minimum channel requirements.

Elem. Ref.
H-13413 H-17768
H-17764
H-17765

LFD-1-LOP-01 Sheet 2 of 3
TS 3.3.8.1-1, Items 1.a and 1.b, 4.16KV Emergency Bus, Loss of Voltage and Time Delay
Rev. 0 12/16/94

Trip System: 1G 4.16KV Bus
Channels



Minimum Channel Requirements for System Initiation Capability:

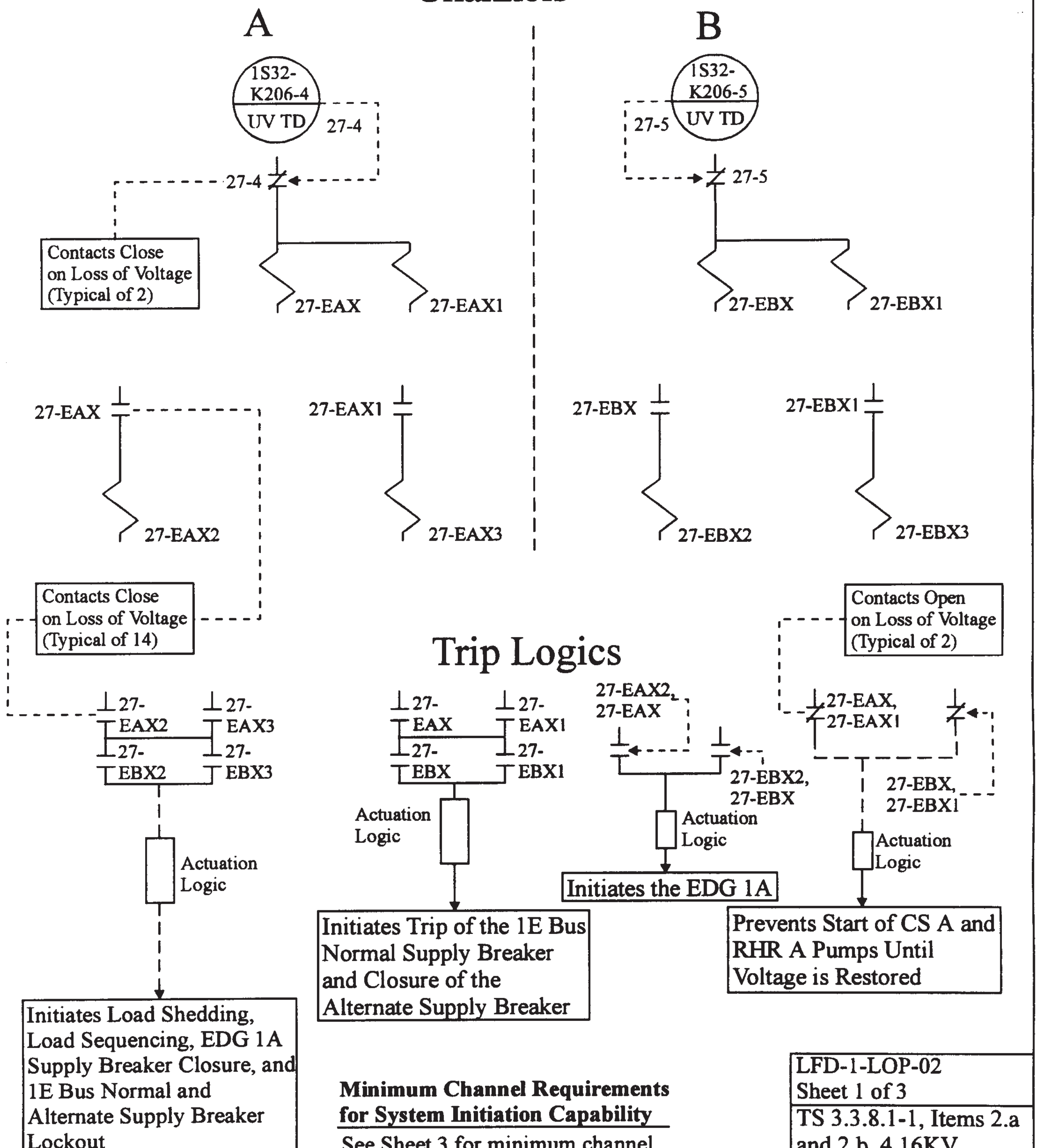
In order to maintain Diesel Generator function initiation capability on a loss of voltage condition, both channels associated with each of two emergency busses are required to be operable.

LFD-1-LOP-01 Sheet 3 of 3	
TS 3.3.8.1-1, Items 1.a and 1.b, 4.16KV Emergency Bus, Loss of Voltage and Time Delay	
Rev. 0	12/16/94

Elem. Ref.
H-13382 H-17111 H-17767
H-13414 H-17765
H-17109 H-17766

Trip System: 1E 4.16KV Bus

Channels



Minimum Channel Requirements for System Initiation Capability

See Sheet 3 for minimum channel requirements.

Elem. Ref.
H-13382 H-17111 H-17768
H-13412 H-17763 H-17776
H-17109 H-17764

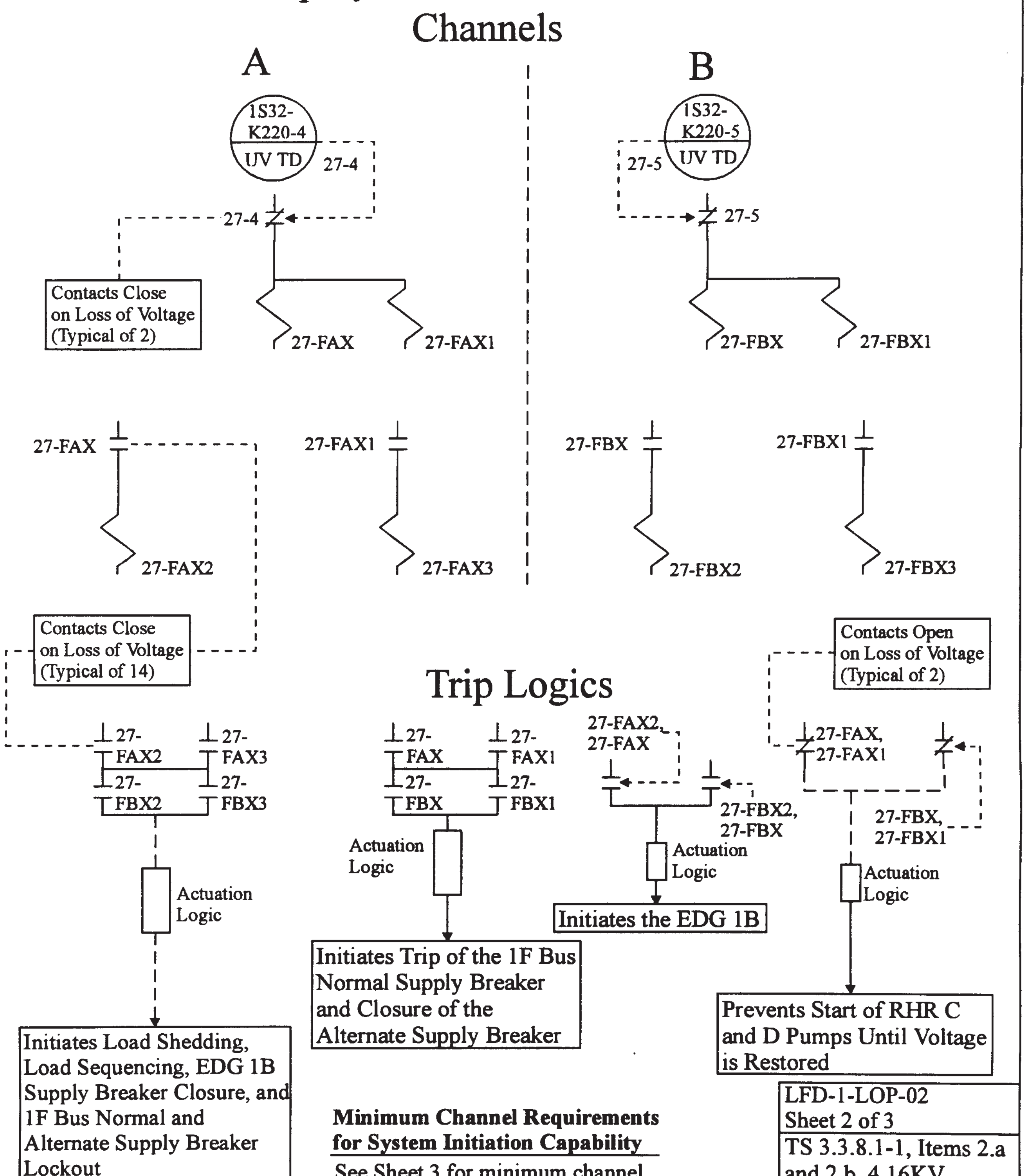
Prepared By: S. G. [signature]
Reviewed By: [signature]

LFD-1-LOP-02
Sheet 1 of 3

TS 3.3.8.1-1, Items 2.a and 2.b, 4.16KV Emergency Bus, Degraded Voltage and Time Delay

Rev. 0 12/16/94

Trip System: 1F 4.16KV Bus



Minimum Channel Requirements for System Initiation Capability

See Sheet 3 for minimum channel requirements.

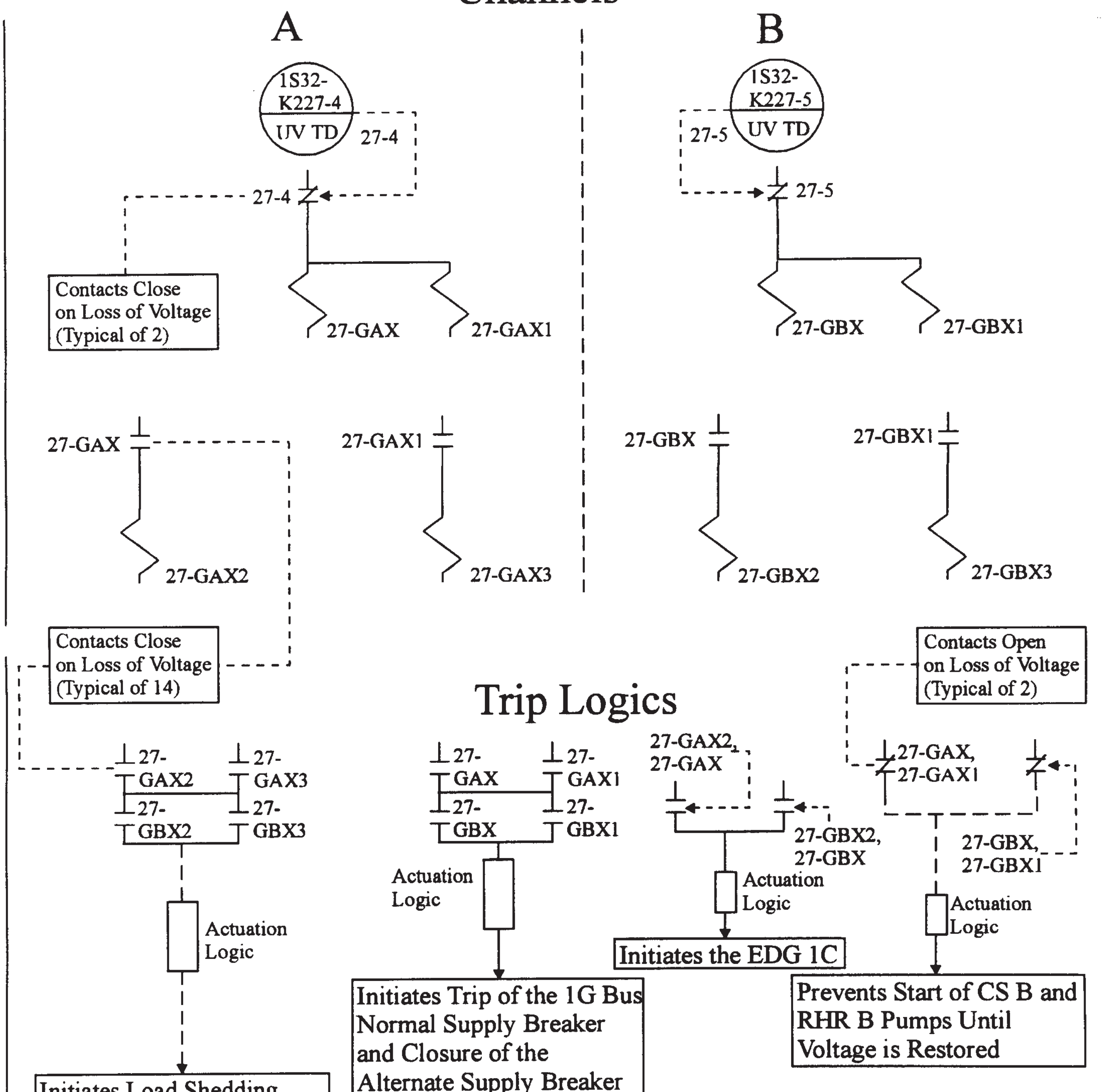
Elem. Ref.
H-13413 H-17768
H-17764
H-17765

LFD-1-LOP-02
Sheet 2 of 3

TS 3.3.8.1-1, Items 2.a and 2.b, 4.16KV Emergency Bus, Degraded Voltage and Time Delay

Rev. 0 12/16/94

Trip System: 1G 4.16KV Bus

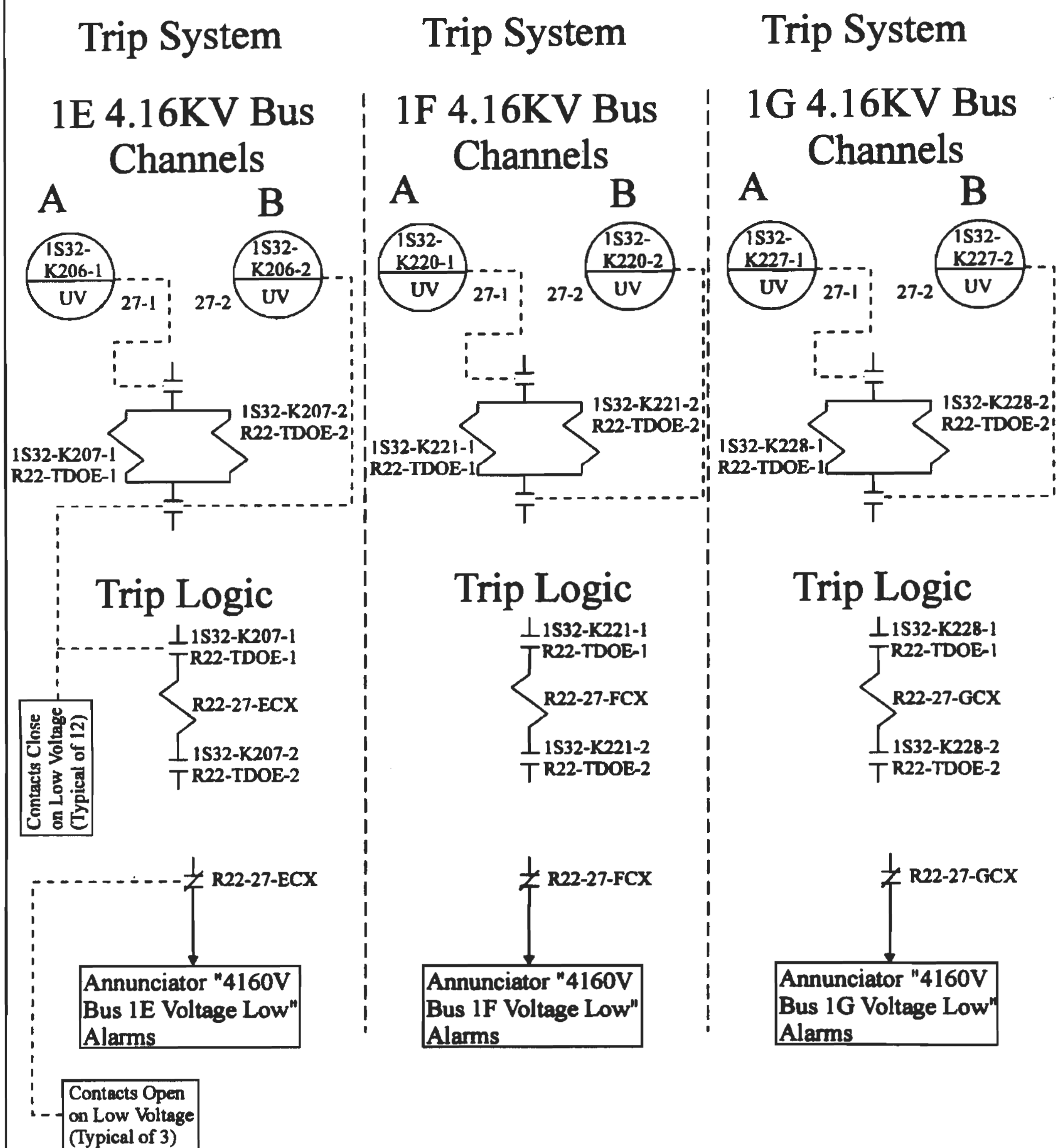


Minimum Channel Requirements for System Initiation Capability:

In order to maintain Diesel Generator function initiation capability on a loss of voltage condition, both channels associated with each of two emergency busses are required to be operable.

LFD-1-LOP-02 Sheet 3 of 3
TS 3.3.8.1-1, Items 2.a and 2.b, 4.16KV Emergency Bus, Degraded Voltage and Time Delay
Rev. 0 12/16/94

Elem. Ref.
H-13382 H-17111 H-17767
H-13414 H-17765
H-17109 H-17766



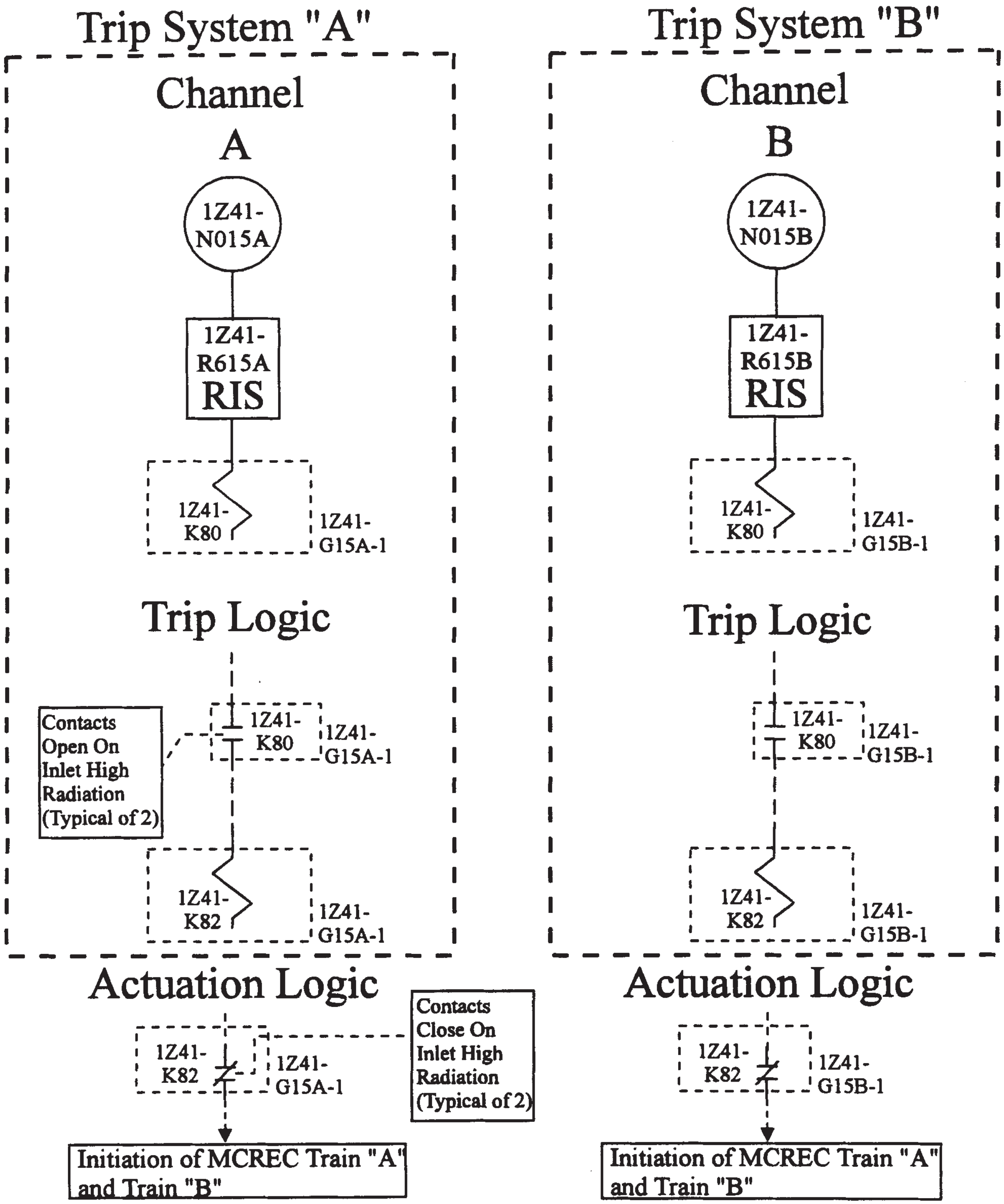
Minimum Channel Requirements for System Initiation Capability:
In order to maintain annunciation capability on a low voltage condition on the emergency busses, both channels including their associated time delay relays for each emergency bus must be operable.

Elem. Ref. H-13412 H-13413 H-13414	Prepared By: Reviewed By:

LFD-1-LOP-03

TS 3.3.8.1-1, Items 3.a and 3.b, 4.16KV Emergency Bus, Degraded Voltage Annunciation and Time Delay

TRM Rev. 63



Minimum Channel Requirements for System Initiation Capability:

In order to maintain MCREC System initiation capability for the pressurization mode on Control Room air inlet high radiation, at least one channel is required to be operable or maintained in the tripped condition.

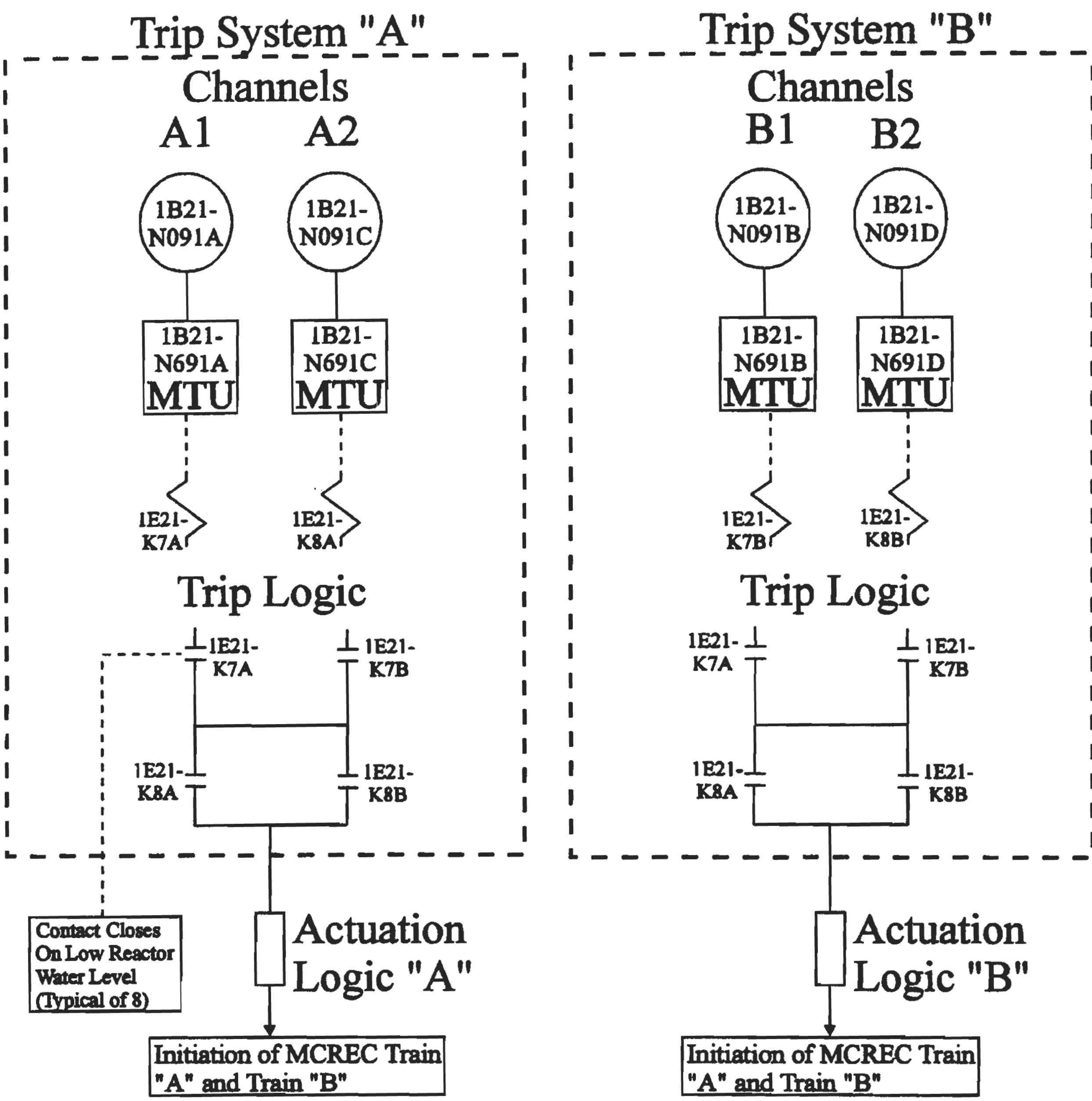
Elem. Ref.
H-17069 H-17073
H-17070 H-17121
H-17071 H-17142

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-MCREC-01

TS 3.3.7.1
MCREC System
Initiation Control Room
Air Inlet Radiation - High

Rev. 0 1/12/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain MCREC System initiation capability on Reactor Water Level - Low Low Low (Level 1), channels in one of the following combinations must be either functional or maintained in the tripped condition.

A1 and A2
A1 and B2
B1 and A2
B1 and B2

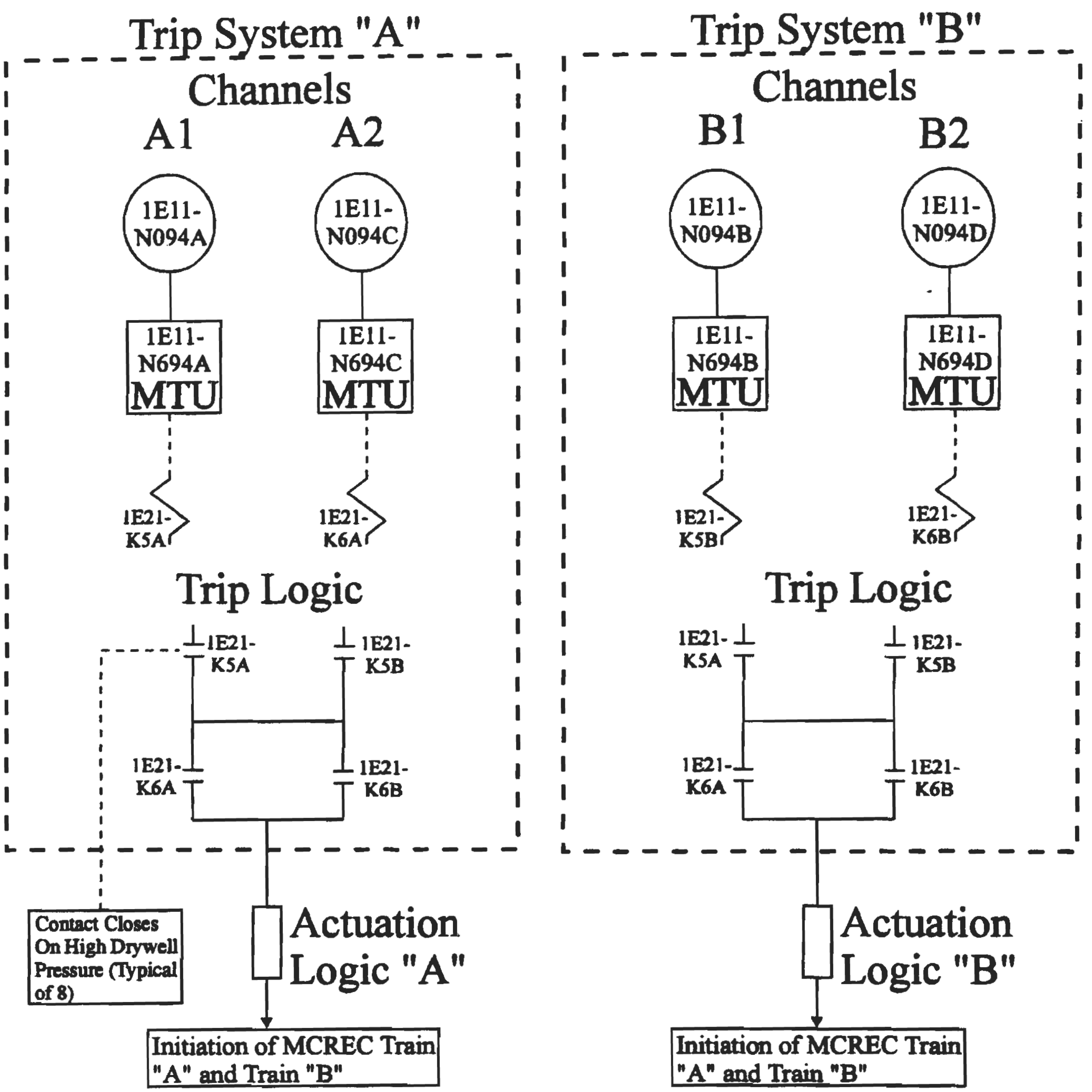
Elem. Ref.	
H-17109	H-19826
H-17121	H-19829
H-19823	H-19830

Prepared By: RLC
Reviewed By: [signature]

LFD-1-MCREC-02

TRM T3.3.7-1, Item 1 MCREC System Instrumentation, Reactor Vessel Water Level - Low Low Low, Level 1

TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain MCREC System initiation capability on high Drywell pressure, channels in one of the following combinations must be either functional or maintained in the tripped condition.

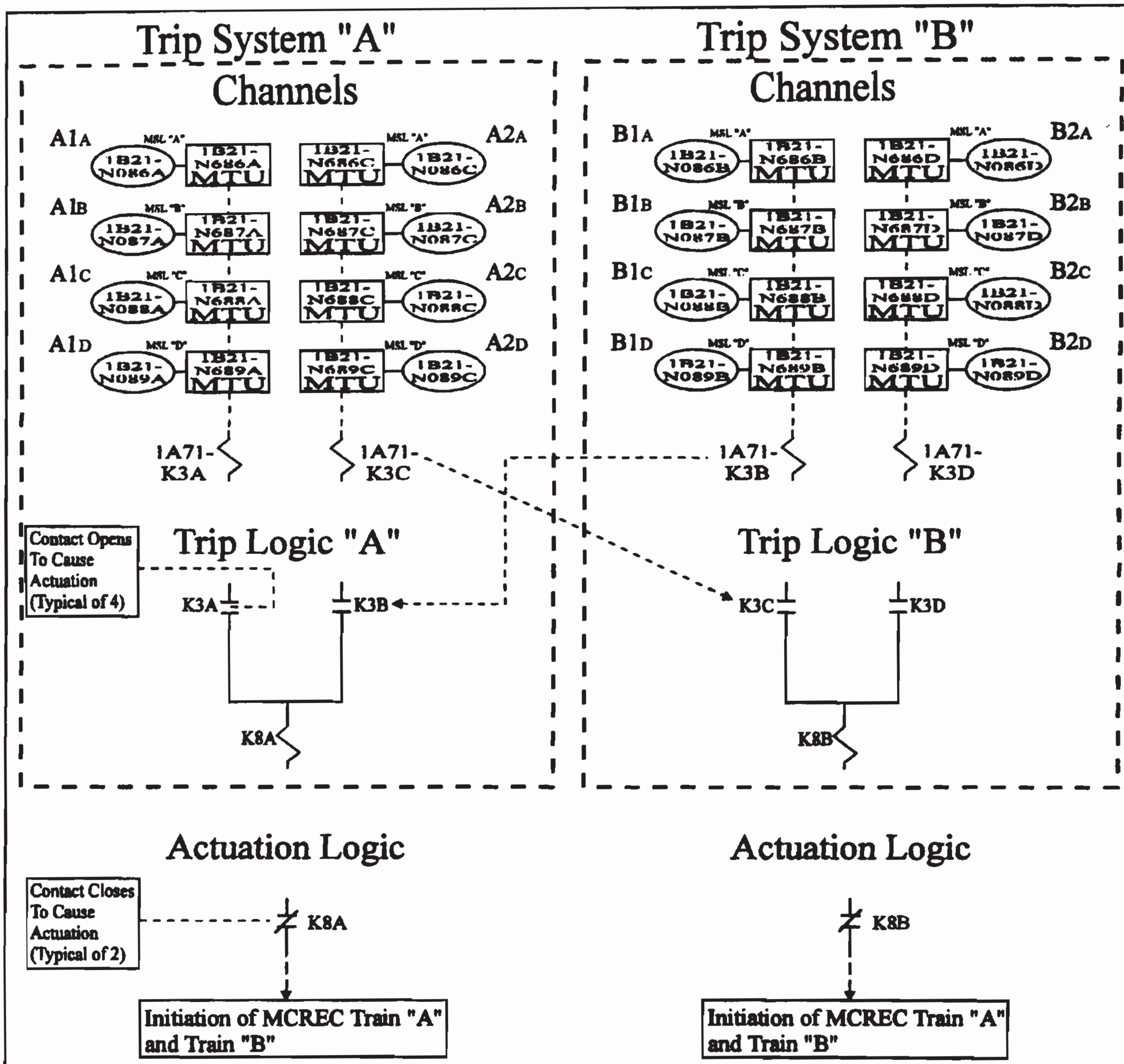
A1and A2
A1and B2
B1and A2
B1and B2

Elem. Ref.
H-19827
H-19830
H-17109
H-17121

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-MCREC-03
TRM T3.3.7-1, Item 2
MCREC System Instrumentation, Drywell Pressure- High

TRM REV. 60



Minimum Channel Requirements for System Initiation Capability:

In order to maintain MCREC System initiation capability on Main Steam Line high flow, channels in one of the following combinations must be either functional or maintained in the tripped condition.

One A1 and One B1 Channel for Each Main Steam Line

OR

One A2 and One B2 Channel for Each Main Steam Line

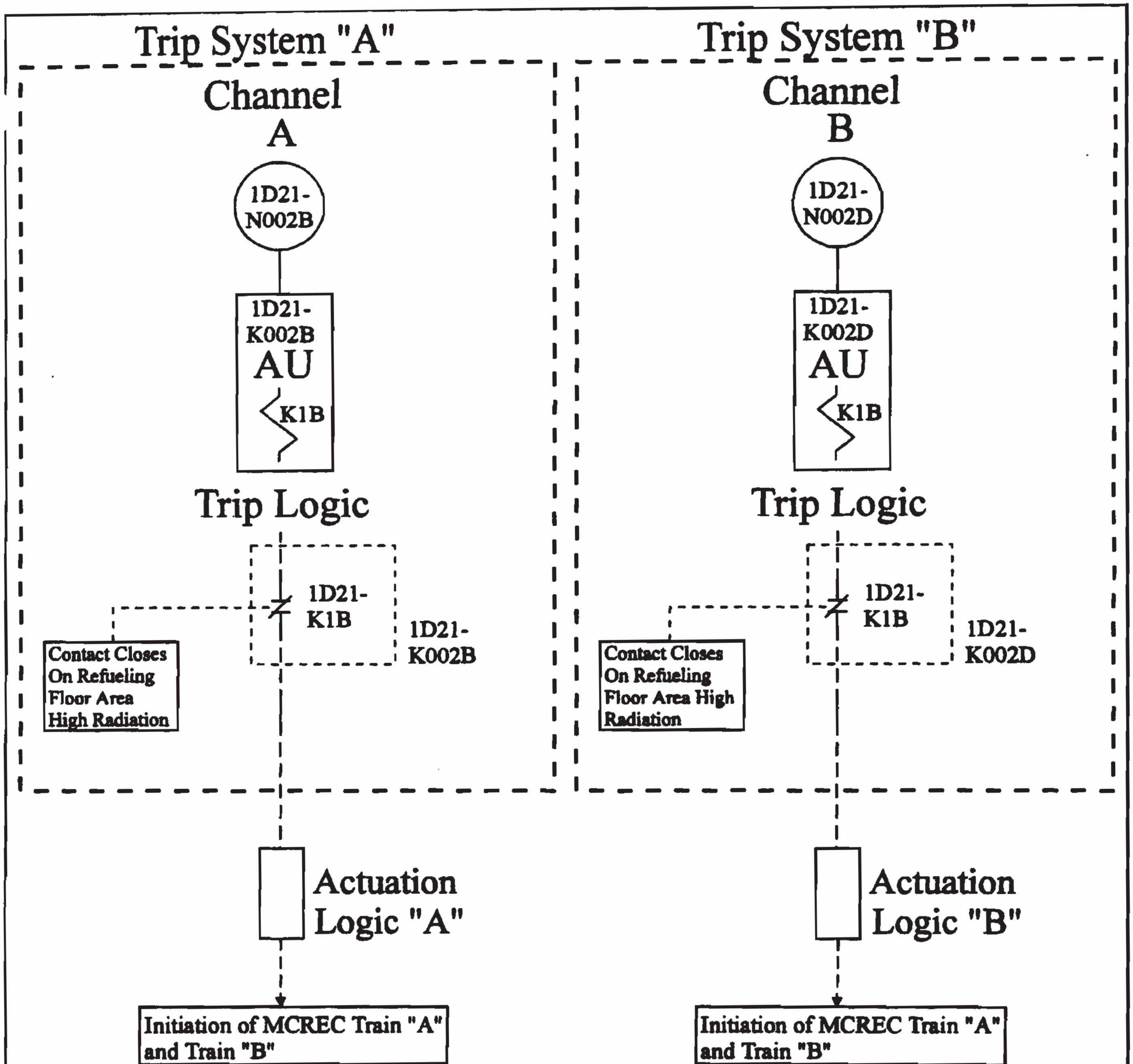
Elem. References	
H-19809	H-17810
H-19812	H-17811
H-19815	H-17818
H-19818	H-17121

Prepared By: TLC

Reviewed By: [signature]

LFD-1-MCREC-04

TRM T3.3.7-1, Item 3
MCREC System Instrumentation, Main Steam Line Flow - High



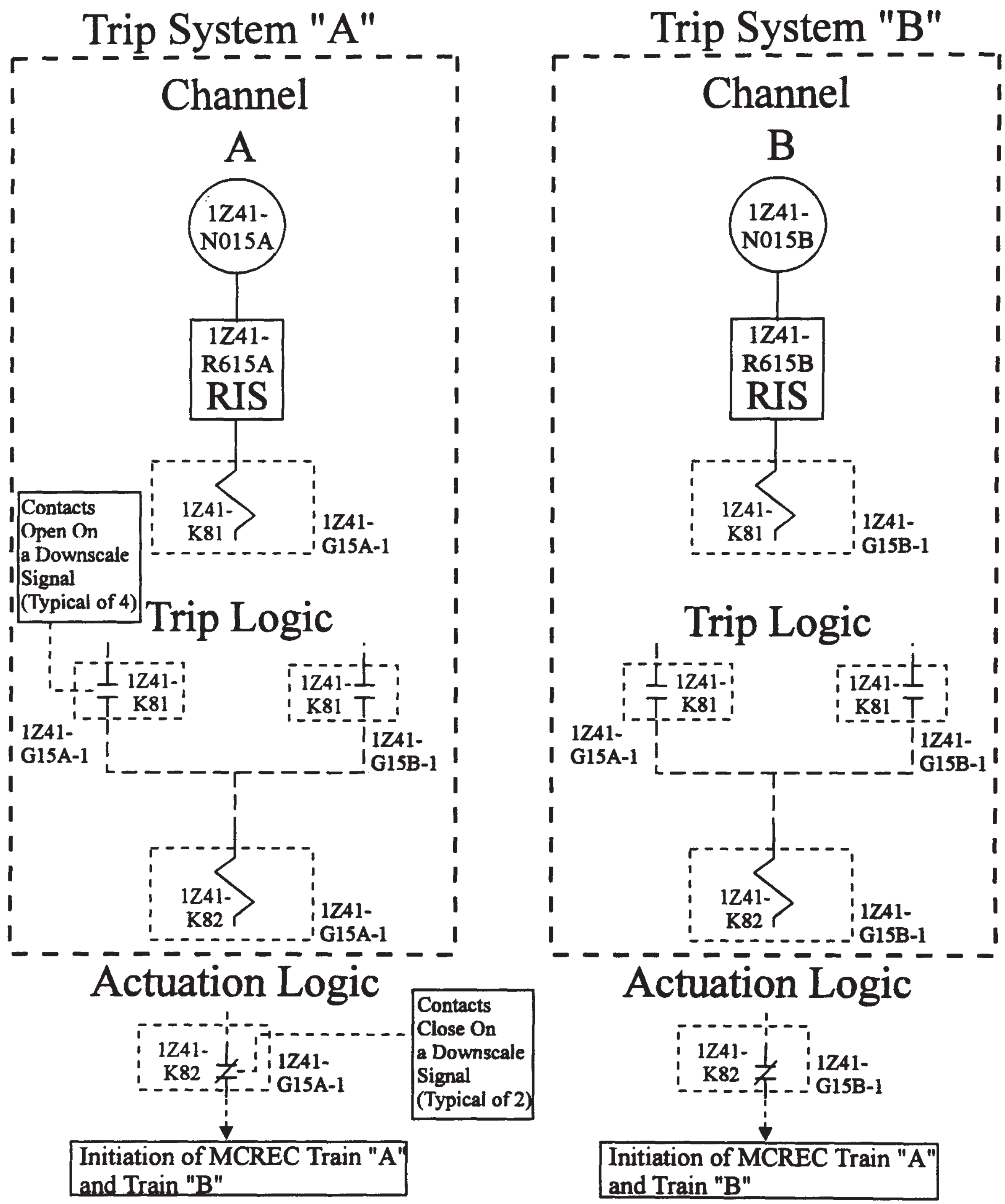
Minimum Channel Requirements for System Initiation Capability:

In order to maintain MCREC System initiation capability on Unit 1 Refueling Floor area high radiation, either channel A or channel B must be functional or maintained in the tripped condition.

Elem. Ref.
H-17854
H-17121

Prepared By: RLC
Reviewed By: [signature]

LFD-1-MCREC-05
TRM T3.3.7-1, Item 4
MCREC System Instrumentation, Refueling Floor Area Radiation - High



Minimum Channel Requirements for System Initiation Capability:

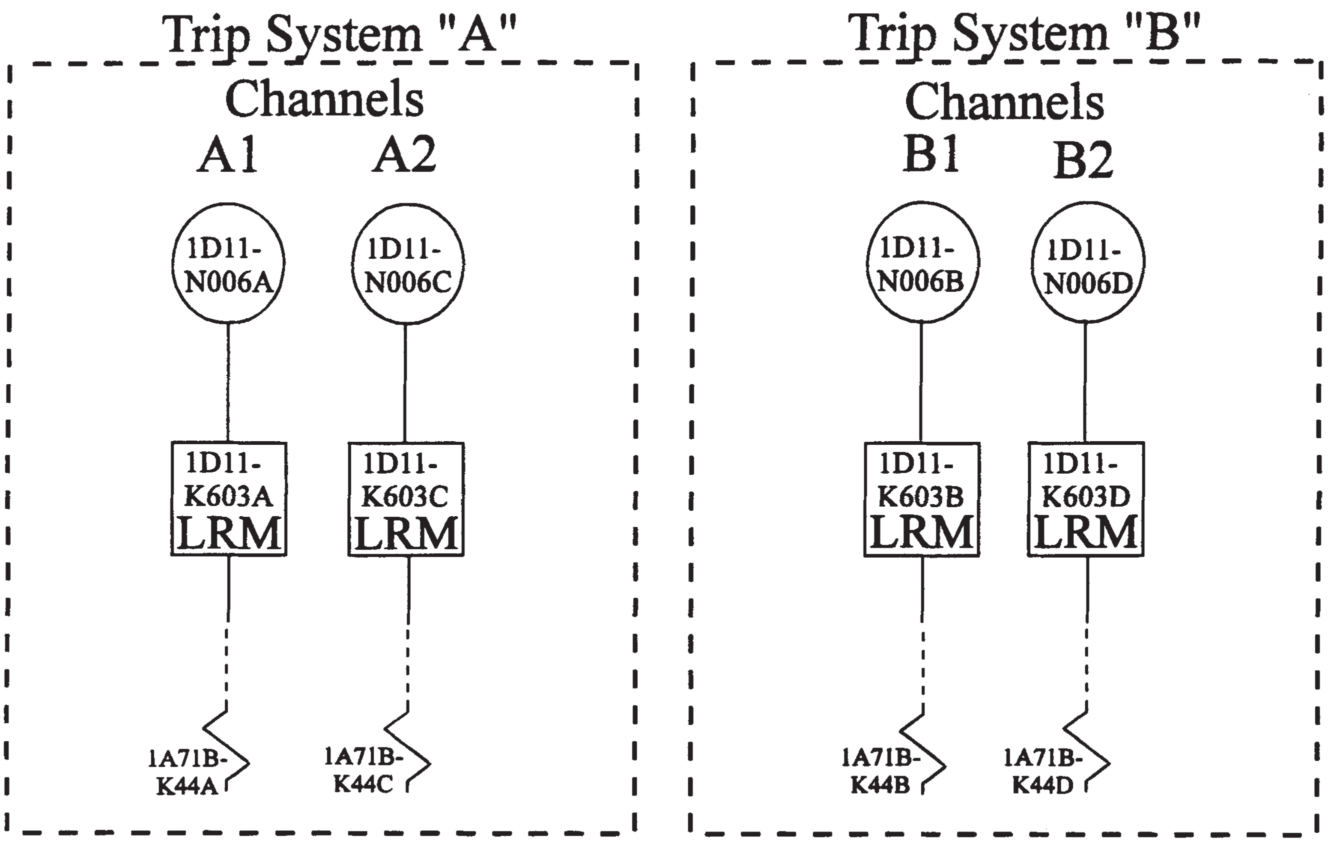
In order to maintain MCREC System initiation capability for the pressurization mode on a Main Control Room Intake Radiation Monitor downscale signal, each channel must be operable or maintained in the tripped condition.

LFD-1-MCREC-06
TRM T3.3.7-1, Item 5 MCREC System Instrumentation, Main Control Room Intake Radiation - Downscale
Rev. 0 1/13/95

Elem. Ref.
H-17121
H-17142

Prepared By:

Reviewed By:



Refer to sheet 2 of 2 for the trip logic, actuation logic and the minimum channels required to maintain functional capability regarding isolation of the Reactor Water Sample line and tripping of the Steam Packing Exhausters and the Mechanical Vacuum Pump. Both functions must be considered in determining the channel minimum requirements.

Elem. Ref.		
H-13377	H-17790	H-17811
H-17076	H-17804	H-17812
H-17077	H-17805	H-17814
H-17789	H-17810	H-19556

Prepared By: J. R. Bunan

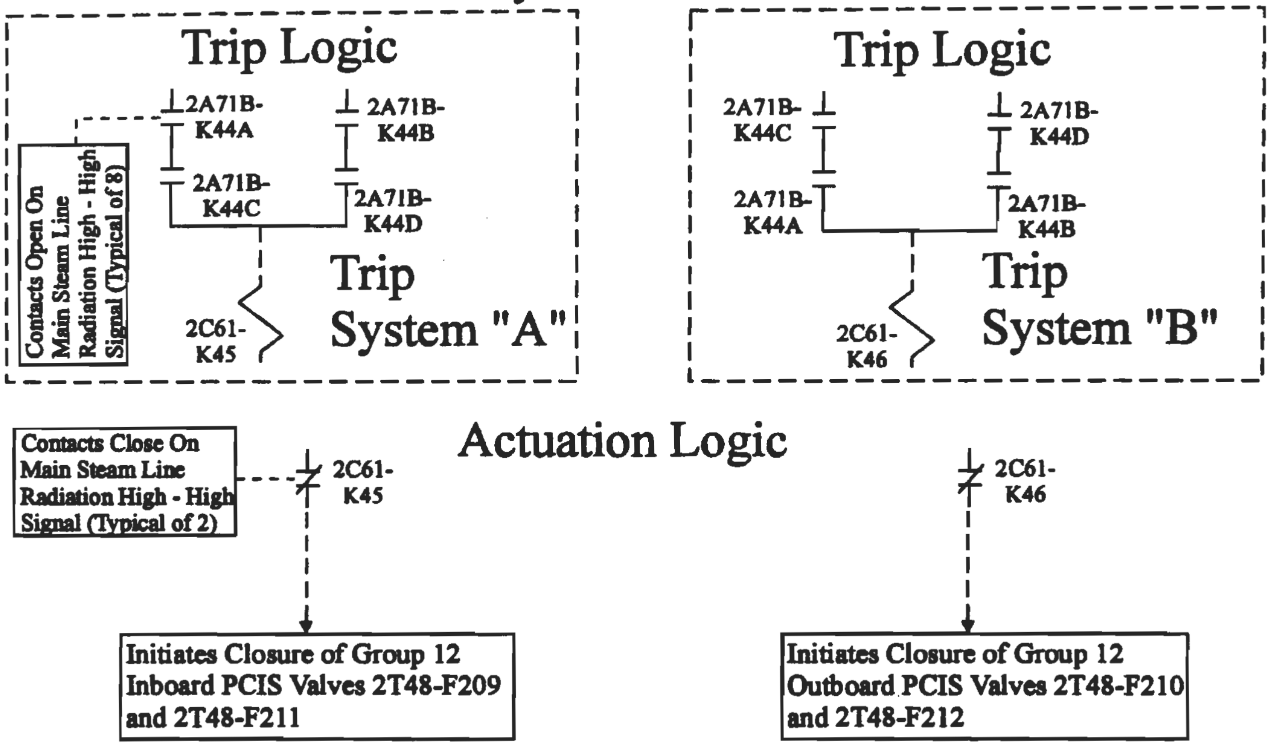
Reviewed By: Wayne

LFD-1-MSLR-01
Sheet 1 of 2

TRM T3.3.11
Main Steam Line
Radiation High - High

Rev. 0 3/30/95

Closure of Torus-to-Drywell Differential Pressure System Isolation Valves



Minimum Channel Requirements for System Isolation Capability:

In order to maintain isolation capability of the Drywell-to-Torus Differential Pressure System on a Main Steam Line Radiation high - high condition, channels in one of the following combinations must either be functional or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

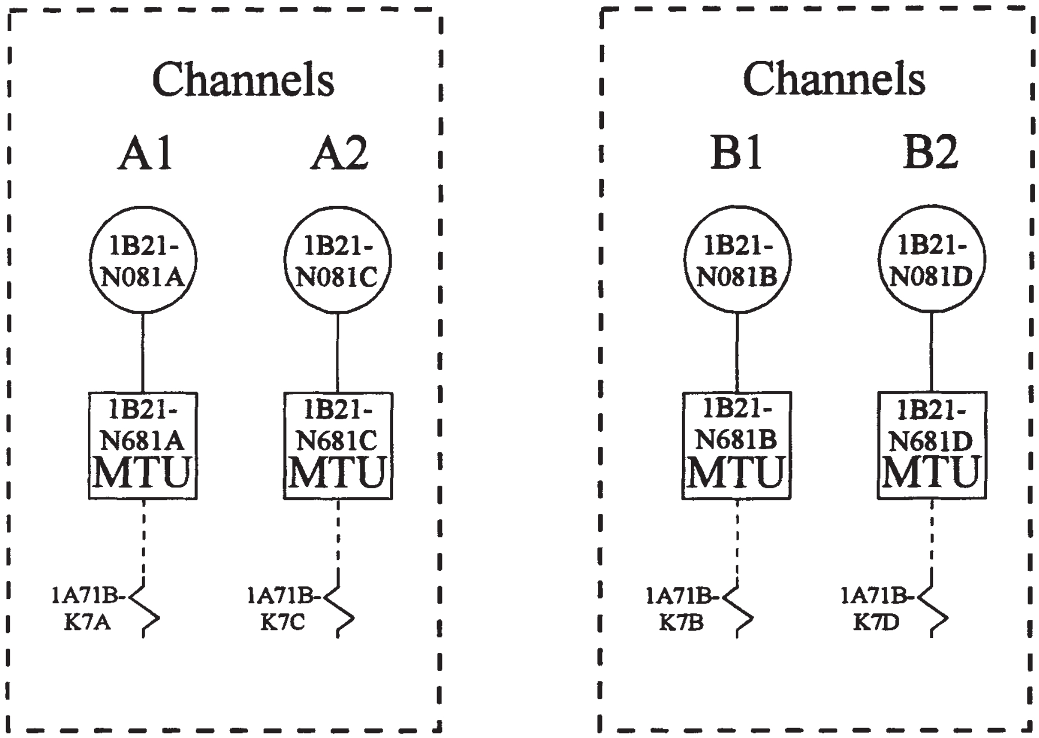
LFD-2-MSLR-01
Sheet 3 of 3

TRM T3.3.11
Main Steam Line Radiation High - High

Prepared By: [signature]
Reviewed By: [signature]

Elem. Ref.: See sheet 1.

Trip System "A" Trip System "B"



Minimum Channel Requirements for System Isolation Capability:

See Sheet 2 of 2.

Elem. Ref.
H-17810 H-17816
H-17811 H-19809
H-17812 H-19812
H-17813 H-19815
H-17814 H-19818
H-17815

Prepared By:

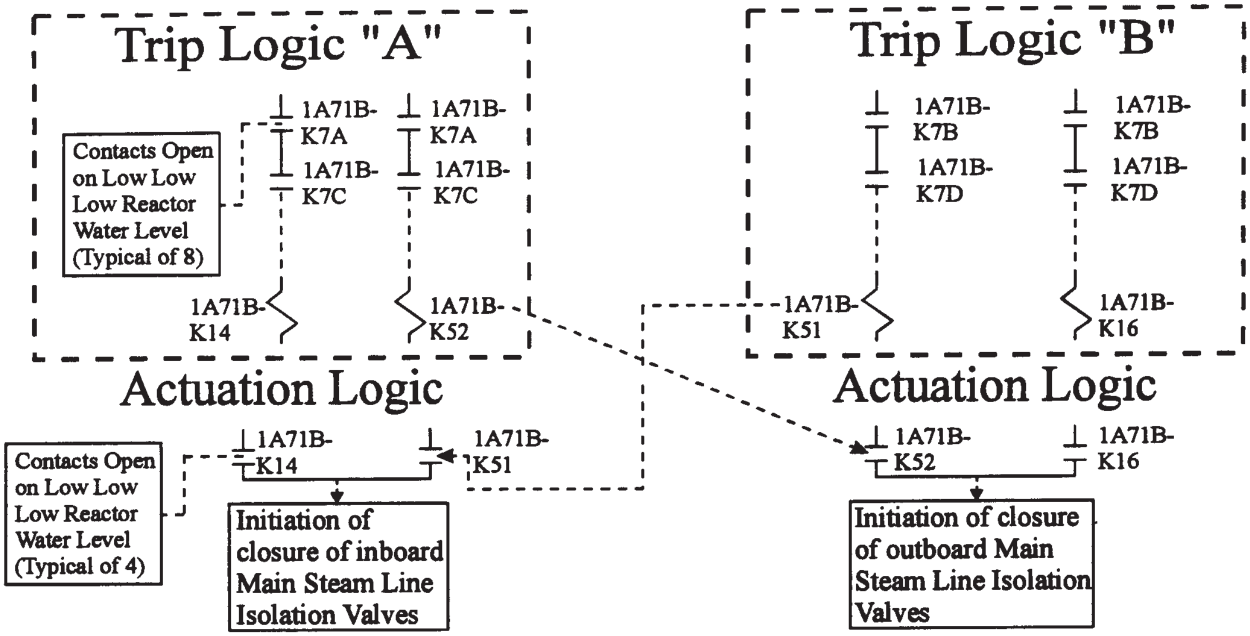
Reviewed By:

LFD-1-PCIS-01
Sheet 1 of 2

TS 3.3.6.1-1, Item 1.a
Main Steam Line Isolation - Reactor Vessel Water Level - Low Low Low, Level 1

Rev. 0 1/13/95

Main Steam Line Isolation Valve Isolation Function

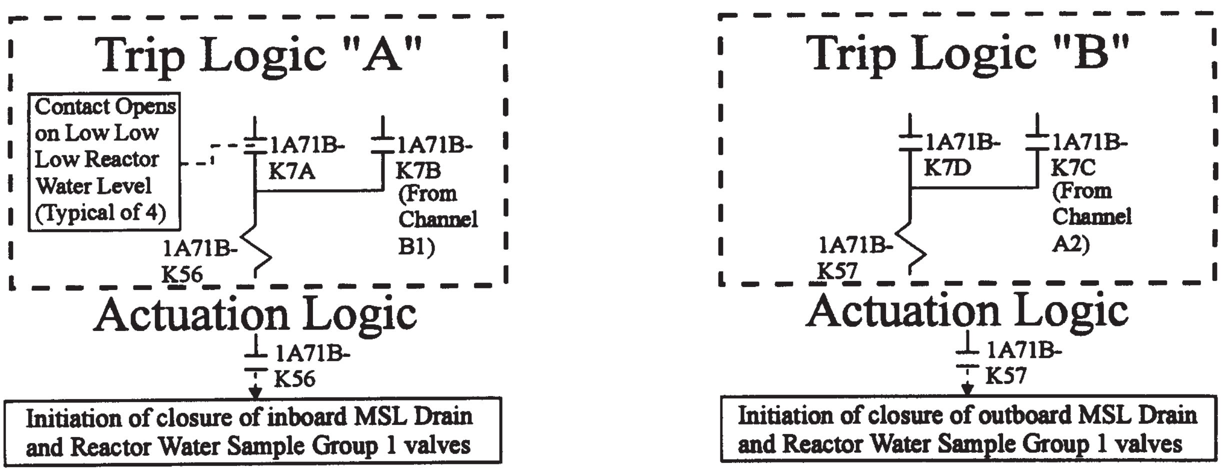


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam lines on low low low reactor vessel water level, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

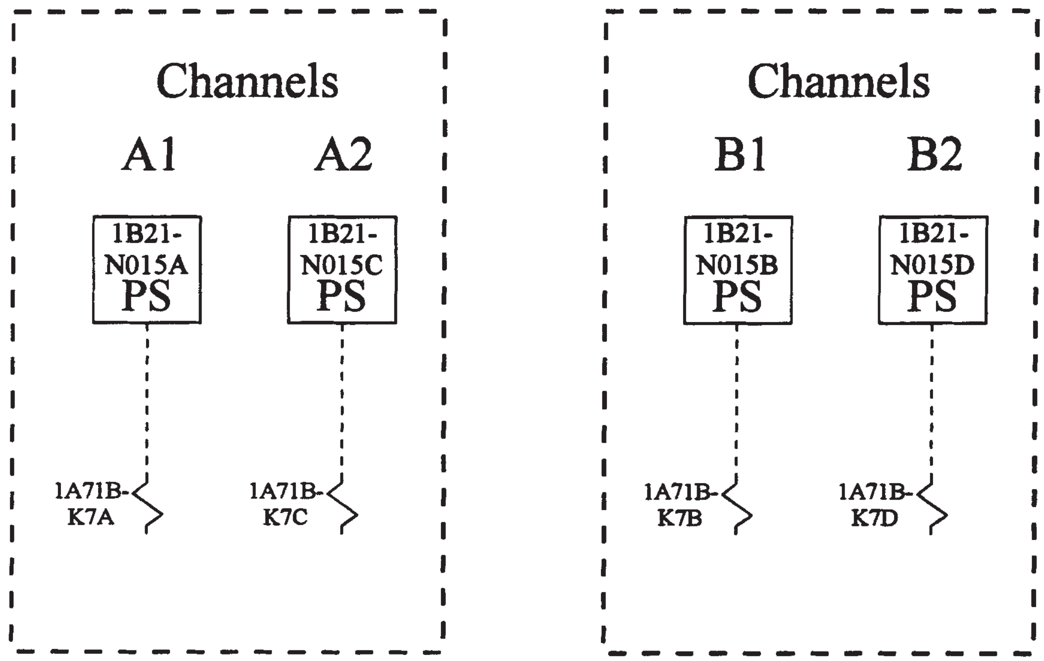
In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on low low low reactor vessel water level, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

Elem. Ref.
H-17810 H-17816
H-17811 H-19809
H-17812 H-19812
H-17813 H-19815
H-17814 H-19818
H-17815

LFD-1-PCIS-01
Sheet 2 of 2
TS 3.3.6.1-1, Item 1.a
Main Steam Line Isolation - Reactor Vessel Water Level - Low Low Low, Level 1
Rev. 0 1/13/95

Trip System "A" Trip System "B"



<u>Minimum Channel Requirements for System Isolation Capability:</u>

See Sheet 2 of 2.

Elem. Ref.

H-17810 H-17814
H-17811 H-17815
H-17812 H-17816
H-17813

Prepared By:

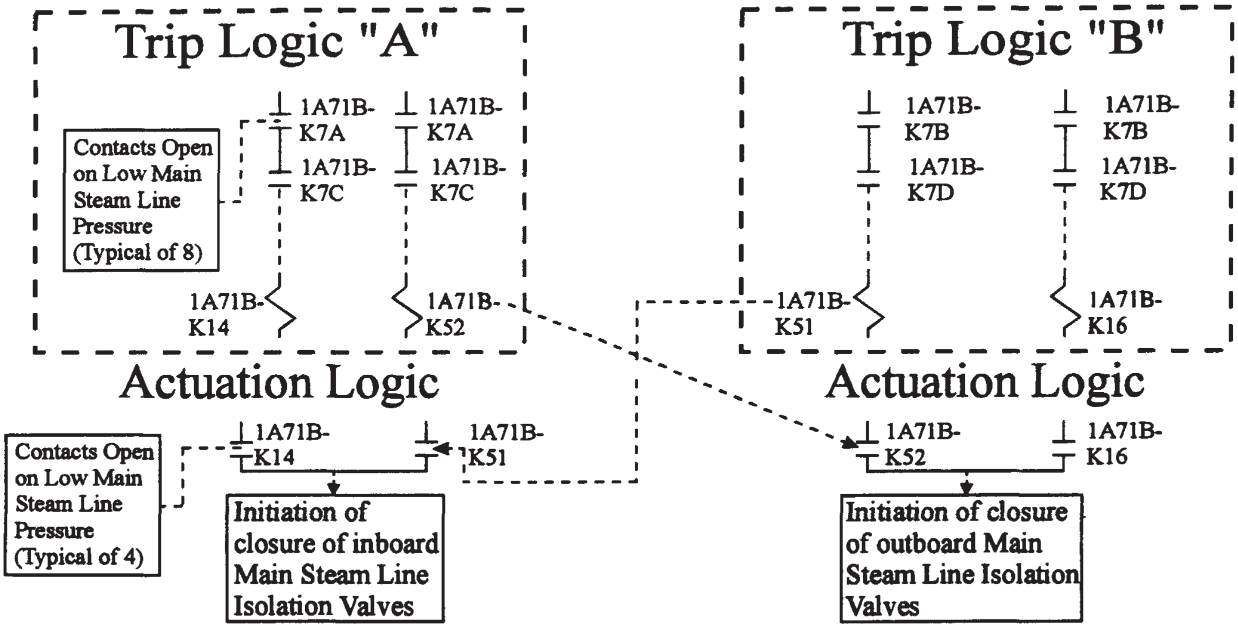
Reviewed By:

LFD-1-PCIS-02
Sheet 1of 2

TS 3.3.6.1-1, Item 1.b
Main Steam Line Isolation -
Main Steam Line
Pressure - Low

Rev. 0 1/13/95

Main Steam Line Isolation Valve Isolation Function

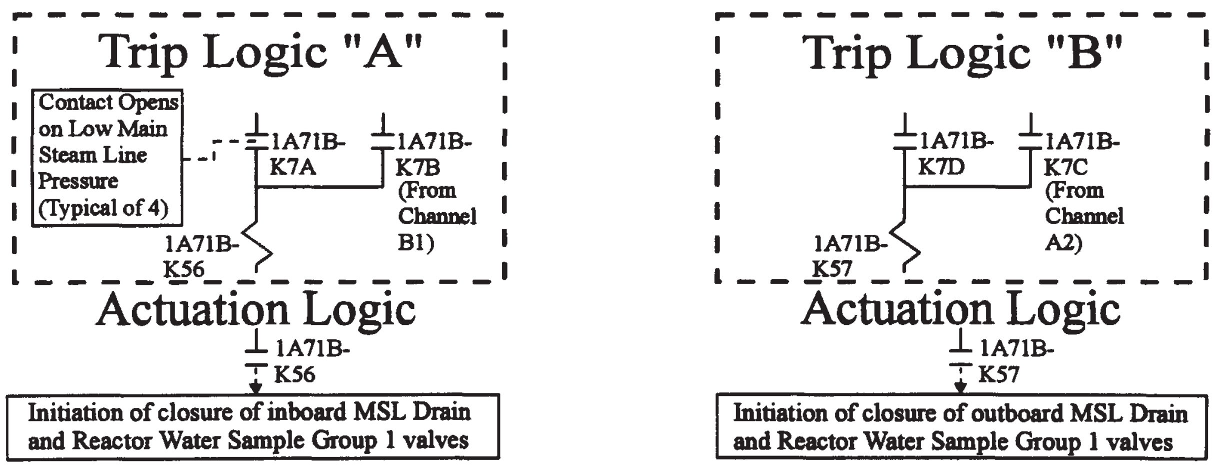


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam lines on low main steam line pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on low main steam line pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

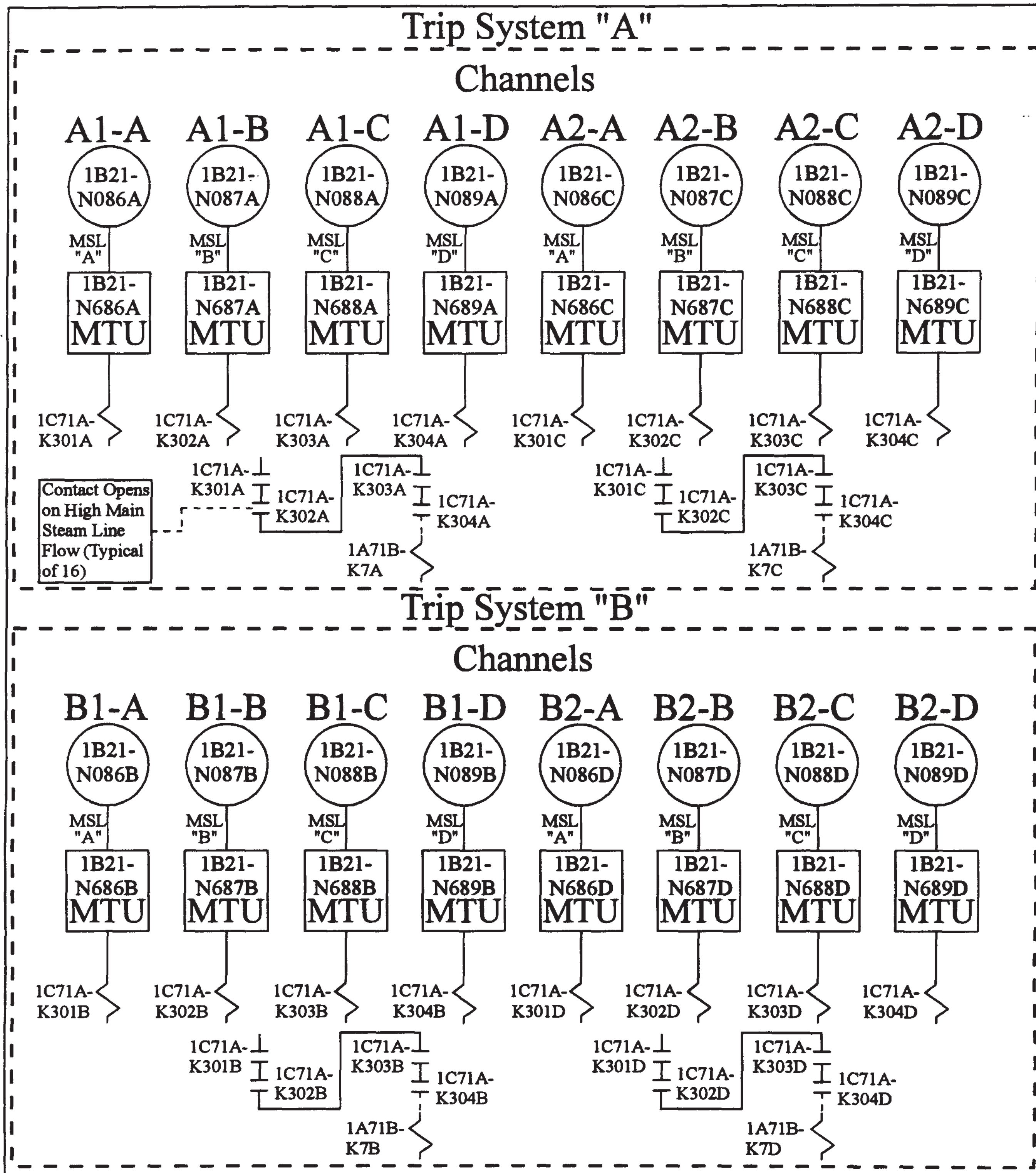
A1 and B1
OR
A2 and B2

Elem. Ref.	
H-17810	H-17814
H-17811	H-17815
H-17812	H-17816
H-17813	

LFD-1-PCIS-02
Sheet 2 of 2

TS 3.3.6.1-1, Item 1.b
Main Steam Line Isolation - Main Steam Line Pressure - Low

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

See Sheet 2 of 2.

Elem. Ref.
H-17810 H-17816
H-17811 H-19809
H-17812 H-19812
H-17814 H-19815
H-17815 H-19818

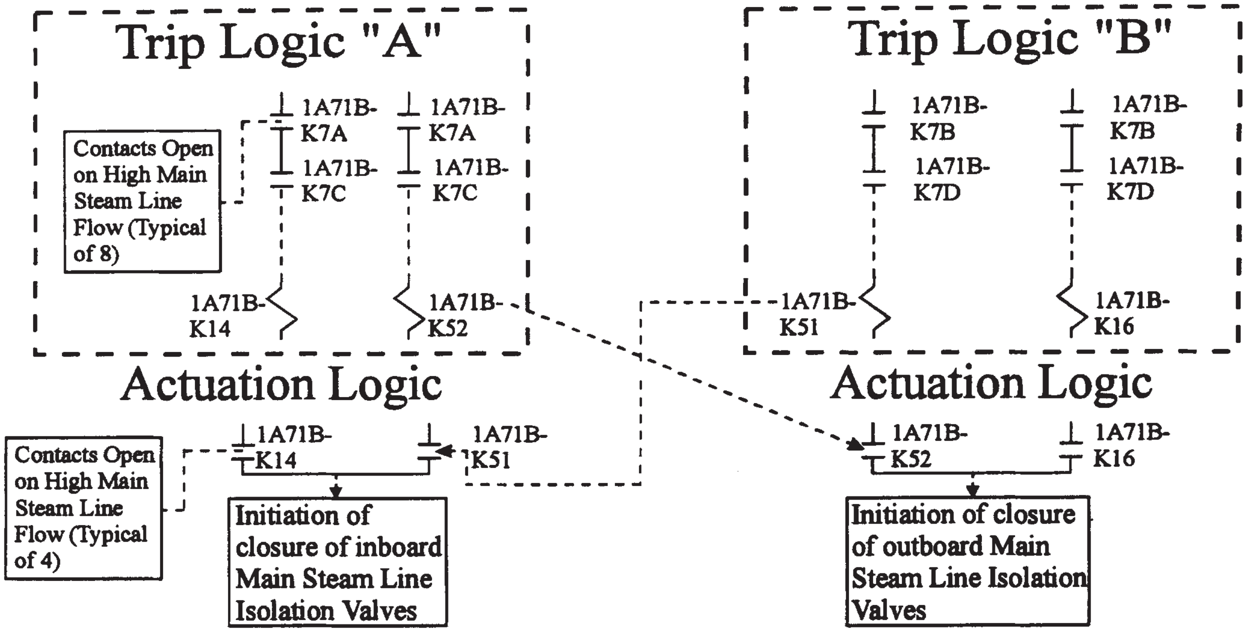
Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-03
Sheet 1 of 2

TS 3.3.6.1-1, Item 1.c
Main Steam Line Isolation - Main Steam Line Flow - High

Rev. 0 1/13/95

Main Steam Line Isolation Valve Isolation Function

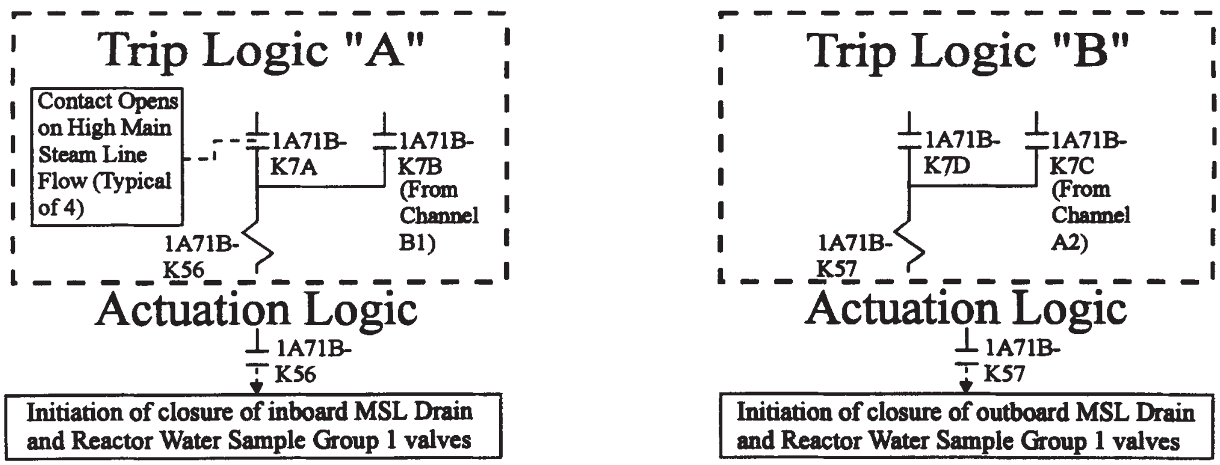


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate a main steam line on high main steam line flow, channels in one of the following combinations must be either operable or maintained in the tripped condition.

One A channel AND one B channel for EACH main steam line

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on high main steam line flow, channels in one of the following combinations must be either operable or maintained in the tripped condition.

One A1 channel and one B1 channel for EACH main steam line

OR

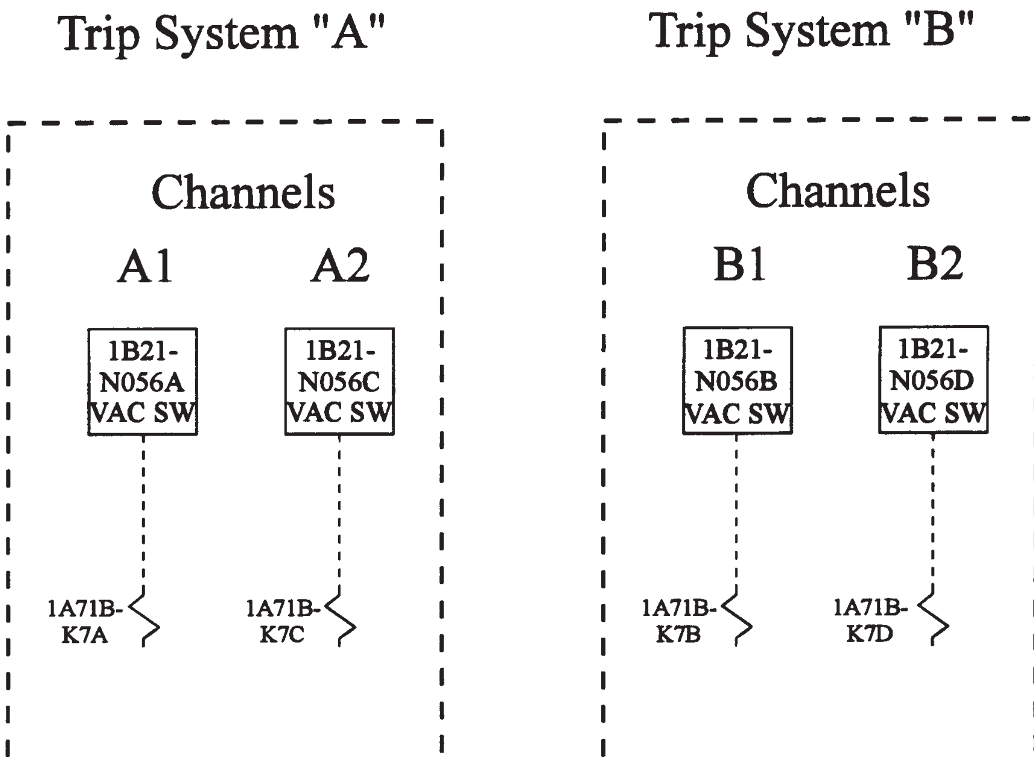
One A2 channel and one B2 channel for EACH main steam line

Elem. Ref.	
H-17810	H-17816
H-17811	H-19809
H-17812	H-19812
H-17814	H-19815
H-17815	H-19818

LFD-1-PCIS-03
Sheet 2 of 2

TS 3.3.6.1-1, Item 1.c
Main Steam Line Isolation - Main Steam Line Flow - High

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

See Sheet 2 of 2.

Elem. Ref.

H-17810	H-17814
H-17811	H-17815
H-17812	H-17816
H-17813	

Prepared By: [signature]

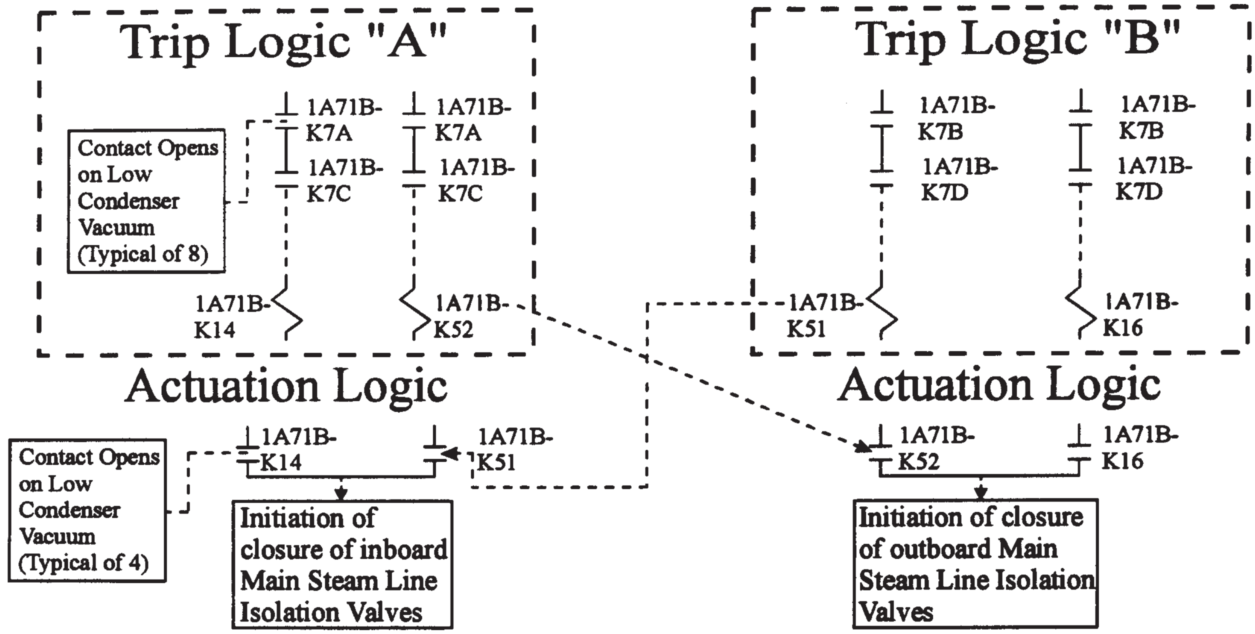
Reviewed By: [signature]

LFD-1-PCIS-04
Sheet 1 of 2

TS 3.3.6.1-1, Item 1.d
Main Steam Line Isolation - Condenser Vacuum - Low

Rev. 0 1/13/95

Main Steam Line Isolation Valve Isolation Function

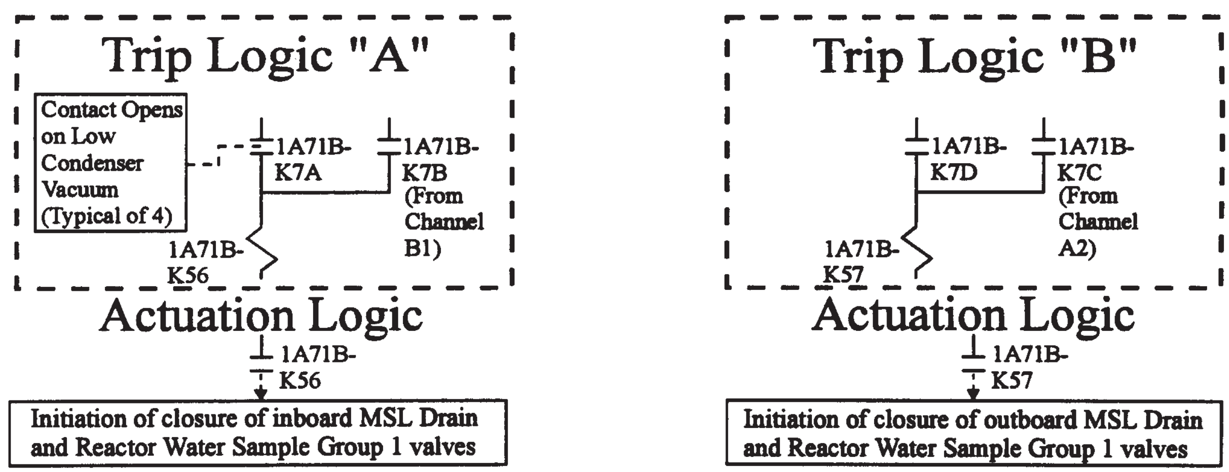


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam lines on low condenser vacuum, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

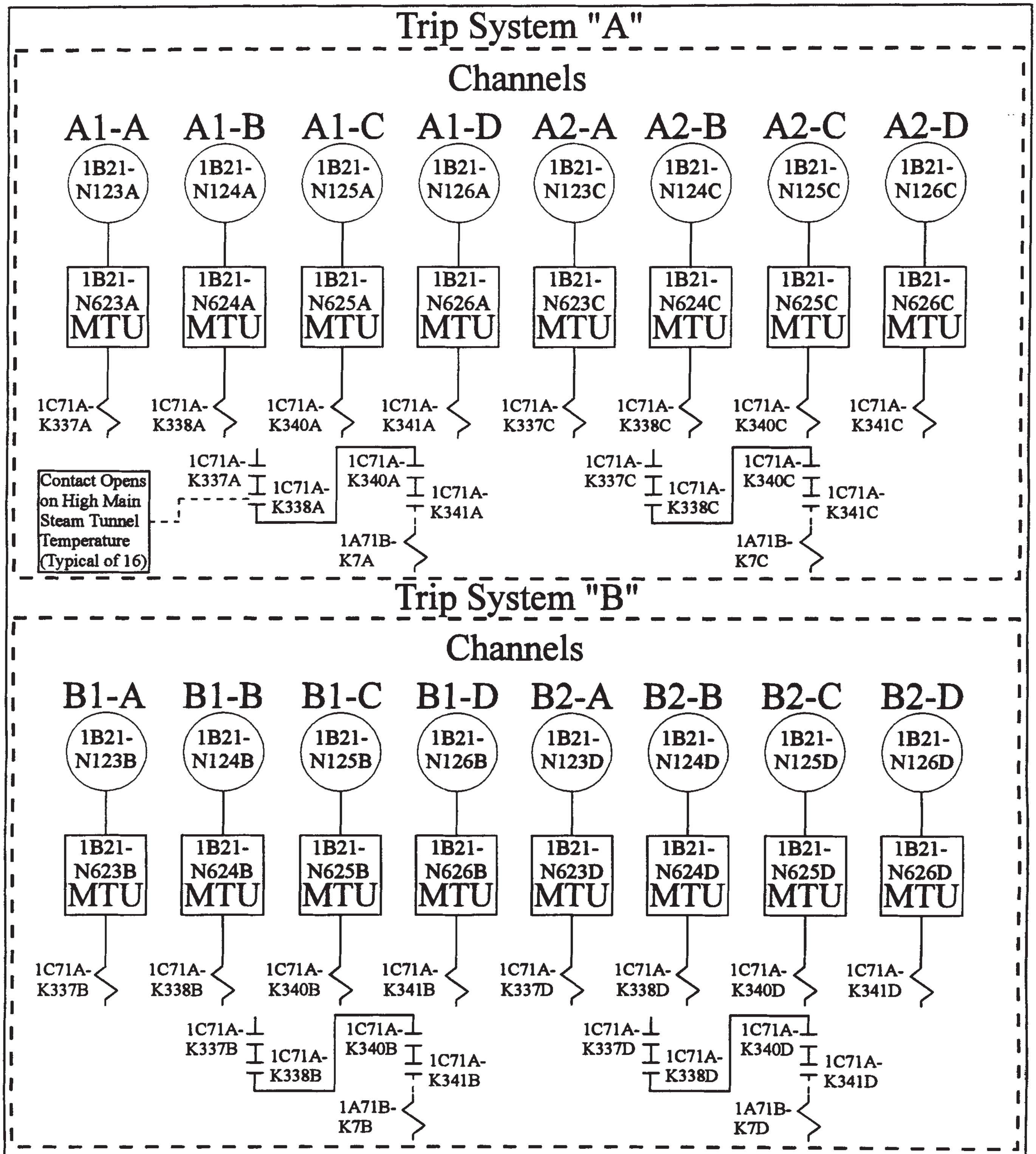
In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on low condenser vacuum, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

Elem. Ref.

H-17810 H-17814
H-17811 H-17815
H-17812 H-17816
H-17813

LFD-1-PCIS-04
Sheet 2 of 2
TS 3.3.6.1-1, Item 1.d
Main Steam Line Isolation - Condenser Vacuum - Low
Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

See Sheet 2 of 2.

Elem. Ref.
H-17810 H-17816
H-17811 H-19810
H-17812 H-19813
H-17813 H-19816
H-17814 H-19819
H-17815

Prepared By:

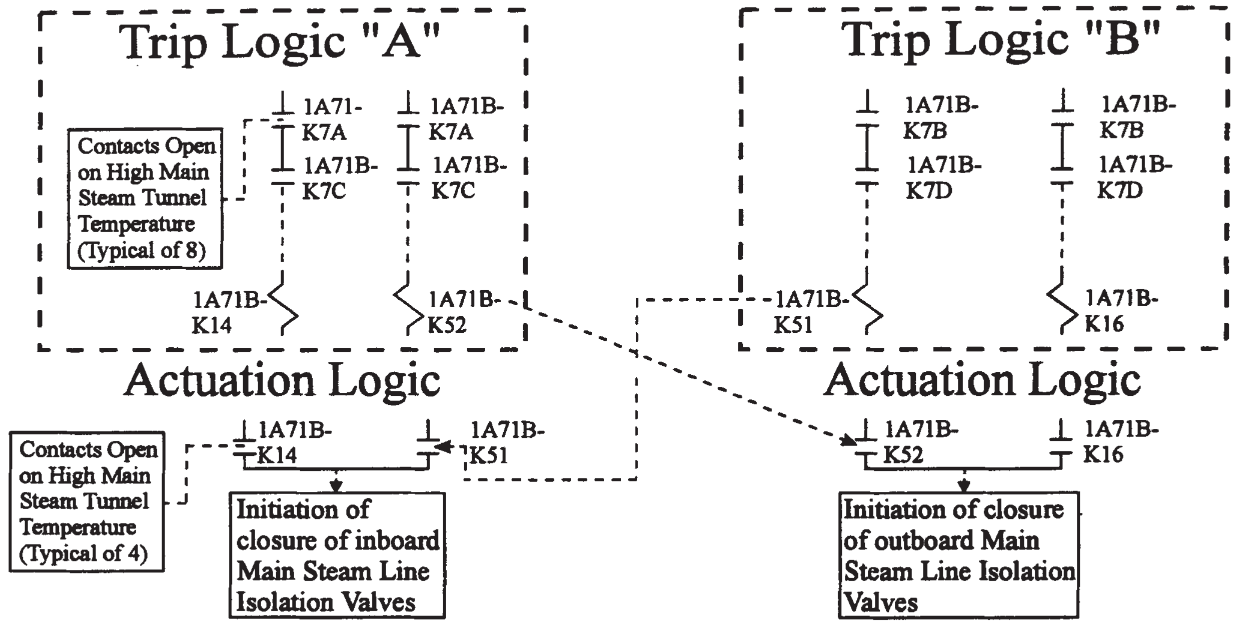
Reviewed By:

LFD-1-PCIS-05
Sheet 1 of 2

TS 3.3.6.1-1, Item 1.e
Main Steam Line Isolation - Main Steam Tunnel Temperature - High

Rev. 0 1/13/95

Main Steam Line Isolation Valve Isolation Function

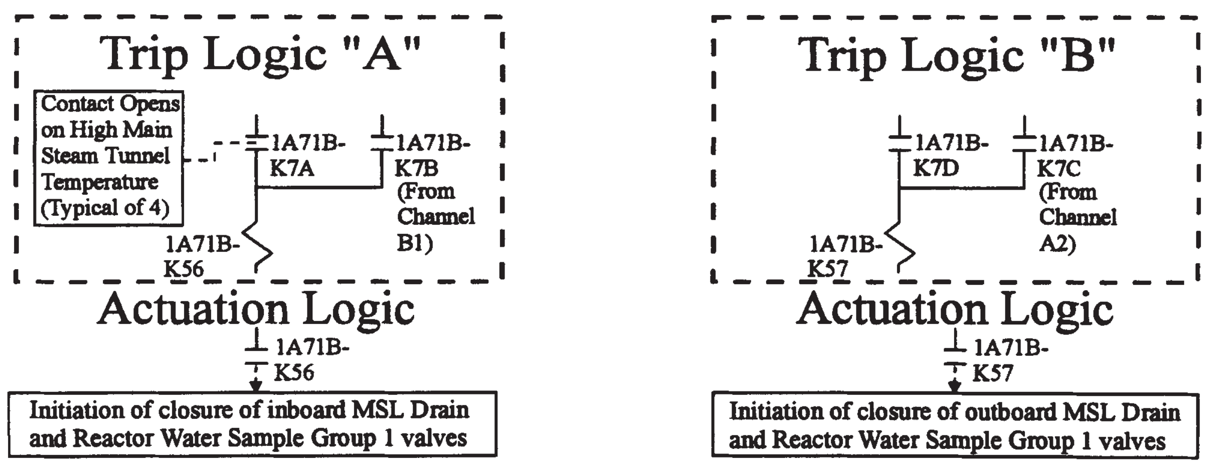


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam lines on high main steam tunnel temperature, channels in one of the following combinations must be either operable or maintained in the tripped condition.

One A1 channel or one A2 channel
AND
One B1 channel or one B2 channel

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on high main steam tunnel temperature, channels in one of the following combinations must be either operable or maintained in the tripped condition.

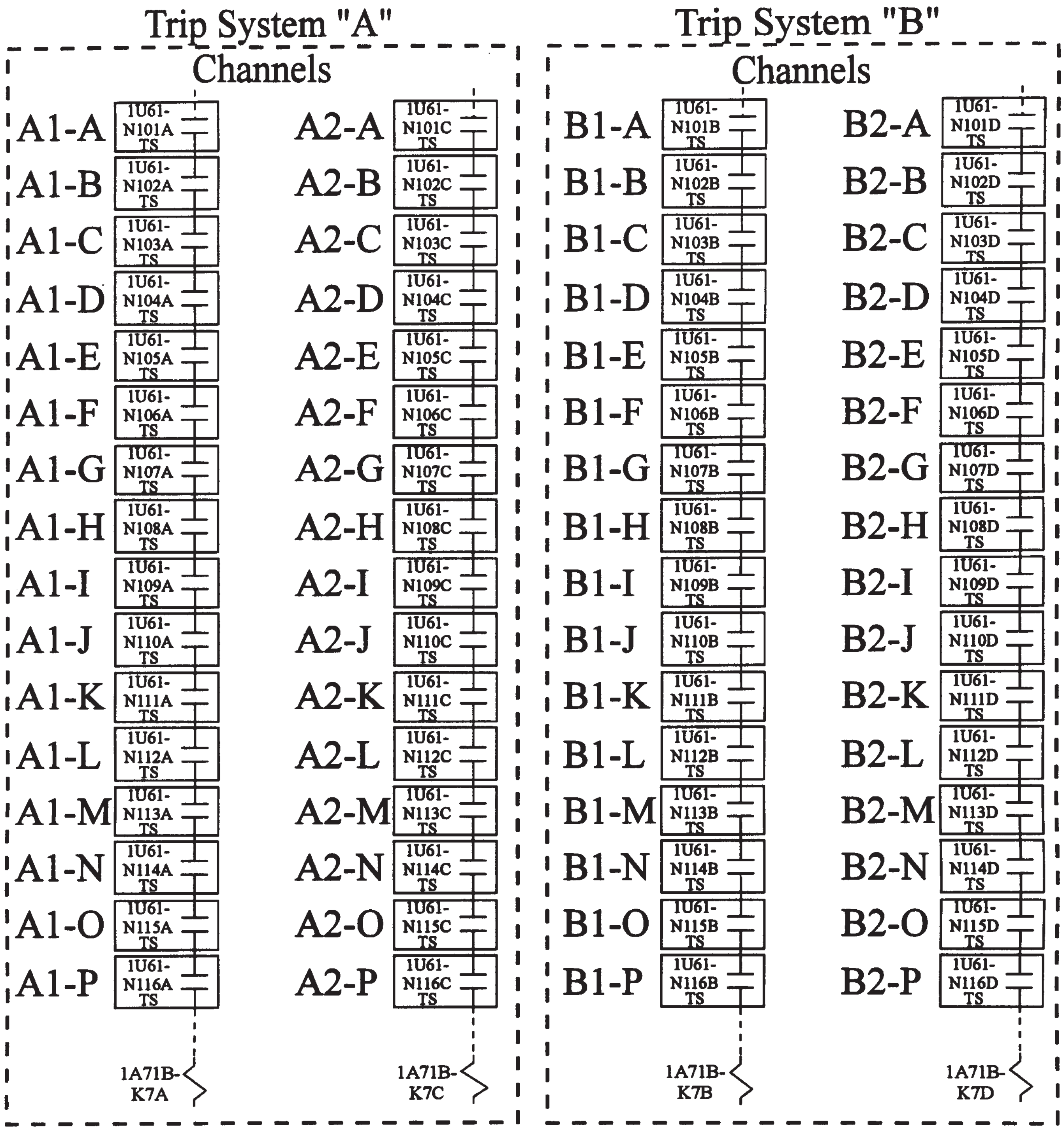
One A1 channel and one B1 channel
OR
One A2 channel and one B2 channel

Elem. Ref.	
H-17810	H-17816
H-17811	H-19810
H-17812	H-19813
H-17813	H-19816
H-17814	H-19819
H-17815	

LFD-1-PCIS-05
Sheet 2 of 2

TS 3.3.6.1-1, Item 1.e
Main Steam Line Isolation - Main Steam Tunnel Temperature - High

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

See Sheet 2 of 4.

Elem. Ref.	
H-17810	H-17814
H-17811	H-17815
H-17812	H-17816
H-17813	H-16071

Prepared By: [signature]

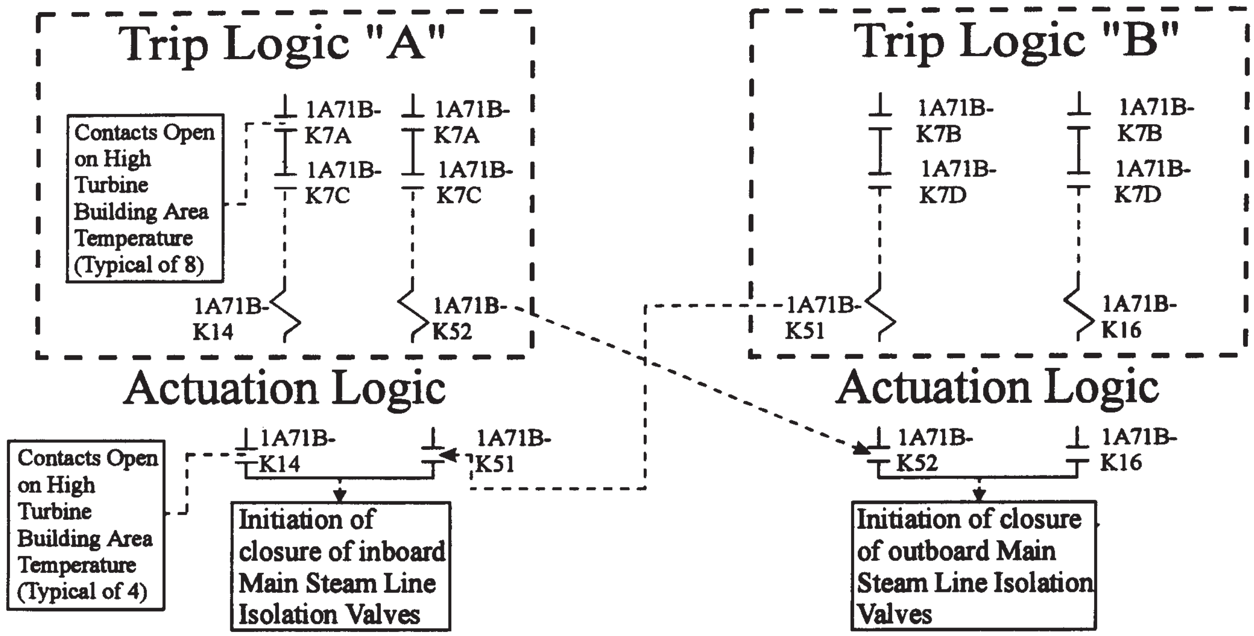
Reviewed By: [signature]

LFD-1-PCIS-06
Sheet 1 of 4

TS 3.3.6.1-1, Item 1.f
Main Steam Line Isolation - Turbine Building Area Temperature - High

Rev. 0 4/4/95

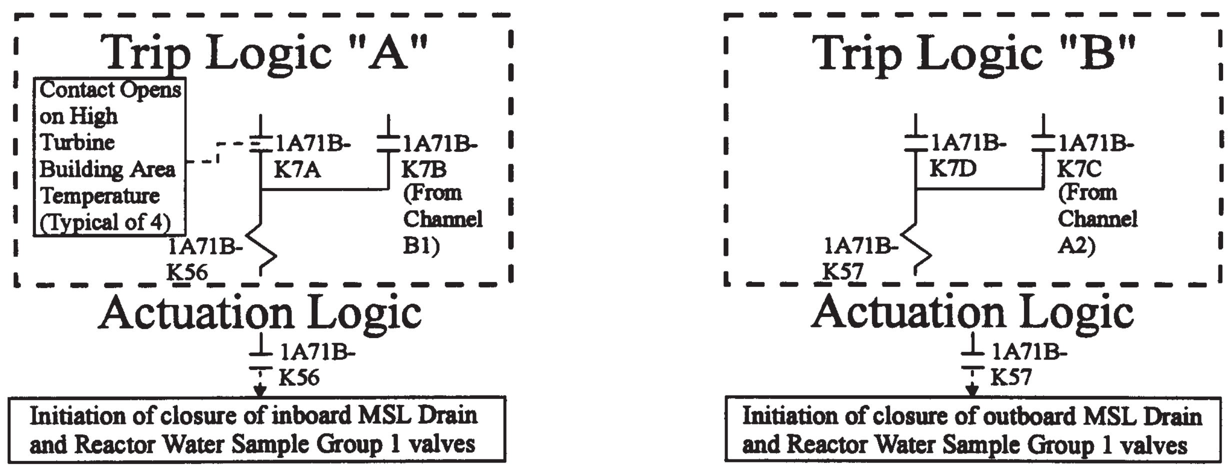
Main Steam Line Isolation Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam lines on high turbine building area temperature, channels in one of the combinations listed on Sheet 3 must be either operable or maintained in the tripped condition.

Drain Line and Reactor Water Sample Line Valve Isolation Function



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the main steam line drain and reactor water sample lines on high turbine building area temperature, channels in one of the combinations listed on Sheet 4 must be either operable or maintained in the tripped condition.

Elem. Ref.	
H-17810	H-17814
H-17811	H-17815
H-17812	H-17816
H-17813	H-16071

LFD-1-PCIS-06
Sheet 2 of 4

TS 3.3.6.1-1, Item 1.f
Main Steam Line Isolation - Turbine Building Area Temperature - High

Rev. 0 4/4/95

Main Steam Line Isolation Valve Isolation Function

Any ONE of the following instruments:

N101A N101C
N102A N102C
N103A N103C
N104A N104C
N105A N105C
N106A N106C
N107A N107C
N108A N108C
N111A

AND

Any ONE of the following instruments:

N101B N101D
N102B N102D
N103B N103D
N104B N104D
N105B N105D
N106B
N107B N107D
N108B N108D

AND

Any ONE of the following instruments:

N111C
N112A N112C
N113A N113C
N114A N114C
N115A N115C
N116A N116C

AND

Any ONE of the following instruments:

N110D
N111B N111D
N112B N112D
N113B N113D
N114B N114D
N115B N115D
N116B N116D

Elem. Ref.

H-17810 H-17814
H-17811 H-17815
H-17812 H-17816
H-17813 H-16071

LFD-1-PCIS-06
Sheet 3 of 4

TS 3.3.6.1-1, Item 1.f
Main Steam Line Isolation - Turbine Building Area Temperature - High

Rev. 0 4/4/95

Drain Line and Reactor Water Sample Line Valve Isolation Function

Any ONE of the following instruments:		Any ONE of the following instruments:
N101A N105A N102A N106A N103A N107A N104A N108A N111A	**AND**	N101B N105B N102B N106B N103B N107B N104B N108B

OR

Any ONE of the following instruments:		Any ONE of the following instruments:
N101C N105C N102C N106C N103C N107C N104C N108C	**AND**	N101D N104D N102D N105D N103D N107D N108D

AND

Any ONE of the following instruments:		Any ONE of the following instruments:
N112A N114A N113A N115A N116A	**AND**	N111B N114B N112B N115B N113B N116B

OR

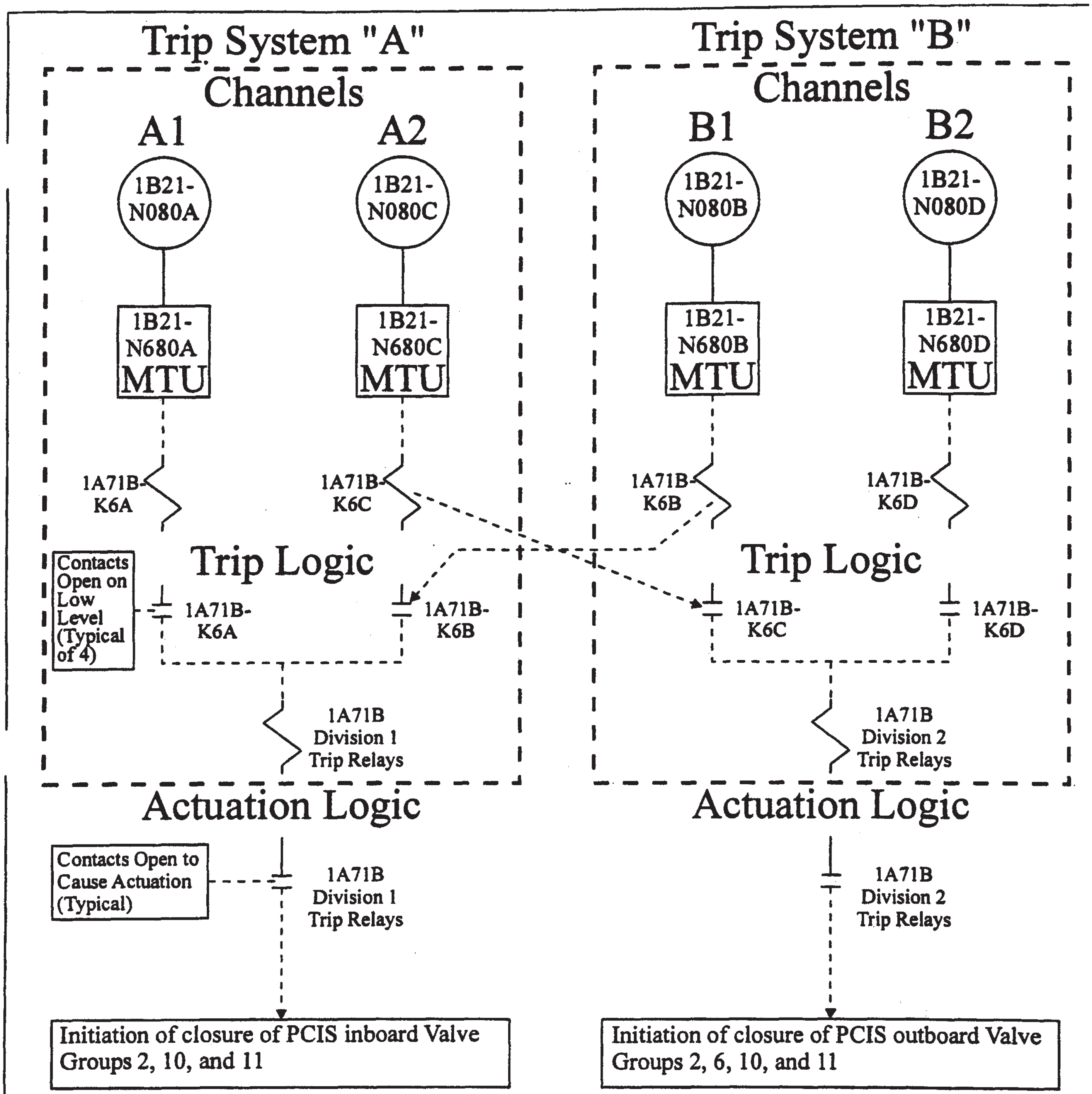
Any ONE of the following instruments:		Any ONE of the following instruments:
N111C N114C N112C N115C N113C N116C	**AND**	N110D N113D N111D N114D N112D N115D N116D

Elem. Ref.	
H-17810	H-17814
H-17811	H-17815
H-17812	H-17816
H-17813	H-16071

LFD-1-PCIS-06
Sheet 4 of 4

TS 3.3.6.1-1, Item 1.f
Main Steam Line Isolation - Turbine Building Area Temperature - High

Rev. 0 4/4/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate Valve Groups 2, 6, 10, and 11 on low reactor water level (Level 3), channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

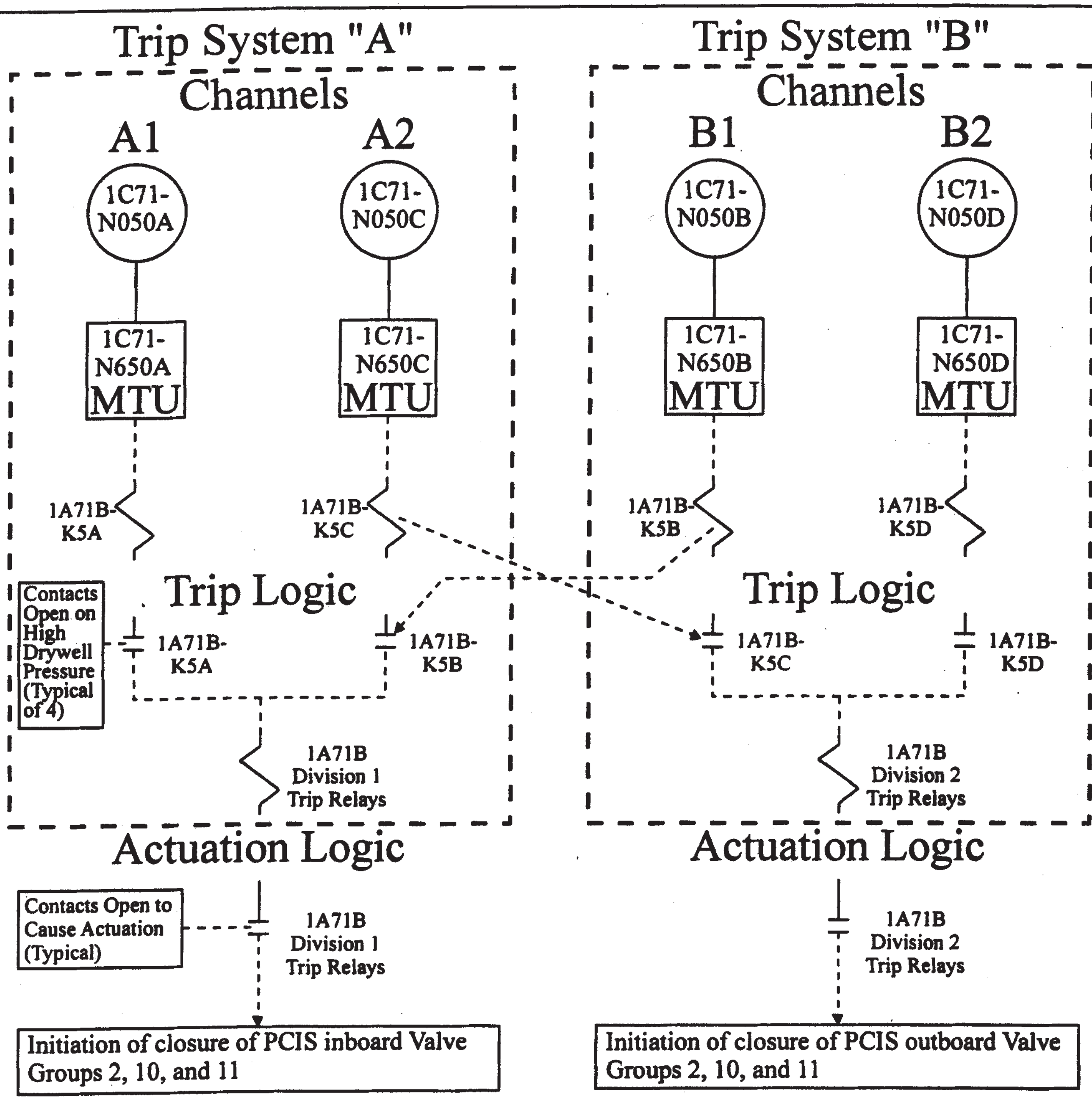
Elem. Ref.
H-17810 H-19809
H-17811 H-19812
H-17812 H-19815
H-17814 H-19818

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-07

TS 3.3.6.1-1, Item 2.a
Primary Containment Isolation,
Reactor Vessel Water Level - Low, Level 3

TRM Rev. 20



Minimum Channel Requirements for System Isolation Capability:

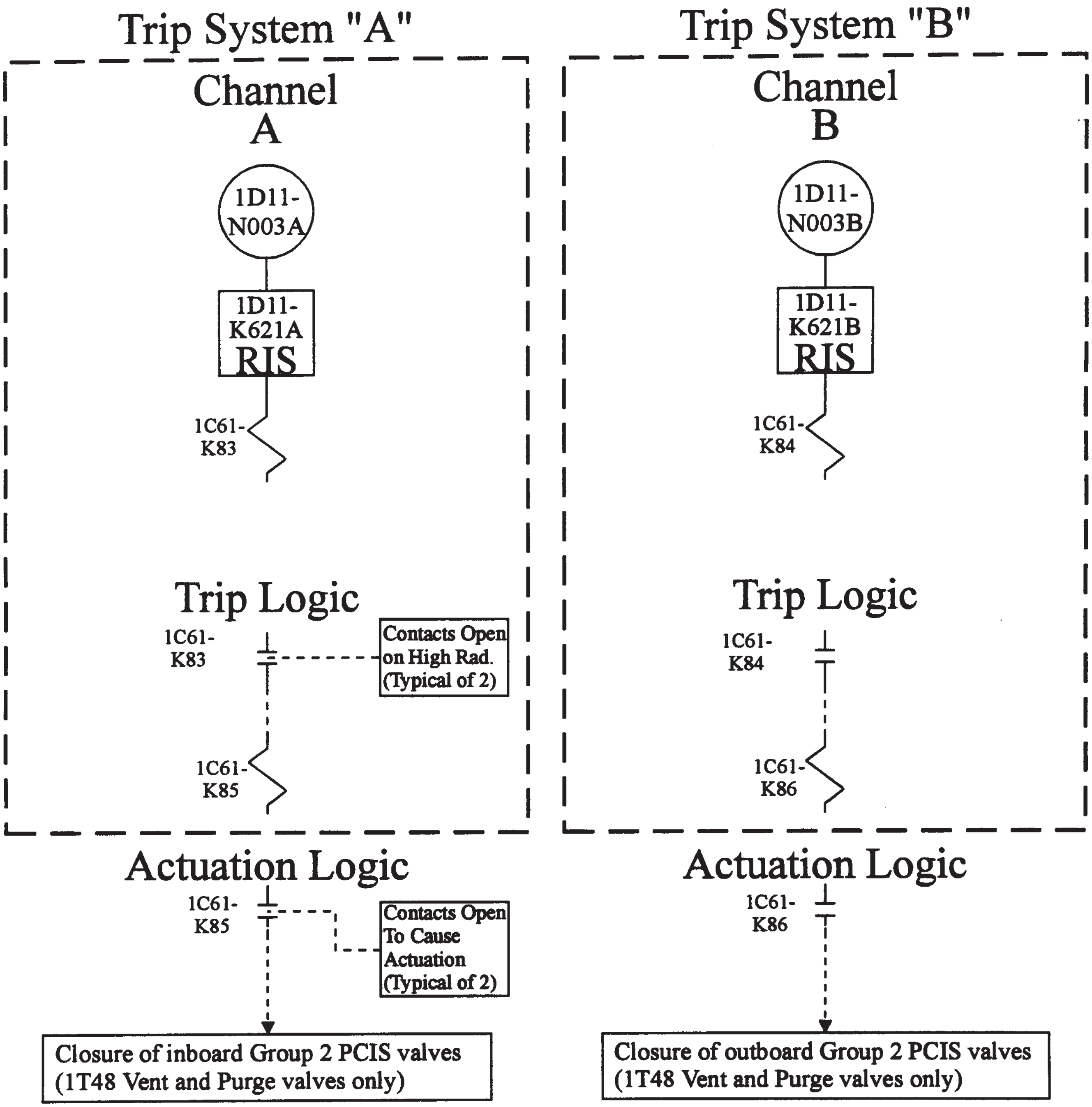
In order to maintain the capability to isolate Valve Groups 2, 10, and 11 on high drywell pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

Elem. Ref.	
H-17810	H-19809
H-17811	H-19812
H-17812	H-19815
H-17814	H-19818

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-08
TS 3.3.6.1-1, Item 2.b
Primary Containment Isolation, Drywell Pressure - High
TRM Rev. 33

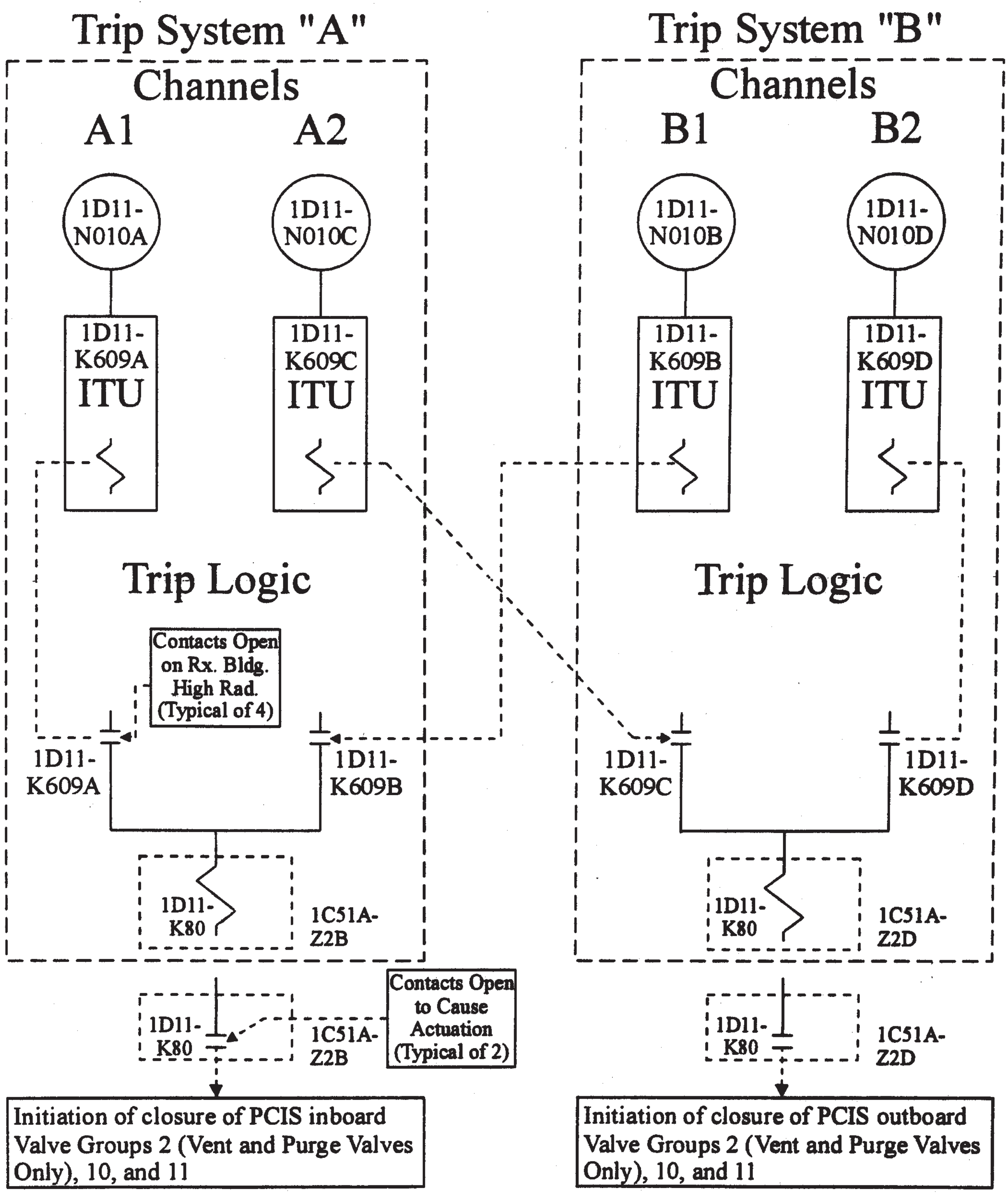


Minimum Channel Requirements for System Isolation Capability:
In order to maintain Group 2 PCIS isolation capability of the Vent and Purge Valves on drywell high radiation, at least one of the two channels must be either operable or maintained in the tripped condition.

Elem. Ref. H-17802 H-17803 H-19643	

Prepared By: Stephen W. Reed
Reviewed By: Royce Clark

LFD-1-PCIS-09
TS 3.3.6.1-1, Item 2.c
Primary Containment Isolation
Drywell Radiation-High
Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate Valve Groups 2, 10, and 11 on Reactor Building Exhaust High Radiation, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

Elem. Ref.	
H-17802	H-19563
H-17803	H-19564
H-19561	H-19566

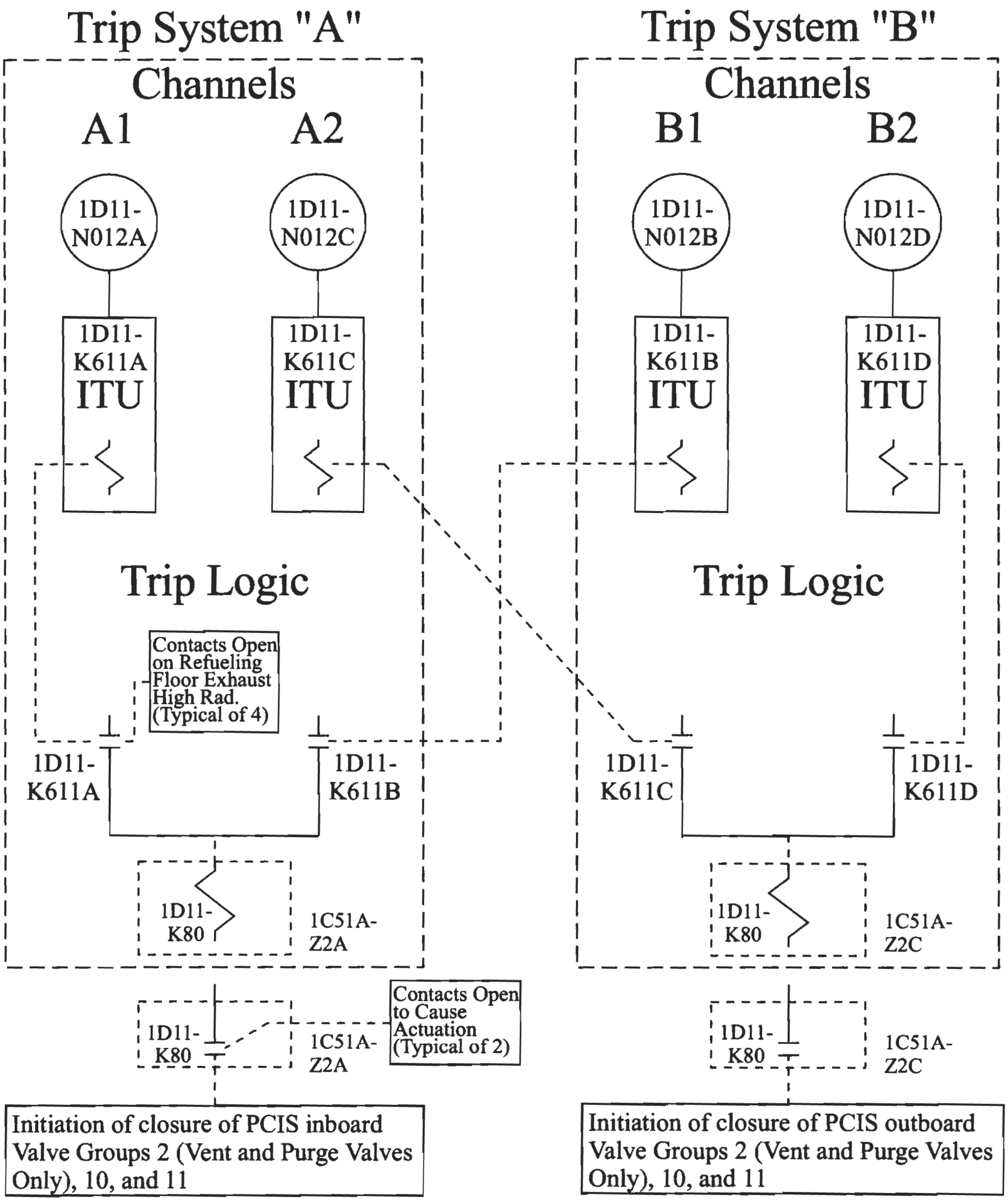
Prepared By: [signature]

Reviewed By: [signature]

LFD-1-PCIS-10

TS 3.3.6.1-1, Item 2.d
Primary Containment Isolation
Reactor Building Exhaust Radiation - High

TRM Rev. 24



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate Valve Groups 2, 10, and 11 on Refueling Floor Exhaust High Radiation, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

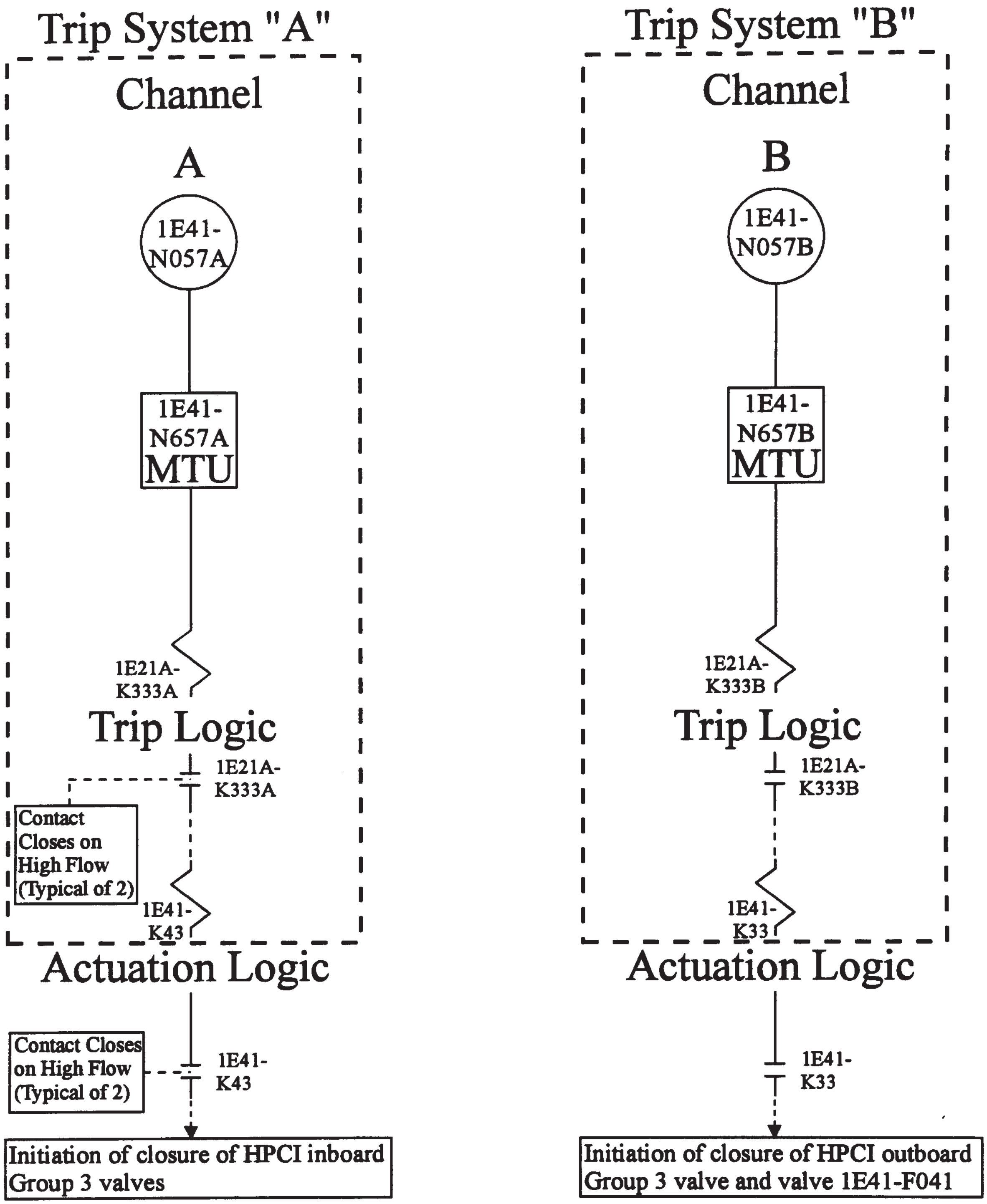
Elem. Ref.	
H-17802	H-19563
H-17803	H-19564
H-19561	H-19566

Prepared By:

Reviewed By:

LFD-1-PCIS-11

TS 3.3.6.1-1, Item 2.e
Primary Containment Isolation
Refueling Floor Exhaust Radiation - High



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high flow, at least one channel is required to be operable or maintained in the tripped condition.

Elem. Ref.

H-17157 H-17163
H-17159 H-19822
H-17160 H-19825

Prepared By: John J. Payne

Reviewed By: Stephen W. Meed

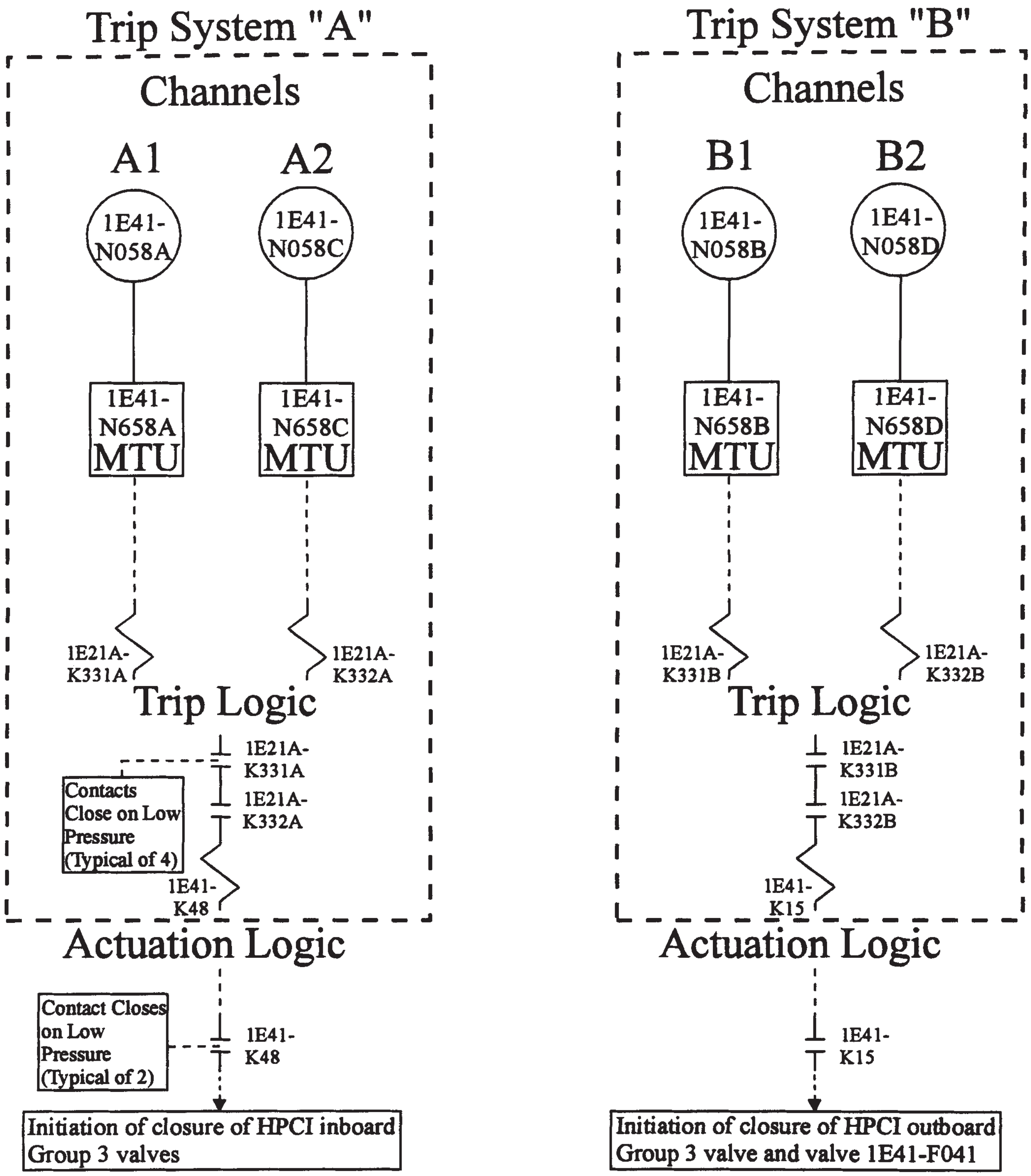
LFD-1-PCIS-12

TS 3.3.6.1-1, Item 3.a

HPCI System Isolation-

HPCI Steam Line Flow - High

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

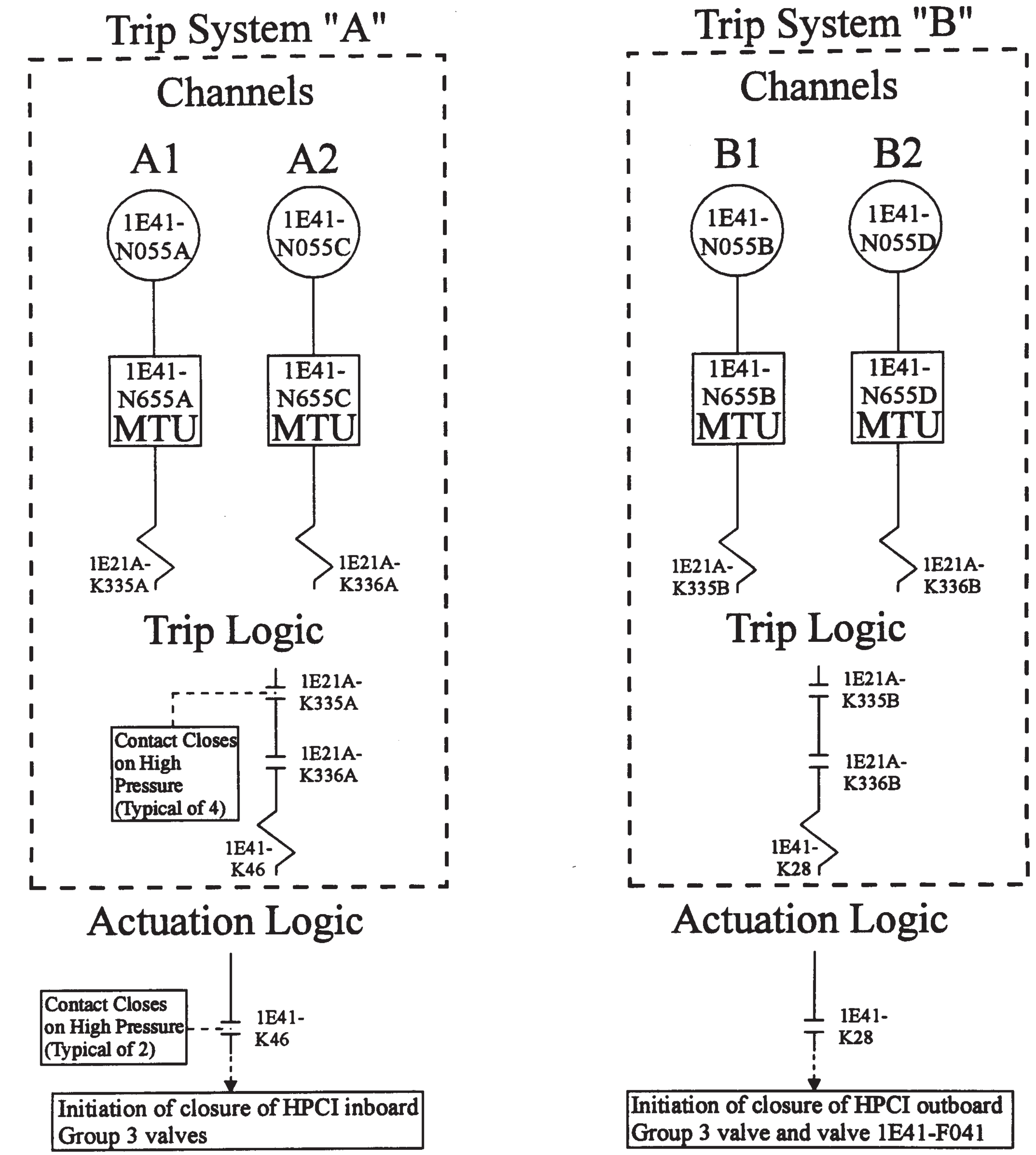
In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on low pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
OR
B1 and B2

Elem. Ref.
H-17157 H-17163
H-17159 H-19822
H-17160 H-19825

Prepared By: John J. Payne
Reviewed By: [signature]

LFD-1-PCIS-13
TS 3.3.6.1-1, Item 3.b
HPCI System Isolation-
HPCI Steam Supply Line
Pressure - Low
Rev. 0 1/13/95

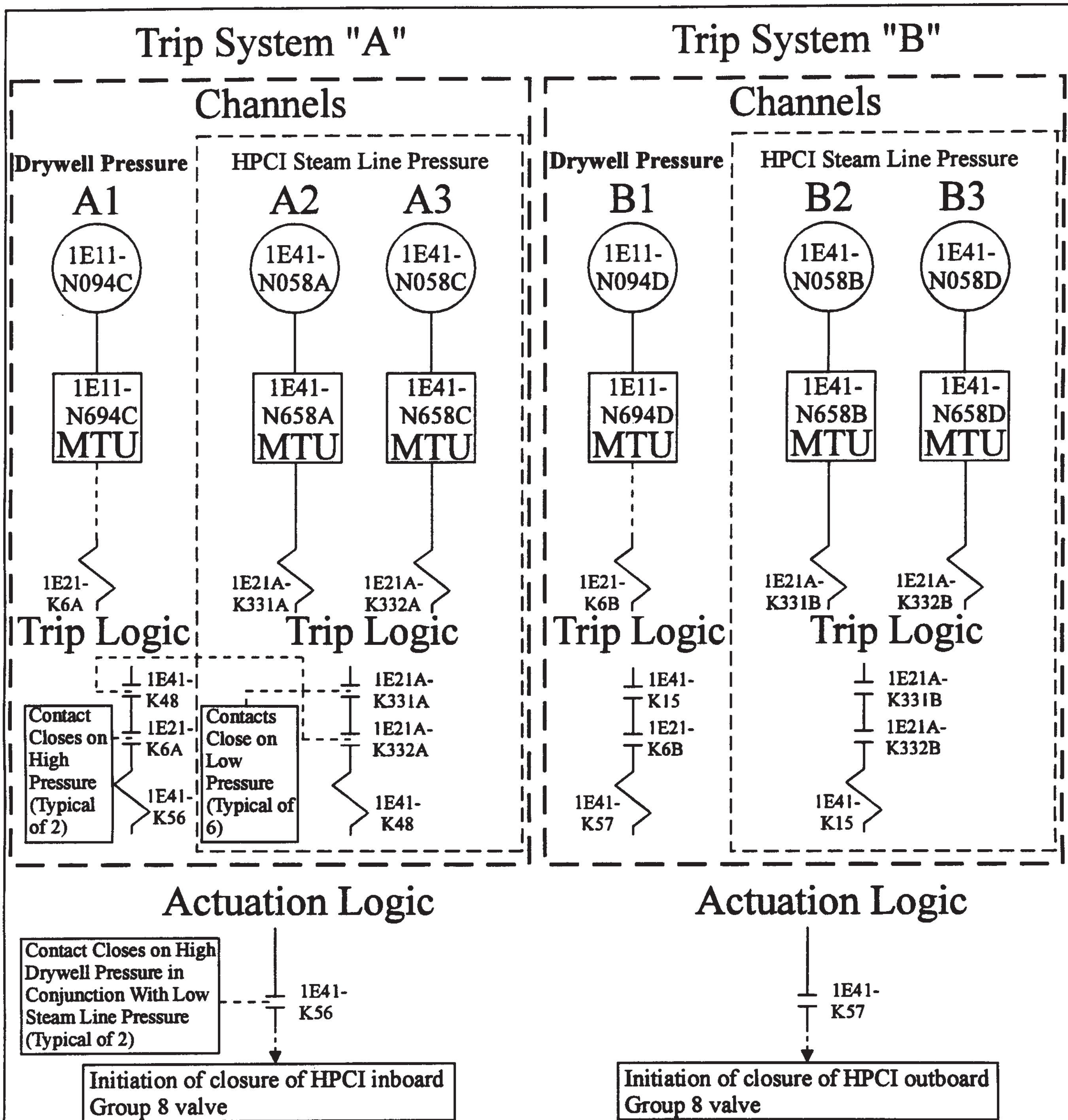


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high turbine exhaust diaphragm pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
OR
B1 and B2

Elem. Ref.		LFD-1-PCIS-14
H-17157 H-17163		TS 3.3.6.1-1, Item 3.c
H-17159 H-19822		HPCI System Isolation- HPCI Turbine Exhaust Diaphragm Pressure - High
H-17160 H-19825	Prepared By: John d. Ryne	
	Reviewed By: Stephen W. Reed	Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the turbine exhaust line on high drywell pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2 and A3
OR
B1 and B2 and B3

Elem. Ref.	
H-17109	H-19822
H-17157	H-19825
H-17159	H-19827
H-17160	H-19830
H-19586	

Prepared By: [signature]

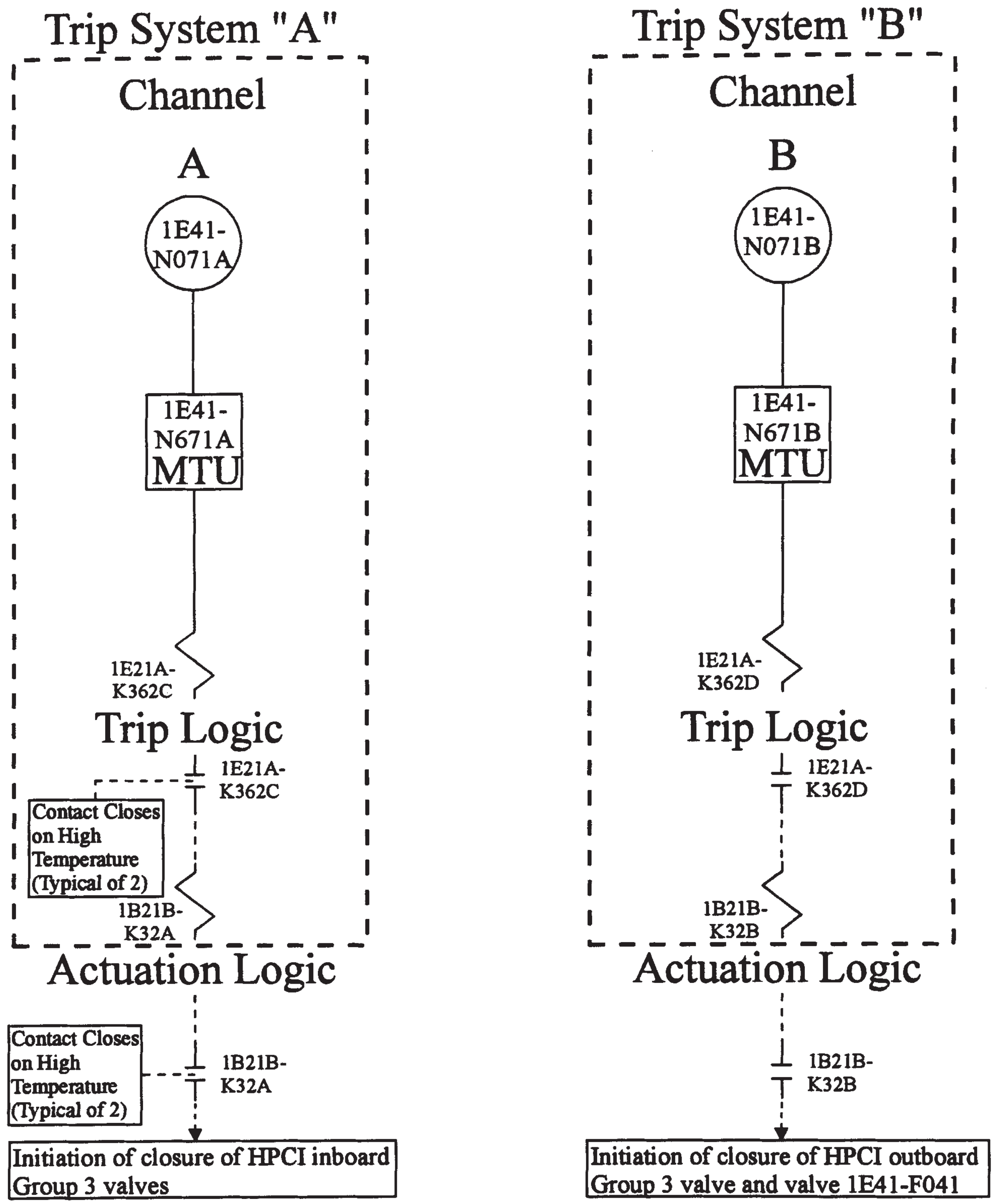
Reviewed By: [signature]

LFD-1-PCIS-15

TS 3.3.6.1-1, Item 3.d

HPCI System Isolation - Drywell Pressure - High

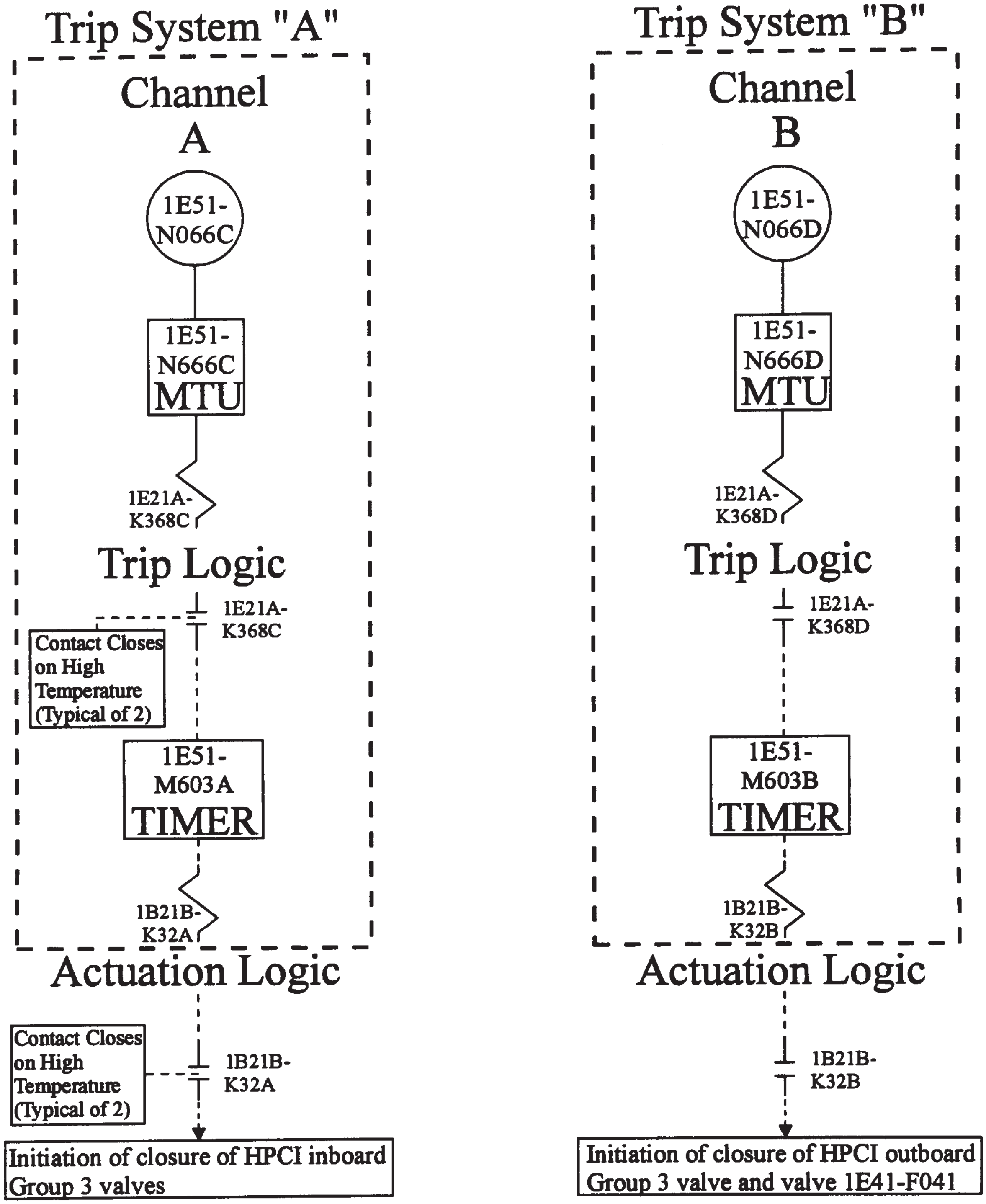
Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high pipe penetration room temperature, at least one channel is required to be operable or maintained in the tripped condition.

Elem. Ref.		Prepared By:	LFD-1-PCIS-16
H-17157	H-17748	Reviewed By:	TS 3.3.6.1-1, Item 3.e HPCI System Isolation- HPCI Pipe Penetration Room Temperature - High
H-17160	H-19829		Rev. 0 1/13/95
H-17163	H-19832		
H-17746			



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high suppression pool area ambient temperature, at least one channel including its associated timer is required to be operable or maintained in the tripped condition.

Elem. Ref.

H-17157 H-17748
H-17160 H-19829
H-17163 H-19832
H-17746

Prepared By: John d. Payne

Reviewed By: Steph W. Reed

LFD-1-PCIS-17

TS 3.3.6.1-1, Items 3.f and 3.g
HPCI System Isolation - Suppression Pool Area Ambient Temperature - High, and Suppression Pool Area Temperature - Time Delay Relays

Rev. 0 1/13/95

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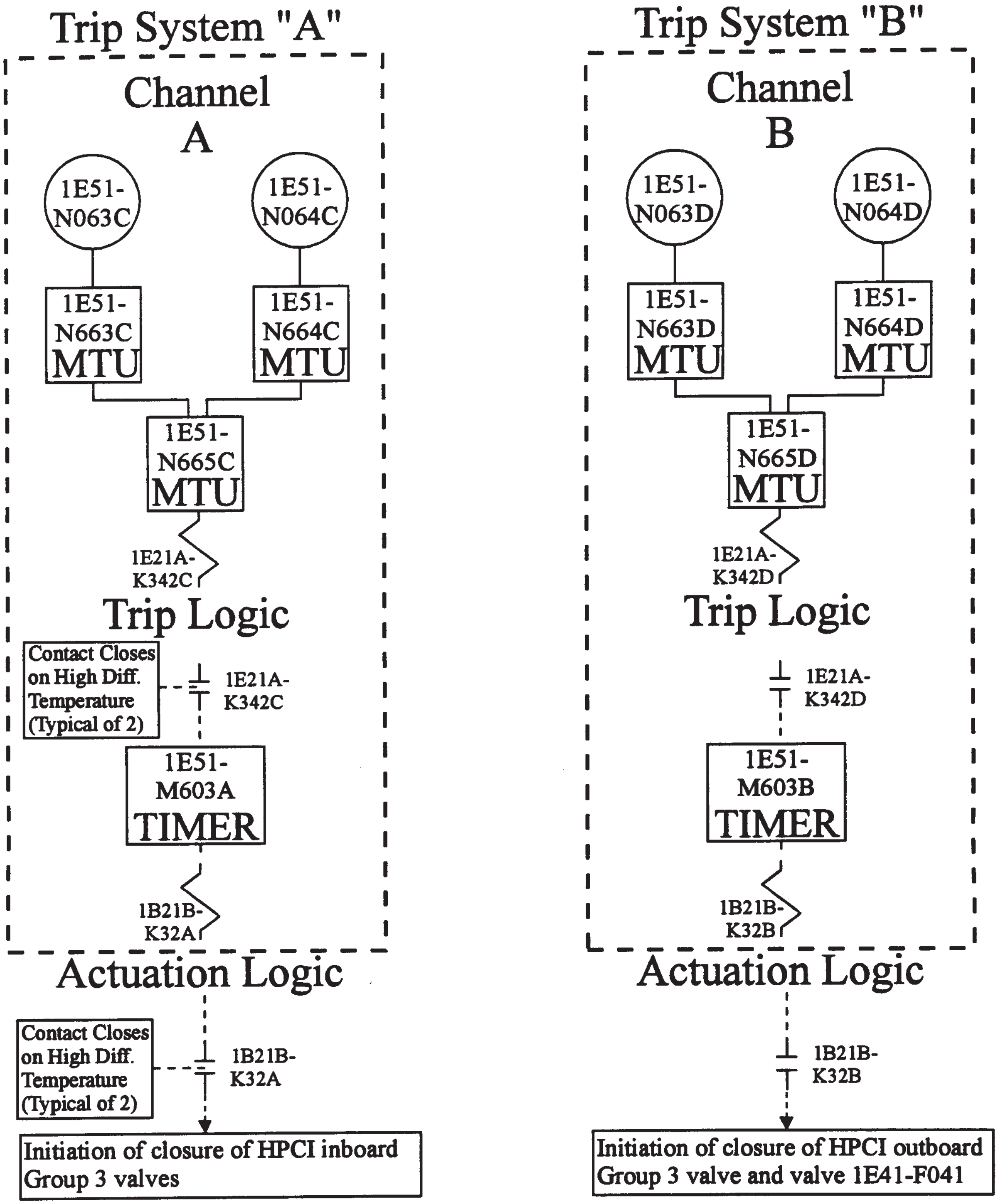


Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high suppression pool area differential temperature, at least one channel including its associated timer is required to be operable or maintained in the tripped condition.

Elem. Ref.

H-17157 H-17748
H-17160 H-19828
H-17163 H-19831
H-17746

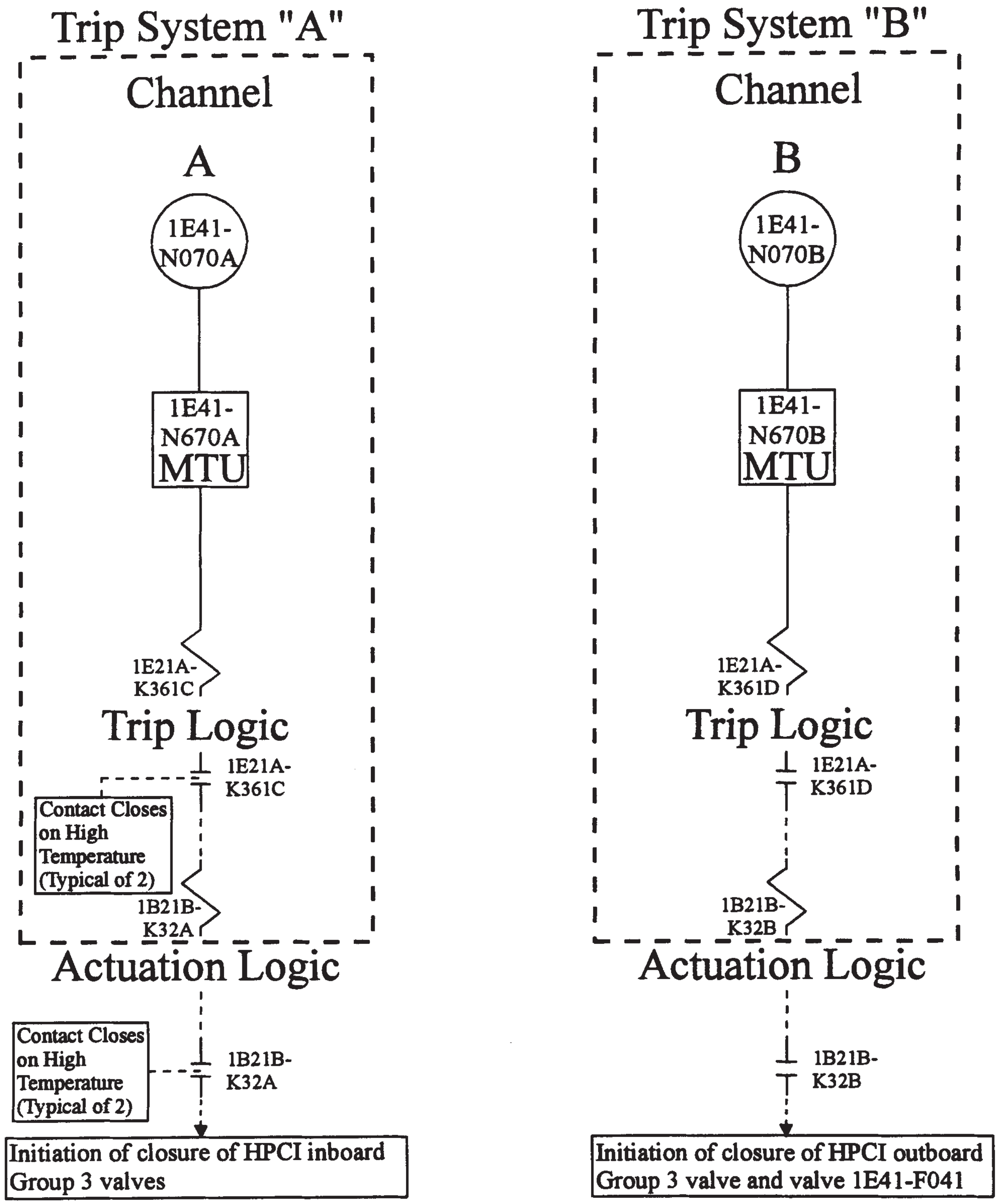
Prepared By: John d. Payne

Reviewed By: Stephen W. Reed

LFD-1-PCIS-19

TS 3.3.6.1-1, Items 3.h and 3.g
HPCI System Isolation - Suppression Pool Area Differential Temperature - High, and Suppression Pool Area Temperature - Time Delay Relays

Rev. 0 1/13/95



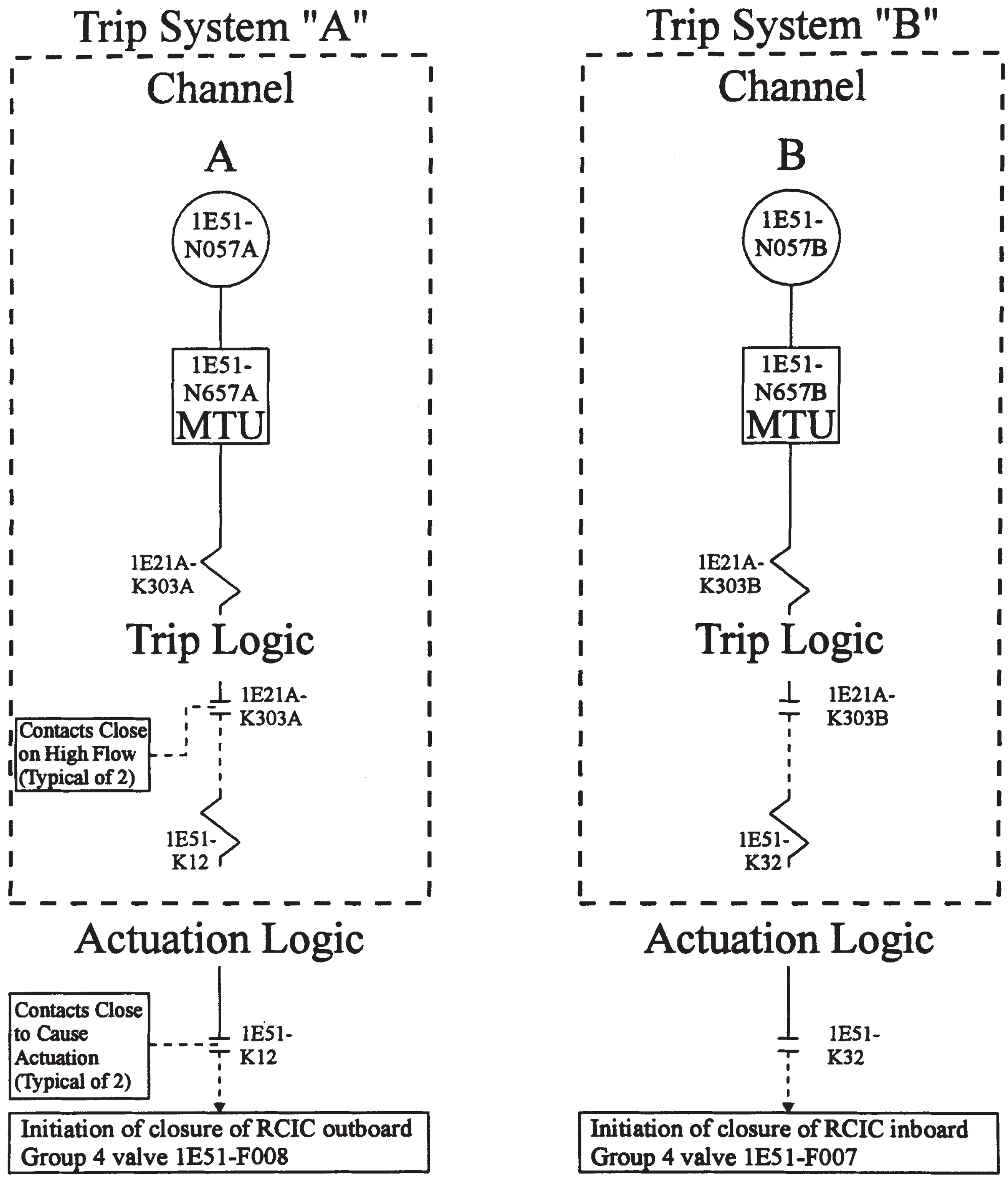
Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the HPCI steam supply and torus suction lines on high emergency area cooler temperature, at least one channel is required to be operable or maintained in the tripped condition.

Elem. Ref.
H-17157 H-17748
H-17160 H-19829
H-17163 H-19832
H-17746

Prepared By: John J. Payne
Reviewed By: Stephen W. Reed

LFD-1-PCIS-20
TS 3.3.6.1-1, Item 3.i
HPCI System Isolation-
Emergency Area Cooler
Temperature - High
Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RCIC steam supply line on high flow, at least one channel is required to be operable or maintained in the tripped condition.

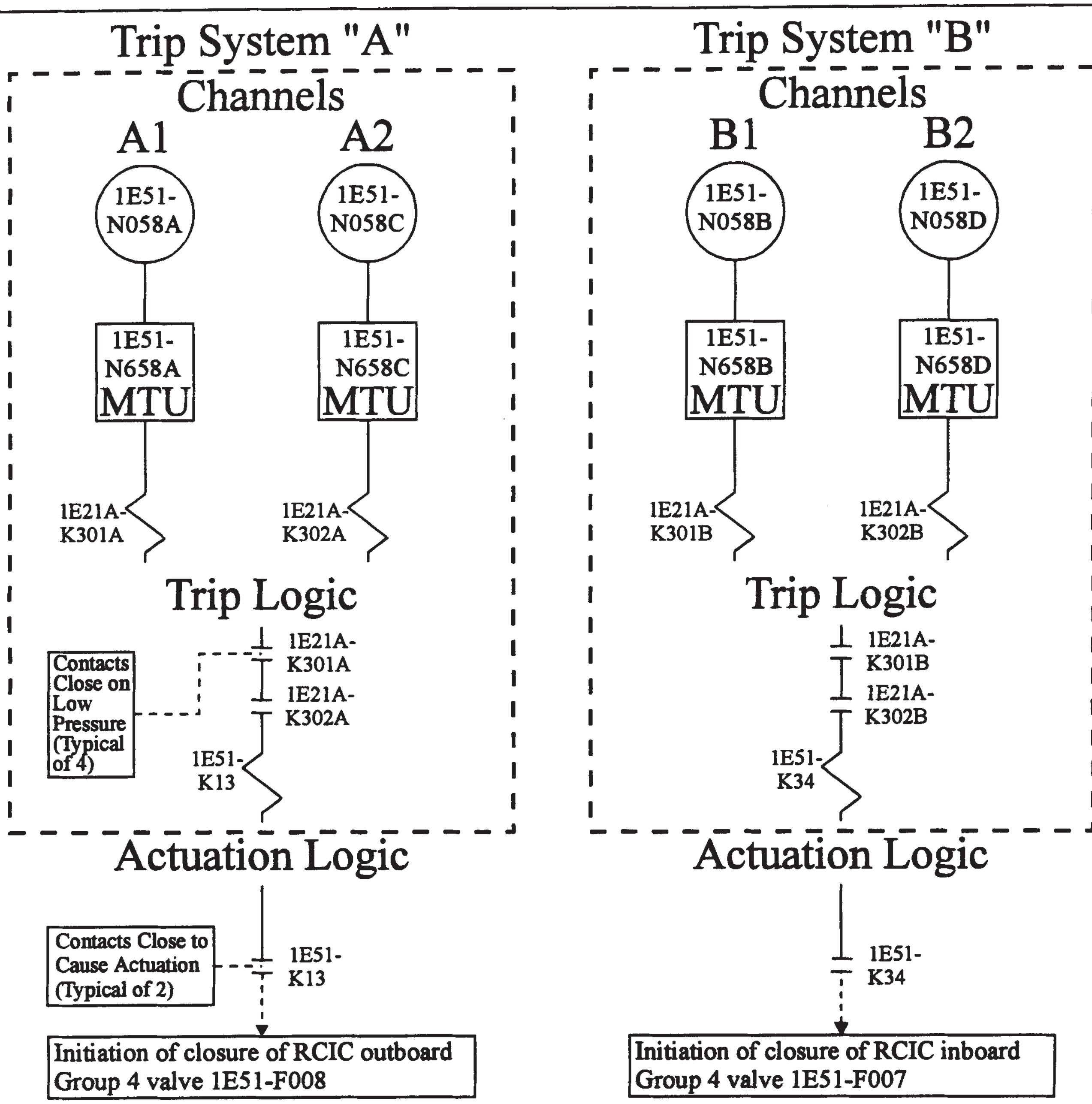
Elem. Ref.
H-19821 H-17149
H-19824 H-17151
H-17148

Prepared By: Stephen W. [signature]
Reviewed By: [signature]

LFD-1-PCIS-21

TS 3.3.6.1-1, Item 4.a
RCIC System Isolation - RCIC Steam Line Flow - High

Rev. 0 11/10/94



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RCIC steam supply line on RCIC steam supply line low pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
OR
B1 and B2

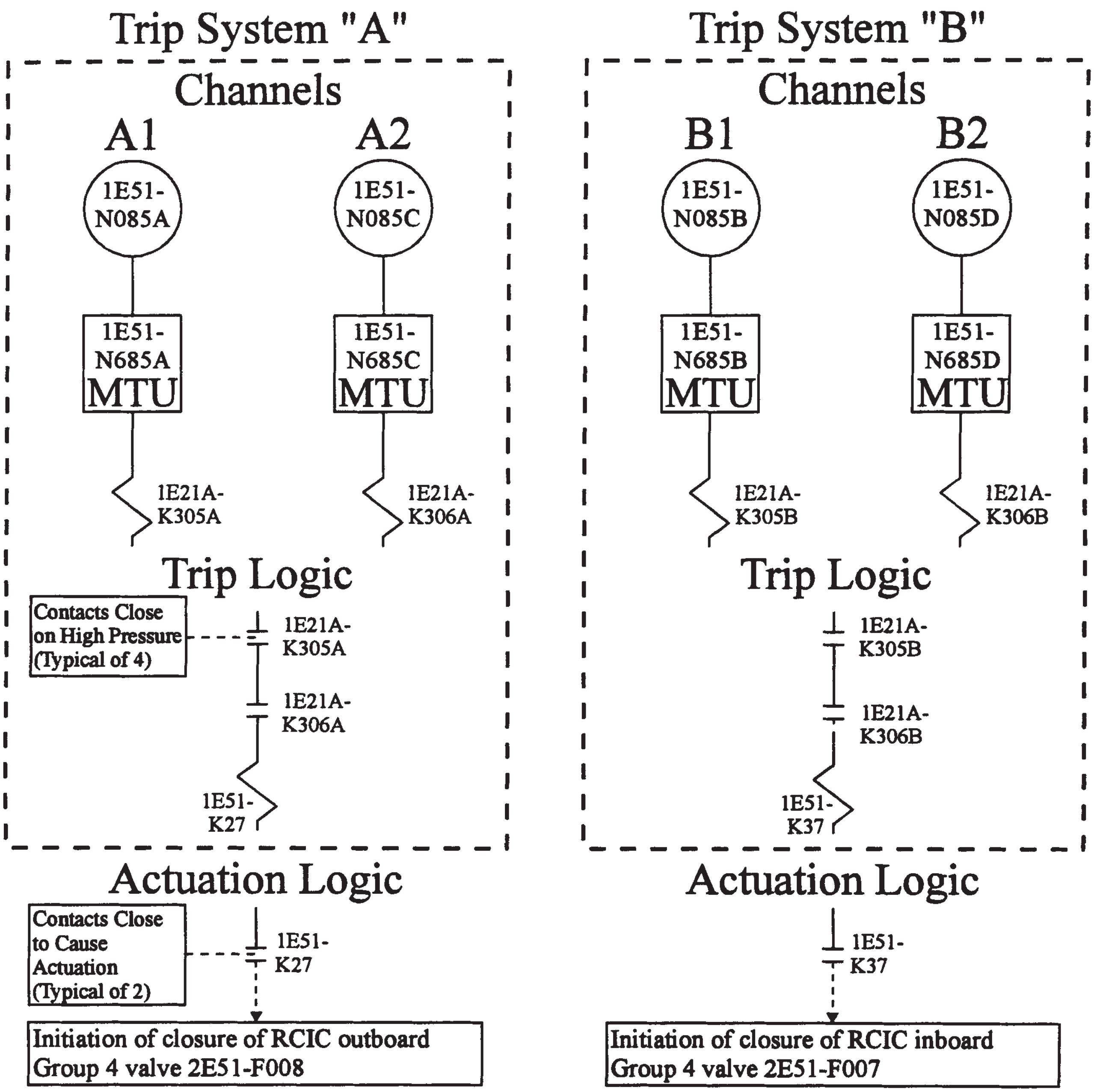
Elem. Ref.	
H-19821	H-17149
H-19824	H-17151
H-17148	

Prepared By:
Reviewed:

LFD-1-PCIS-22

TS 3.3.6.1-1, Item 4.b
RCIC System Isolation
RCIC Steam Supply Line Pressure - Low

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RCIC steam supply line on high RCIC turbine exhaust pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2
OR
B1 and B2

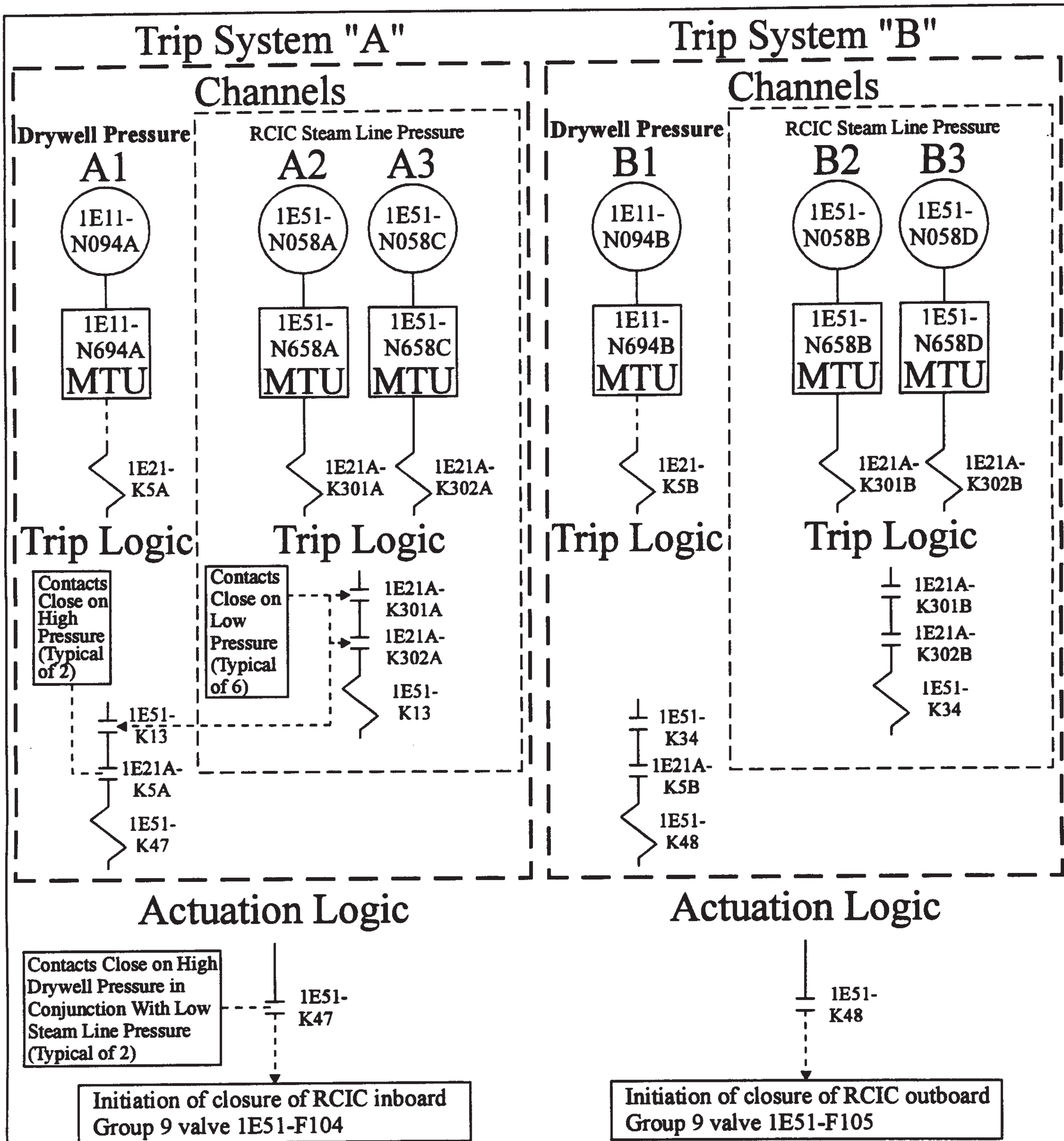
Elem. Ref.	
H-19821	H-17149
H-19824	H-17151
H-17148	

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-23

TS 3.3.6.1-1, Item 4.c
RCIC System Isolation
RCIC Turbine Exhaust Diaphragm Pressure - High

Rev. 0 1/13/95



<u>Minimum Channel Requirements for System Isolation Capability:</u>

In order to maintain the capability to isolate the RCIC exhaust vacuum breaker line on high drywell pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and A2 and A3
OR
B1 and B2 and B3

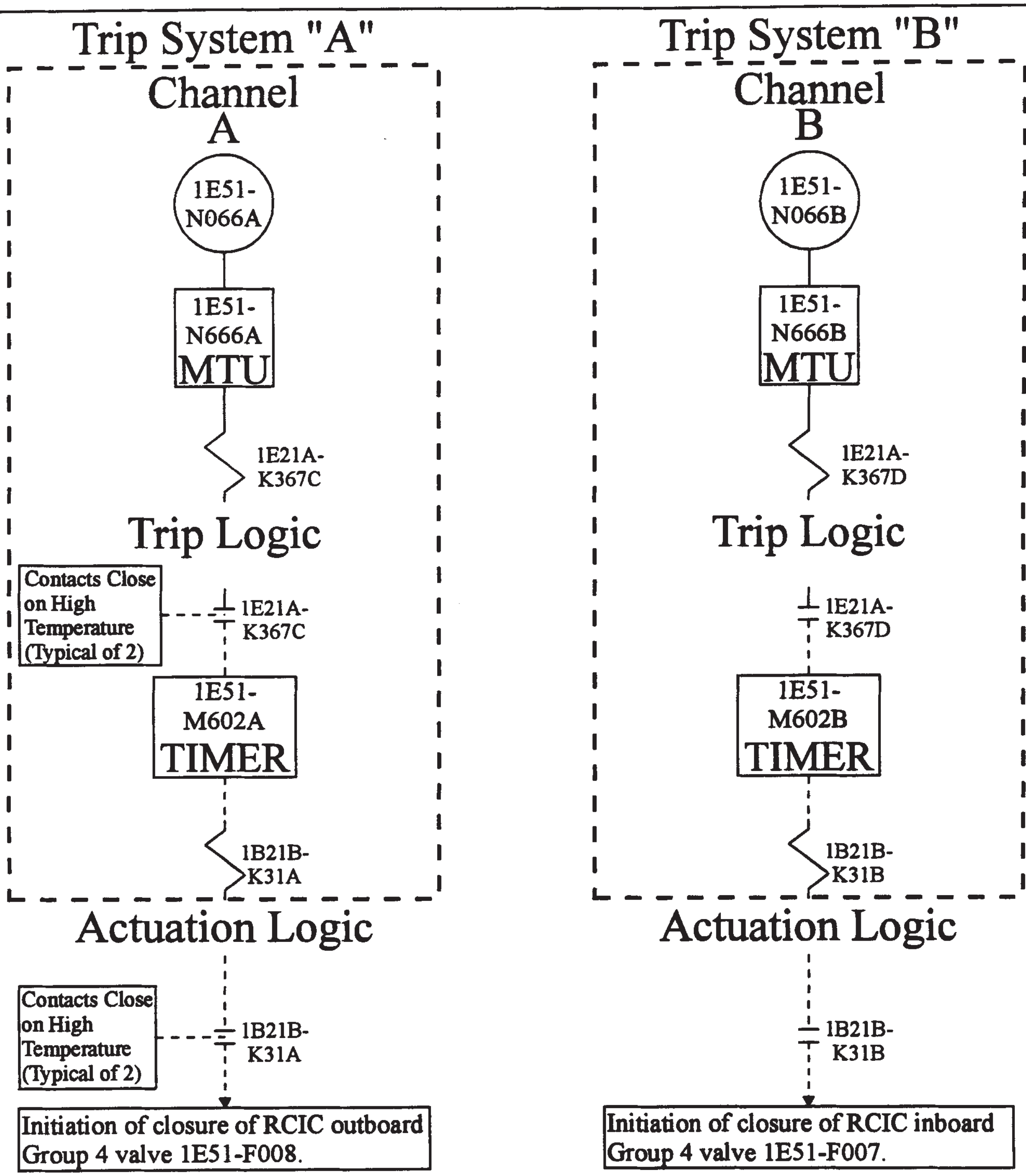
Elem. Ref.	
H-17109	H-19821
H-17148	H-19824
H-17149	H-19827
H-17150	H-19830

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-24

TS 3.3.6.1-1, Item 4.d
RCIC System Isolation
Drywell Pressure - High

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RCIC steam supply line on high suppression pool ambient area temperature, at least one channel including its associated timer is required to be operable or maintained in the tripped condition.

Elem. Ref.	
H-17148	H-17748
H-17149	H-19829
H-17151	H-19832

Prepared By:

Reviewed:

LFD-1-PCIS-25

TS 3.3.6.1-1, Items 4.e and f
RCIC System Isolation
RCIC Suppression Pool Ambient Area Temperature - High and Suppression Pool Area Temperature-Time Delay Relays

Rev. 0 1/13/95

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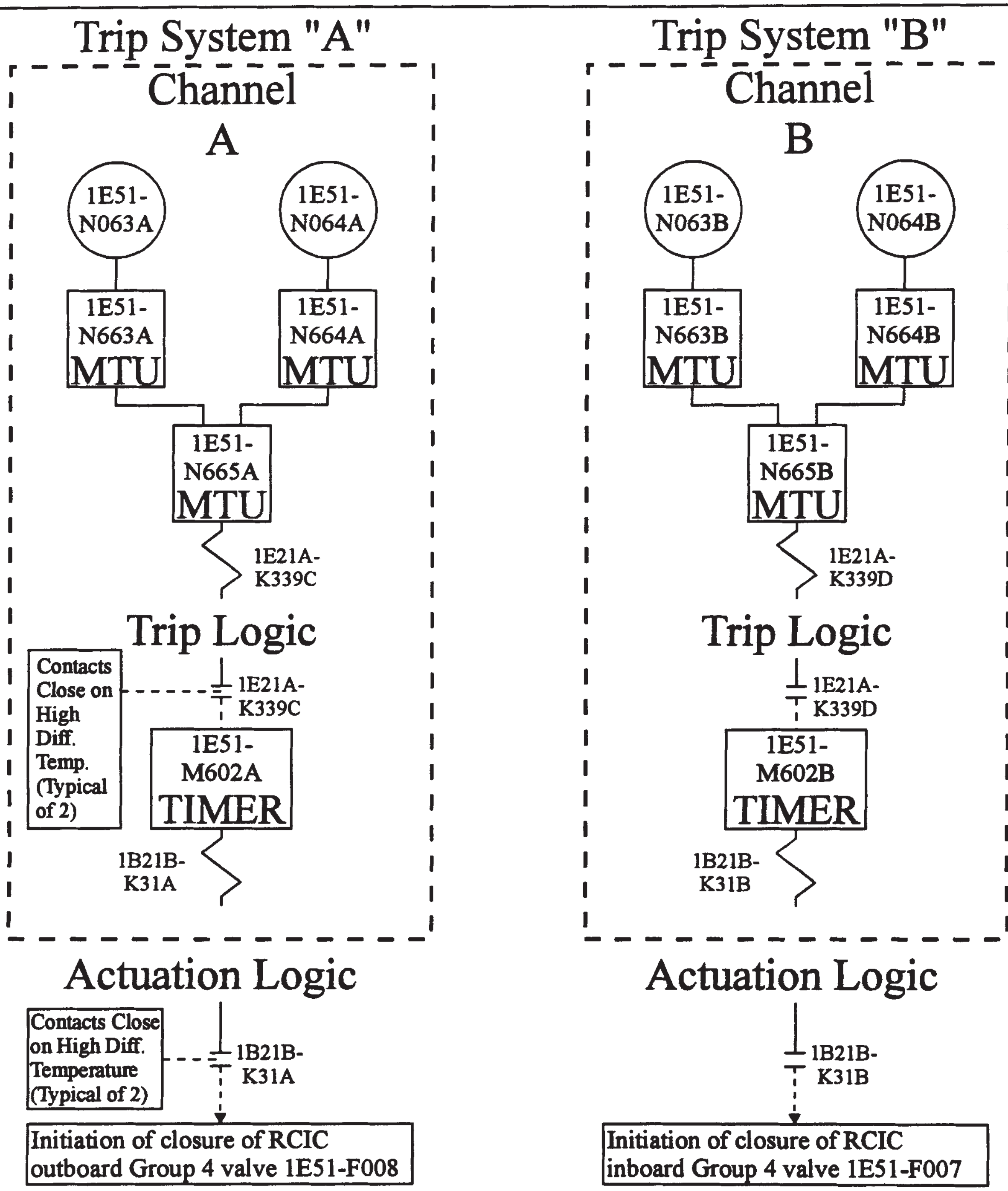


<u>Minimum Channel Requirements for System Isolation Capability:</u>

In order to maintain the capability to isolate the RCIC steam supply line on high suppression pool area differential temperature, at least one channel including its associated timer is required to be operable or maintained in the tripped condition.

Elem. Ref.	
H-17148	H-17748
H-17149	H-19828
H-17151	H-19831

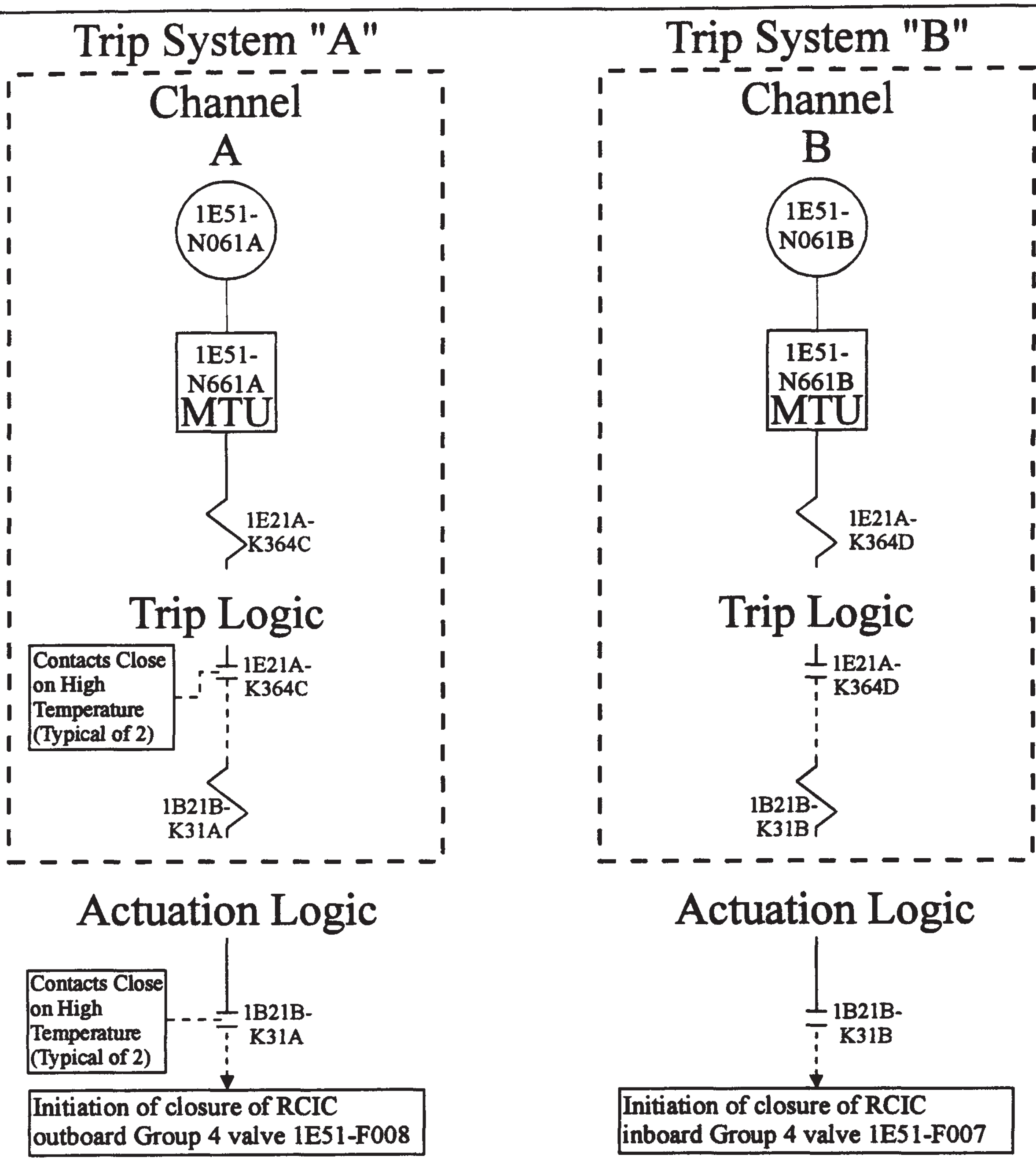
Prepared By:

Reviewed By:

LFD-1-PCIS-27

TS 3.3.6.1-1, Items 4.f and g
RCIC System Isolation
Suppression Pool Area
Temperature Time Delay
Relays and RCIC
Suppression Pool Area
Differential Temp. - High

Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RCIC steam supply line on high emergency area equipment cooler temperature, at least one channel is required to be operable or maintained in the tripped condition.

Elem. Ref.	
H-17148	H-17748
H-17149	H-19829
H-17151	H-19832

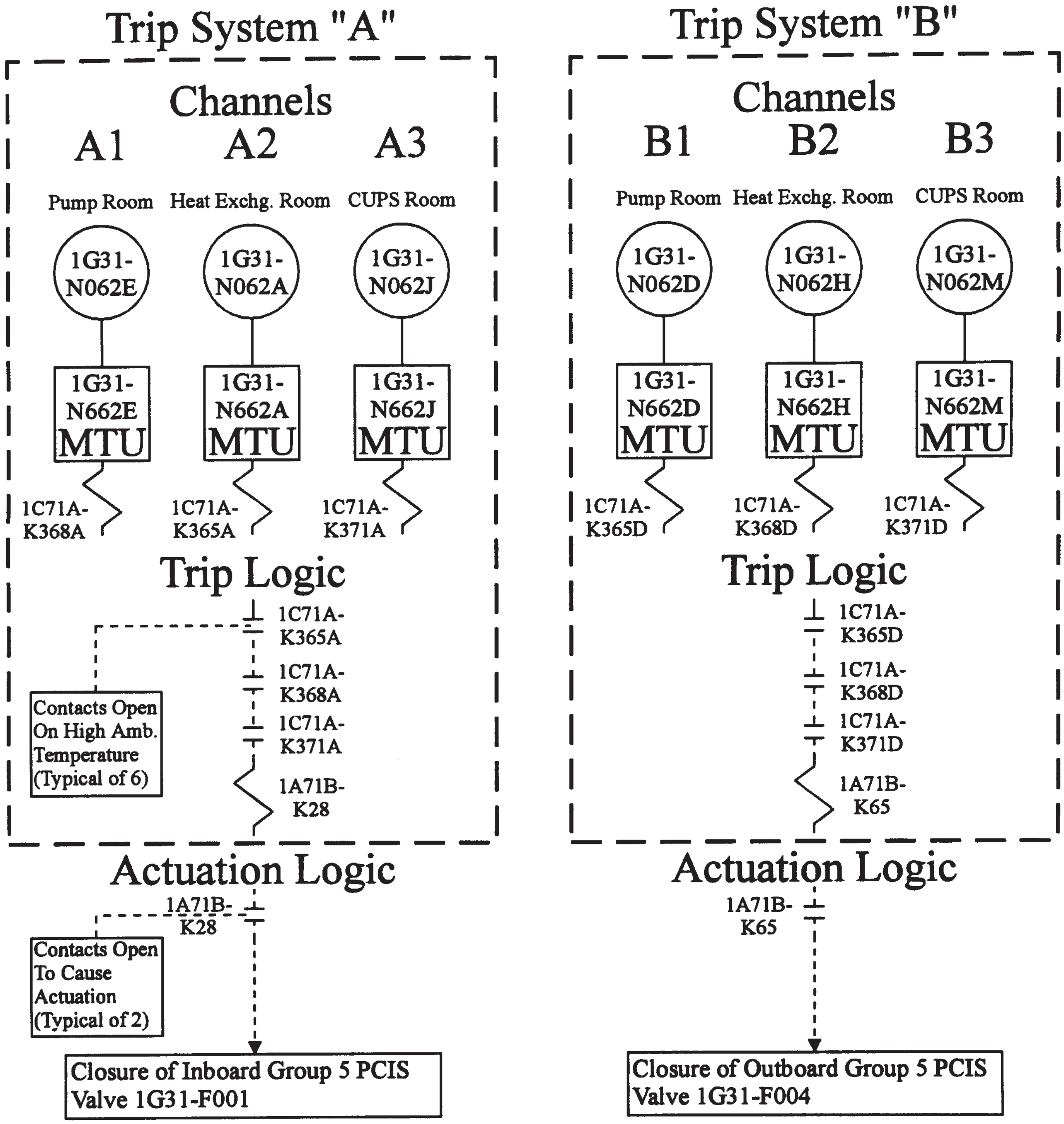
Prepared By: Stephen W. Nie...

Reviewed: [signature]

LFD-1-PCIS-28

TS 3.3.6.1-1, Item 4.h
RCIC System Isolation
Emergency Area Cooler
Temperature - High

Rev. 0 1/13/95



<u>Minimum Channel Requirements for System Isolation Capability:</u>

In order to maintain the capability to isolate the RWCU system on high area temperature, channels in one of the following combinations must be either operable or maintained in the tripped condition.

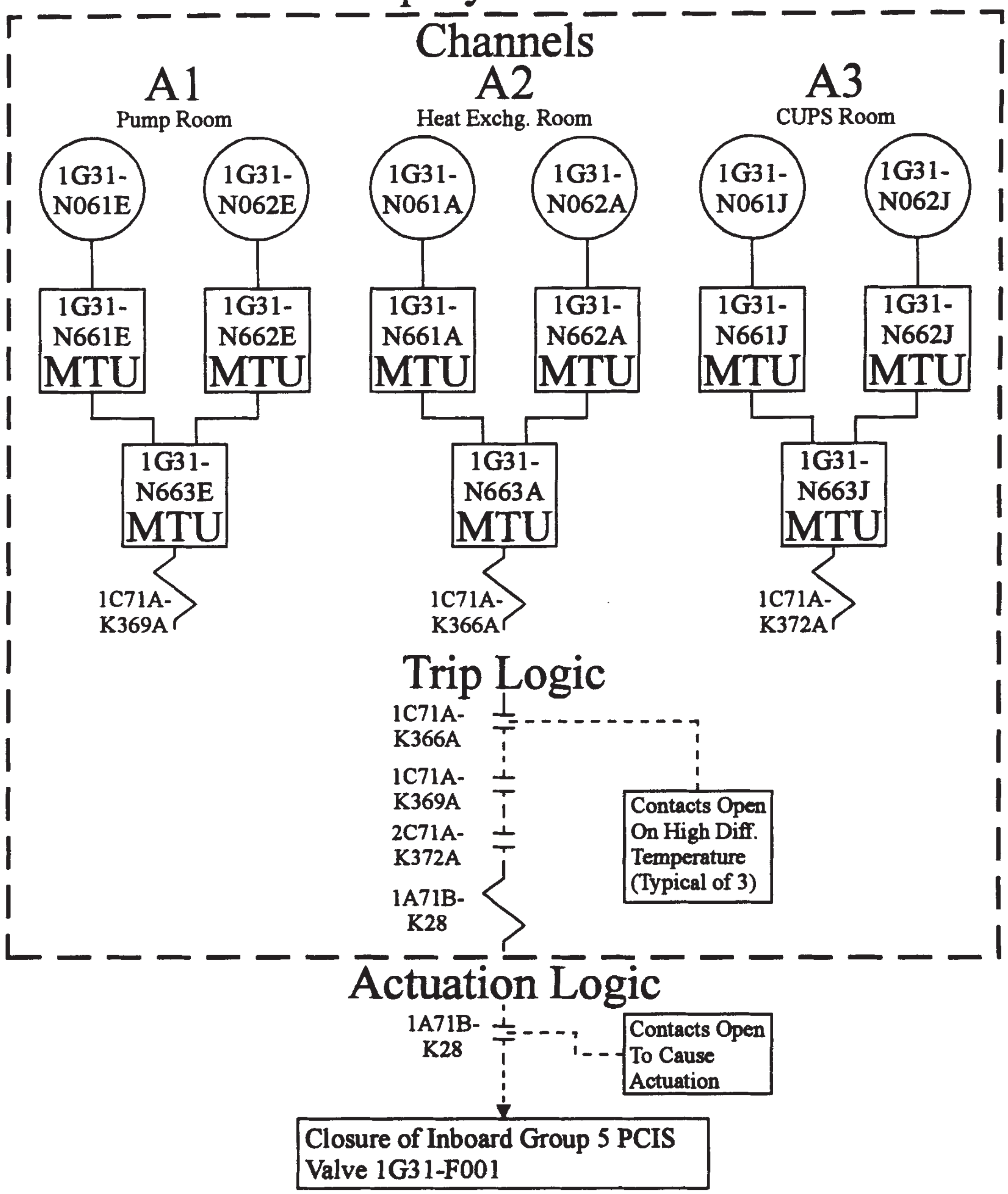
A1 or B1
AND
A2 or B2
AND
A3 or B3

Elem. Ref.
H-16231
H-17817
H-17818
H-19811
H-19820

Prepared By: [signature]
Reviewed: [signature]

LFD-1-PCIS-29
TS 3.3.6.1-1, Item 5.a
RWCU System Isolation
Area Temperature - High
Rev. 0 1/13/95

Trip System "A"



<u>Minimum Channel Requirements for System Isolation Capability:</u>

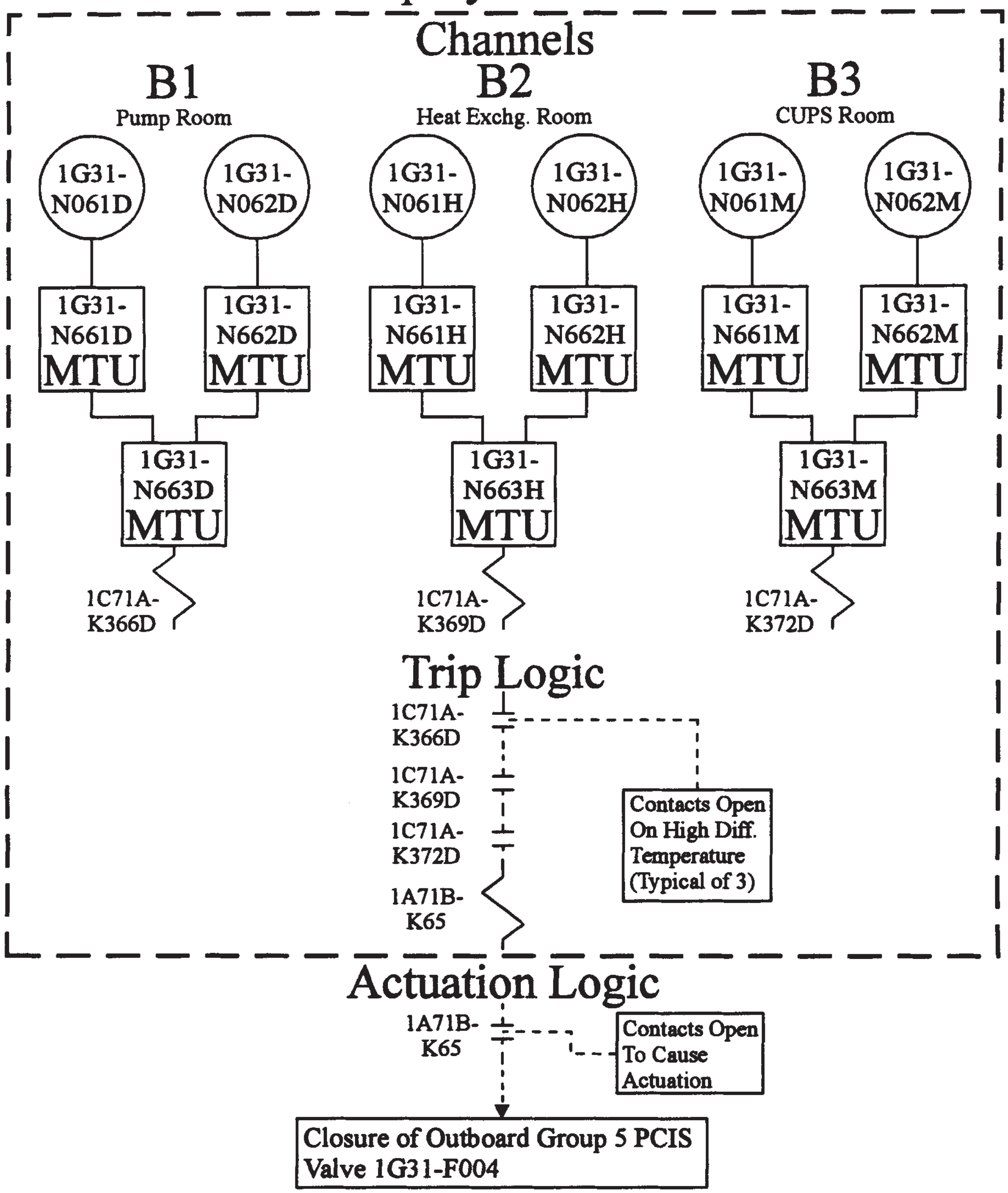
See Sheet 2 of 2 for statement of minimum channel requirements.

Elem. Ref. H-16231 H-17817 H-17818 H-19811 H-19820	LFD-1-PCIS-30 Sheet 1 of 2 TS 3.3.6.1-1 Item 5.b RWCU System Isolation Area Ventilation Diff. Temperature - High Rev. 0 1/13/95

Prepared By: Steph... [signature]

Reviewed: [signature]

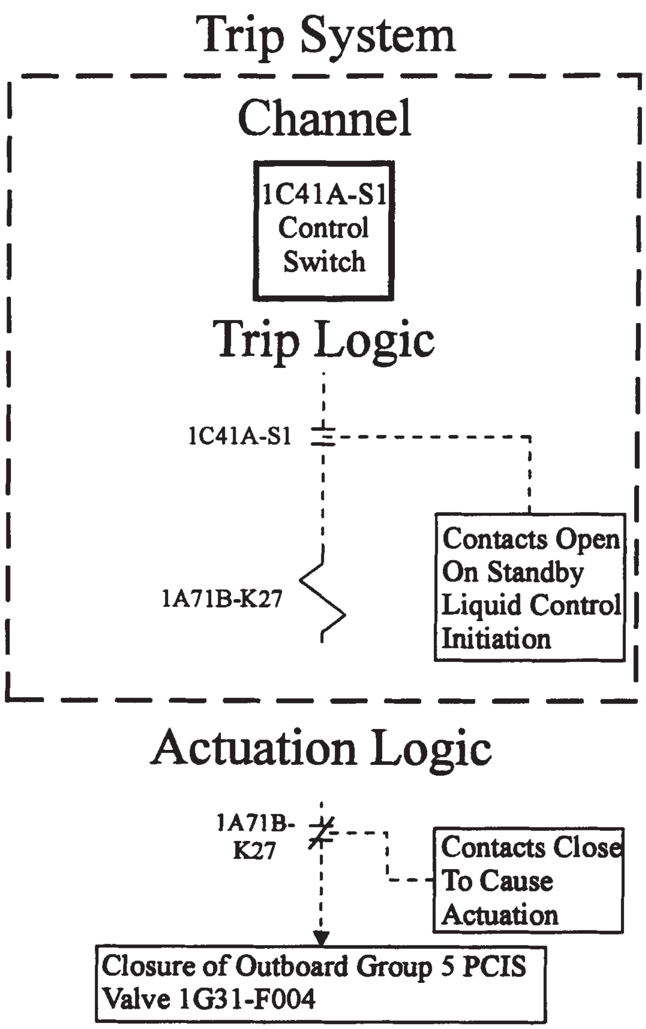
Trip System "B"



Minimum Channel Requirements for System Isolation Capability:

In order to maintain Group 5 PCIS isolation capability on high ventilation differential temperature, channels in one of the following combinations must be either operable or maintained in the tripped condition.

Elem. Ref.		
H-16231 H-17817 H-17818 H-19811 H-19820	A1or B1 AND A2 or B2 AND A3 or B3	LFD-1-PCIS-30 Sheet 2 of 2 TS 3.3.6.1-1 Item 5.b RWCU System Isolation Area Ventilation Diff. Temperature - High Rev. 0 1/13/95



Minimum Channel Requirements for System Isolation Capability

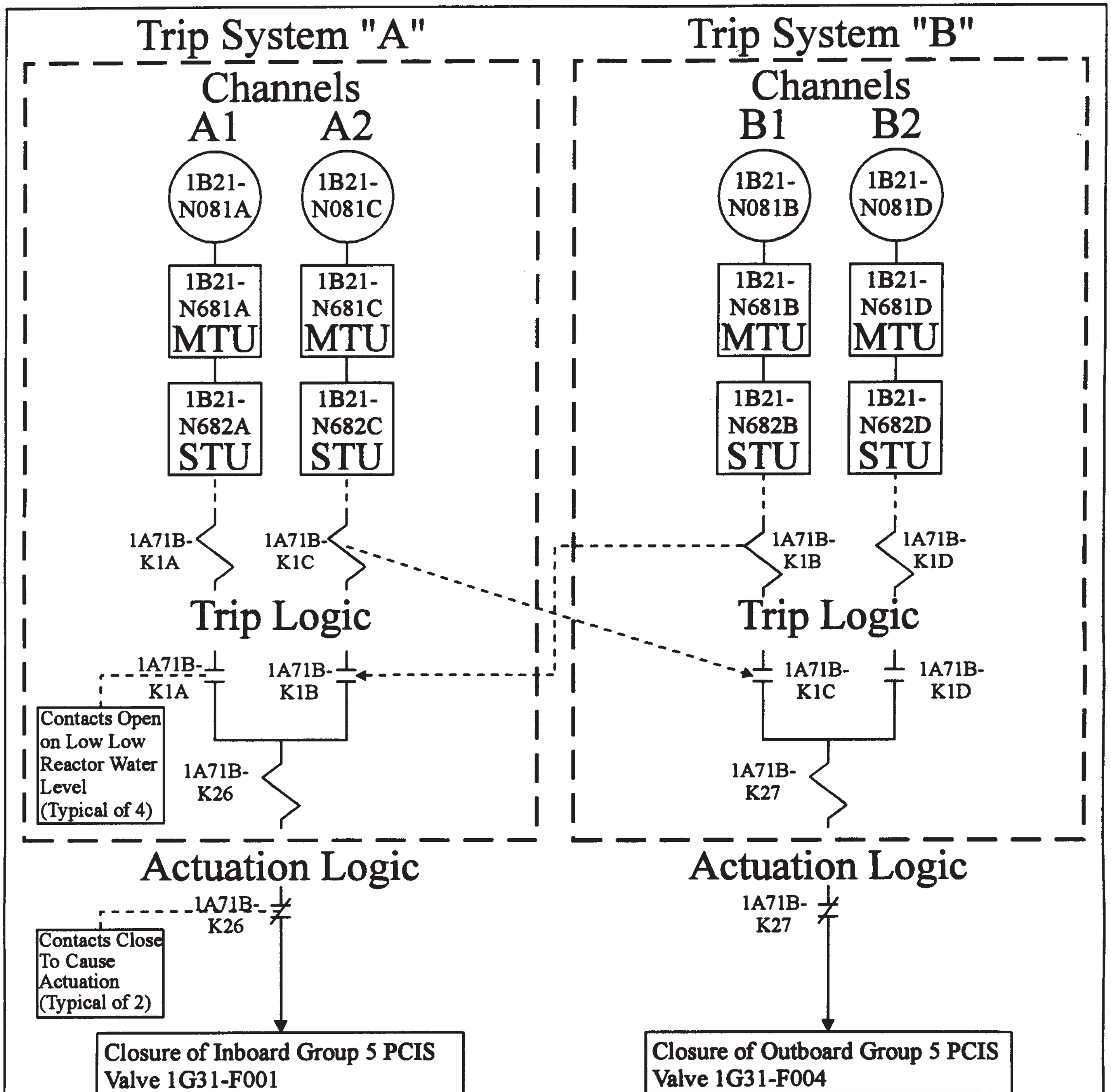
In order to maintain the capability to isolate the RWCU system on Standby Liquid Control System initiation, this channel must be operable or maintained in the tripped condition.

Elem. Ref.
H-17120 H-17817 H-17818

Prepared By:

Revi

LFD-1-PCIS-31	
TS 3.3.6.1-1, Item 5.c RWCU System Isolation SLC System Initiation	
Rev. 0	1/13/95



Minimum Channel Requirements for System Isolation Capability:

In order to maintain the capability to isolate the RWCU system on low low reactor water level, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

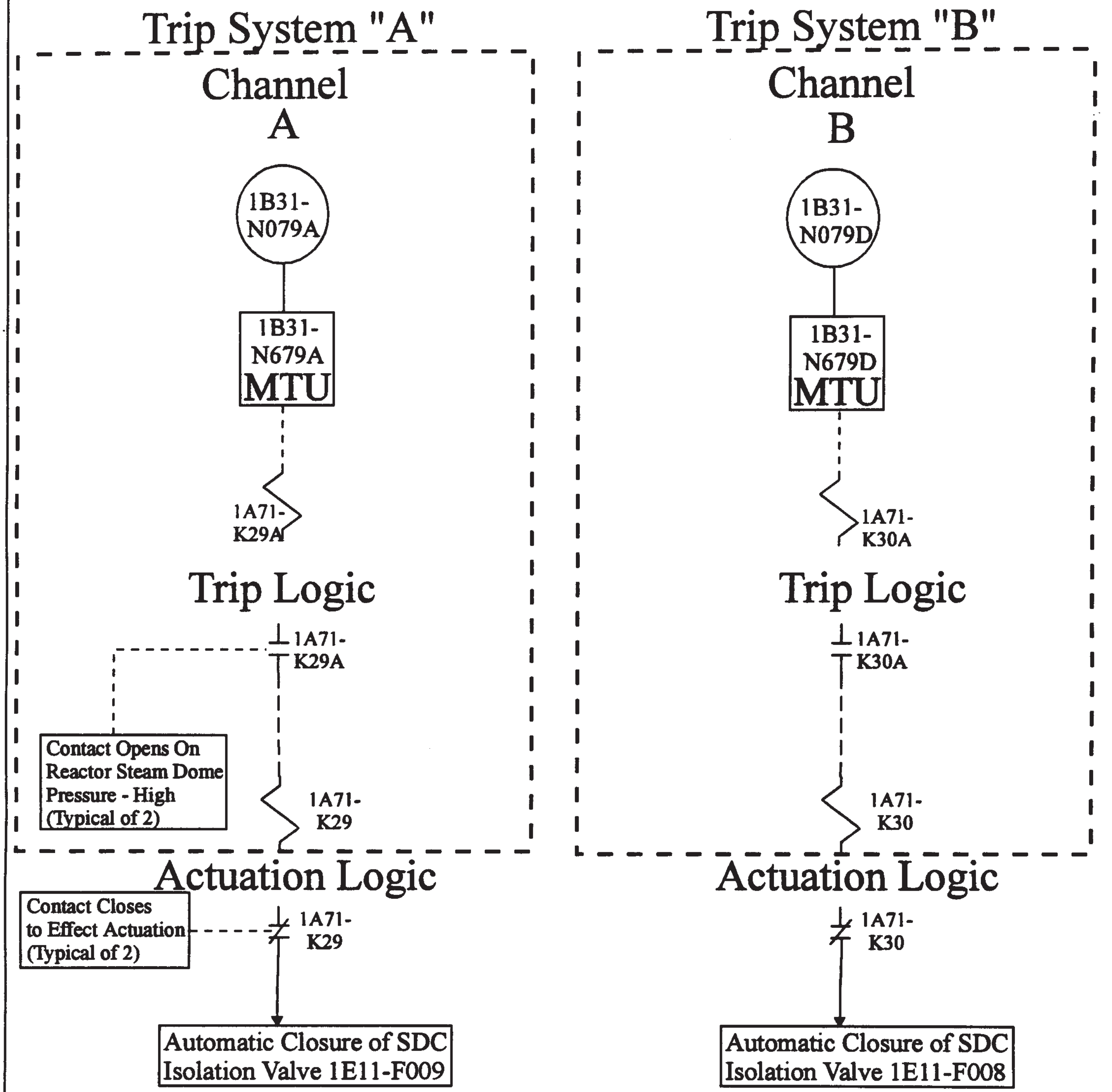
Elem. Ref.	
H-17810	H-19809
H-17811	H-19812
H-17817	H-19815
H-17818	H-19818

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-32

TS 3.3.6.1-1, Item 5.d
RWCU System Isolation
Reactor Vessel Water Level - Low Low, Level 2

Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain RHR Shutdown Cooling System isolation capability on a Reactor Steam Dome Pressure - High signal, either channel "A" or "B" is required to be operable or maintained in the tripped condition.

Note: This is not a PCIS function; however, it is an SDC isolation function. Therefore, automatic isolation capability of 1E11-F009 is required even though it is not a PCIS valve.

Elem. Ref.	
H-17817	H-19809
H-17818	H-19818

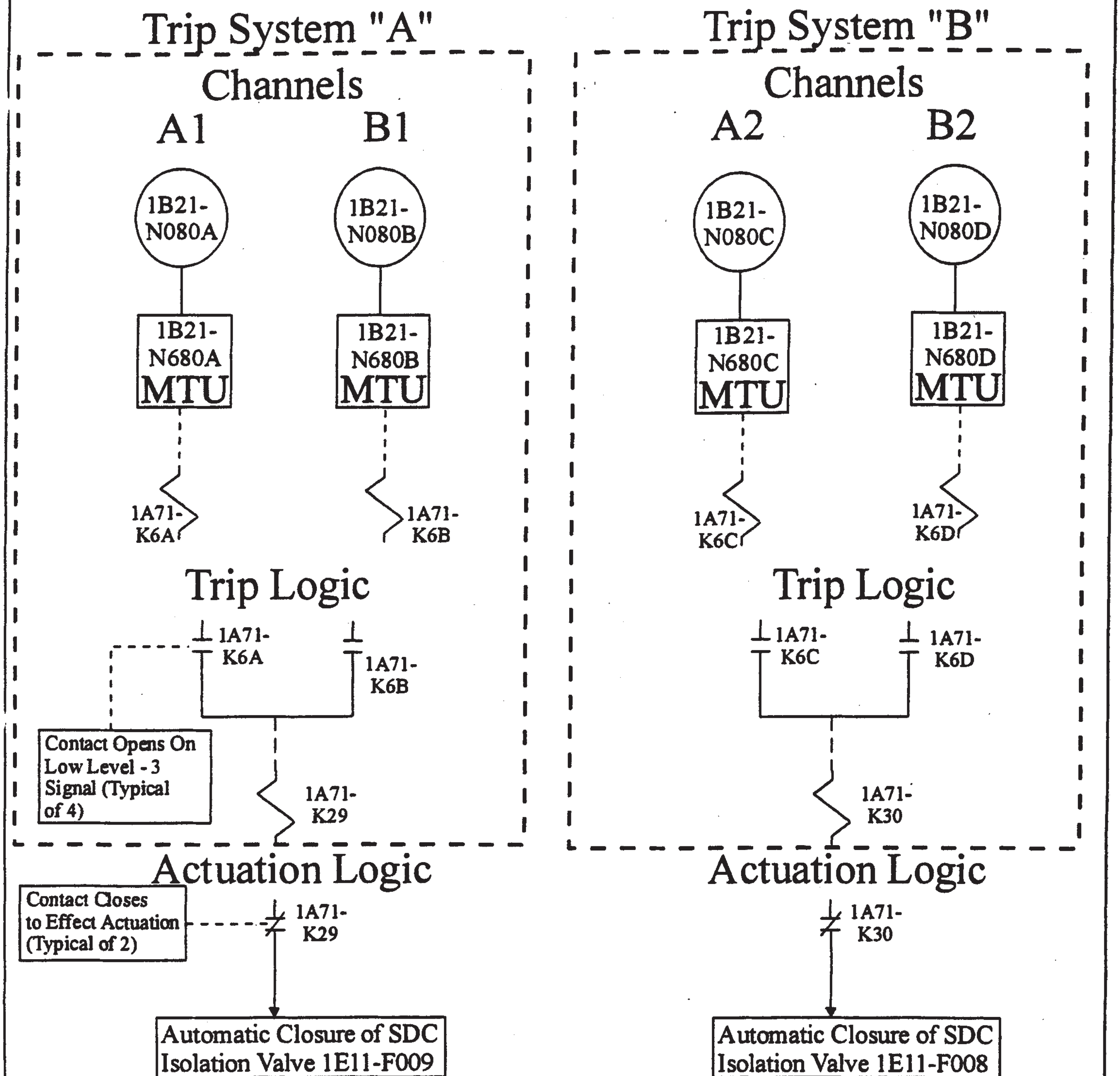
Prepared By:

Reviewed By:

LFD-1-PCIS-33

TS 3.3.6.1-1, Item 6.a RHR SDC System Isolation, Reactor Steam Dome Pressure - High

Rev. 0 1/15/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain RHR Shutdown Cooling System isolation capability on a Reactor Vessel Water Level - Low, Level 3 signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1and B1
OR
A2 and B2

Note: This is not a PCIS function; however, it is an SDC isolation function. Therefore, automatic isolation capability of 1E11-F009 is required even though it is not a PCIS valve.

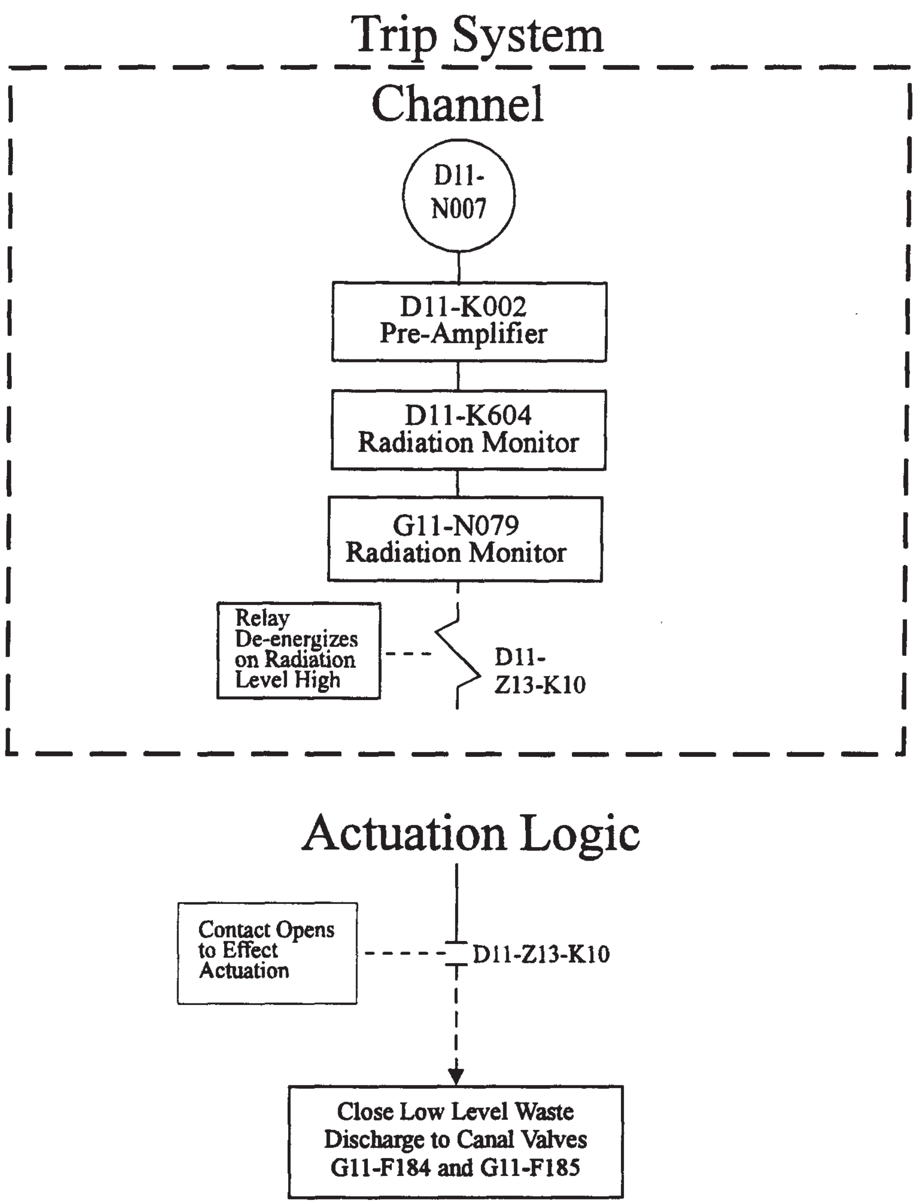
Elem. Ref.	
H-17789	H-17818
H-17790	H-19809
H-17810	H-19812
H-17811	H-19815
H-17817	H-19818

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-PCIS-34

TS 3.3.6.1-1, Item 6.b
RHR SDC System Isolation, Reactor Vessel Water Level - Low, Level 3

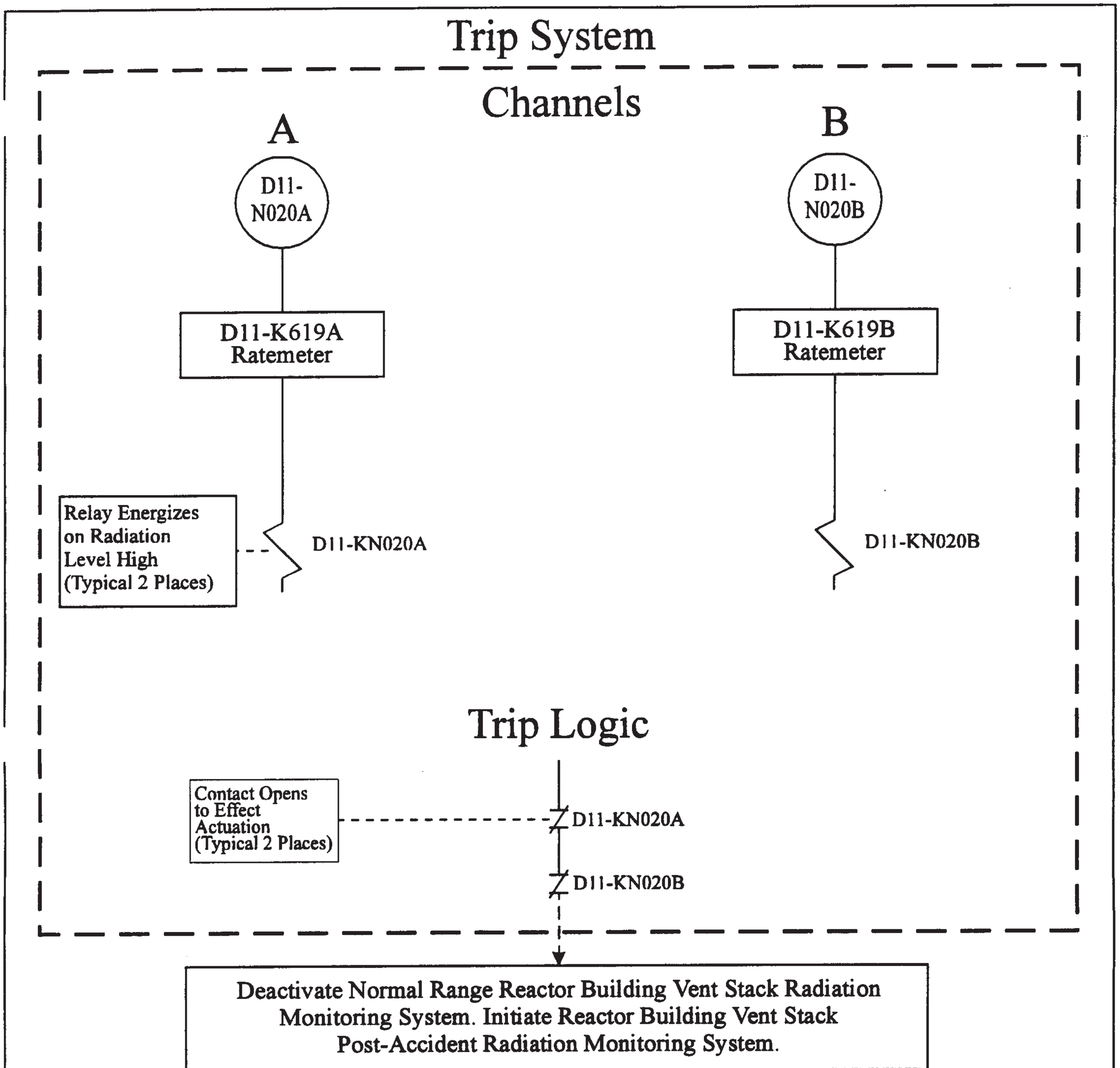
TRM Rev. 26



Minimum Channel Requirements for System Initiation Capability:

In order to maintain automatic isolation capability of the liquid radwaste discharge line (to the river) on a Liquid Radwaste Effluent Line Radiation-High signal, this channel must be operable.

Elem. Ref. H-19533 H-19560	Prepared By: RBR Reviewed By: JSB	LFD-1-PRM-01 ODCM 2-1, Item 1 Liquid Radwaste Effluent Line Radiation High Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain accident range monitoring automatic initiation capability due to a reactor building vent stack monitor high radiation signal, at least one channel must be operable.

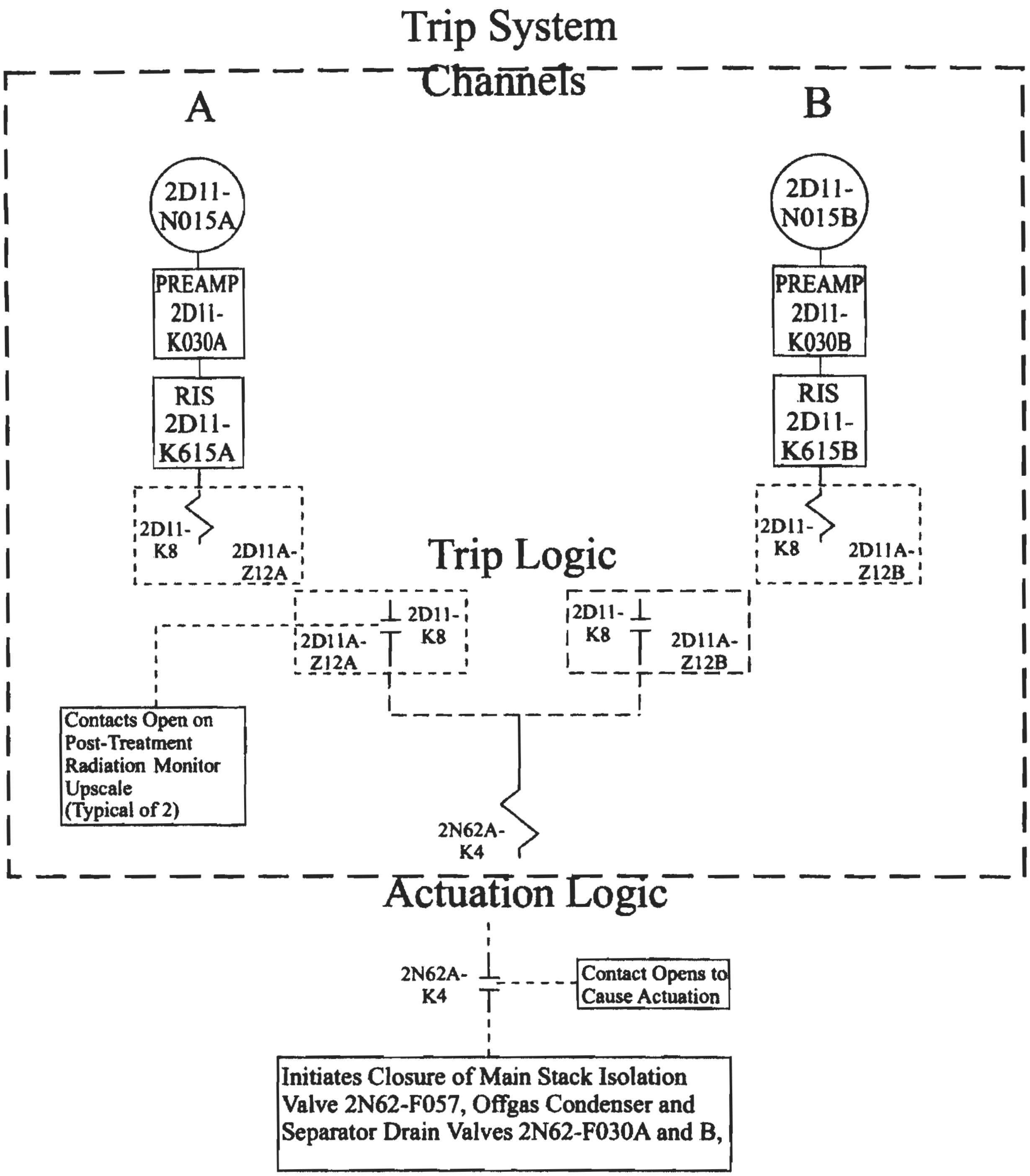
LFD-1-PRM-02

ODCM 3-1, Item 1.a
Reactor Building Vent Stack
Monitoring System
Radiation High

Elem. Ref.
H-19559
H-19596
H-19661
H-19662

Prepared By: RBR
Reviewed By: JSB

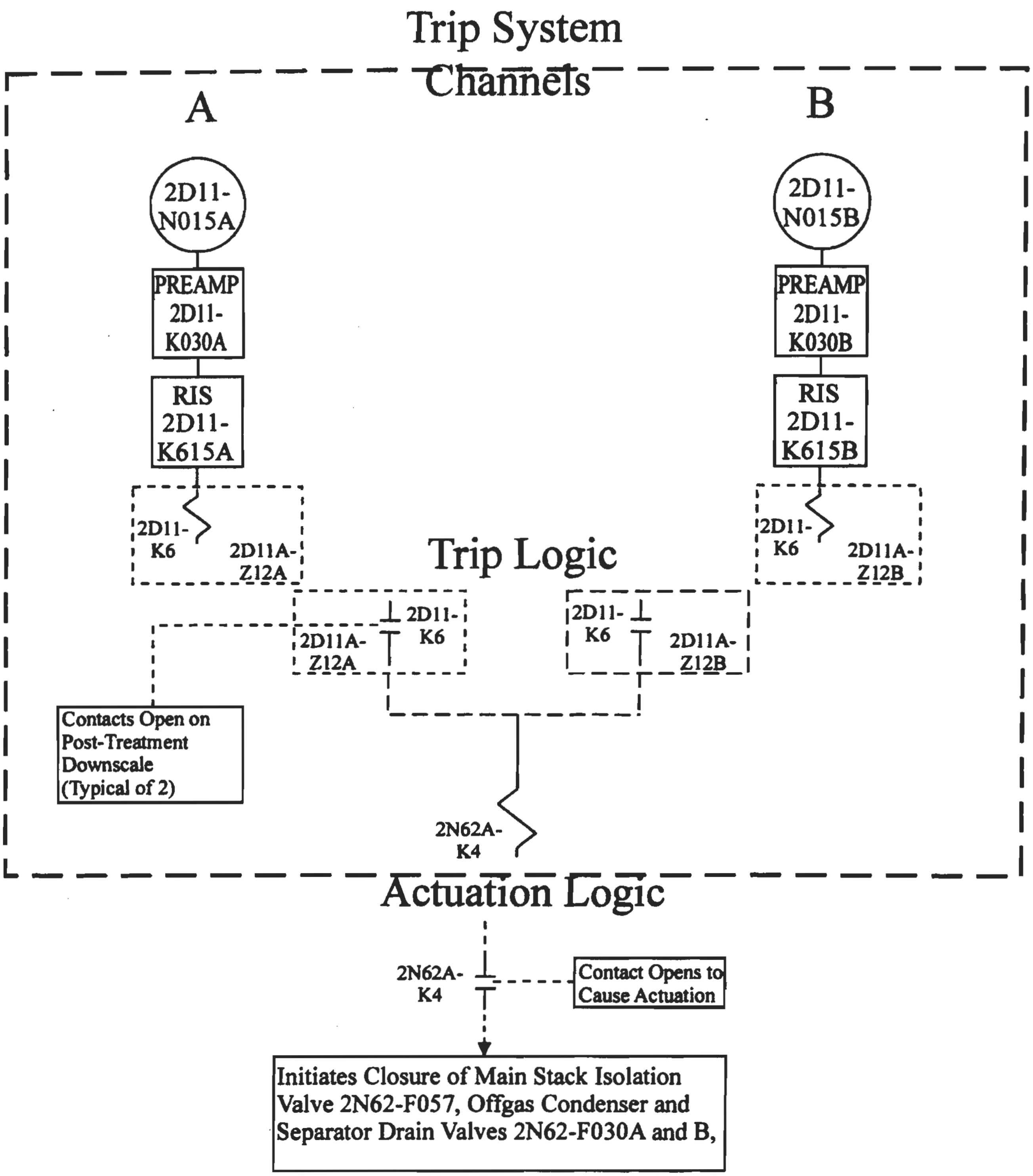
Rev. 0 11/16/94



Minimum Channel Requirements for System Isolation Capability:

In order to maintain Offgas System isolation capability on a Post-Treatment Radiation Upscale condition, each channel must be functional or maintained in the tripped condition.

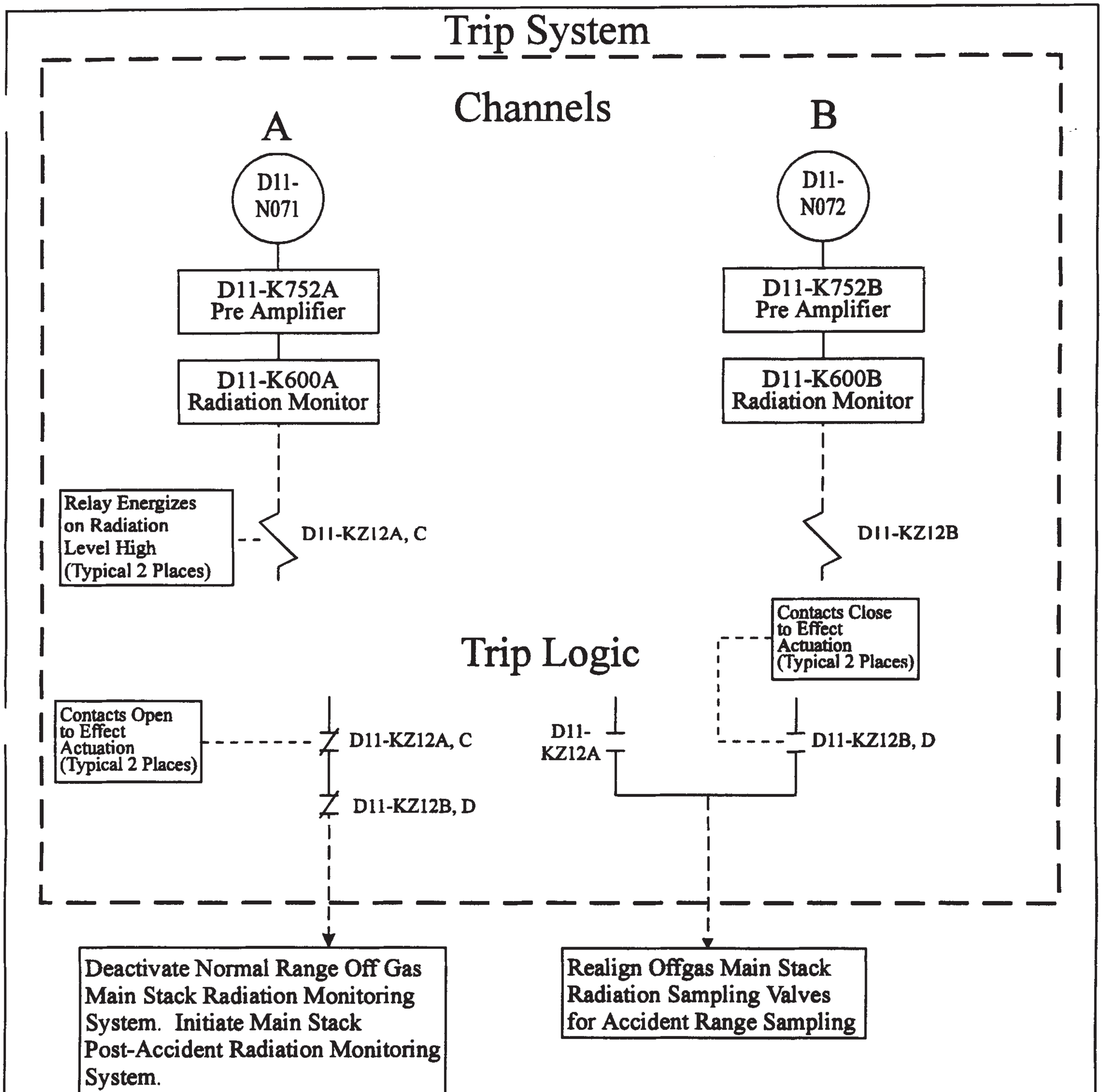
Elem. Ref. H-27627 H-27783 H-27811 H-27818 H-27819	Prepared By: DC Reviewed By: [signature]	LFD-2-PRM-03 TRM T3.3.8-1, Item 1 Offgas System Isolation Post-Treatment Radiation Monitor Upscale TRM REV. 62



Minimum Channel Requirements for System Isolation Capability:

In order to maintain Offgas System isolation capability on a Post-Treatment Radiation Downscale condition, each channel must be functional or maintained in the tripped condition.

Elem. Ref.		LFD-2-PRM-04
H-27627 H-27783 H-27811 H-27818 H-27819	Prepared By: TLC Reviewed By: [signature]	TRM T3.3.8-1, Item 2 Offgas System Isolation Post-Treatment Radiation Downscale
		TRM REV. 62

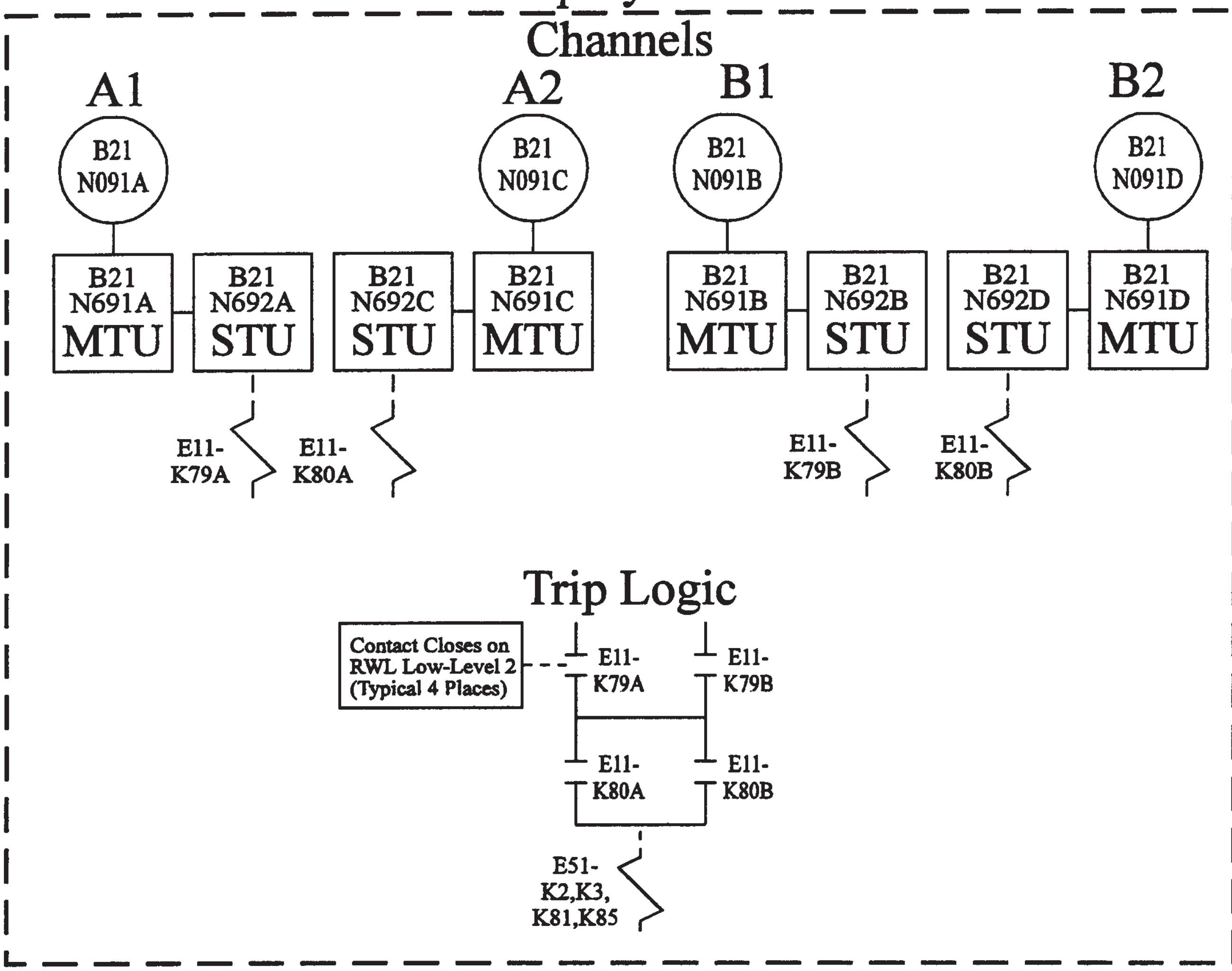


Minimum Channel Requirements for System Initiation Capability:

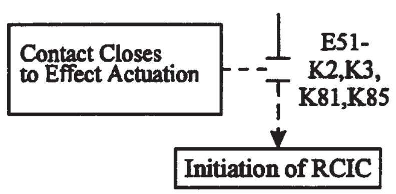
In order to maintain accident range monitoring automatic initiation capability due to a main stack monitor high radiation signal, at least one channel must be operable.

	LFD-1-PRM-05
	ODCM 3-1, Item 3.a Main Stack Monitoring System, Noble Gas Activity Monitor
Elem. Ref. H-19559 H-19596 H-19661	
Prepared By: Reviewed By:	Rev. 0 12/1/94

Trip System



Actuation Logic



Minimum Channel Requirements for System Initiation Capability:

In order to maintain RCIC initiation capability due to low reactor water level, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 & A2
A1 & B2
B1 & A2
B1 & B2

Elem. Ref.

H-17148	H-19826
H-17763	H-19829
H-17766	H-19830
H-19823	

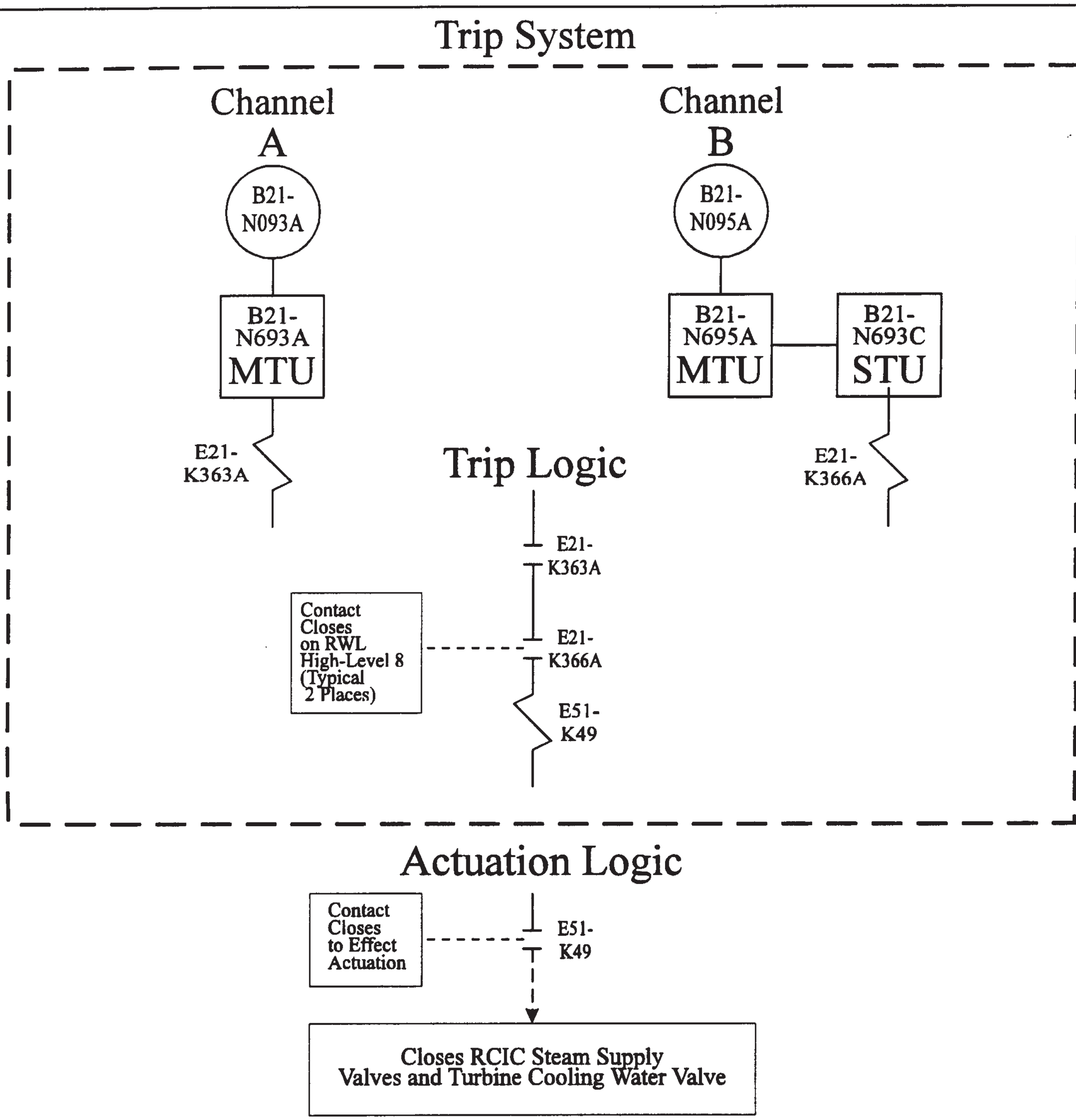
Prepared By: [signature]

Reviewed By: [signature]

LFD-1-RCIC-01

TS 3.3.5.2-1, Item 1
RCIC system
Reactor Vessel
Water Level-
Low Low, Level 2

TRM Rev. 6



Minimum Channel Requirements for System Trip Capability:

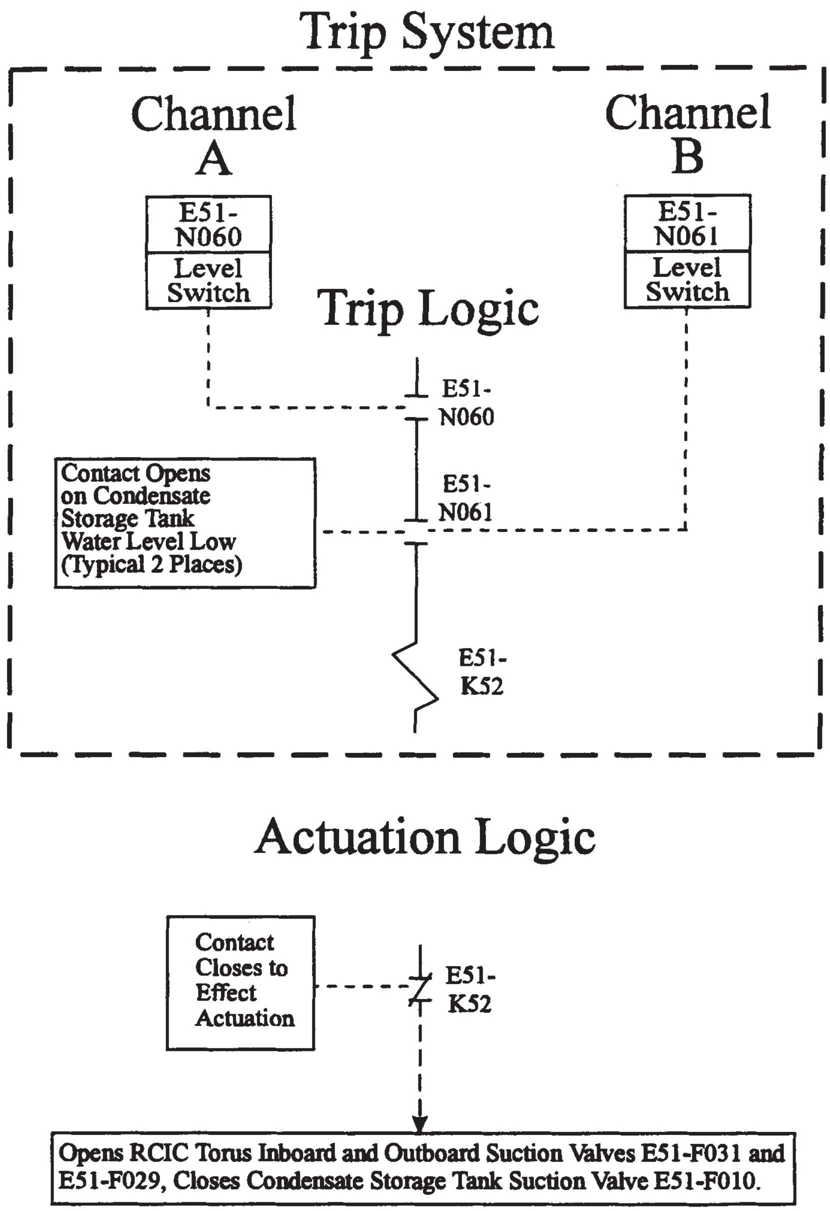
In order to ensure RCIC system trip capability on a RWL-HIGH- Level 8 signal, both channels must be operable.

Elem. Ref.
H-17148
H-17152
H-19823
H-44120

Prepared By: RBR

Reviewed By: JSB

LFD-1-RCIC-02
TS 3.3.5.2-1, Item 2 RCIC System Reactor Vessel Water Level - High, Level 8
Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the ability to automatically transfer the RCIC pump suction from the CST to the Suppression Pool on a CST low level signal, one of the two channels must be operable or maintained in the tripped condition.

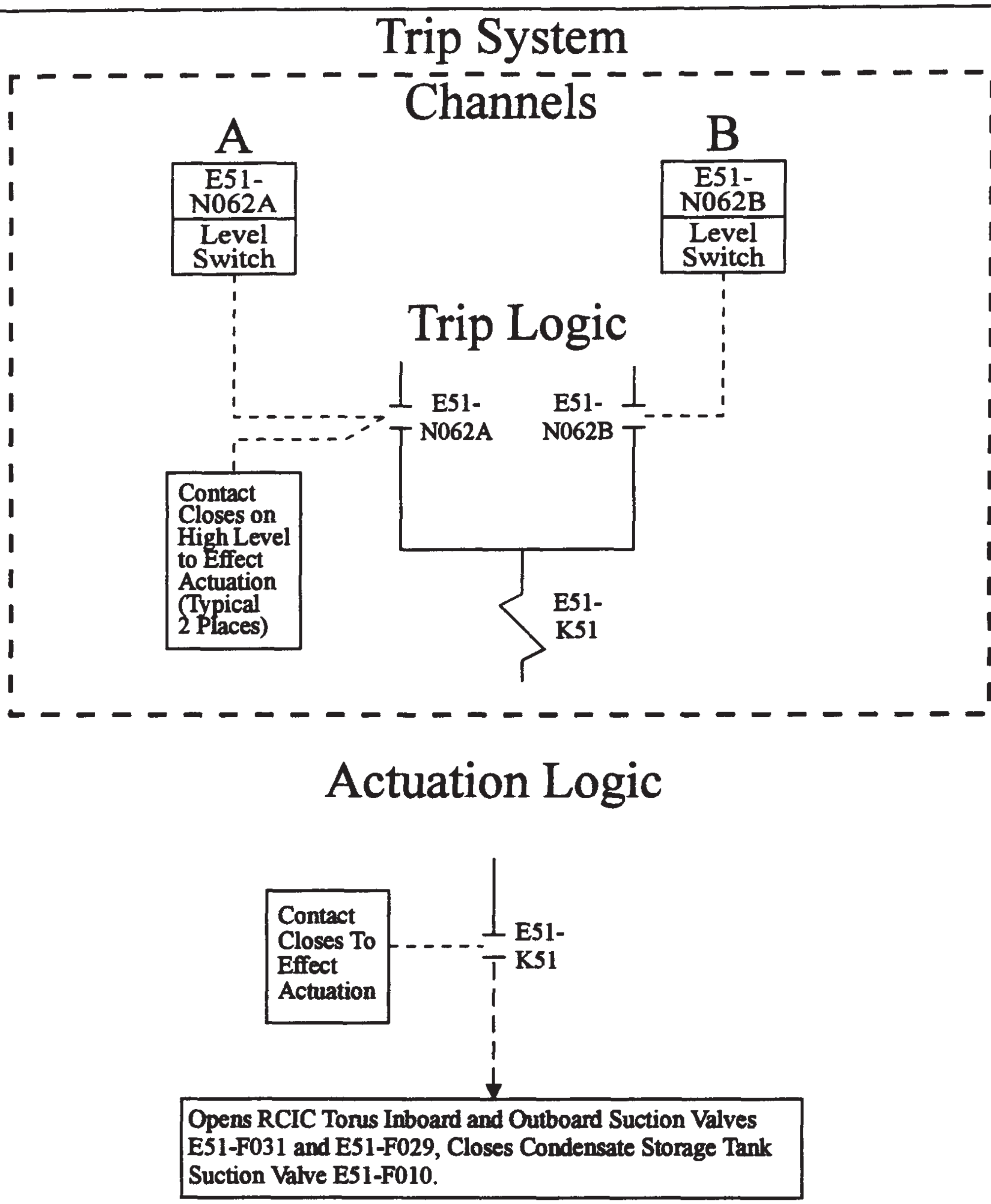
Elem. Ref.
H-17148
H-17152

Prepared By: RBR
Reviewed By: JDB

LFD-1-RCIC-03

TS 3.3.5.2-1, Item 3
RCIC System
Condensate Storage
Tank Level-Low

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

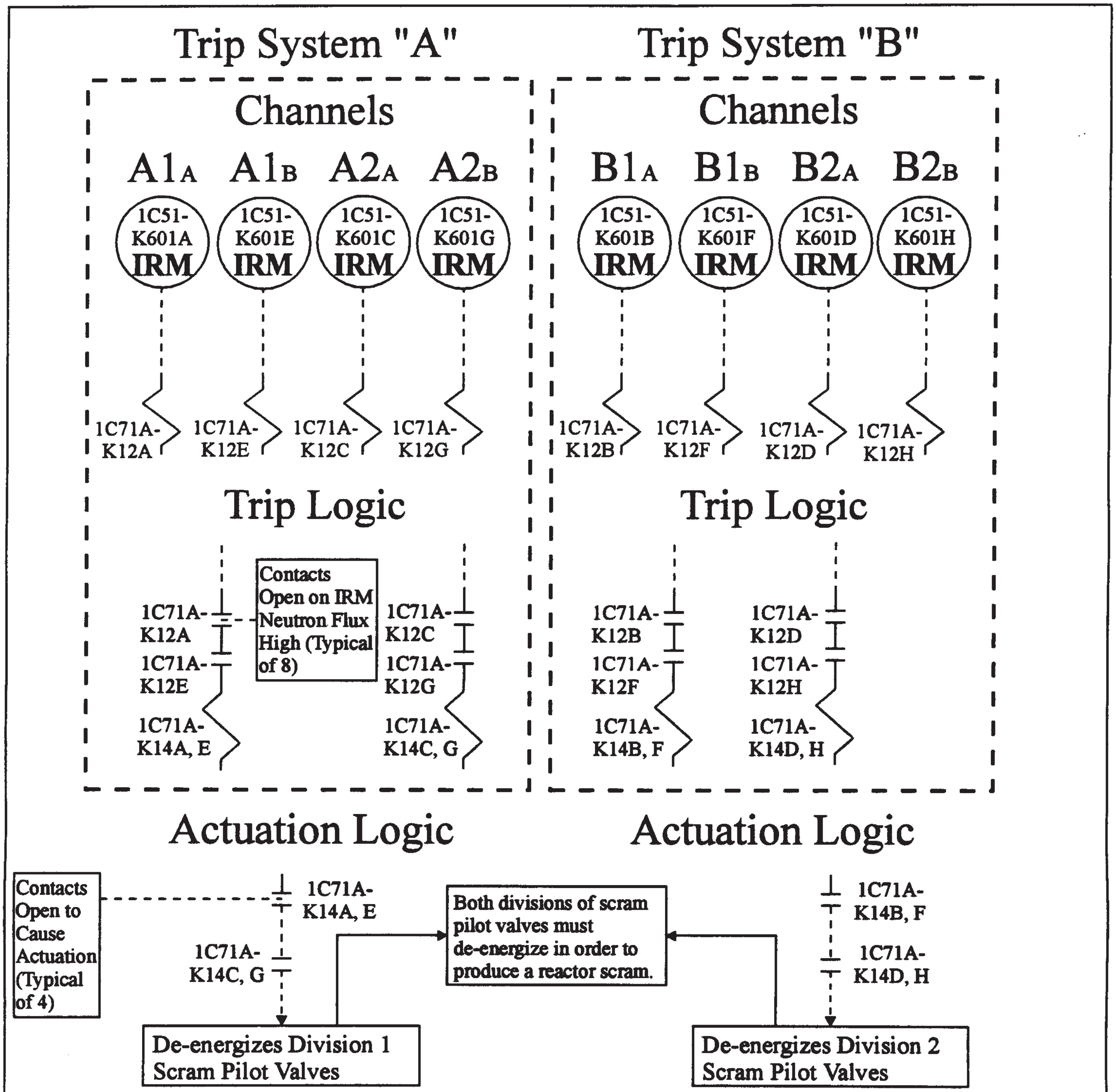
In order to maintain the ability to automatically transfer the RCIC pump suction from the CST to the Suppression Pool on a high Suppression Pool water level signal, one of the two channels must be operable or maintained in the tripped condition.

Elem. Ref.
H-17148
H-17152

Prepared By: RBR
Reviewed By: JDB

LFD-1-RCIC-04
TS 3.3.5.2-1, Item 4
RCIC System
Suppression Pool
Water Level-High

Rev. 0 11/16/94



Minimum Channel Requirements for System Initiation Capability:

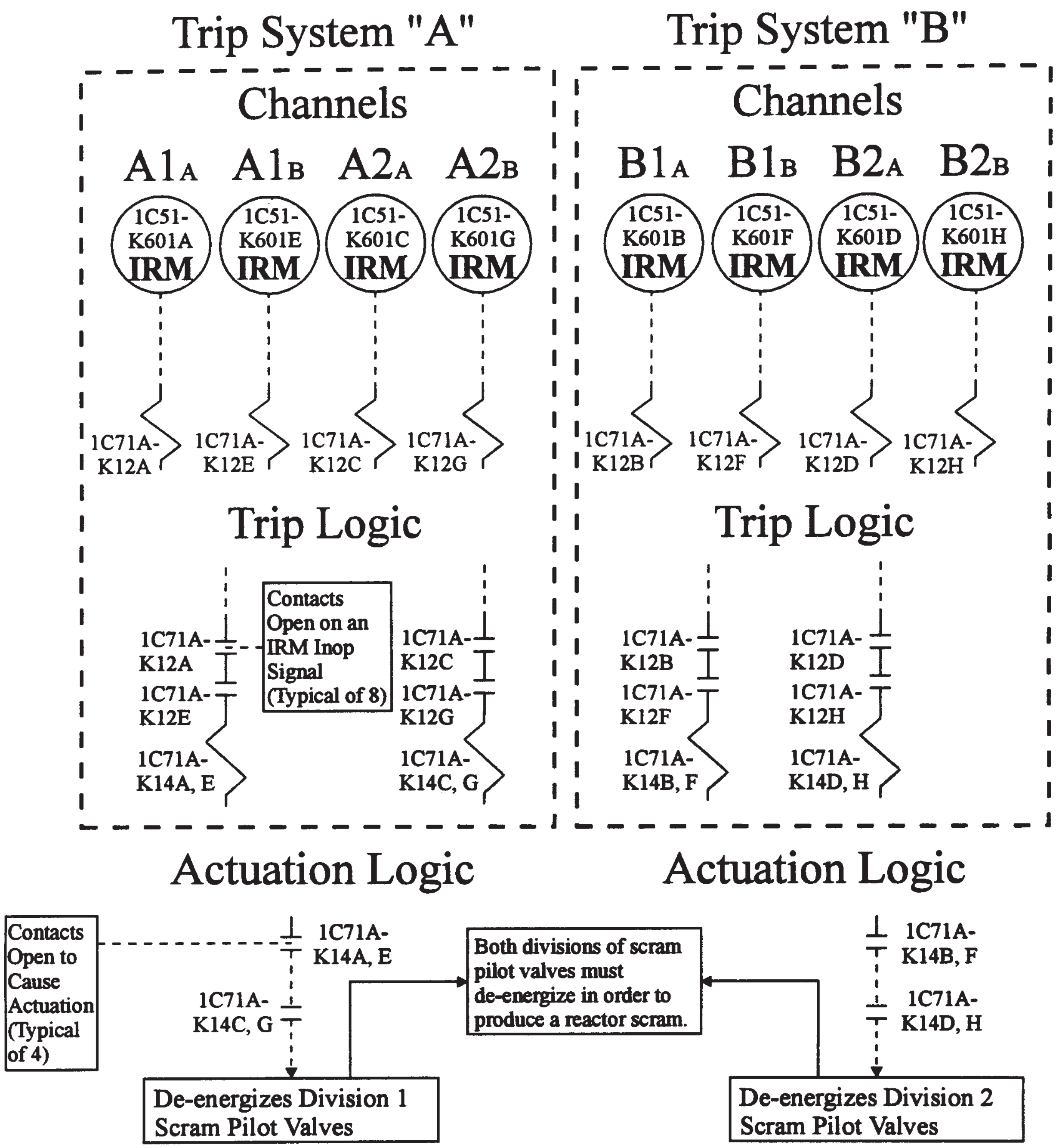
In order to maintain the capability to scram the reactor on IRM neutron flux high, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1A or A1B or A2A or A2B
AND
B1A or B1B or B2A or B2B

Elem. Ref.
H-17789 H-17792
H-17790 H-17793
H-17791

Prepared By: Royce Clark
Reviewed By: [signature]

LFD-1-RPS-01
TS 3.3.1.1-1, Item 1.a
Reactor Protection System Instrumentation
IRM Neutron Flux - High
Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on an IRM inop signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

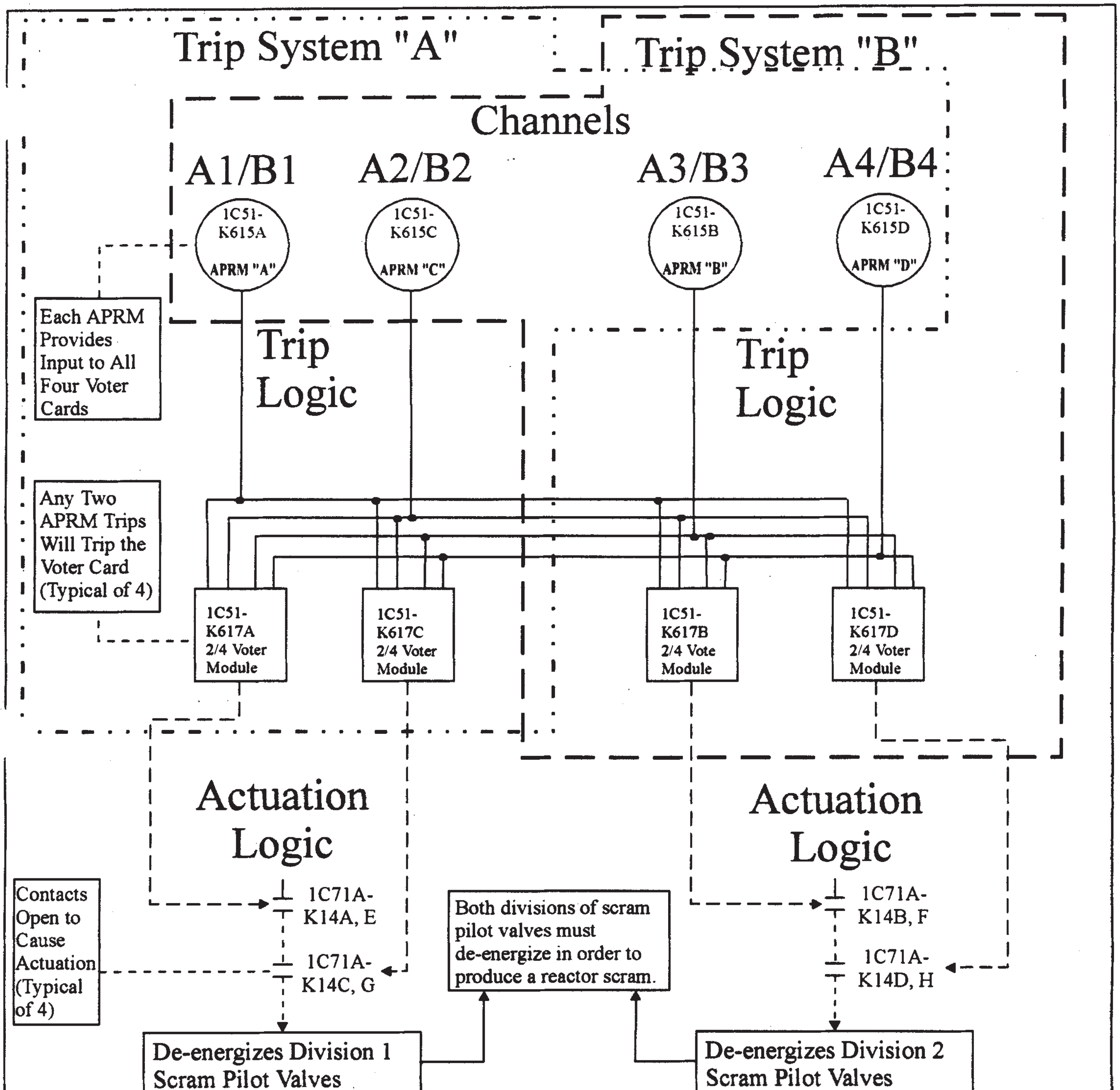
A1A or A1B or A2A or A2B
AND
B1A or B1B or B2A or B2B

Elem. Ref.
H-17789 H-17792
H-17790 H-17793
H-17791

Prepared By: Royce Clark

Reviewed By: [signature]

LFD-1-RPS-02
TS 3.3.1.1-1, Item 1.b
Reactor Protection System Instrumentation - IRM Inop
Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on APRM neutron flux high (setdown), channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1/B1 and A2/B2
A1/B1 and A3/B3
A1/B1 and A4/B4
A2/B2 and A3/B3
A2/B2 and A4/B4
A3/B3 and A4/B4

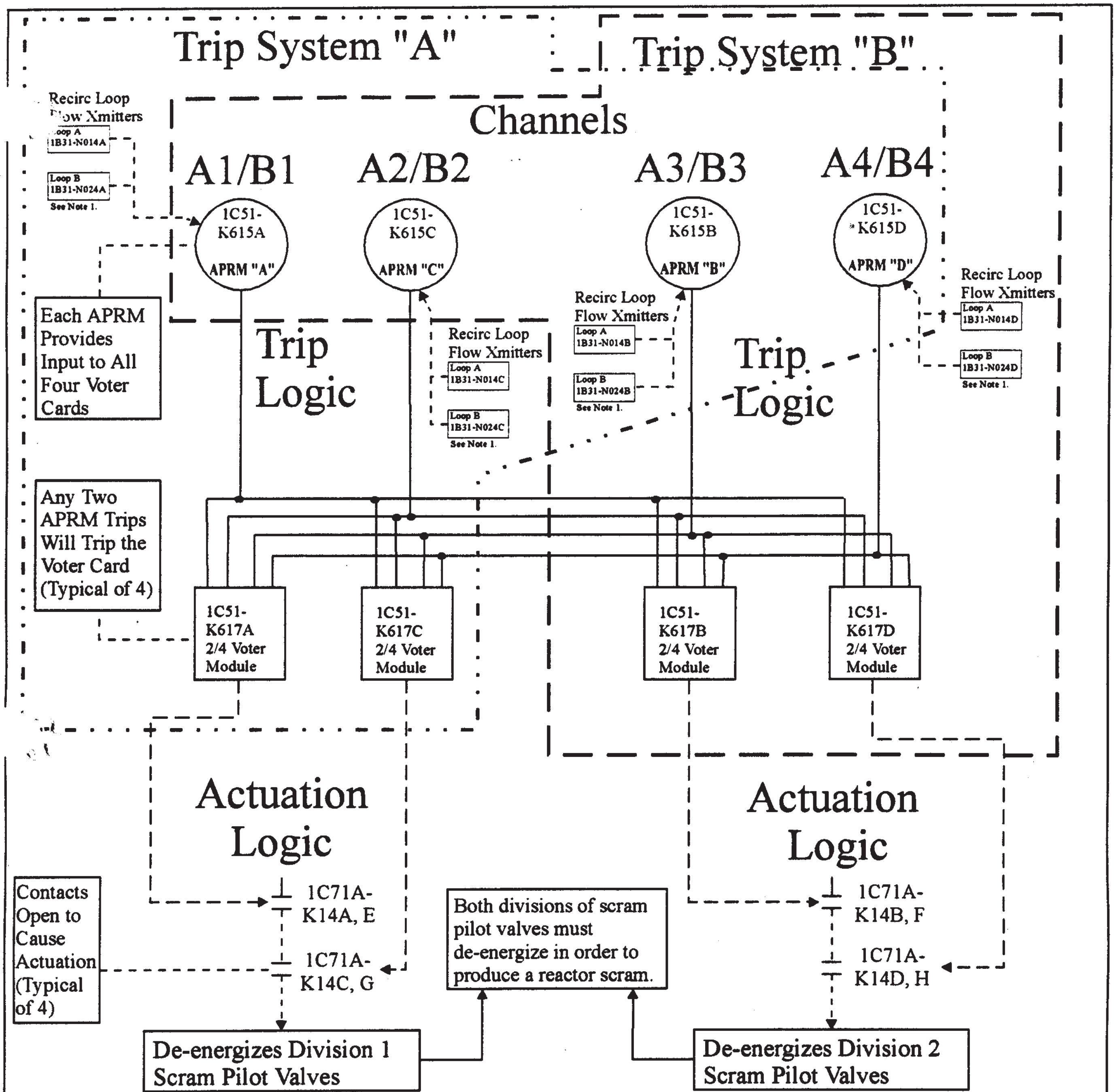
Elem. Ref.	
H-17789	H-44705
H-17790	H-44706
H-17791	H-44707
H-17792	H-44708
H-17793	H-44712

Prepared By: [signature]

Reviewed By: [signature]

LFD-1-RPS-03

TS 3.3.1.1-1, Item 2.a
Reactor Protection System Instrumentation - APRM Neutron Flux - High (Setdown)



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on APRM Simulated Thermal Power - High, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1/B1 and A2/B2
A1/B1 and A3/B3
A1/B1 and A4/B4
A2/B2 and A3/B3
A2/B2 and A4/B4
A3/B3 and A4/B4

Note 1: For the STP High function of an APRM to be considered operable, both of the associated Recirc Flow transmitters must be operable.

Elem. Ref.	
H-17789	H-44705
7790	H-44706
H-17791	H-44707
H-17792	H-44708
H-17793	H-44712

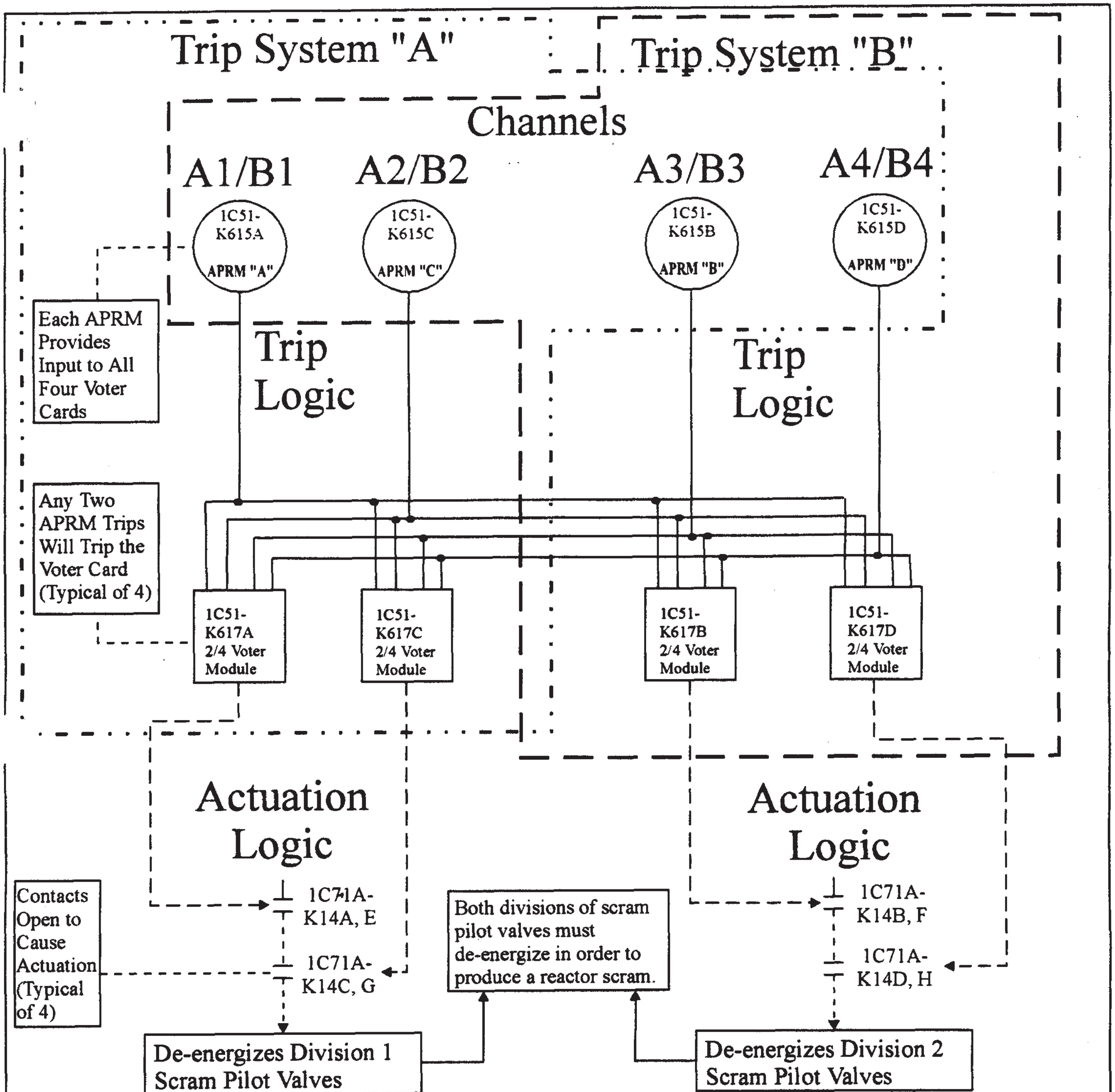
Prepared By: [signature]

Reviewed By: [signature]

LFD-1-RPS-04

TS 3.3.1.1-1, Item 2.b
Reactor Protection System Instrumentation - Simulated Thermal Power - High

TRM Rev. 12



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on APRM Neutron Flux - High, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1/B1 and A2/B2
A1/B1 and A3/B3
A1/B1 and A4/B4
A2/B2 and A3/B3
A2/B2 and A4/B4
A3/B3 and A4/B4

Elem. Ref.	
H-17789	H-44705
H-17790	H-44706
H-17791	H-44707
H-17792	H-44708
H-17793	H-44712

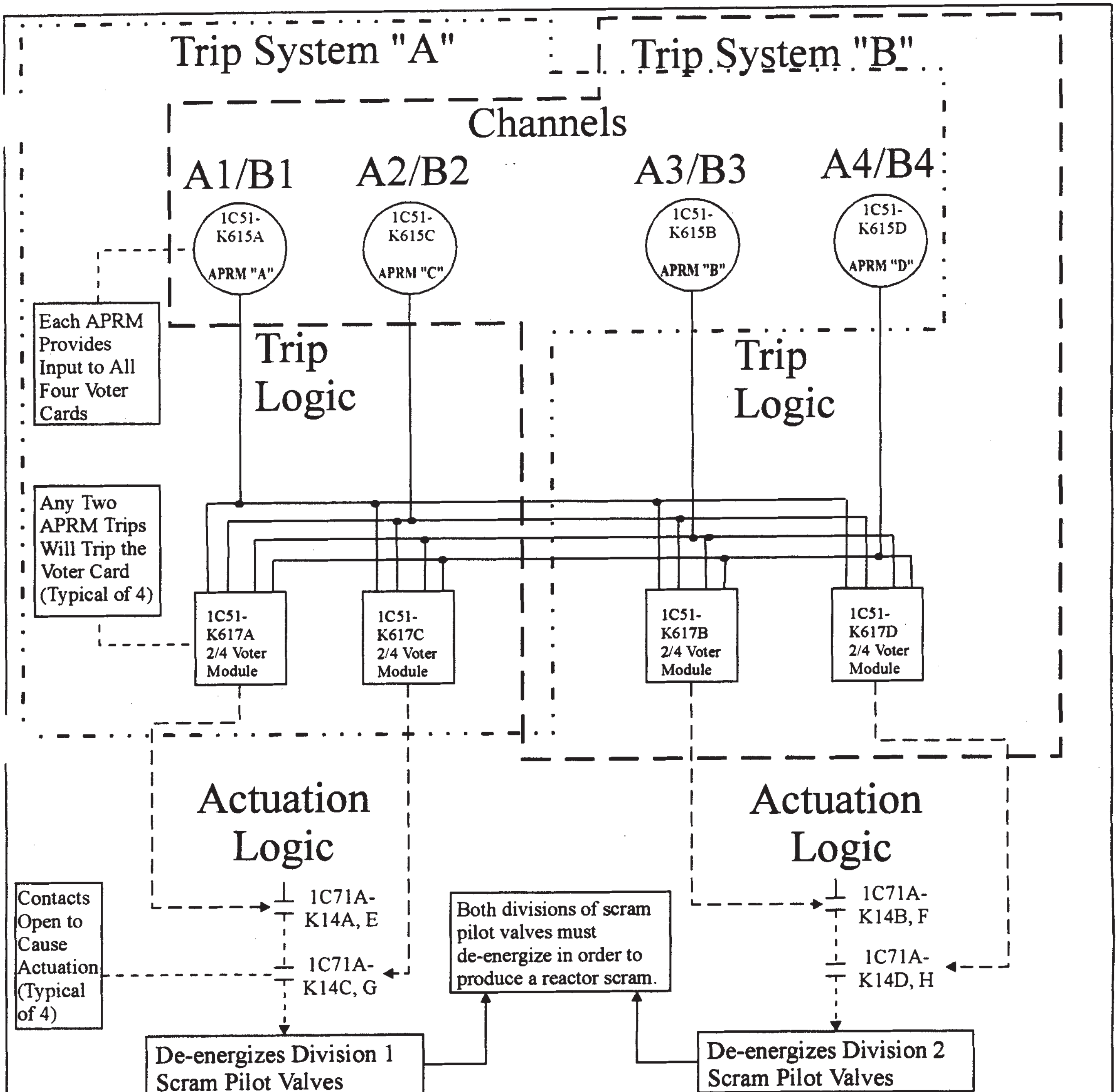
Prepared By: [signature]

Reviewed By: [signature]

LFD-1-RPS-05

TS 3.3.1.1-1, Item 2.c
Reactor Protection System Instrumentation - Neutron Flux - High

TRM Rev. 12



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on APRM Inop, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1/B1 and A2/B2
A1/B1 and A3/B3
A1/B1 and A4/B4
A2/B2 and A3/B3
A2/B2 and A4/B4
A3/B3 and A4/B4

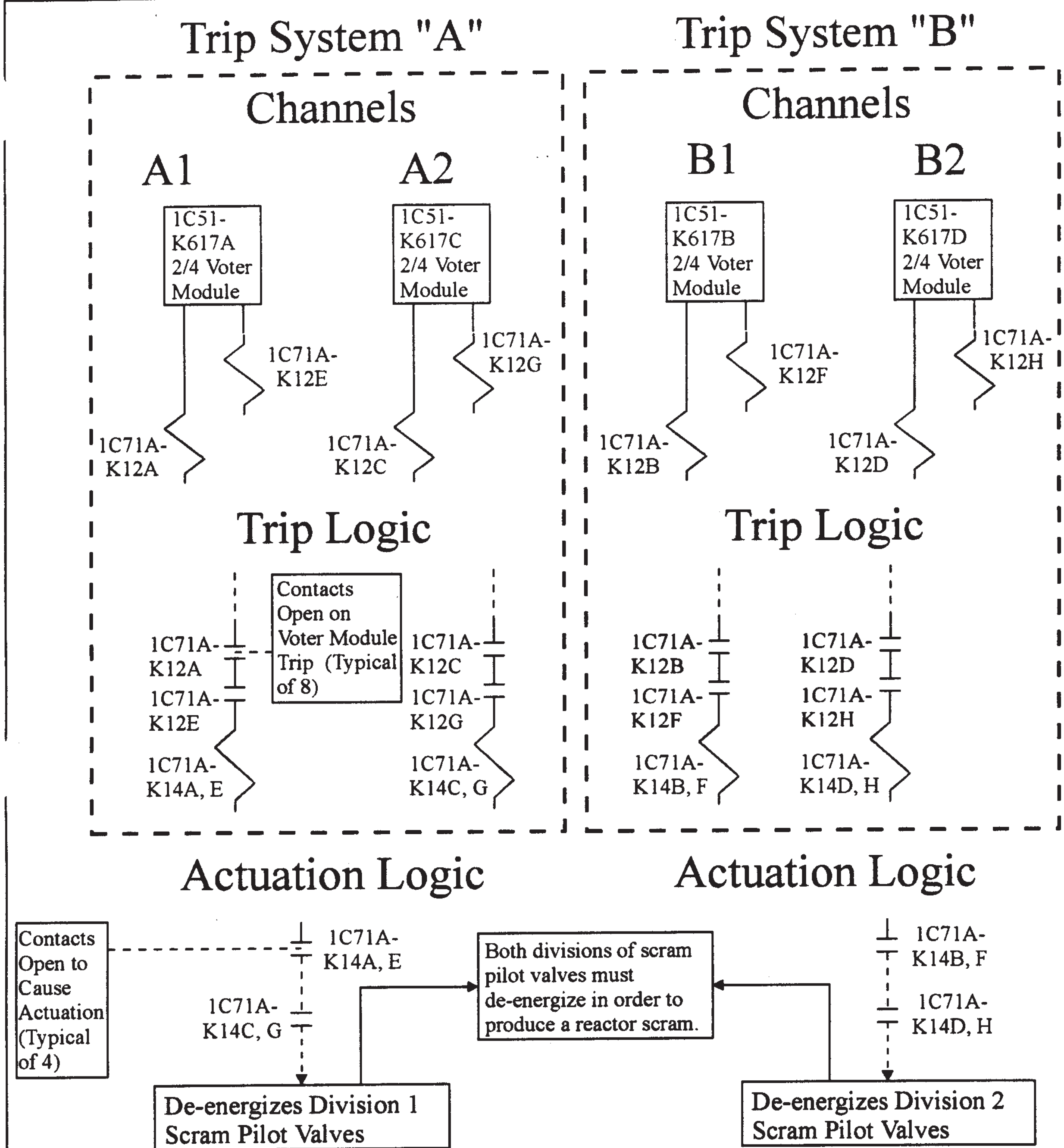
Elem. Ref.	
H-17789	H-44705
H-17790	H-44706
H-17791	H-44707
H-17792	H-44708
H-17793	H-44712

Prepared By: Wayne

Reviewed By: [signature]

LFD-1-RPS-06

TS 3.3.1.1-1, Item 2.d
Reactor Protection System Instrumentation - APRM Inop



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on APRM Voter Module circuit function, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

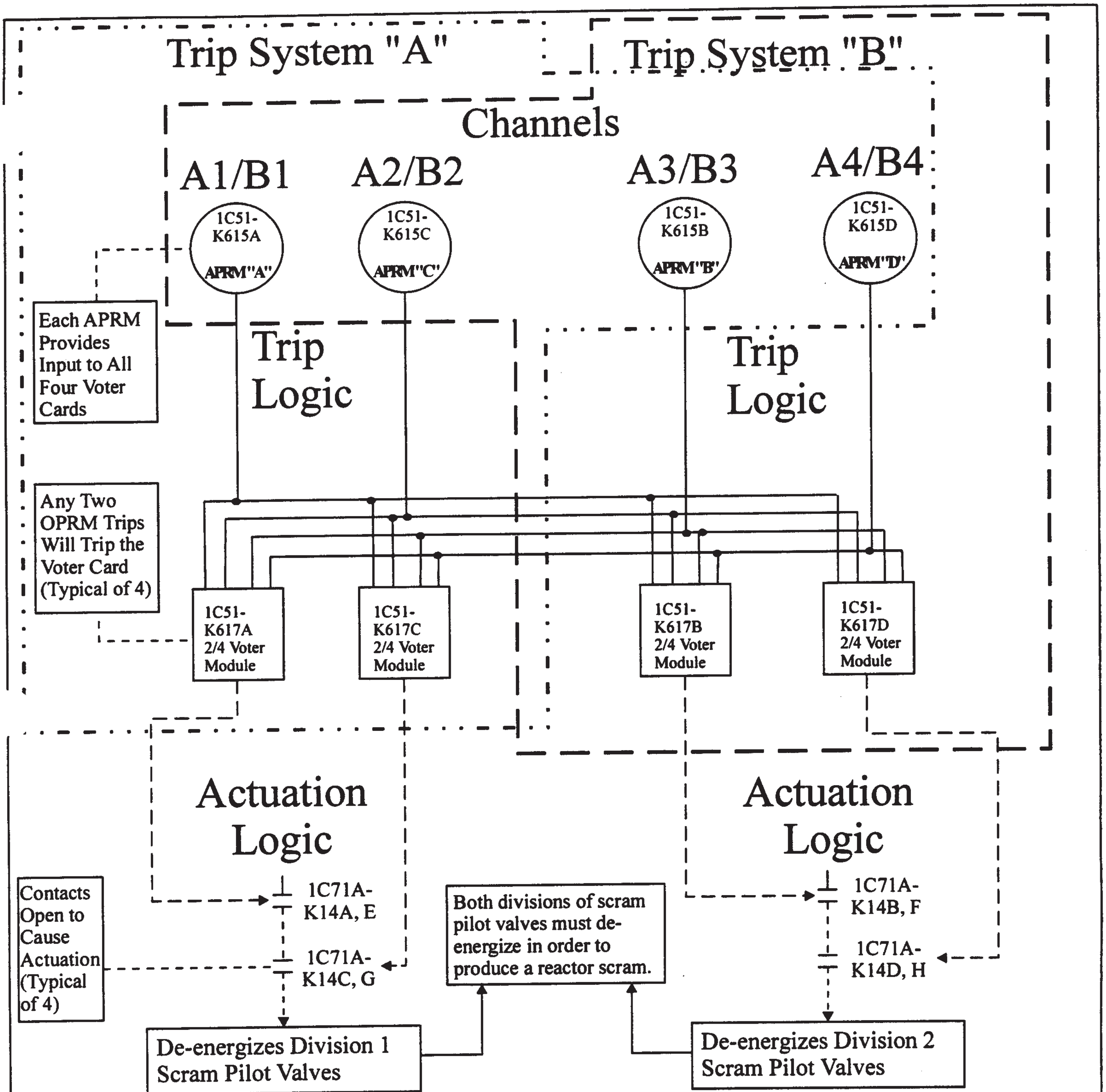
Elem. Ref.
H-17789 H-17792
H-17790 H-17793
H-17791 H-44712

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-RPS-07

TS 3.3.1.1-1, Item 2.e
Reactor Protection System
Instrumentation -
APRM Two-Out-of-Four
Voter Circuit

TRM Rev. 12



<u>Minimum Channel Requirements for System Initiation Capability:</u>

In order to maintain the capability to scram the reactor on OPRM Upscale, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1/B1 and A2/B2
A1/B1 and A3/B3
A1/B1 and A4/B4
A2/B2 and A3/B3
A2/B2 and A4/B4
A3/B3 and A4/B4

Elem. Ref.	
H-17789	H-44705
H-17790	H-44706
H-17791	H-44707
H-17792	H-44708
H-17793	H-44712

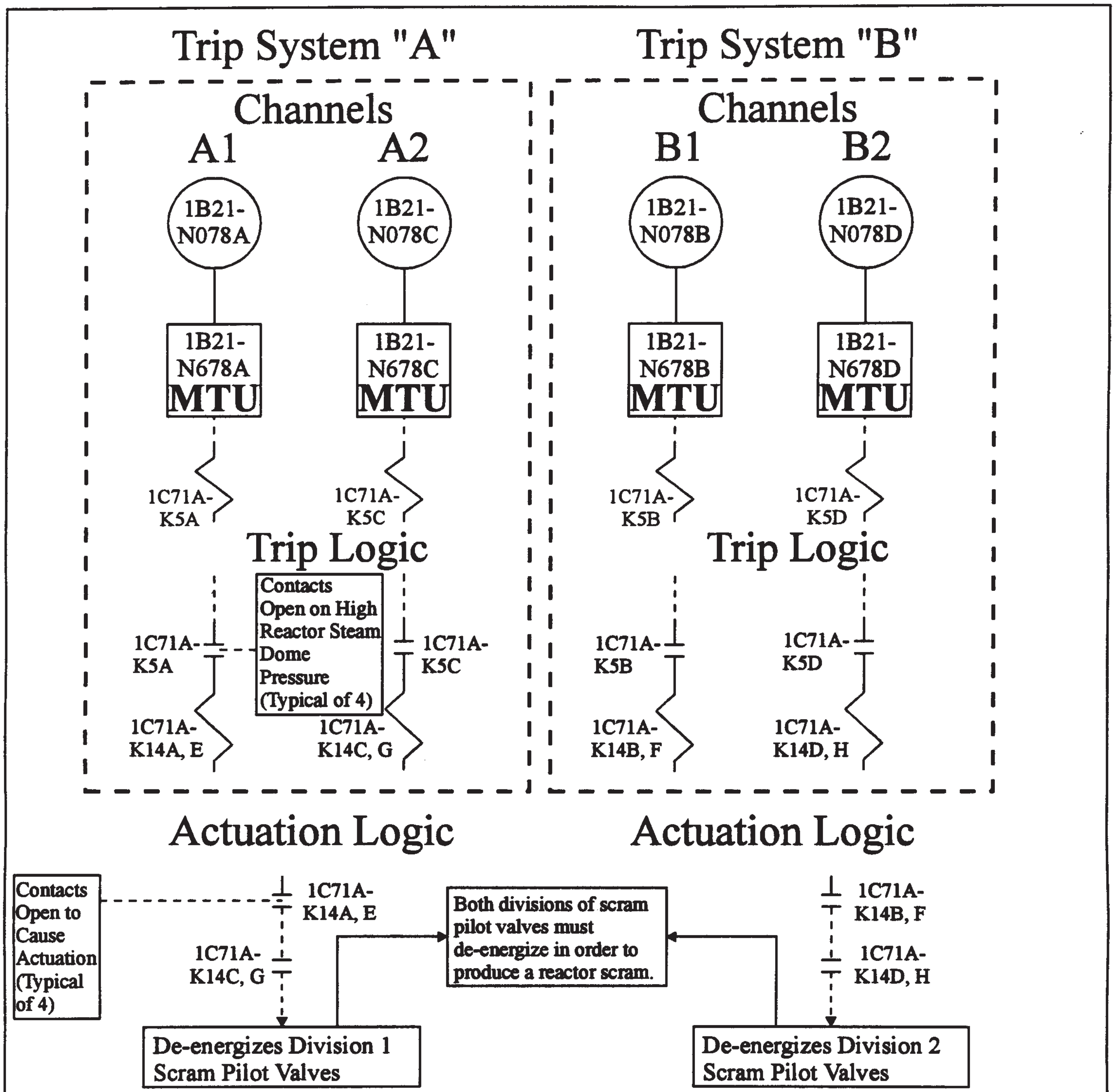
Prepared By:

Reviewed By: Stephen W. Reed

LFD-1-RPS-07a

TS 3.3.1.1-1, Item 2.f
Reactor Protection System
Instrumentation - OPRM
Upscale

TRM Rev. 26



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on high reactor vessel steam dome pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Elem. Ref.	
H-17789	H-19809
H-17790	H-19812
H-17791	H-19815
H-17792	H-19818
H-17793	

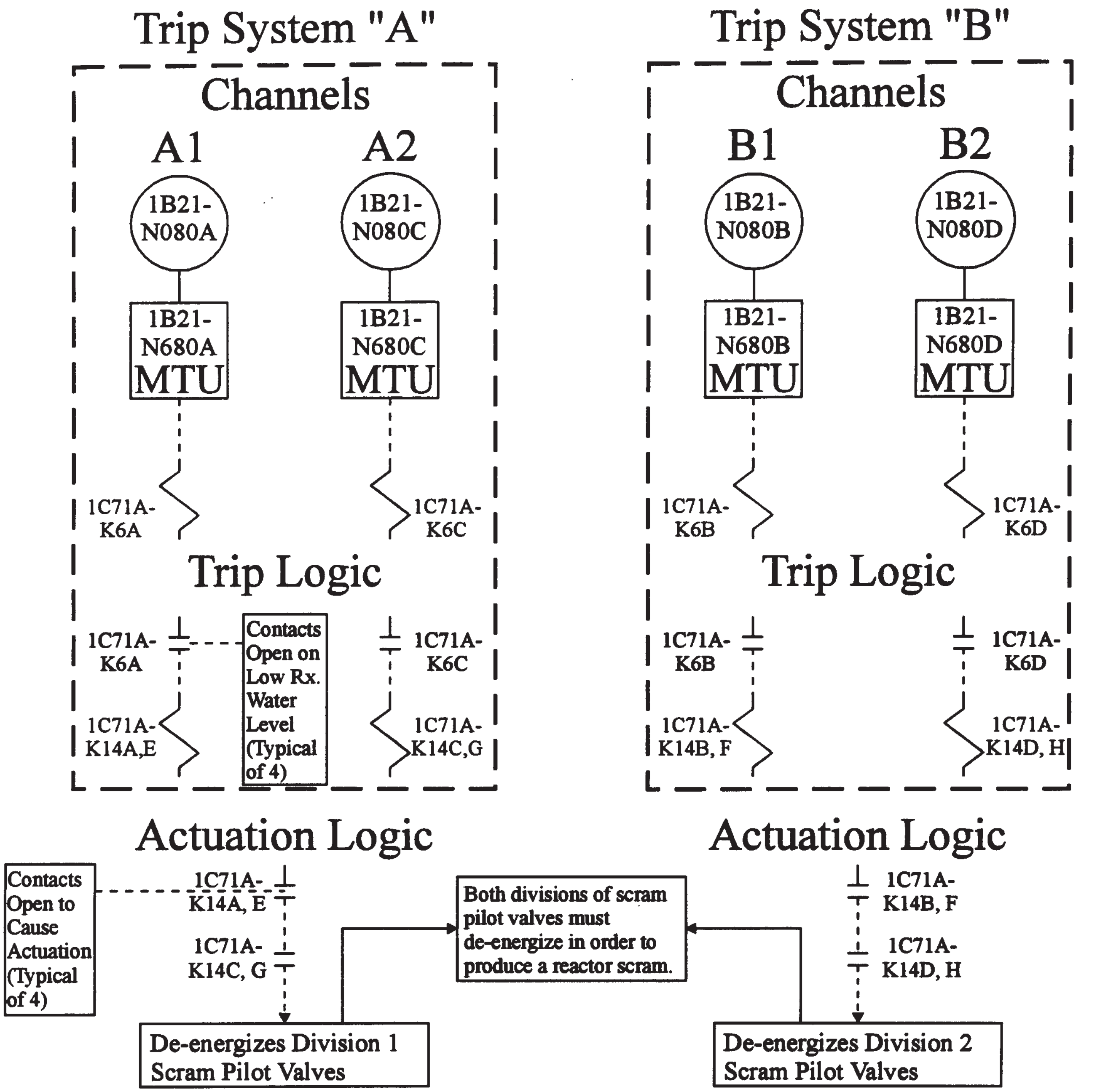
Prepared By: Royce Clark

Reviewed By: [signature]

LFD-1-RPS-08

TS 3.3.1.1-1, Item 3
Reactor Protection System Instrumentation - Reactor Vessel Steam Dome Pressure - High

Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on low reactor water level (Level 3), channels in one of the following combinations must be either operable or maintained in the tripped condition.

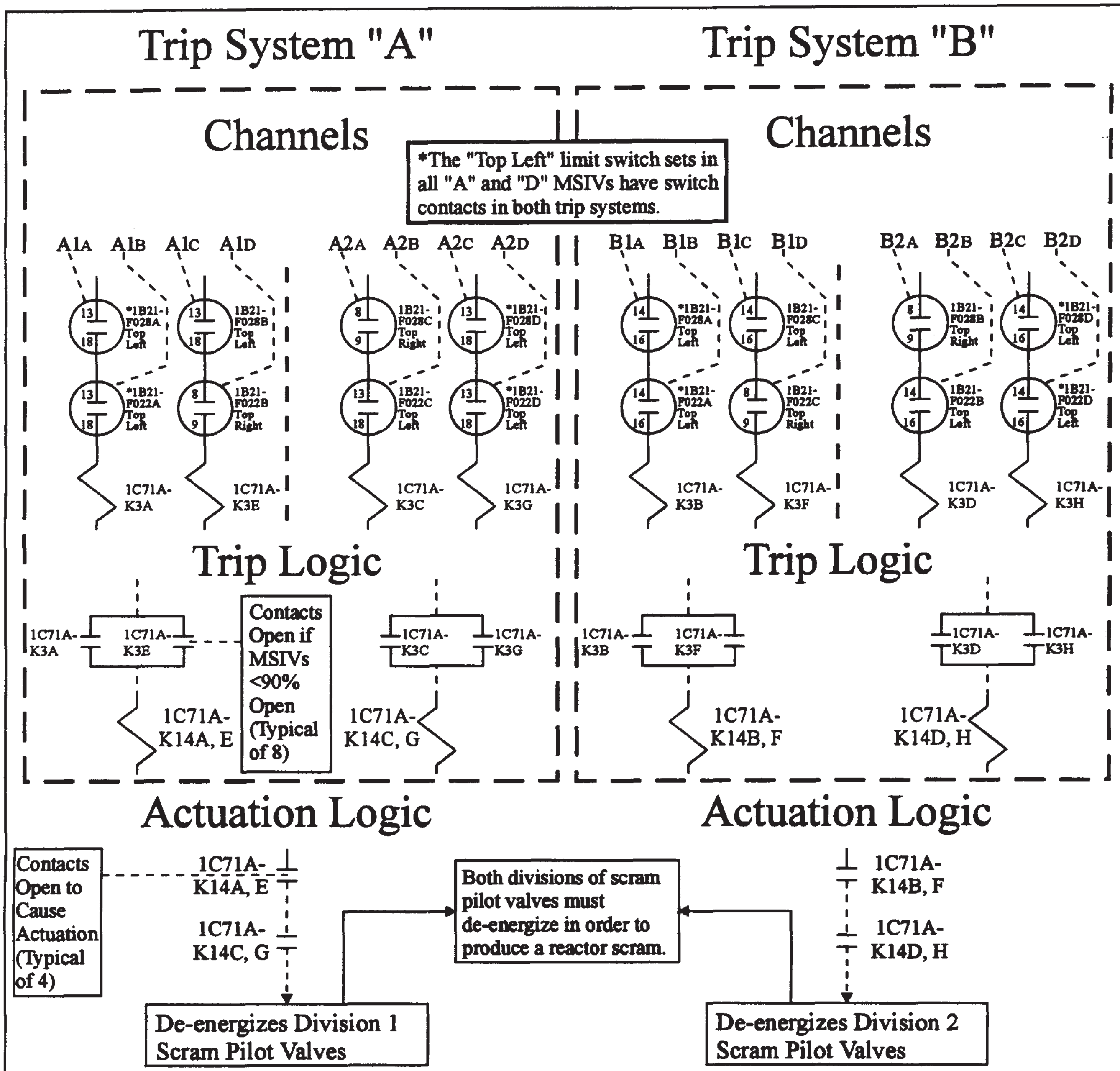
A1 or A2
AND
B1 or B2

Elem. Ref.
H-17789 H-19809
H-17790 H-19812
H-17791 H-19815
H-17792 H-19818
H-17793

Prepared By:

Reviewed By:

LFD-1-RPS-09
TS 3.3.1.1-1, Item 4
Reactor Protection System Instrumentation Reactor Vessel Water Level - Low, Level 3
Rev. 0 1/16/95

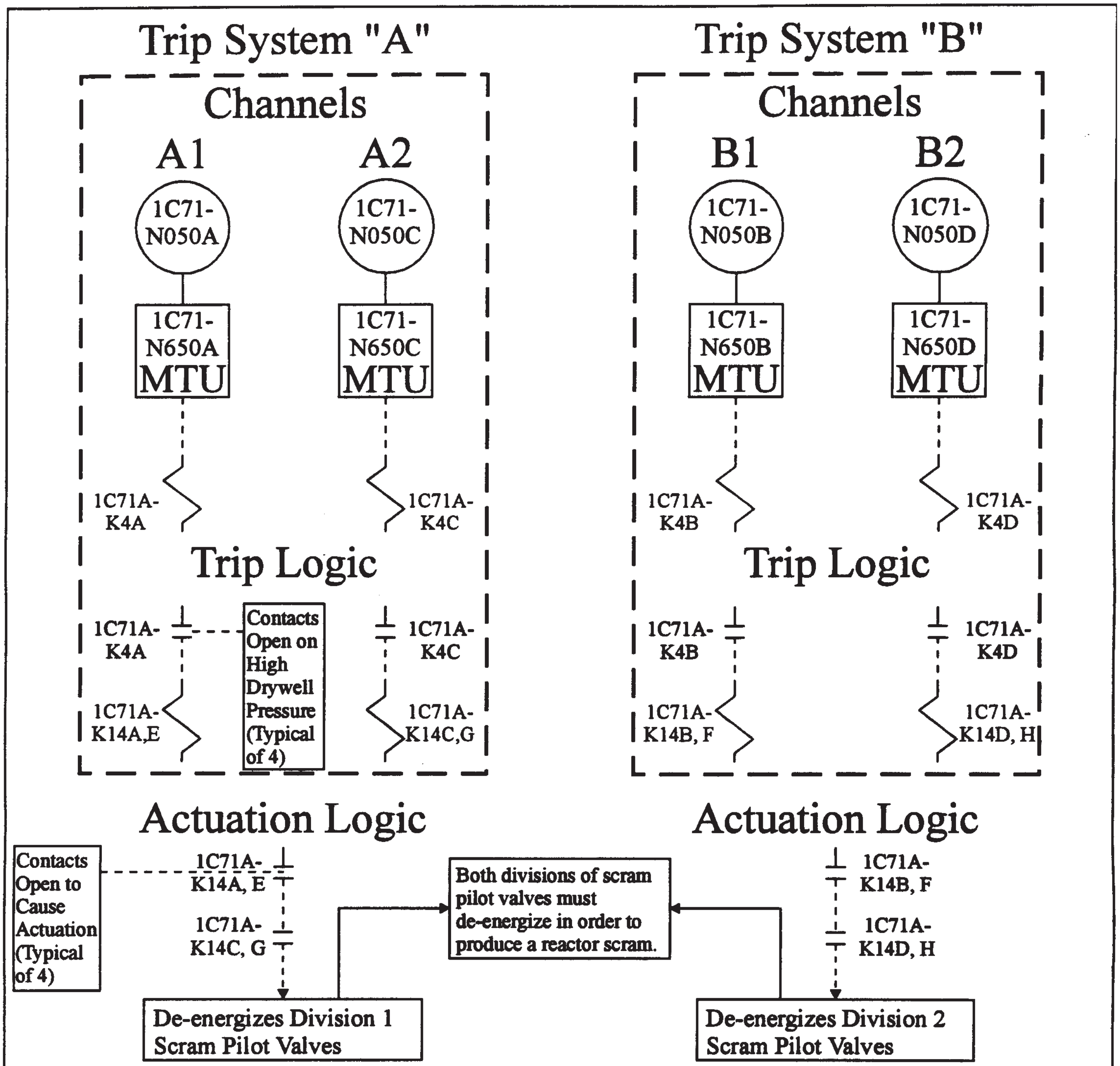


Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on Main Steam Isolation Valve closure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

(A1A or A1B) and (A1C or A1D) OR (A2A or A2B) and (A2C or A2D)	**AND**	(B1A or B1B) and (B1C or B1D) OR (B2A or B2B) and (B2C or B2D)

Elem. Ref. H-17789 H-17793 H-17790 H-17815 H-17791 H-17816 H-17792 H-17943	Prepared By: Reviewed By:	LFD-1-RPS-10 TS 3.3.1.1-1, Item 5 Reactor Protection System Instrumentation - Main Steam Isolation Valve - Closure Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

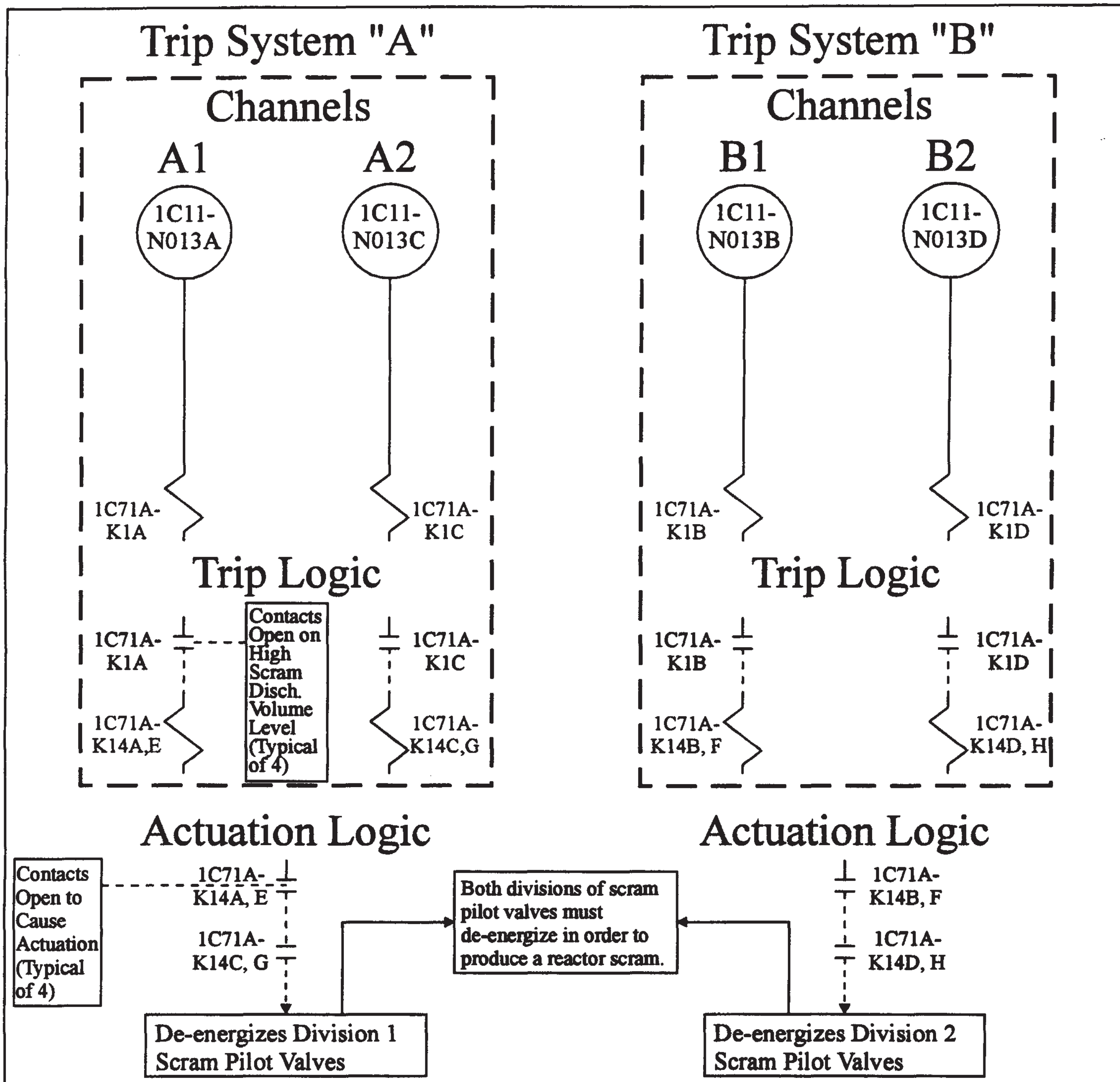
In order to maintain the capability to scram the reactor on high drywell pressure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Elem. Ref.
H-17789 H-19809
H-17790 H-19812
H-17791 H-19815
H-17792 H-19818
H-17793

Prepared By: Royce Clark
Reviewed By: Stephen W. Reed

LFD-1-RPS-11
TS 3.3.1.1-1, Item 6
Reactor Protection System Instrumentation
Drywell Pressure - High
Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on scram discharge volume high level (float switches), channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Elem. Ref.	
H-17789	H-17792
H-17790	H-17793
H-17791	

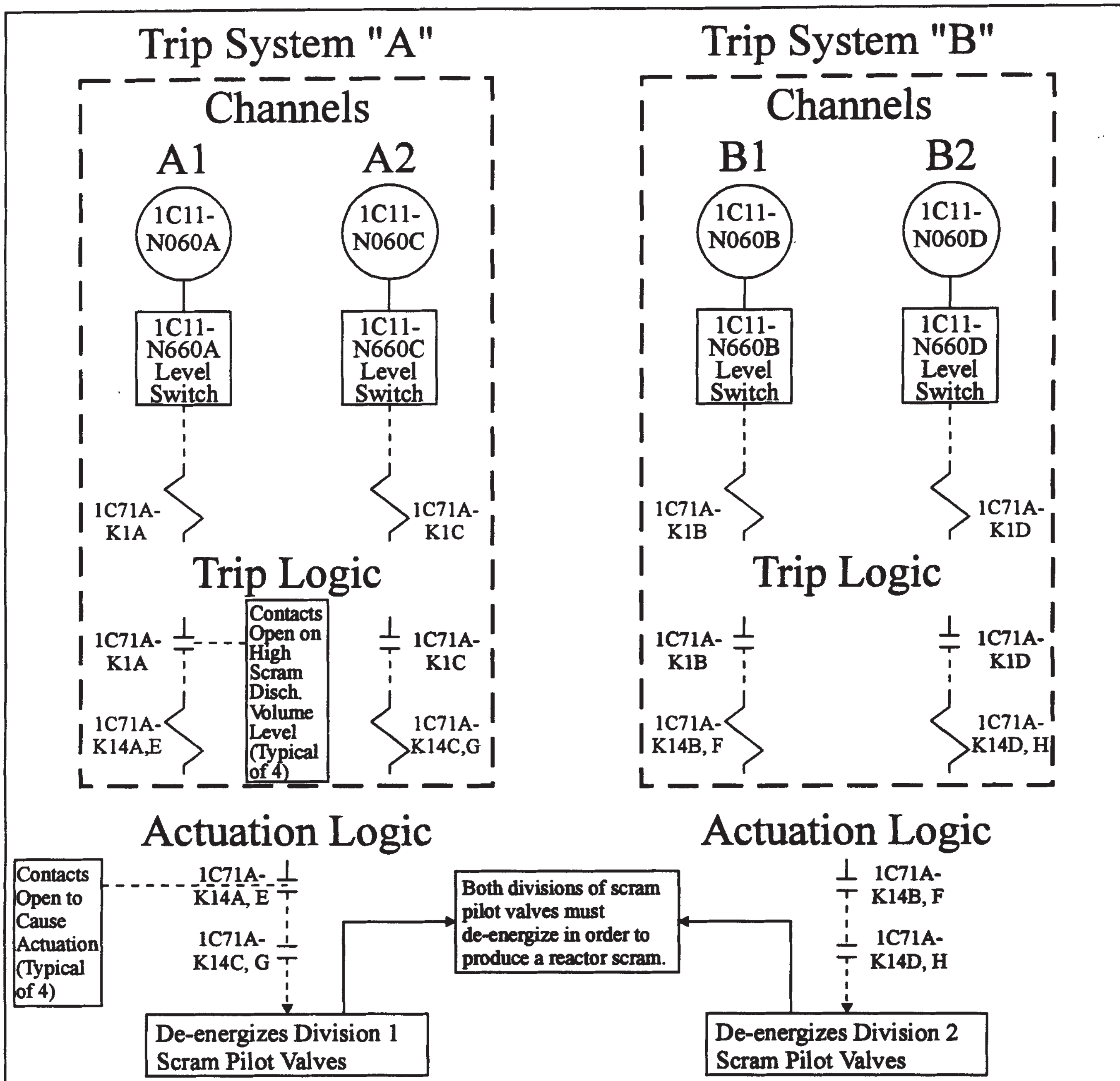
Prepared By: Royce Clark

Reviewed By: Stephen W. Neal

LFD-1-RPS-13

TS 3.3.1.1-1, Item 7.b
Reactor Protection System Instrumentation - Scram Discharge Volume Water Level - High, Float Switch

Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on scram discharge volume high level (resistance temperature detectors), channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Elem. Ref.

H-17789 H-17792
H-17790 H-17793
H-17791 H-17796

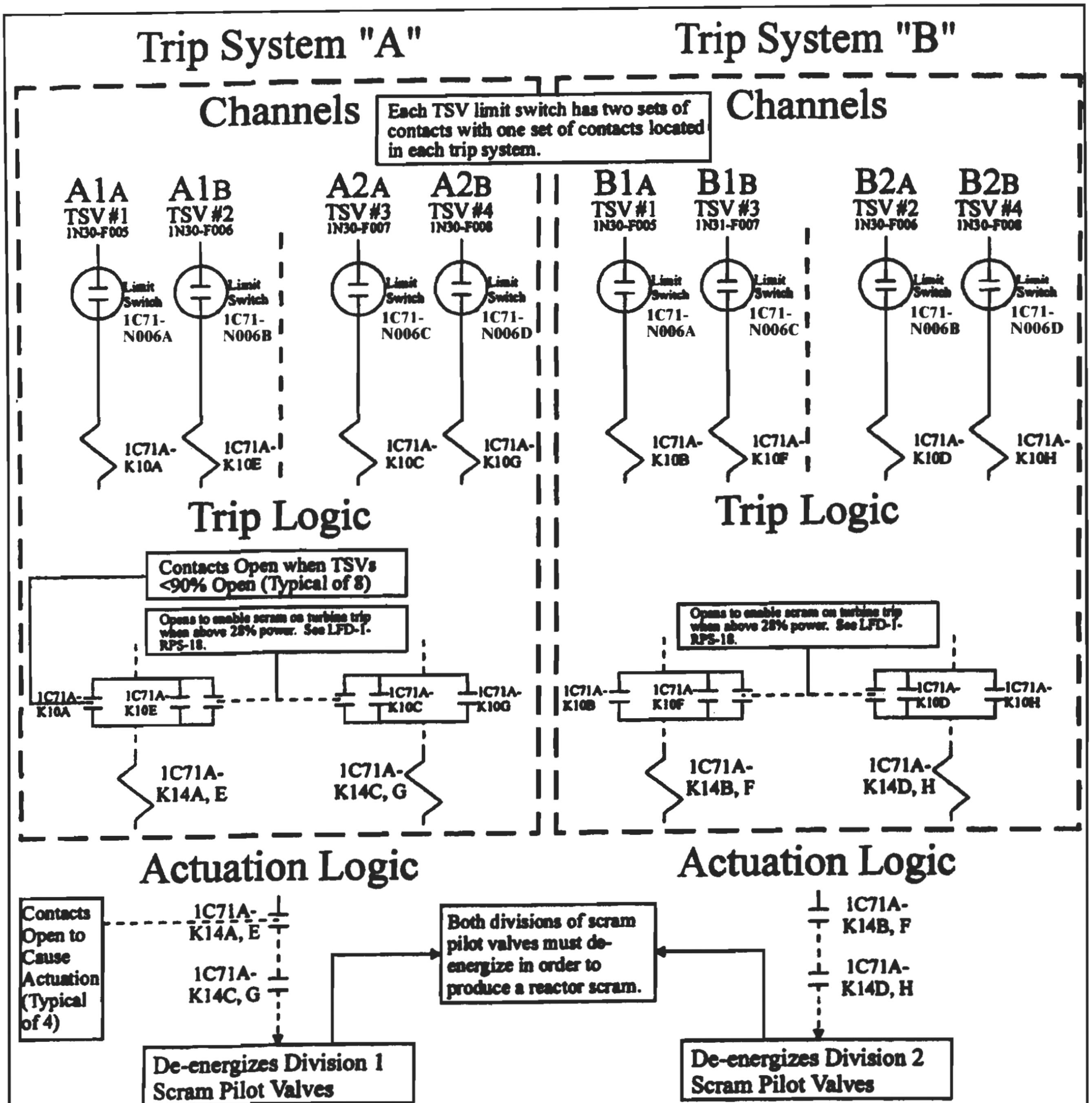
Prepared By: Roger Clark

Reviewed By: Stephen W. Reed

LFD-1-RPS-12

TS 3.3.1.1-1, Item 7.a
Reactor Protection System Instrumentation - Scram Discharge Volume Water Level - High, Resistance Temperature Detector

Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on Turbine Stop Valve closure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

[A1A and A1B OR A2A and A2B] AND [B1A and B1B OR B2A and B2B]

Elem. Ref.

H-11470 H-17791
H-13445 H-17792
H-17789 H-17793
H-17790

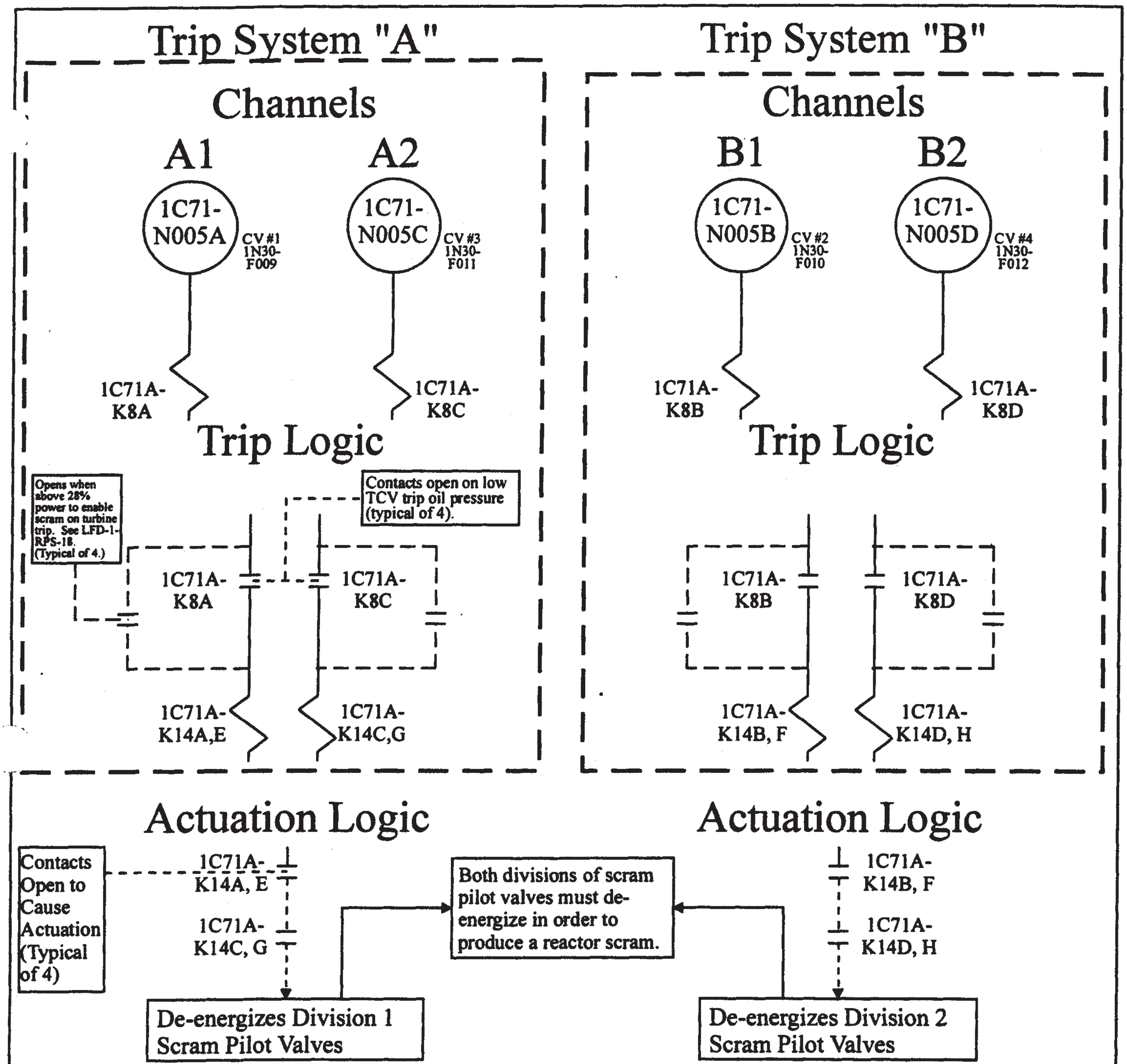
Prepared By: RLC

Reviewed By:

LFD-1-RPS-14

TS 3.3.1.1-1, Item 8
Reactor Protection System Instrumentation - Turbine Stop Valve - Closure

TRM Rev. 66



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on Turbine Control Valve fast closure, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 or A2
AND
B1 or B2

Elem. Ref.

H-11470 H-17791
H-17789 H-17792
H-17790 H-17793

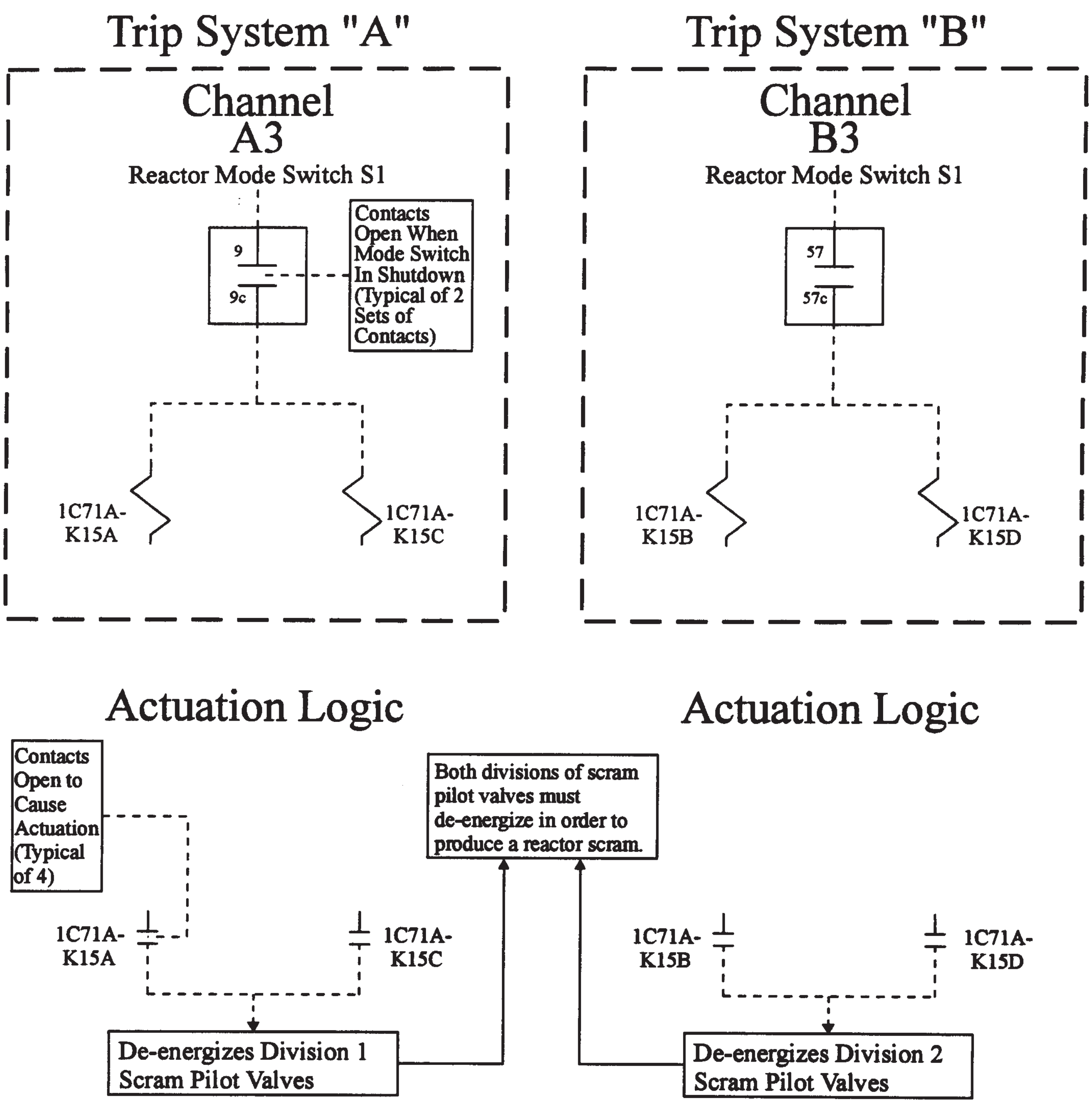
Prepared By:

Reviewed By:

LFD-1-RPS-15

TS 3.3.1.1-1, Item 9
Reactor Protection System Instrumentation - Turbine Control Valve Fast Closure, Trip Oil Pressure - Low

TRM Rev. 33



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to scram the reactor on Reactor Mode Switch position (Mode Switch in Shutdown), each channel must be either operable or maintained in the tripped condition.

Elem. Ref.

H-17786
H-17791
H-17792
H-17793

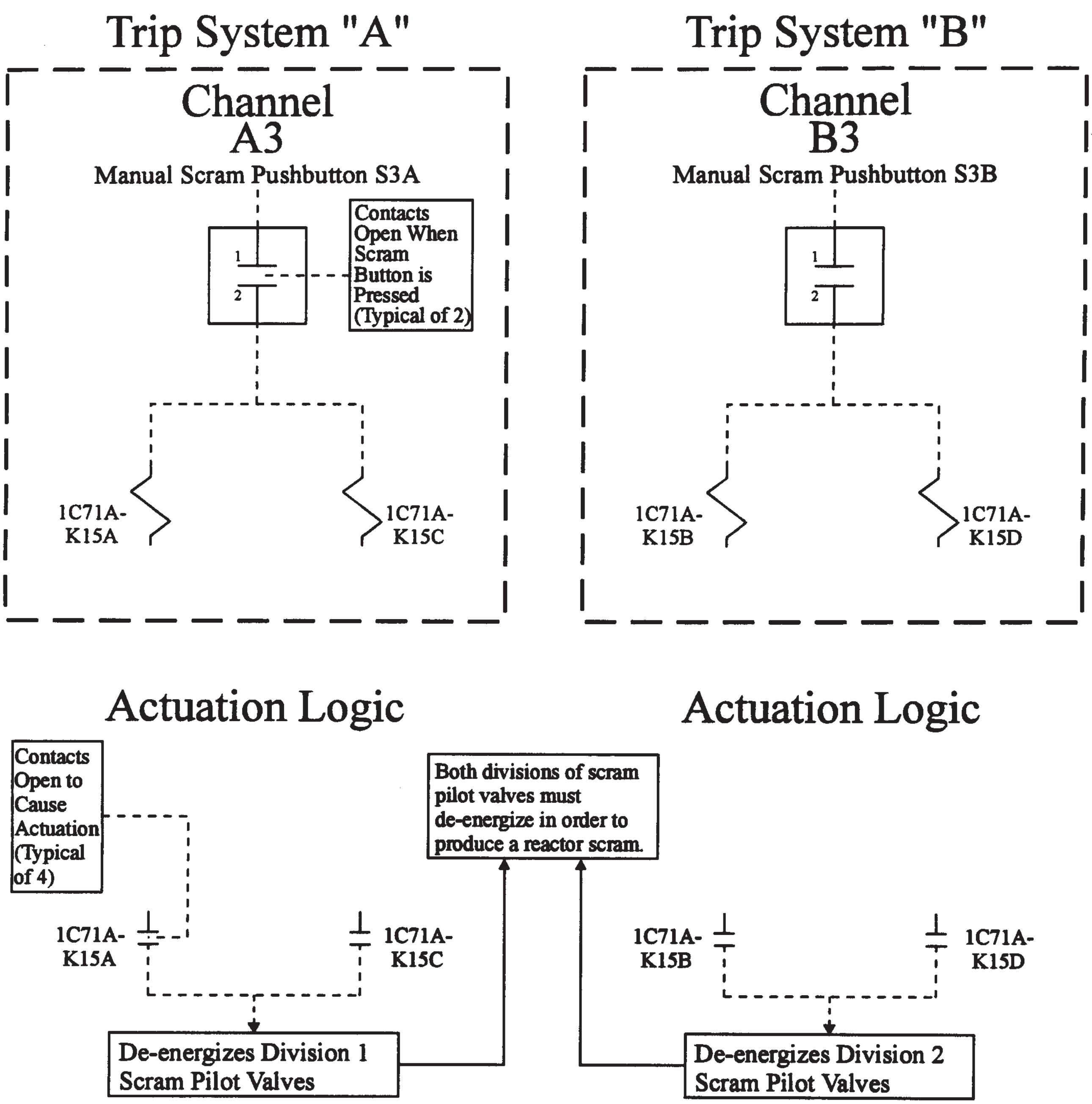
Prepared By: Roger Clark

Reviewed By: Stephen W. Reed

LFD-1-RPS-16

TS 3.3.1.1-1, Item 10
Reactor Protection System Instrumentation
Reactor Mode Switch - Shutdown Position

Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

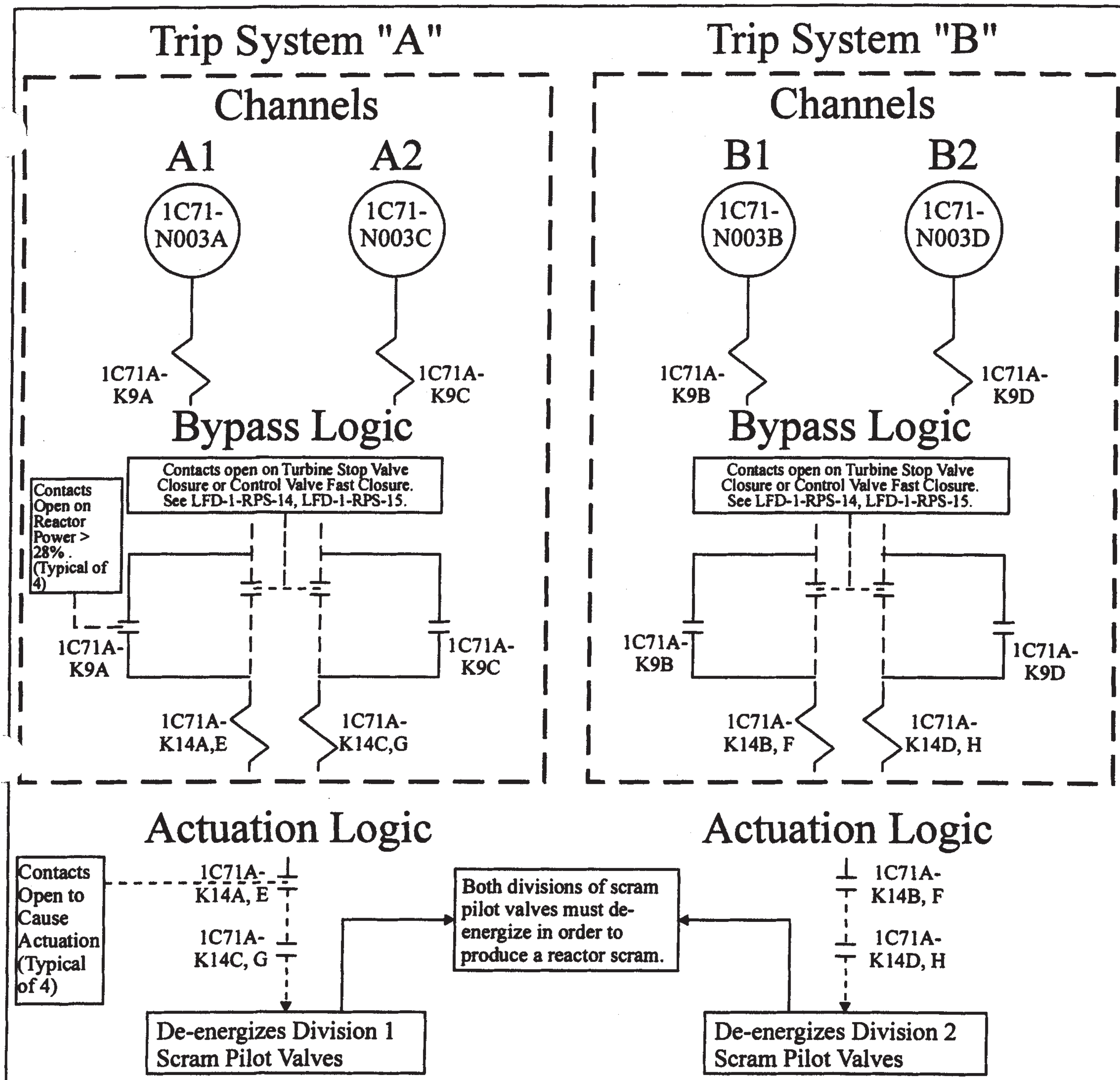
In order to maintain the capability to scram the reactor using the Manual Scram Pushbuttons, each channel must be either operable or maintained in the tripped condition.

Elem. Ref.
H-17786
H-17791
H-17792
H-17793

Prepared By: Royce Clark

Reviewed By: Stephen L. Reed

LFD-1-RPS-17
TS 3.3.1.1-1, Item 11
Reactor Protection System Instrumentation Manual Scram
Rev. 0 1/16/95



Minimum Channel Requirements for System Initiation Capability:

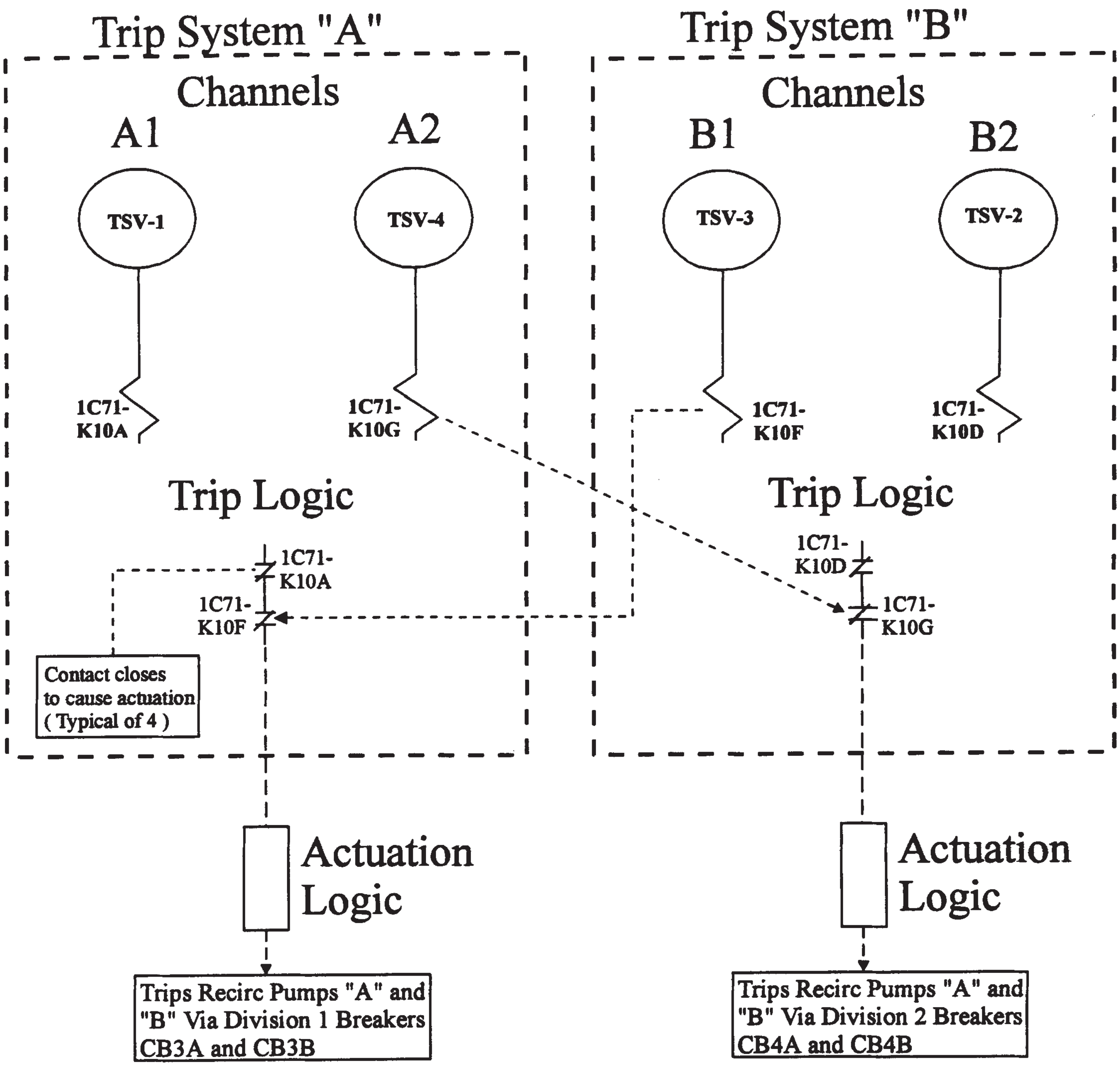
In order to maintain the capability to scram the reactor above 28 percent power on Turbine Stop Valve closure or Turbine Control Valve fast closure, channels in one of the following combinations must be either operable or circuit continuity otherwise interrupted.

A1 or A2
AND
B1 or B2

Elem. Ref.
H-17789 H-17790
H-17791 H-17792
H-17793

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-RPS-18
TS SR 3.3.1.1.11
Reactor Protection System Instrumentation Bypass, Items 8 & 9
TRM Rev. 33



<u>Minimum Channel Requirements to Maintain Trip Capability:</u>

In order to maintain Recirc pump trip capability on a TSV Closure signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

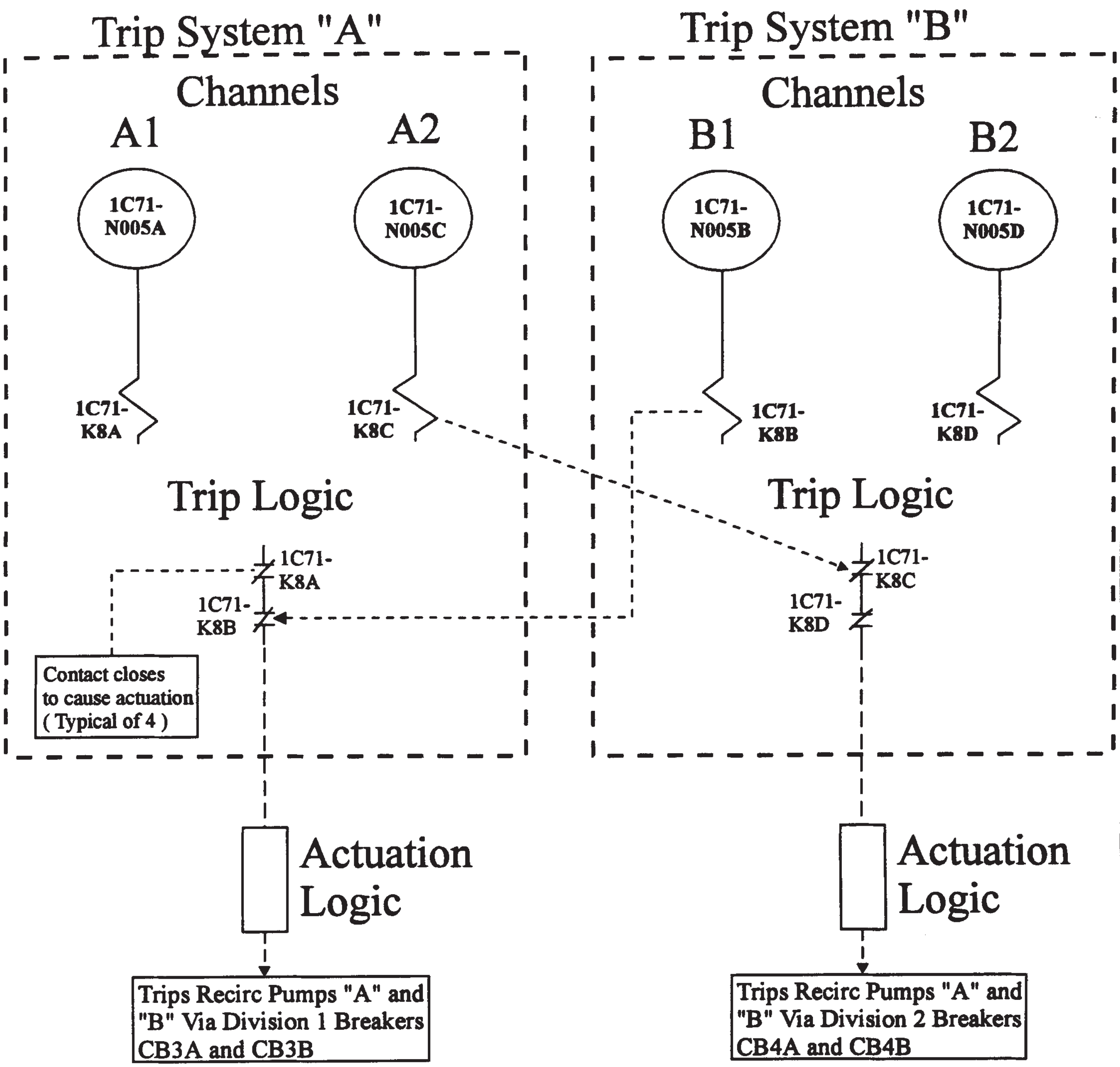
A1 and B1
OR
A2 and B2

Elem. Ref.
H-13445
H-17789
H-17790
H-17822

Prepared By:

Reviewed:

LFD-1-RPT-01	
TS 3.3.4.1.a.1 EOC-RPT, TSV CLOSURE	
Rev. 0	1/16/95



Minimum Channel Requirements to Maintain Trip Capability:

In order to maintain Recirc pump trip capability on a TCV Fast Closure signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

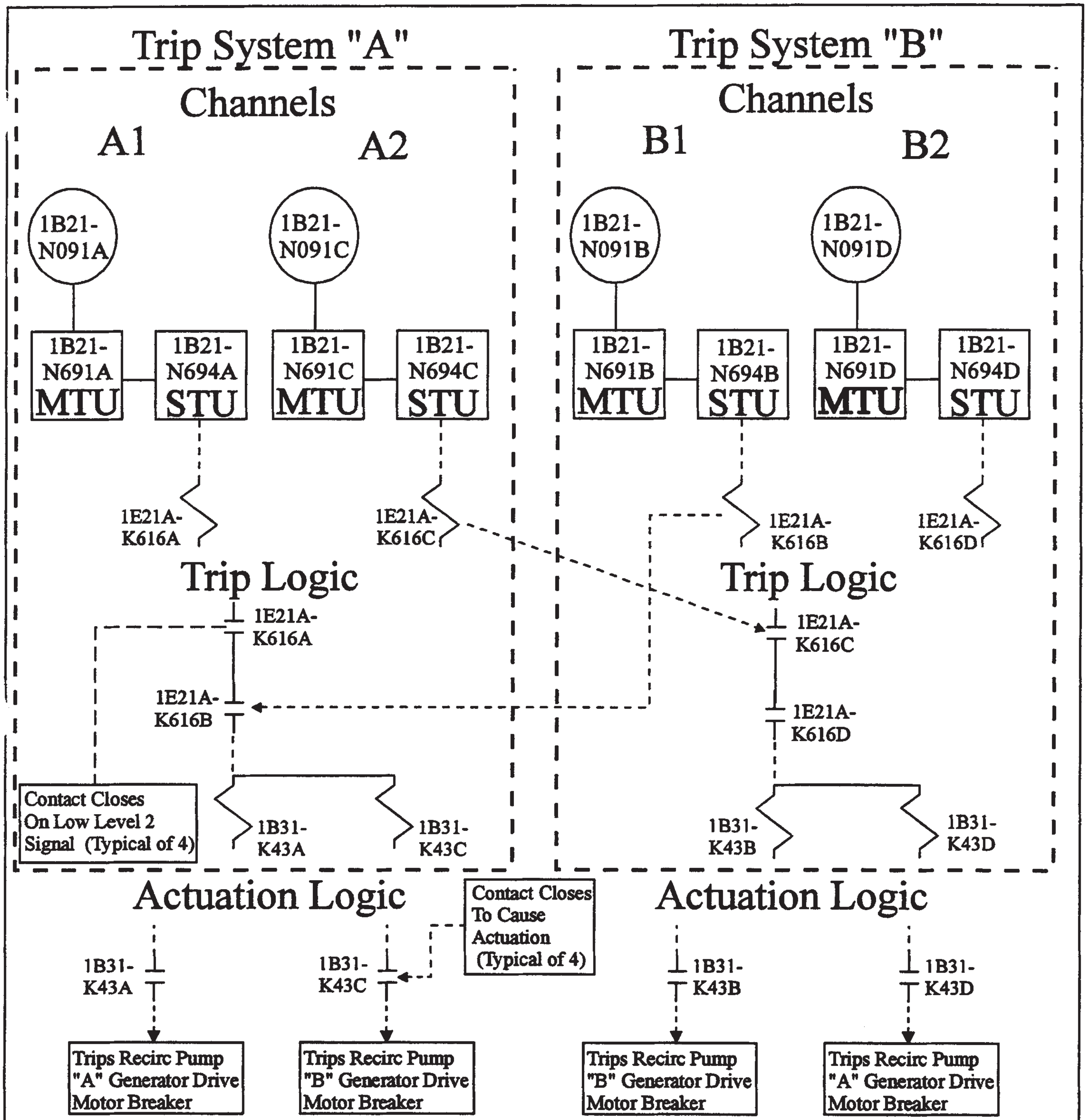
A1 and B1
OR
A2 and B2

Elem. Ref.
H-13444
H-17789
H-17790
H-17822

Prepared By: J. R. Bruner

Reviewed By:

LFD-1-RPT-02	
TS 3.3.4.1.a.2 EOC-RPT, TCV FAST CLOSURE.	
Rev. 0	1/16/95



Minimum Channel Requirements for System Trip Capability:

In order to maintain ATWS-RPT trip capability of the Recirc Pumps on a Reactor Vessel Water Level - ATWS-RPT Level signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

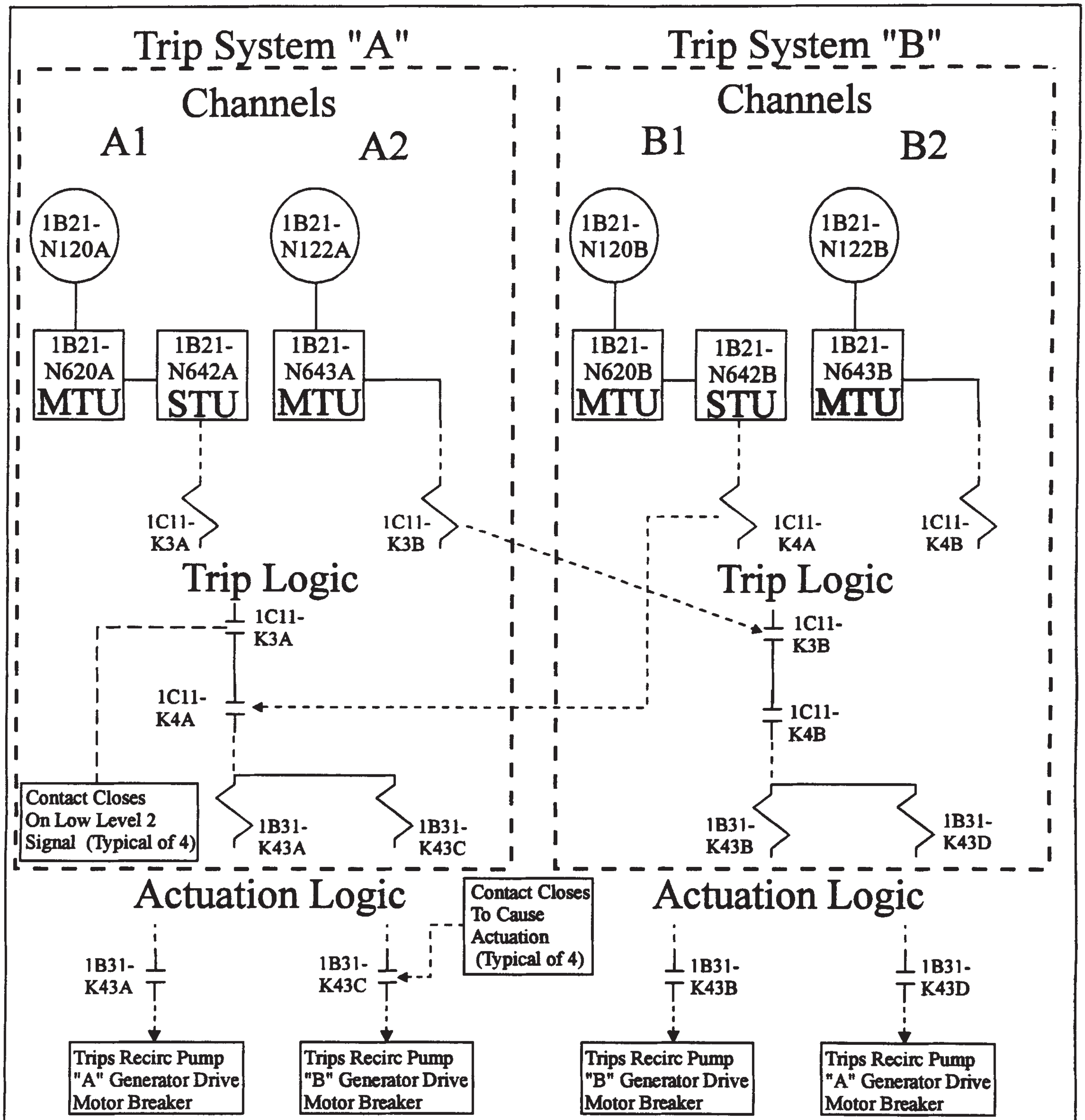
Elem. Ref.	
H-17860	H-19826
H-17861	H-19829
H-17902	H-19830
H-17903	H-42173
H-19823	

Prepared By: [signature]

Reviewed By: Kathryn Wilkins

LFD-1-RPT-03

TS 3.3.4.2.a, Reactor Vessel Water Level - ATWS-RPT Level



Minimum Channel Requirements for System Trip Capability:

In order to maintain ATWS-RPT trip capability of the Recirc Pumps on a Reactor Steam Dome Pressure - High signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

A1 and B1
OR
A2 and B2

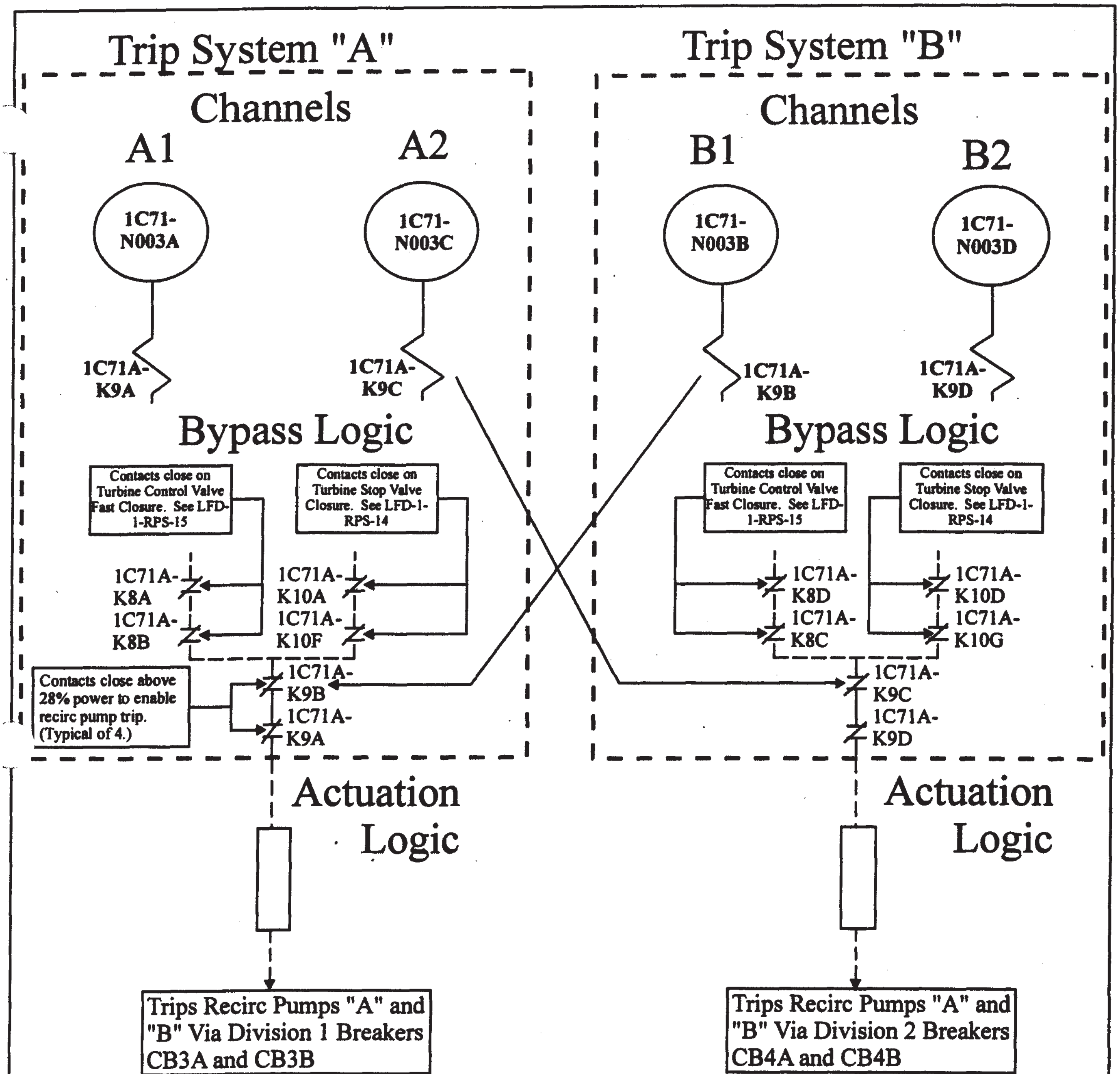
Elem. Ref.	
H-17860	H-19822
H-17861	H-19825
H-17902	H-42173
H-17903	

Prepared By: [signature]
Reviewed: [signature]

LFD-1-RPT-04

TS 3.3.4.2.b, ATWS-RPT, Reactor Steam Dome Pressure - High

Rev. 0 1/16/95



Minimum Channel Requirements to Maintain Trip Capability:

In order to maintain the capability to trip the recirc pump breakers above 28 percent power on Turbine Stop Valve closure or Turbine Control Valve fast closure, channels in one of the following combinations must be either operable or circuit continuity otherwise maintained..

A1 and B1
OR
A2 and B2

Elem. Ref.
H-13444 H-13445
H-17789 H-17790
H-17822

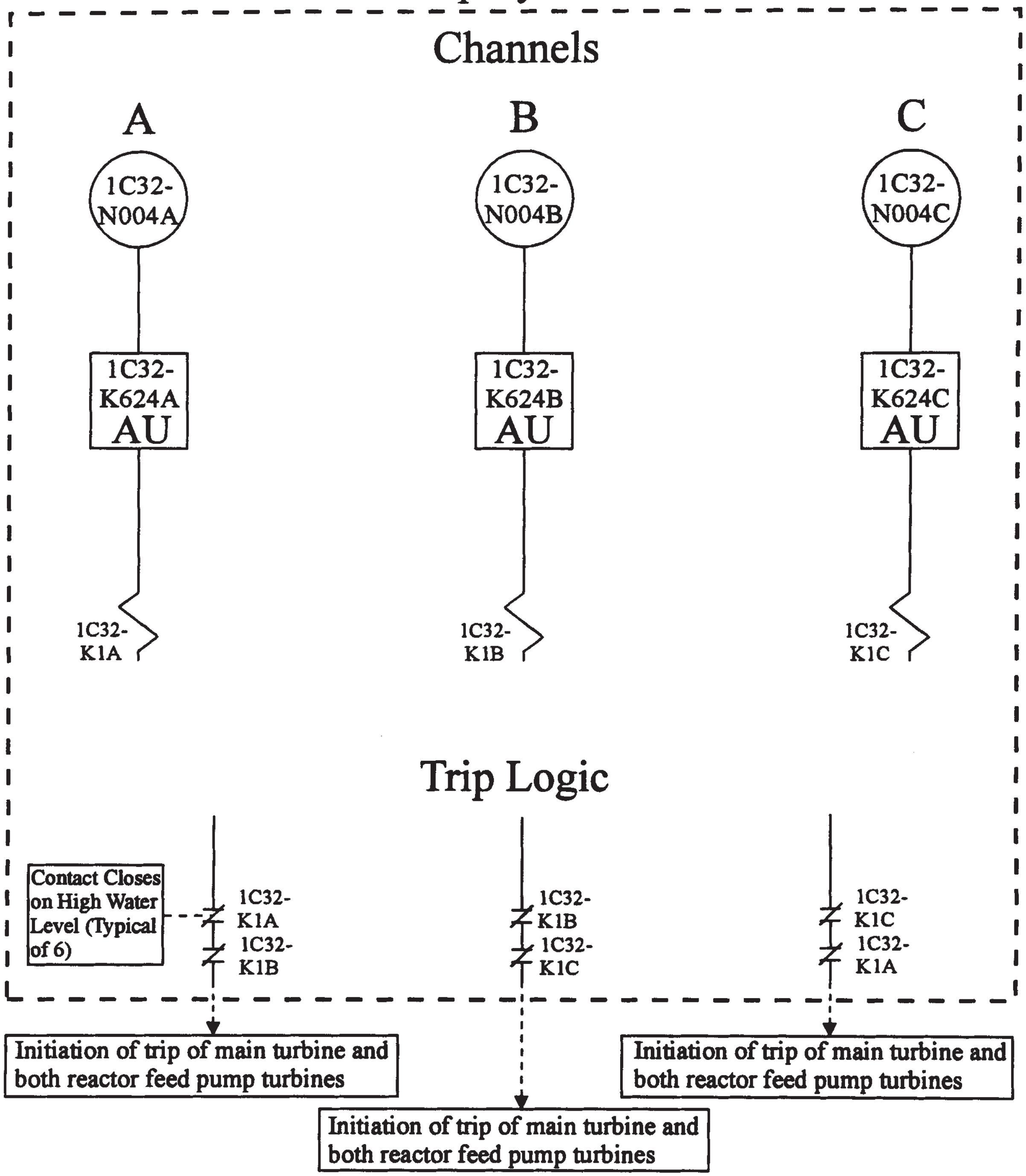
Prepared By:
Reviewed By:

LFD-1-RPT-05

TS SR 3.3.4.1.2
EOC-RPT Instrumentation Bypass Below 28 Percent Power

TRM Rev. 33

Trip System



Minimum Channel Requirements for System Initiation Capability:

In order to maintain the capability to trip the main turbine and the reactor feed pump turbines on high reactor water level, channels in one of the following combinations must be either operable or maintained in the tripped condition.

Elem. Ref.

H-17842
H-17845

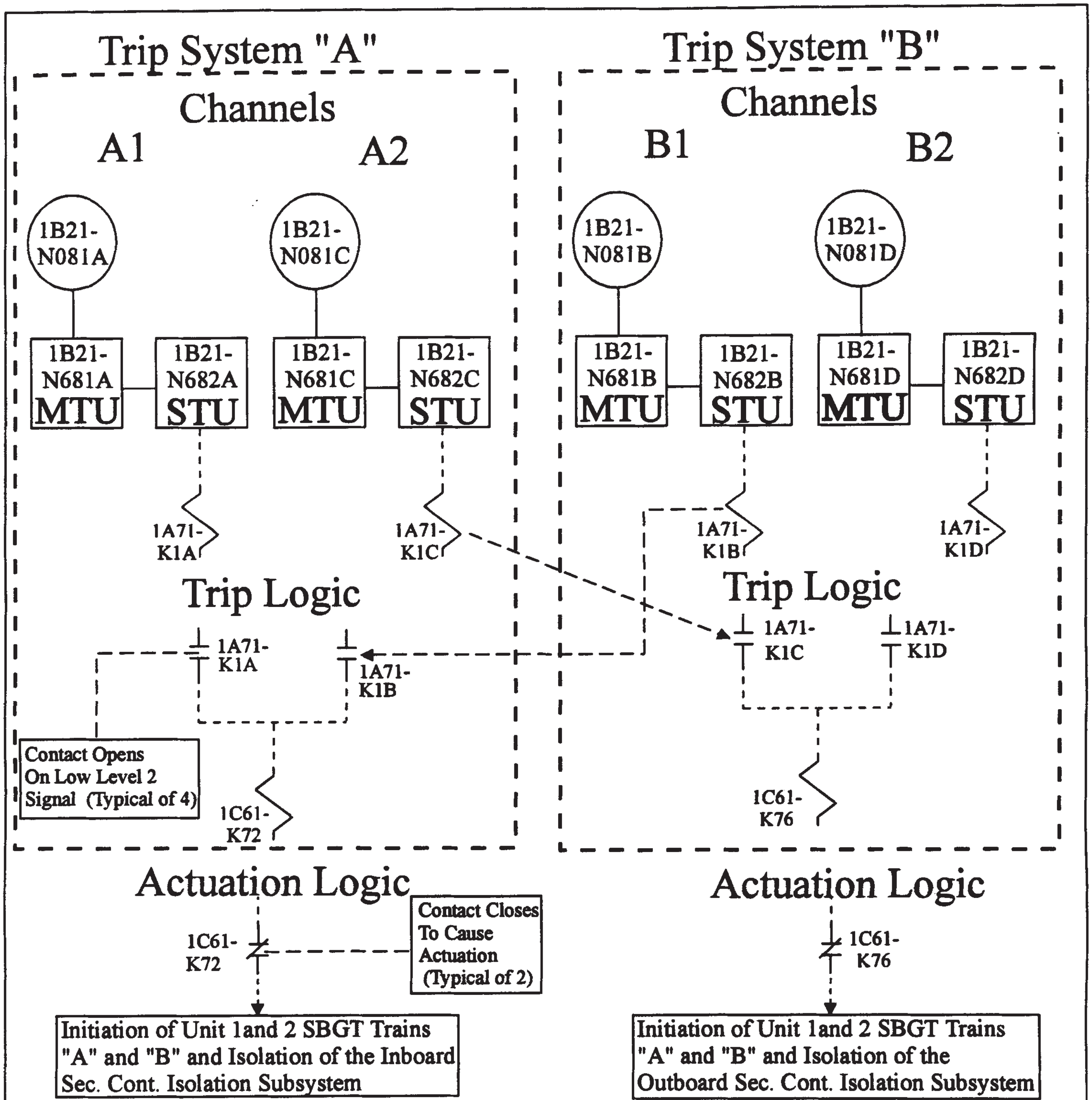
A and B
OR
B and C
OR
A and C

Prepared By: [signature]
Reviewed By: [signature]

LFD-1-RWLH-01

TS 3.3.2.2
Feedwater and Main Turbine Trip High Water Level Instrumentation

Rev. 0 1/16/95



Minimum Channel Requirements for System Isolation/Initiation Capability:

In order to maintain Secondary Containment isolation capability and SBGT initiation capability on a Reactor Vessel Water Level-Low Low, Lvl. 2 signal, channels in one of the following combinations must be either operable or maintained in the tripped condition.

Elem. Ref.

H-17053	H-17810	H-19815
H-17104	H-17811	H-19818
H-17804	H-19809	H-27761
H-17805	H-19812	H-27767

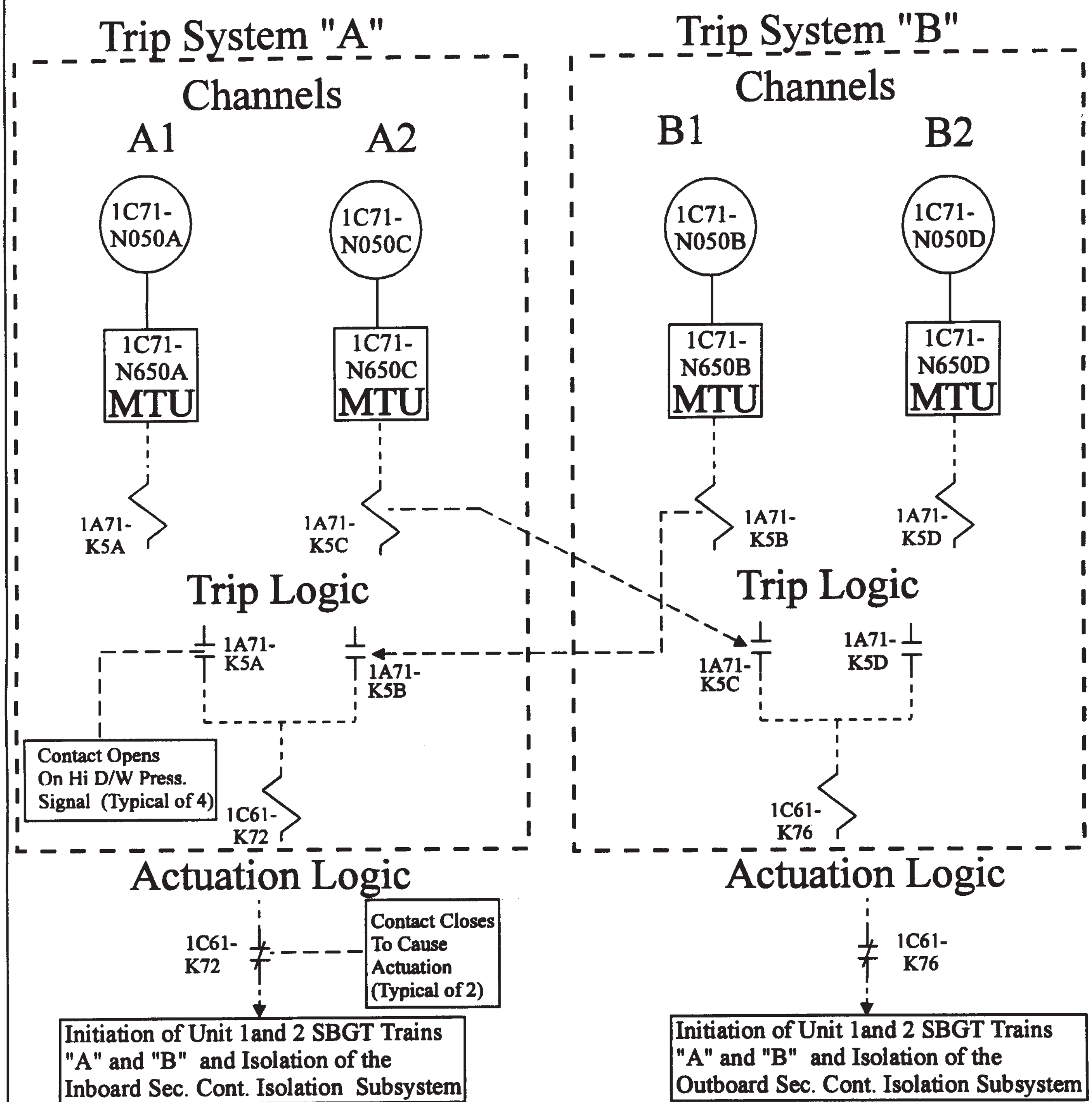
A1 and B1
OR
A2 and B2

Prepared By: [signature]
Reviewed: [signature]

LFD-1-SCIS-01

TS 3.3.6.2-1, Item 1
Reactor Vessel Water Level-Low Low, Lvl.2

Rev. 0 10/19/94



Minimum Channel Requirements for System Isolation/Initiation Capability:

In order to maintain Secondary Containment isolation capability and SBGT initiation capability on a Drywell Pressure - High signal, channels in one of the following combinations must be operable or maintained in the tripped condition.

Elem. Ref.

H-17053	H-17810	H-19809	H-27761
H-17104	H-17811	H-19812	H-27767
H-17804	H-17789	H-19815	
H-17805	H-17790	H-19818	

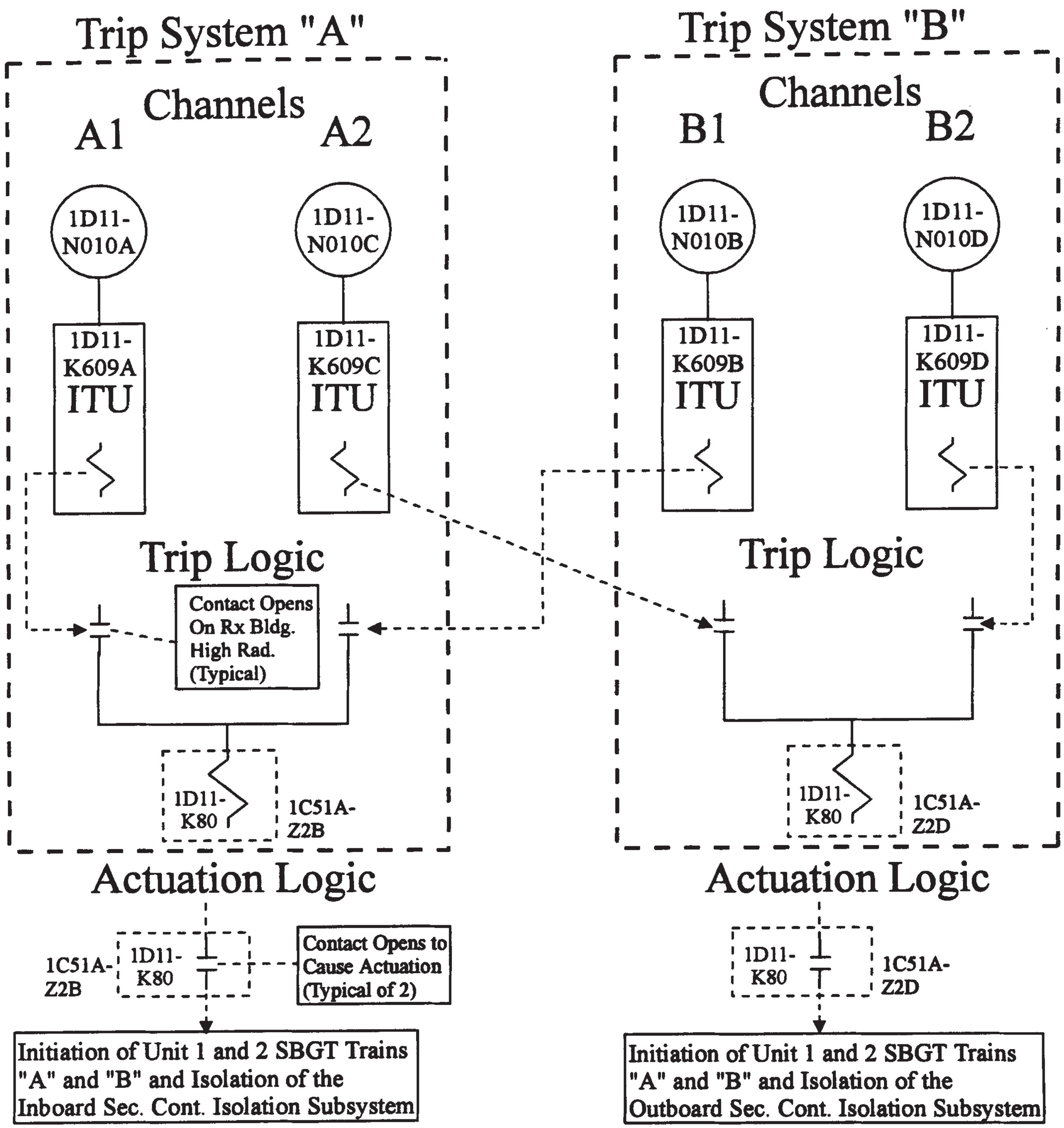
A1 and B1
OR
A2 and B2

Prepared By: S.R. Bruns
Reviewed: [signature]

LFD-1-SCIS-02

TS 3.3.6.2-1, Item 2
Drywell Pressure - High

Rev. 0 10/20/94



Minimum Channel Requirements for System Isolation/Initiation Capability:

In order to maintain Secondary Containment isolation capability and SBGT initiation capability on a Reactor Building Exhaust Radiation - High signal, channels in one of the following combinations must be operable or maintained in the tripped condition.

Elem. Ref.

H-19561	H-17053	H-17805
H-19563	H-17802	H-17104
H-19564	H-17803	H-27761
H-19566	H-17804	H-27767

A1 and B1
OR
A2 and B2

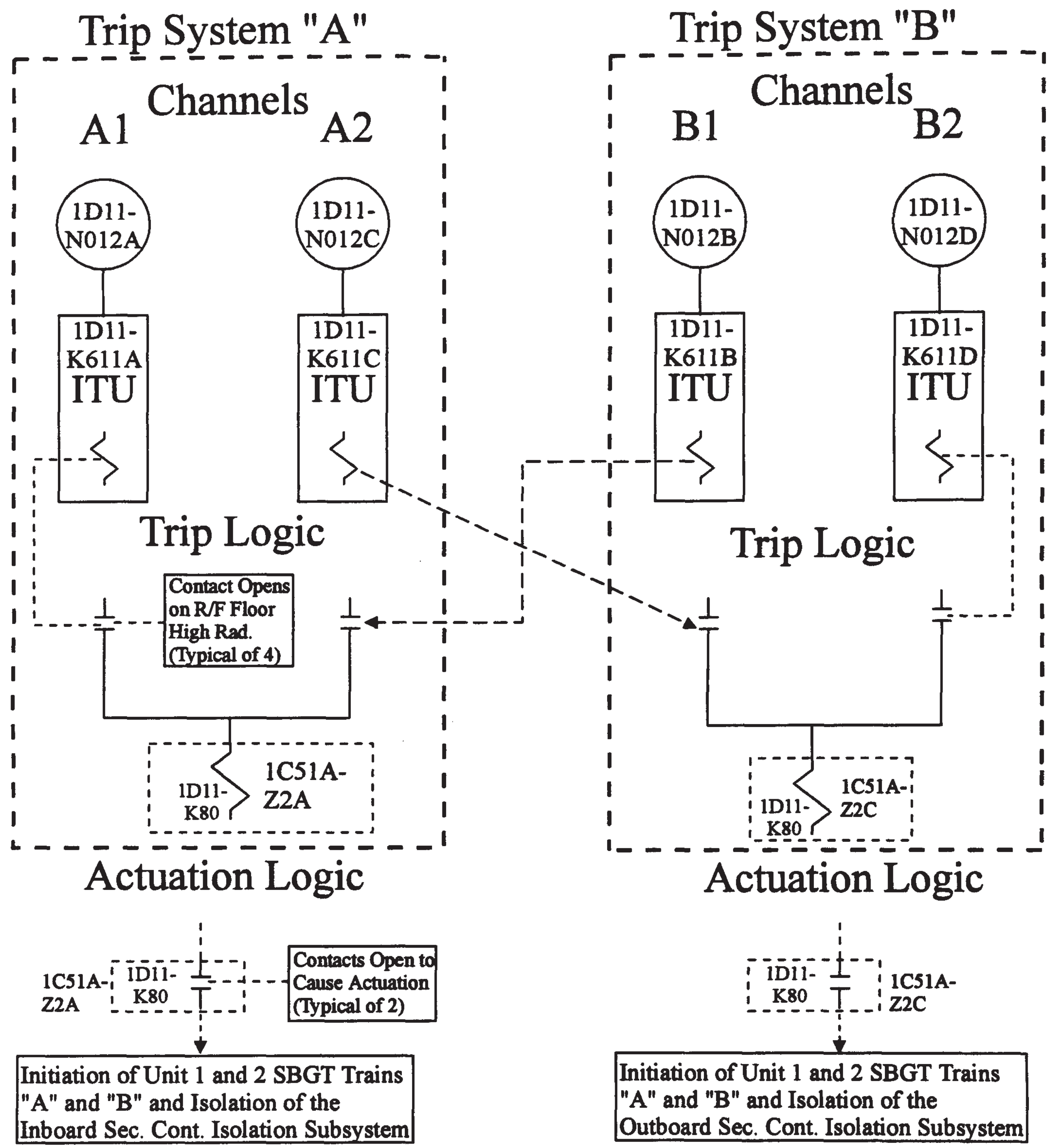
Prepared By: S. R. Bruner

Reviewed By: [signature]

LFD-1-SCIS-03

TS 3.3.6.2-1, Item 3
Secondary Containment
Isolation, Rx. Building
Exhaust Radiation- High

Rev. 0 10/20/94



Minimum Channel Requirements for System Isolation/Initiation Capability:

In order to maintain Secondary Containment isolation capability and SBGT initiation capability on a Refueling Floor Exhaust Radiation - High signal, channels in one of the following combinations must be operable or maintained in the tripped condition.

Elem. Ref.
H-19561 H-17802 H-27761
H-19563 H-17803 H-27767
H-19564 H-17804
H-19566 H-17805
H-17053 H-17104

A1 and B1
OR
A2 and B2

Prepared By: J.C. Bruner
Reviewed By:

LFD-1-SCIS-04

TS 3.3.6.2-1, Item 4
R/F Exhaust Radiation-High

Rev. 0 10/20/94

T 12.0 Safety Function Determination Program

1.0 Introduction

This document outlines the Plant Hatch Safety Function Determination Program (SFDP), provides guidance for evaluating the impact of failure to meet multiple Technical Specifications (TS) Limiting Conditions for Operation (LCOs), and gives appropriate actions for a loss of safety function. The SFDP is required by TS Section 5.5.10.

2.0 Loss of Safety Function

2.1 Background

LCO 3.0.2 directs that if an LCO is not met, its associated Required Actions shall be performed. LCO 3.0.6 provides exception to LCO 3.0.2 for a supported system, structure, or component (SSC) by allowing only the support SSC LCO Actions to be performed if the supported SSC is inoperable solely because its support SSC is inoperable.

If a support SSC is inoperable and a loss of safety function does not exist, the Required Actions for the support SSC address the Condition, and the supported SSC Required Actions do not have to be performed. This recognizes that the plant may no longer satisfy single failure criteria and that all of the supported SSC may not meet the definition of OPERABILITY. Appropriate compensation is made by performance of the support system Required Actions.

2.2 Use of LCO 3.0.6

Upon determination that a TS required support SSC is inoperable, the decision may be made to use LCO 3.0.6 for the supported SSCs. A loss of safety function determination shall be performed using the flow chart shown in **Attachment 1** as a guide. **Attachment 2** provides examples of appropriate determinations. The allowances given by LCO 3.0.6 can be taken only if **no loss of safety function exists**.

2.3 Actions for a Loss of Safety Function

If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered. These may be the Required Actions specified for the loss of safety function or LCO 3.0.3.

2.4 SSC OPERABILITY

OPERABILITY determinations precede entry into the SFDP and thus, are not a direct part of the SFDP. OPERABILITY of an SSC is determined using the definition given in TS 1.1, along with the guidance of SR 3.0.1. When equipment that is not addressed in TS is degraded or nonconforming, the impact on TS SSC OPERABILITY shall also be assessed.

3.0 Guidance for Safety Function Determination

TS 5.5.10 states that a loss of safety function exists when, assuming no concurrent single failure, a safety function assumed in the accident analyses cannot be performed. For the purpose of this program a "**graduated**" **approach** may be taken for determining the "safety function" of the supported SSC. This approach, detailed below, is graduated from most to least conservative. Even if the least conservative method is used, the requirements of TS 5.5.10 will be met. In determining whether a loss of safety function has occurred, **at least one** of these methods **must be used.**

- Method 1: Redundant Train[a]

  For this method, the safety function is assumed to be the system function. Confirm the OPERABILITY of the corresponding redundant supported SSC(s).

  If one or more of the redundant SSCs are found to be inoperable, a loss of safety function may exist. The appropriate actions for a loss of function **may** be taken or alternatively, one of the following methods may be used.

- Method 2: LCO Function

  In certain cases, multiple systems with diverse individual functions are specified under one LCO statement; i.e., in one TS. For these, the safety function may be considered to be broader than the individual system function--it is the TS LCO function, not the system function.

  An example of this is the TS for "ECCS Operating," in which four different systems are included. In this case, the function as stated in the Bases, "... to cool the core during a LOCA," may be the safety function to be considered in the SFDP.

  If a loss of LCO function is determined to exist, the appropriate actions for a loss of safety function **may** be taken. Alternatively, the following method may be used.

---

[a] The term "train" may be interchanged with "subsystem" or "division."

- Method 3: Safety Analysis

  In this approach, the function of the SSC in the FSAR accident analyses is considered to be the safety function. If the SSC in question is not credited in the analyses, or if the accident function it performs is intact, then no loss of safety function exists. However, if the function is lost, then the actions for a loss of safety function **must** be taken.

4.0 Additional Requirements and Information

4.1 Non-TS SSCs

A situation may exist where a TS support SSC provides support to an SSC not addressed in TS, which may in turn support a supported SSC addressed in TS. The interrelationships between TS and non-TS support and supported SSCs shall be considered in the loss of safety function determination.

4.2 Subsequent Inoperabilities

While taking the Required Actions of the support SSC as allowed by LCO 3.0.6, the impact of subsequent additional SSC inoperabilities on previous SFDP evaluations shall be considered.

5.0 Extending Supported SCS Completion Times

5.1 Singular Support SSC Inoperability

When entering the supporting SSC Required Actions as allowed by LCO 3.0.6, the Completion Times for the supported SSCs might potentially be extended longer than their allowed Required Action Completion Times if they are shorter than those of the support SSC. If there is no loss of safety function, it is acceptable to extend the Completion Time of the supported SSC an amount equal to but not exceeding the Completion Time of its support SSC.

5.2 Multiple Support SSC Inoperabilities

Once a supported SSC LCO is not met solely based on a support SSC inoperability, subsequent support SSC inoperabilities have additional limitations. This is to ensure that the supported LCO will not be in a situation of not being met for an inappropriate amount of time.

Provided there is no loss of function, the Required Actions of the support SSC Condition(s) continue to apply to each additional failure, with Completion Times based on initial entry into the particular support SSC Condition. However, when a subsequent support SSC is discovered to be inoperable or not within limits, the overall time that the supported SSC LCO is not met shall be limited to the more restrictive of either:

a. The first support SSC Completion Time, plus an additional 24 hours; or

b. The subsequent support SSC Completion Time as measured from discovery of the subsequent inoperability.

To apply this Completion Time extension, two criteria must first be met. The subsequent support SSC inoperability.

a. Must exist concurrently with the first inoperability; and

b. Must remain inoperable or not within limits after the first inoperability is resolved.

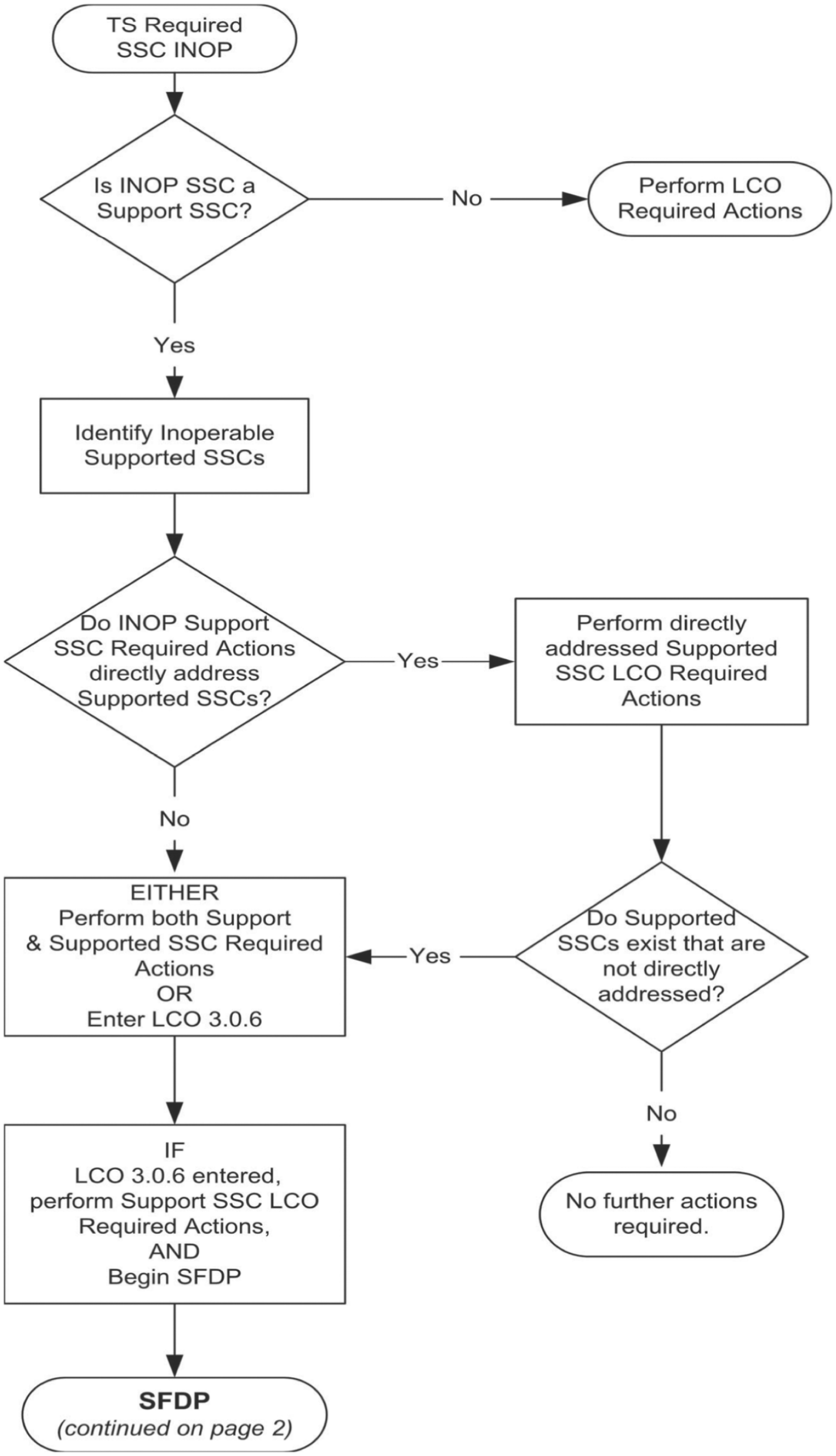
Should this extended Completion Time expire with the subsequent support SSC remaining inoperable or not within limits, the Completion Time for the subsequent support SSC inoperable Condition shall be considered expired. The Required Actions defined for that Condition shall be entered.

Examples regarding Completion Time tracking are included in **Attachment 2**.

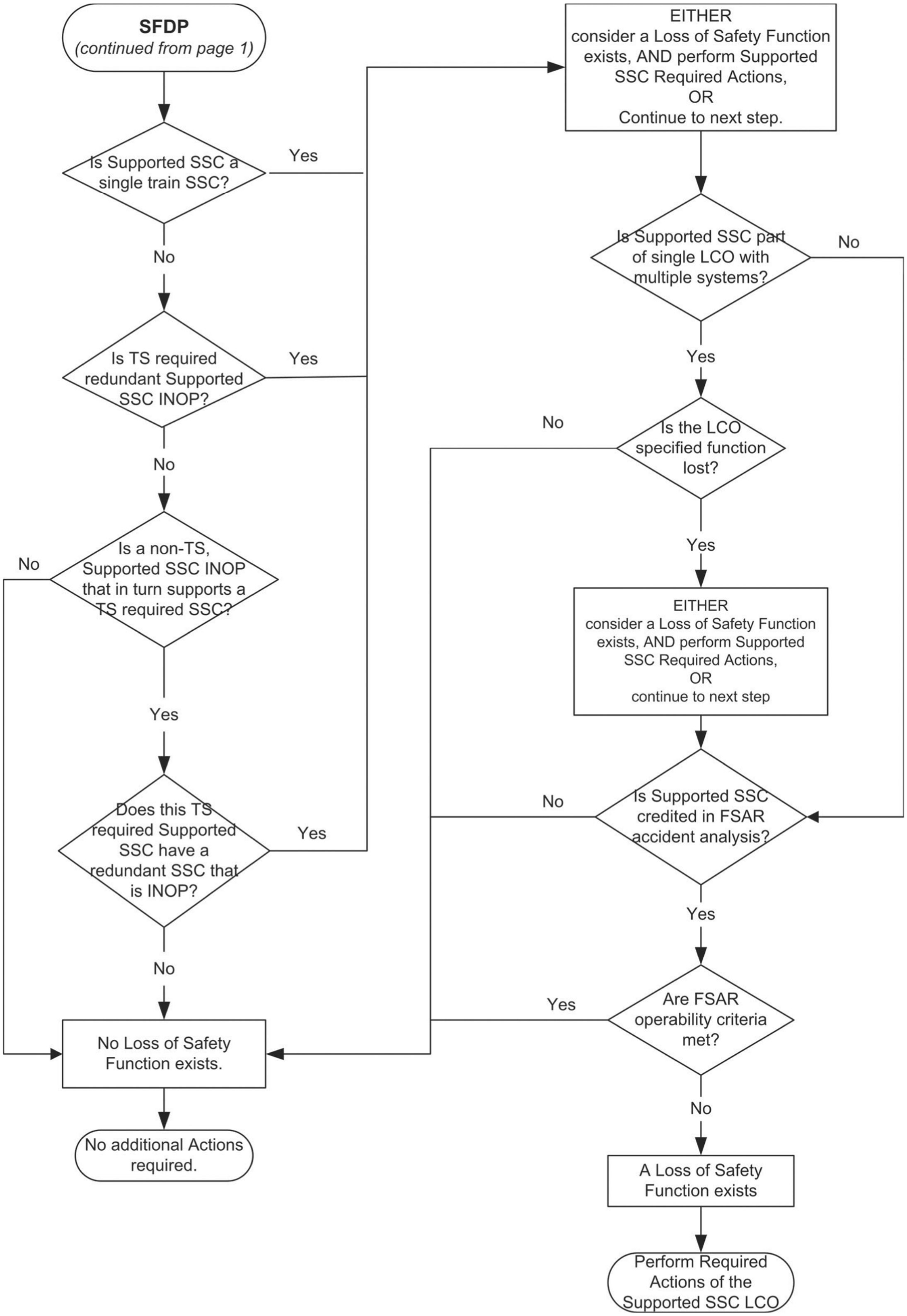
6.0 Conclusions Regarding the Use of LCO 3.0.6

The exception permitted by LCO 3.0.6 is justified as follows. The actions necessary to ensure safe operation of the plant are specified in the support SSC LCO Required Actions and the SFDP requires evaluation of loss of safety function. The SFDP directs that appropriate actions be taken if a loss of safety function exists. This approach eliminates the confusion and inconsistency associated with entry into multiple LCO Conditions and Required Actions.

ATTACHMENT 1 (Sheet 1 of 2)



ATTACHMENT 1 (Sheet 2 of 2)



ATTACHMENT 2

SCENARIO NO. 1: At 0100, with Unit 2 in RUN, the Unit 2 4160V "F" bus (a.k.a. swing bus) is determined to be inoperable. No other TS SSC inoperabilities exist.

The 4160V F bus is a support SSC, addressed by TS LCO 3.8.7. Required Action C requires restoring the bus to OPERABLE status within 8 hours.

The following is the loss of function determination for the supported systems:

- RHR Pumps 2C and 2D: For LCO 3.5.1, because Core Spray, ADS, and HPCI are OPERABLE, no loss of safety function exists.
- RHR Pumps 2C and 2D: For LCO 3.6.2.3, suppression pool cooling is not considered inoperable because only one pump per subsystem is required.
- RHR Pumps 2C and 2D: For LCO 3.6.2.4, suppression pool spray is not considered inoperable because only one pump per subsystem is required.
- RHR Pump 2C: For LCO 3.7.1, because the other subsystem is OPERABLE, no loss of safety function exists.
- PSW Pumps 2C and 2D: For LCO 3.7.2, because PSW can perform its safety function with one pump per subsystem, no loss of safety function exists.
- CRD Pump 2B: This is a non-TS SSC, but it supports control rods, TS LCO 3.1.3. With redundant CRD pumps operable, the safety function of the control rods is not affected.
- Diesel Bldg. MCC 1B (1R24S026): This is part of the 4160V F bus subsystem, addressed by TS 3.8.7. This supports distribution cabinet 1K (1R24S030) and ultimately the DG 1B. The DG 1B is inoperable, and LCO 3.8.1 Condition B required several different actions with Completion Times ranging from 1 hour to 7 days. With redundant DGs OPERABLE, no loss of safety function exists.

<u>Conclusions</u>: No loss of safety function exists. LCO 3.0.6 may be entered with a completion time of 8 hours to restore the inoperable bus to OPERABLE status, beginning at 0100.

SCENARIO NO. 2: At 0500, with Unit 2 in RUN, Reactor Vessel Water Level-Low Low Low (Level 1) channels A, B, and C are determined to be inoperable. This leaves only channel D operable.

This instrumentation supports ECCS by providing initiation for Core Spray, LPCI and ADS; and, also, supports initiation of the DGs and isolation of the PSW Turbine Building valves. Since all these supported functions require at least two channels, entry must be made into the Required Actions for LCO 3.3.5.1.

These Actions directly specify declaring supported features inoperable (due to loss of initiation capability in both Divisions). As stated in LCO 3.0.6, when the support SSC Required Actions provide direction for supported SSCs, the applicable supported SSC Conditions and Required Actions shall be entered. This effectively precludes the use of LCO 3.0.6 in determining the completion time for the supported SSCs.

Conclusions: The LCO 3.3.5.1 Required Actions should be performed, as well as those for all the inoperable supported systems. The SFDP will not be entered, because LCO 3.0.6 cannot be used.

SCENARIO NO. 4-A: At 0100, with Unit 2 in MODE 1, the Unit 2 RHRSW "A" Pump becomes inoperable. The RHRSW crosstie valves are tagged for maintenance. No other TS SSC inoperabilities exist.

The RHRSW system is a support SSC, addressed by TS LCO 3.7.1. Required Action A for one inoperable RHRSW pump is to restore the pump to OPERABLE status within 30 days. The bases for this specification state that an RHRSW subsystem is considered operable when 2 pumps are OPERABLE with an OPERABLE flow path. With the "A" pump inoperable, the "A" subsystem of RHRSW is inoperable.

The following is the loss of function determination for the supported systems:

RHR Suppression Pool Cooling: LCO 3.6.2.3 requires two subsystems to be OPERABLE for suppression pool cooling. The Bases for this LCO state that an RHR suppression pool cooling subsystem is OPERABLE with one RHR pump, the heat exchanger, and associated piping. Therefore, the inoperability of RHRSW subsystem "A" causes suppression pool cooling subsystem "A" to be inoperable. This is Condition A, with a Required Action Completion Time of 7 days. However, because suppression pool cooling subsystem "B" is OPERABLE, no loss of safety function exists. The Completion Time for suppression pool cooling may be extended to 30 days (from the time of discovery of RHRSW pump "A" being inoperable; i.e., 0100).

RHR Suppression Pool Spray: LCO 3.6.2.4 requires 2 subsystems to be OPERABLE for suppression pool spray. The Bases for this LCO state that an RHR suppression pool spray subsystem is OPERABLE with one RHR pump, the heat exchanger, and associated piping. Therefore, the inoperability of RHRSW subsystem "A" causes suppression pool spray subsystem "A" to be inoperable. This is Condition A, with a Required Action Completion Time of 7 days. However, because subsystem “B” is operable, no loss of safety function exists. The Completion Time for suppression pool spray may be extended to 30 days.

SCENARIO 4-B: At 29 days, 2 hours after the initial inoperability of RHRSW pump ”A,” with the pump remaining inoperable, RHRSW pump “C” is found to be inoperable. At 29 days 6 hours, RHR SW pump “A” is restored to OPERABLE status. RHRSW pump “C” remains inoperable.

With the second RHRSW pump inoperability, Condition C has been entered for LCO 3.7.1. Note that the Completion Time “clock” for Condition A is “still running.” Condition C requires that the RHRSW subsystem be restored to OPERABLE status within 7 days. The two SSCs supported by RHRSW continue to have their “B” subsystems OPERABLE, so no loss of safety function exists.

When the RHRSW pump “A” is restored to OPERABLE status, the LCO 3.7.1 Condition C is exited, but the Condition A clock is “still running” due to the inoperability of RHRSW pump “C”. Under the provisions of Section 1.3 of the Technical Specifications, the Completion Time for RHRSW pump “C” is 31 days from the initial inoperability, i.e., the inoperability of pump “A.” Therefore, the Completion Times for the supported SSCs may also be extended to 31 days measured from the same starting point.