ATTACHMENT B

PROPOSED CHANGE TO APPENDIX A

TECHNICAL SPECIFICATIONS TO OPERATING LICENSES

NPF-11 and NPF-18

Revised Pages:

NPF-11	NPF-18
3/4 3-24	3/4 3-24
3/4 3-25	3/4 3-25
3/4 3-27	3/4 3-27
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3/4 3-29	3/4 3-29
3/4 3-32	3/4 3-32
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3/4 5-1	3/4 5-1
B 3/4 5-1	B 3/4 5-1
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ATTACHMENT B

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION[(a)]	APPLICABLE OPERATIONAL CONDITIONS	ACTION
A. DIVISION I TRIP SYSTEM			
1. RHR-A (LPCI MODE) & LPCS SYSTEM			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2[(b)]	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2[(b)]	1, 2, 3	30
c. LPCS Pump Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
d. LPCS and LPCI A Injection Valve Injection Line Pressure-Low (Permissive)	1/valve	1, 2, 3 4*, 5*	32 33
e. LPCS and LPCI A Injection Valve Reactor Pressure-Low (Permissive)	2	1, 2, 3 4*, 5*	38 33
f. LPCI Pump A Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
g. LPCI Pump A Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
h. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"#			
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2[(b)]	1, 2, 3	30
b. Drywell Pressure - High	2[(b)]	1, 2, 3	30
c. ~~ADS~~ Initiation Timer	1	1, 2, 3	32
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
e. LPCS Pump Discharge Pressure-High (Permissive)	2	1, 2, 3	32
f. LPCI Pump A Discharge Pressure-High (Permissive)	2	1, 2, 3	32
g. Manual Initiation	1/division	1, 2, 3	34
h. Drywell Pressure Bypass Timer	1	1, 2, 3	32
i. Manual Inhibit	1/division	1, 2, 3	34

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TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION	
B. DIVISION 2 TRIP SYSTEM				
1. RHR B & C (LPCI MODE)				
a. Reactor Vessel Water Level - Low, Low Low, Level 1	2(b)	1, 2, 3, 4*, 5*	30	
b. Drywell Pressure - High	2(b)	1, 2, 3	30	
c. LPCI B and C Injection Valve Injection Line Pressure-Low (Permissive)	1/valve	1, 2, 3 4*, 5*	32 33	10
d. LPCI Pump B Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32	
e. LPCI Pump Discharge Flow - Low (Bypass)	1/pump	1, 2, 3, 4*, 5*	31	
f. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34	
g. LPCI B and C Valve Reactor Pressure-Low (Permissive)	2	1, 2, 3 4*, 5*	38 33	10
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"#				
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2(b)	1, 2, 3	30	
b. Drywell Pressure - High	2(b)	1, 2, 3	30	
c. ~~ADS~~ Initiation Timer	1	1, 2, 3	32	
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32	
e. LPCI Pump B and C Discharge Pressure - High (Permissive)	2/pump	1, 2, 3	32	
f. Manual Initiation	1/division	1, 2, 3	34	
g. Drywell Pressure Bypass Timer	1	1, 2, 3	32	
h. Manual Inhibit	1/division	1, 2, 3	34	

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

ACTION

ACTION 30 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, place the inoperable channel in the tripped condition within one hour* or declare the associated system inoperable.

b. With more than one channel inoperable, declare the associated system inoperable.

ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE channels per Trip Function, place the inoperable channel in the tripped condition within one hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated system inoperable.

ACTION 32 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, declare the associated ADS trip system or ECCS inoperable.

ACTION 33 - With the number of OPERABLE channels less than the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.

ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 8 hours or declare the associated ADS ~~valve~~ trip system or ECCS inoperable. 1

ACTION 35 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement

a. For one trip system, place that trip system in the tripped condition within one hour* or declare the HPCS system inoperable.

b. For both trip systems, declare the HPCS system inoperable.

ACTION 36 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within one hour* or declare the HPCS system inoperable.

ACTION 37 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated emergency diesel generator inoperable and take the ACTION required by Specification 3.8.1.1 or 3.8.1.2, as appropriate.

*The provisions of Specification 3.0.4 are not applicable.

NO CHANGES

FOR REFERENCE ONLY

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

ACTION

ACTION 38 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per trip function requirements:

a. With one channel inoperable, remove the inoperable channel within one hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated ECCS systems inoperable.

b. With both channels inoperable, restore at least one channel to OPERABLE status within one hour or declare the associated ECCS systems inoperable.

TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE	
A. DIVISION 1 TRIP SYSTEM			
1. RHR-A (LPCI MODE) AND LPCS SYSTEM			
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ 129 inches*	≥ 136 inches*	
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig	
c. LPCS Pump Discharge Flow-Low	≥ 750 gpm	≥ 640 gpm	
d. LPCS and LPCI A Injection Valve Injection Line-Low Pressure Interlock	500 psig	500 ± 20 psig	10
e. LPCS and LPCI A Injection Valve Reactor Pressure-Low Pressure Interlock	500 psig	500 ± 20 psig	
f. LPCI Pump A Start Time Delay Relay	≤ 5 seconds	≤ 6 seconds	
g. LPCI Pump A Discharge Flow-Low	≥ 1000 gpm	≥ 550 gpm	
h. Manual Initiation	NA	NA	
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"			
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ 129 inches*	≥ 136 inches*	
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig	
c. ADS Initiation Timer	≤ 105 seconds	≤ 117 seconds	
d. Reactor Vessel Water Level-Low, Level 3	≥ 12.5 inches*	≥ 11 inches*	
e. LPCS Pump Discharge Pressure-High	≥ 146 psig, increasing	≥ 136 psig, increasing	
f. LPCI Pump A Discharge Pressure-High	≥ 119 psig, increasing	≥ 106 psig, increasing	
g. Manual Initiation	NA	NA	
h. Drywell Pressure Bypass Timer	≤ 9.0 minutes	Footnote (a)	
i. Manual Inhibit	N.A.	N.A.	

(a) The sum of the time delays associated with the ADS initiation timer and the drywell pressure bypass timer shall be less than or equal to 687 seconds.

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE	
B. DIVISION 2 TRIP SYSTEM			
1. RHR B AND C (LPCI MODE)			
a. Reactor Vessel Water Level - Low Low Low, Level 1	$\geq$- 129 inches*	$\geq$- 136 inches*	
b. Drywell Pressure - High	$\leq$ 1.69 psig	$\leq$ 1.89 psig	
c. LPCI B and C Injection Valve Injection Line-Low Pressure Interlock	500 psig	500 psig ±20 psig	10
d. LPCI Pump B Start Time Delay Relay	$\leq$ 5 seconds	$\leq$ 6 seconds	
e. LPCI Pump Discharge Flow-Low	$\geq$ 1000 gpm	$\geq$ 550 gpm	
f. Manual Initiation	NA	NA	
g. LPCI B and C Injection Valve Reactor Pressure Low Pressure Interlock	500 psig	500 ± 20 psig	10
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"			
a. Reactor Vessel Water Level - Low Low Low, Level 1	$\geq$- 129 inches*	$\geq$- 136 inches*	
b. Drywell Pressure - High	$\leq$ 1.69 psig	$\leq$ 1.89 psig	
c. ~~ADS~~ Initiation Timer	$\leq$ 105 seconds	$\leq$ 117 seconds	
d. Reactor Vessel Water Level-Low, Level 3	$\geq$ 12.5 inches*	$\geq$ 11 inches*	
e. LPCI Pump B amd C Discharge Pressure-High	$\geq$ 119 psig, increasing	$\geq$ 106 psig, increasing	
f. Manual Initiation	NA	NA	
g. Drywell Pressure Bypass Timer	$\leq$ 9.0 minutes.	footnote (a)	
h. Manual Inhibit	N.A.	N.A.	

(A) The sum of the time delays associated with the ADS initiation timer and the drywell pressure bypass timer shall be less than or equal to 687 seconds.

TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
A. DIVISION I TRIP SYSTEM				
1. RHR-A (LPCI MODE) AND LPCS SYSTEM				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. LPCS Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
d. LPCS and LPCI A Injection Valve Injection Line Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
e. LCPS and LPCI A Injection Valve Reactor Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
f. LPCI Pump A Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*
g. LPCI Pump A Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
h. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"#				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure-High	NA	M	Q	1, 2, 3
c. ~~ADS~~ Initiation Timer	NA	M	Q	1, 2, 3
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
e. LPCS Pump Discharge Pressure-High	NA	M	Q	1, 2, 3
f. LPCI Pump A Discharge Pressure-High	NA	M	Q	1, 2, 3
g. Manual Initiation	NA	R	NA	1, 2, 3
h. Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3
i. Manual Inhibit	NA	R	NA	1, 2, 3

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TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED	
B. DIVISION 2 TRIP SYSTEM					
1. RHR B AND C (LPCI MODE)					
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*	
b. Drywell Pressure - High	NA	M	Q	1, 2, 3	
c. LPCI B and C Injection Valve Injection Line Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*	10
d. LPCI Pump B Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*	
e. LPCI Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*	
f. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*	
g. LPCI B and C Injection Valve Reactor Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*	10
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"#					
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3	
b. Drywell Pressure-High	NA	M	Q	1, 2, 3	
c. ~~ADS~~ Initiation Timer	NA	M	Q	1, 2, 3	
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3	
e. LPCI Pump B and C Discharge Pressure-High	NA	M	Q	1, 2, 3	
f. Manual Initiation	NA	R	NA	1, 2, 3	
g. Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3	
h. Manual Inhibit	NA	R	NA	1, 2, 3	

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ECCS - OPERATING

LIMITING CONDITION FOR OPERATION

3.5.1 ECCS divisions 1, 2 and 3 shall be OPERABLE with:

a. ECCS division 1 consisting of:

1. The OPERABLE low pressure core spray (LPCS) system with a flow path capable of taking suction from the suppression chamber and transferring the water through the spray sparger to the reactor vessel.

2. The OPERABLE low pressure coolant injection (LPCI) subsystem "A" of the RHR system with a flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel.

3. At least 6 OPERABLE** ADS valves.

b. ECCS division 2 consisting of:

1. The OPERABLE low pressure coolant injection (LPCI) subsystems "B" and "C" of the RHR system, each with a flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel.

2. At least 6 OPERABLE** ADS valves.

c. ECCS division 3 consisting of the OPERABLE high pressure core spray (HPCS) system with a flow path capable of taking suction from the suppression chamber and transferring the water through the spray sparger to the reactor vessel.

APPLICABILITY: OPERATIONAL CONDITION 1, 2*# and 3*.

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* The ADS is not required to be OPERABLE when reactor steam dome pressure is less than or equal to 122 psig.

#See Special Test Exception 3.10.6.

** See Specification 3.3.3 for trip system operability

3/4.5 EMERGENCY CORE COOLING SYSTEM

BASES

3/4.5.1 and 3/4.5.2 ECCS - OPERATING and SHUTDOWN

ECCS Division 1 consists of the low pressure core spray system, low pressure coolant injection subsystem "A" of the RHR system, and the automatic depressurization system (ADS) as actuated by ADS trip system "A". ECCS Division 2 consists of low pressure coolant injection subsystems "B"and "C" of the RHR system and the automatic depressurization system as actuated by ADS trip system "B".

The low pressure core spray (LPCS) system is provided to assure that the core is adequately cooled following a loss-of-coolant accident and provides adequate core cooling capacity for all break sizes up to and including the double-ended reactor recirculation line break, and for smaller breaks following depressurization by the ADS.
transients or

The LPCS is a primary source of emergency core cooling after the reactor vessel is depressurized and a source for flooding of the core in case of accidental draining.

The surveillance requirements provide adequate assurance that the LPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

The low pressure coolant injection (LPCI) mode of the RHR system is provided to assure that the core is adequately cooled following a loss-of-coolant accident. Three subsystems, each with one pump, provide adequate core flooding for all break sizes up to and including the double-ended reactor recirculation line break, and for small breaks following depressurization by the ADS.
transients or

The surveillance requirements provide adequate assurance that the LPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

ECCS Division 3 consists of the high pressure core spray system. The high pressure core spray (HPCS) system is provided to assure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break in the reactor coolant system and loss of coolant which does not result in rapid depressurization of the reactor vessel. The HPCS system permits the reactor to be shut down while maintaining sufficient reactor vessel water level inventory until the vessel is depressurized. The HPCS system operates over a range of 1160 psid, differential pressure between reactor vessel and HPCS suction source, to 0 psid.

The capacity of the HPCS system is selected to provide the required core cooling. The HPCS pump is designed to deliver greater than or equal to 516/1550/6200 gpm at differential pressures of 1160/1130/200 psid. Initially, water from the condensate storage tank is used instead of injecting water from 18

ECCS-OPERATING and SHUTDOWN (Continued)

the suppression pool into the reactor, but no credit is taken in the hazards analyses for the condensate storage tank water.

With the HPCS system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the LPCS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the hazards analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCS out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems.

The surveillance requirements provide adequate assurance that the HPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCS system to function properly, if required, ~~after a small break loss-of-coolant accident,~~ the automatic depressurization system (ADS) automatically causes selected safety-relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 122 psig even though low pressure core cooling systems provide adequate core cooling up to 350 psig.

ADS automatically controls seven selected safety-relief valves. Six valves are required to be OPERABLE although the hazards analysis only takes credit for five valves. It is therefore appropriate to permit one of the required valves to be out-of-service for up to 14 days without materially reducing system reliability.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is also required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCS, LPCS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITIONS 1, 2 or 3 is required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume, vortex prevention plus a 2'-4" safety margin for conservatism.

TABLE 3.3.3-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION[(a)]	APPLICABLE OPERATIONAL CONDITIONS	ACTION
A. DIVISION I TRIP SYSTEM			
1. RHR-A (LPCI MODE) & LPCS SYSTEM			
a. Reactor Vessel Water Level - Low Low Low, Level 1	2[(b)]	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2[(b)]	1, 2, 3	30
c. LPCS Pump Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
d. LPCS and LPCI A Injection Valve Injection Line Pressure-Low (Permissive)	1/Valve	1, 2, 3 4*, 5*	32 33
e. LPCS and LPCI A Injection Valve Reactor Pressure-Low (Permissive)	2	1, 2, 3 4*, 5*	38 33
f. LPCI Pump A Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
g. LPCI Pump A Discharge Flow-Low (Bypass)	1	1, 2, 3, 4*, 5*	31
h. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"#			
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2[(b)]	1, 2, 3	30
b. Drywell Pressure - High	2[(b)]	1, 2, 3	30
c. ~~ADS~~ Initiation Timer	1	1, 2, 3	32
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
e. LPCS Pump Discharge Pressure-High (Permissive)	2	1, 2, 3	32
f. LPCI Pump A Discharge Pressure-High (Permissive)	2	1, 2, 3	32
g. Manual Initiation	1/division	1, 2, 3	34
h. Drywell Pressure Bypass Timer	1	1, 2, 3	32
i. Manual Inhibit	1/division	1, 2, 3	34

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

TRIP FUNCTION	MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION(a)	APPLICABLE OPERATIONAL CONDITIONS	ACTION
B. DIVISION 2 TRIP SYSTEM			
1. RHR B & C (LPCI MODE)			
a. Reactor Vessel Water Level - Low, Low Low, Level 1	2(b)	1, 2, 3, 4*, 5*	30
b. Drywell Pressure - High	2(b)	1, 2, 3	30
c. LPCI B and C Injection Valve Injection Line Pressure-Low (Permissive)	1/valve	1, 2, 3 4*, 5*	32 33
d. LPCI Pump B Start Time Delay Relay	1	1, 2, 3, 4*, 5*	32
e. LPCI Pump Discharge Flow - Low (Bypass)	1/pump	1, 2, 3, 4*, 5*	31
f. Manual Initiation	1/division	1, 2, 3, 4*, 5*	34
g. LPCI B and C Injection Valve Reactor Pressure-Low (Permissive)	2	1, 2, 3, 4*, 5*	38 33
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"#			
a. Reactor Vessel Water Level - Low Low Low, Level 1 coincident with	2(b)	1, 2, 3	30
b. Drywell Pressure - High	2(b)	1, 2, 3	30
c. ~~ADS~~ Initiation Timer	1	1, 2, 3	32
d. Reactor Vessel Water Level - Low, Level 3 (Permissive)	1	1, 2, 3	32
e. LPCI Pump B and C Discharge Pressure - High (Permissive)	2/pump	1, 2, 3	32
f. Manual Initiation	1/division	1, 2, 3	34
g. Drywell Pressure Bypass Timer	1	1, 2, 3	32
h. Manual Inhibit	1/division	1, 2, 3	34

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

ACTION

ACTION 30 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement:

a. With one channel inoperable, place the inoperable channel in the tripped condition within one hour* or declare the associated system inoperable.

b. With more than one channel inoperable, declare the associated system inoperable.

ACTION 31 - With the number of OPERABLE channels less than required by the Minimum OPERABLE channels per Trip Function, place the inoperable channel in the tripped condition within one hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated system inoperable.

ACTION 32 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, declare the associated ADS trip system or ECCS inoperable.

ACTION 33 - With the number of OPERABLE channels less than the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within one hour.

ACTION 34 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 8 hours or declare the associated ADS ~~valve~~ trip system or ECCS inoperable.

ACTION 35 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement

a. For one trip system, place that trip system in the tripped condition within one hour* or declare the HPCS system inoperable.

b. For both trip systems, declare the HPCS system inoperable.

ACTION 36 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within one hour* or declare the HPCS system inoperable.

ACTION 37 - With the number of OPERABLE channels less than the Total Number of Channels, declare the associated emergency diesel generator inoperable and take the ACTION required by Specification 3.8.1.1 or 3.8.1.2, as appropriate.

*The provisions of Specification 3.0.4 are not applicable.

NO CHANGES ON THIS PAGE

FOR REFERENCE ONLY

TABLE 3.3.3-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION

ACTION

ACTION 38 With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per trip function requirements:

a. With one channel inoperable, remove the inoperable channel within one hour; restore the inoperable channel to OPERABLE status within 7 days or declare the associated ECCS systems inoperable.

b. With both channels inoperable, restore at least one channel to OPERABLE status within one hour or declare the associated ECCS system inoperable.

TABLE 3.3.3-2

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
A. DIVISION 1 TRIP SYSTEM		
1. RHR-A (LPCI MODE) AND LPCS SYSTEM		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches*	≥ -136 inches*
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig
c. LPCS Pump Discharge Flow-Low	≥ 750 gpm	≥ 640 gpm
d. LPCS and LPCI A Injection Valve Injection Line-Low Pressure Interlock	500 psig	500 ± 20 psig
e. LPCS and LPCI A Injection Valve Reactor Pressure-Low Pressure Interlock	500 psig	500 ± 20 psig
f. LPCI Pump A Start Time Delay Relay	≤ 5 seconds	≤ 6 seconds
g. LPCI Pump A Discharge Flow-Low	≥ 1000 gpm	≥ 550 gpm
h. Manual Initiation	N.A.	N.A.
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -129 inches*	≥ -136 inches*
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig
c. ADS Initiation Timer	≤ 105 seconds	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3	≥ 12.5 inches*	≥ 11 inches*
e. LPCS Pump Discharge Pressure-High	≥ 146 psig, increasing	≥ 136 psig, increasing
f. LPCI Pump A Discharge Pressure-High	≥ 119 psig, increasing	≥ 106 psig, increasing
g. Manual Initiation	N.A.	N.A.
h. Drywell Pressure Bypass Timer	≤ 9.0 minutes	footnote (a)
i. Manual Inhibit	N.A.	N.A.

(a). The sum of the time delays associated with the ADS initiation timer and the drywell pressure bypass timer shall be less than or equal to 687 seconds.

TABLE 3.3.3-2 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
B. DIVISION 2 TRIP SYSTEM		
1. RHR B AND C (LPCI MODE)		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ 129 inches*	≥ 136 inches*
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig
c. LPCI B and C Injection Valve Injection Line Low Pressure Interlock	500 psig	500 ± 20 psig
d. LPCI Pump B Start Time Delay Relay	≤ 5 seconds	≤ 6 seconds
e. LPCI Pump Discharge Flow-Low	≥ 1000 gpm	≥ 550 gpm
f. Manual Initiation	N.A.	N.A.
g. LPCI B and C Injection Valve Reactor Pressure-Low Pressure Interlock	500 psig	500 ± 20 psig
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ 129 inches*	≥ 136 inches*
b. Drywell Pressure - High	≤ 1.69 psig	≤ 1.89 psig
c. ~~ADS~~ Initiation Timer	≤ 105 seconds	≤ 117 seconds
d. Reactor Vessel Water Level-Low, Level 3	≥ 12.5 inches*	≥ 11 inches*
e. LPCI Pump B amd C Discharge Pressure-High	≥ 119 psig, increasing	≥ 106 psig, increasing
f. Manual Initiation	N.A.	N.A.
g. Drywell Pressure Bypass Timer	≤ 9.0 minutes	footnote (a)
h. Manual Inhibit	N.A.	N.A.

(a) The sum of the time delays associated with the ADS initiation timer and the drywell pressure bypass timer shall be less than or equal to 687 seconds.

TABLE 4.3.3.1-1

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
A. DIVISION I TRIP SYSTEM				
1. RHR-A (LPCI MODE) AND LPCS SYSTEM				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. LPCS Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
d. LPCS and LPCI A Injection Valve Injection Line Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
e. LPCS and LCPI A Injection Valve Reactor Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
f. LPCI Pump A Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*
g. LPCI Pump A Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
h. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "A"#				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure-High	NA	M	Q	1, 2, 3
c. Initiation ~~ADS~~ Timer	NA	M	Q	1, 2, 3
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
e. LPCS Pump Discharge Pressure-High	NA	M	Q	1, 2, 3
f. LPCI Pump A Discharge Pressure-High	NA	M	Q	1, 2, 3
g. Manual Initiation	NA	R	NA	1, 2, 3
h. Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3
i. Manual Inhibit	NA	R	NA	1, 2, 3

TABLE 4.3.3.1-1 (Continued)

EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SURVEILLANCE REQUIREMENTS

TRIP FUNCTION	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
B. DIVISION 2 TRIP SYSTEM				
1. RHR B AND C (LPCI MODE)				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3, 4*, 5*
b. Drywell Pressure - High	NA	M	Q	1, 2, 3
c. LPCI B and C Injection Valve Injection Line Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
d. LPCI Pump B Start Time Delay Relay	NA	M	Q	1, 2, 3, 4*, 5*
e. LPCI Pump Discharge Flow-Low	NA	M	Q	1, 2, 3, 4*, 5*
f. Manual Initiation	NA	R	NA	1, 2, 3, 4*, 5*
g. LPCI B and C Injection Valve Reactor Pressure Low Interlock	NA	M	R	1, 2, 3, 4*, 5*
2. AUTOMATIC DEPRESSURIZATION SYSTEM TRIP SYSTEM "B"#				
a. Reactor Vessel Water Level - Low Low Low, Level 1	S	M	R	1, 2, 3
b. Drywell Pressure-High	NA	M	Q	1, 2, 3
c. Initiation ~~ADS~~ Timer	NA	M	Q	1, 2, 3
d. Reactor Vessel Water Level - Low, Level 3	S	M	R	1, 2, 3
e. LPCI Pump B and C Discharge Pressure-High	NA	M	Q	1, 2, 3
f. Manual Initiation	NA	R	NA	1, 2, 3
g. Drywell Pressure Bypass Timer	NA	M	Q	1, 2, 3
h. Manual Inhibit	NA	R	NA	1, 2, 3

3/4.5 EMERGENCY CORE COOLING SYSTEMS

3/4.5.1 ECCS - OPERATING

LIMITING CONDITION FOR OPERATION

3.5.1 ECCS divisions 1, 2 and 3 shall be OPERABLE with:

a. ECCS division 1 consisting of:

1. The OPERABLE low pressure core spray (LPCS) system with a flow path capable of taking suction from the suppression chamber and transferring the water through the spray sparger to the reactor vessel.

2. The OPERABLE low pressure coolant injection (LPCI) subsystem "A" of the RHR system with a flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel.

3. At least 6 OPERABLE** ADS valves.

b. ECCS division 2 consisting of:

1. The OPERABLE low pressure coolant injection (LPCI) subsystems "B" and "C" of the RHR system, each with a flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel.

2. At least 6 OPERABLE** ADS valves.

c. ECCS division 3 consisting of the OPERABLE high pressure core spray (HPCS) system with a flow path capable of taking suction from the suppression chamber and transferring the water through the spray sparger to the reactor vessel.

APPLICABILITY: OPERATIONAL CONDITION 1, 2*# and 3*.

* The ADS is not required to be OPERABLE when reactor steam dome pressure is less than or equal to 122 psig.

#See Special Test Exception 3.10.6.

** See Specification 3.3.3 for trip system operability

3/4.5 EMERGENCY CORE COOLING SYSTEM

BASES

3/4.5.1 and 3/4.5.2 ECCS - OPERATING and SHUTDOWN

ECCS Division 1 consists of the low pressure core spray system, low pressure coolant injection subsystem "A" of the RHR system, and the automatic depressurization system (ADS) as actuated by ADS trip system "A". ECCS Division 2 consists of low pressure coolant injection subsystems "B" and "C" of the RHR system and the automatic depressurization system as actuated by ADS trip system "B".

The low pressure core spray (LPCS) system is provided to assure that the core is adequately cooled following a loss-of-coolant accident and provides adequate core cooling capacity for all break sizes up to and including the double-ended reactor recirculation line break, and for smaller breaks following depressurization by the ADS.

transients or

The LPCS is a primary source of emergency core cooling after the reactor vessel is depressurized and a source for flooding of the core in case of accidental draining.

The surveillance requirements provide adequate assurance that the LPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

The low pressure coolant injection (LPCI) mode of the RHR system is provided to assure that the core is adequately cooled following a loss-of-coolant accident. Three subsystems, each with one pump, provide adequate core flooding for all break sizes up to and including the double-ended reactor recirculation line break, and for small breaks following depressurization by the ADS.

transients or

The surveillance requirements provide adequate assurance that the LPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

ECCS Division 3 consists of the high pressure core spray system. The high pressure core spray (HPCS) system is provided to assure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break in the reactor coolant system and loss of coolant which does not result in rapid depressurization of the reactor vessel. The HPCS system permits the reactor to be shut down while maintaining sufficient reactor vessel water level inventory until the vessel is depressurized. The HPCS system operates over a range of 1160 psid, differential pressure between reactor vessel and HPCS suction source, to 0 psid.

The capacity of the HPCS system is selected to provide the required core cooling. The HPCS pump is designed to deliver greater than or equal to 516/1550/6200 gpm at differential pressures of 1160/1130/200 psid. Initially, water from the condensate storage tank is used instead of injecting water from

ECCS-OPERATING and SHUTDOWN (Continued)

the suppression pool into the reactor, but no credit is taken in the hazards analyses for the condensate storage tank water.

With the HPCS system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the LPCS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the hazards analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCS out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems.

The surveillance requirements provide adequate assurance that the HPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCS system to function properly, if required, ~~after a small break loss-of-coolant accident,~~ the automatic depressurization system (ADS) automatically causes selected safety-relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 122 psig even though low pressure core cooling systems provide adequate core cooling up to 350 psig.

ADS automatically controls seven selected safety-relief valves. Six valves are required to be OPERABLE although the hazards analysis only takes credit for five valves. It is therefore appropriate to permit one of the required valves to be out-of-service for up to 14 days without materially reducing system reliability.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is also required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCS, LPCS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITIONS 1, 2 or 3 is required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume, vortex prevention plus a 2'-4" safety margin for conservatism.

ATTACHMENT C

SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison has evaluated the proposed Technical Specification Amendment and determined that it does not represent a significant hazards consideration. Based on the criteria for defining a significant hazards consideration established in 10 CFR 50.92, operation of LaSalle County Station Units 1 and 2 in accordance with the proposed amendment will not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated because the revised ADS logic doesn't affect automatic depressurization for events where high drywell pressure occurs. This modification automates the function of reactor vessel blowdown for events where high drywell pressure does not occur. Under these conditions, manual operation of the ADS system is called for by the emergency operating procedures and was assumed in Chapter 15 of the UFSAR.

2) Create the possibility of a new or different kind of accident from any accident previously evaluated because automatic depressurization is analyzed and required for events where high pressure coolant sources are unavailable and reactor vessel level is low. This change only automates what were previously manual operator actions.

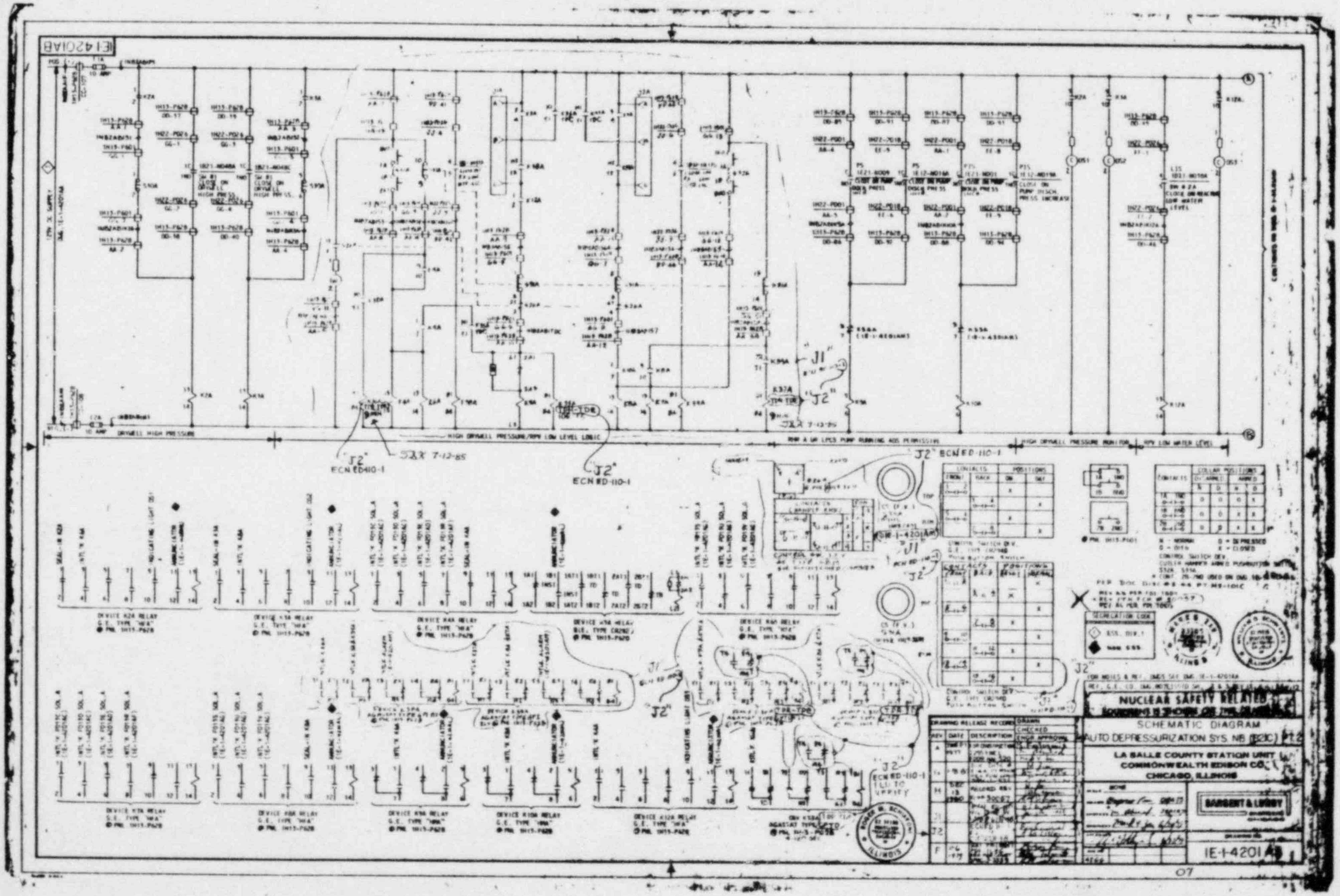
3) Involve a significant reduction in the margin of safety because the upgraded logic provides additional margin of safety for events where high drywell pressure does not occur while still providing the same level of protection for events where high drywell pressure does occur.

Based on the preceding discussion, it is concluded that the proposed system change clearly falls within all acceptable criteria with respect to the system or component, the consequences of previously evaluated accidents will not be increased and the margin of safety will not be decreased. Therefore, based on the guidance provided in the Federal Register and the criteria established in 10 CFR 50.92(e), the proposed change does not constitute a significant hazards consideration.

ATTACHMENT D

Schematic diagrams 4201 AB, AH, AM are included.

0329K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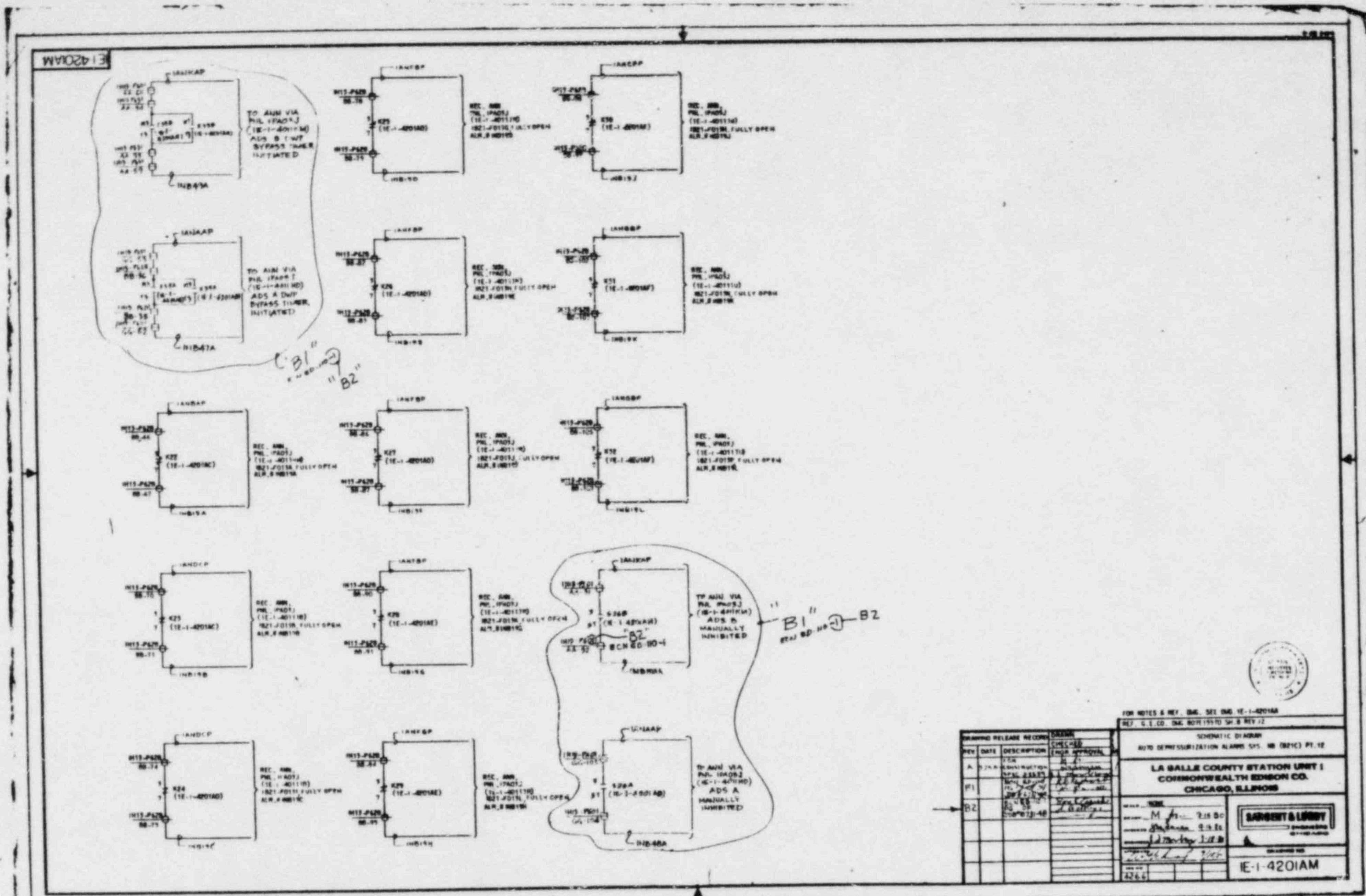
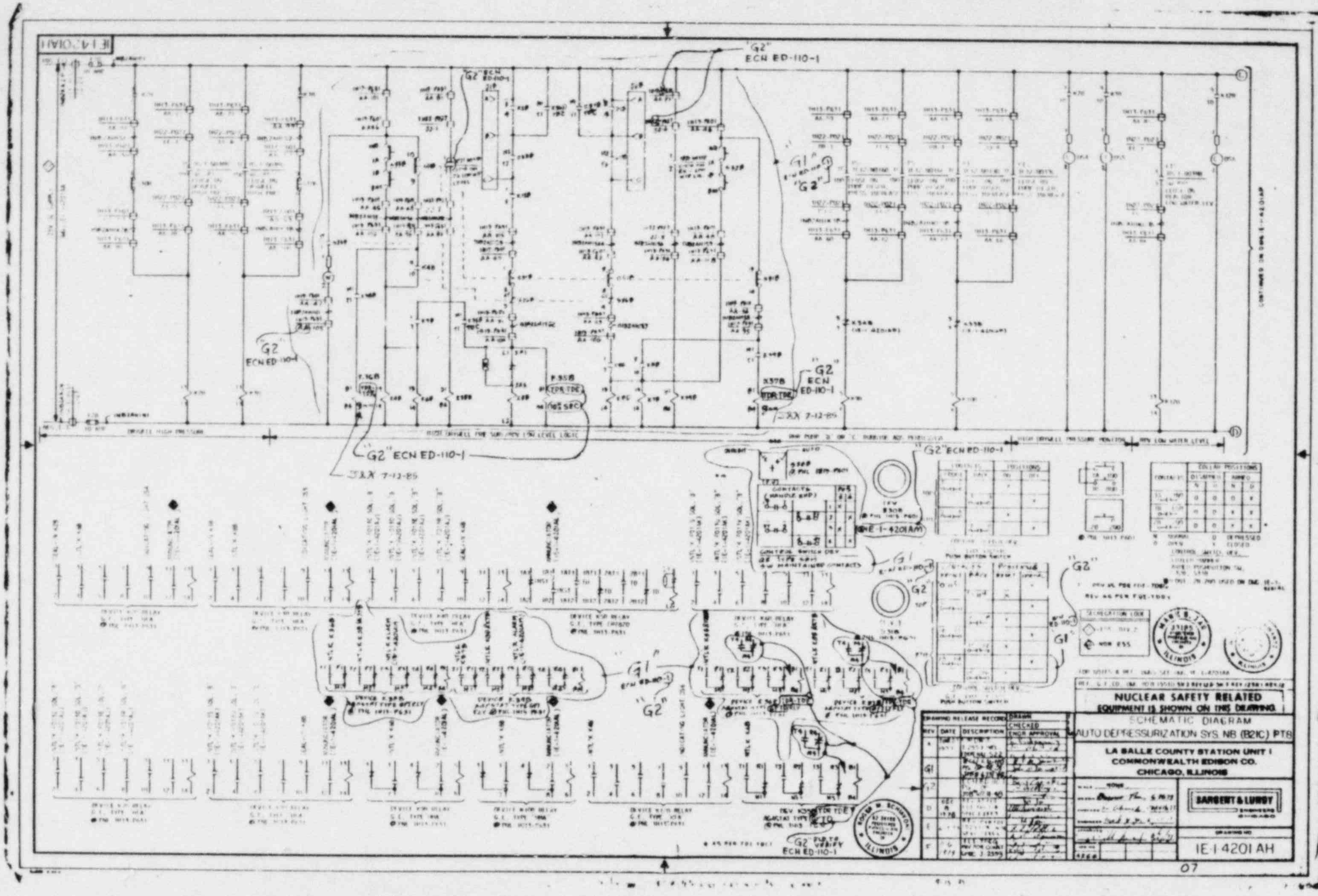
125V DC SUPPLY
DRYWELL HIGH PRESSURE
HIGH DRYWELL PRESSURE/RPV LOW LEVEL LOGIC
RHR A OR LPCS PUMP RUNNING ADS PERMISSIVE
HIGH DRYWELL PRESSURE MONITOR
RPV LOW WATER LEVEL
ECN ED-110-1
NUCLEAR SAFETY RELATED
SCHEMATIC DIAGRAM
AUTO DEPRESSURIZATION SYS. NB (B21C) Pt.2
LA SALLE COUNTY STATION UNIT 1
COMMONWEALTH EDISON CO.
CHICAGO, ILLINOIS
SARGENT & LUNDY
1E-1-4201AB


IE-1-4201AM
TO ANN VIA
ADS B TWP BYPASS TIMER INITIATED
ADS A TWP BYPASS TIMER INITIATED
"B1"
"B2"
ADS B MANUALLY INHIBITED
ADS A MANUALLY INHIBITED
"B1"
B2
FOR NOTES & REF. DWG. SEE DWG. 1E-1-4201AA
SCHEMATIC DIAGRAM
AUTO DEPRESSURIZATION ALARMS SYS. NB (B21C) PT. 12
LA SALLE COUNTY STATION UNIT 1
COMMONWEALTH EDISON CO.
CHICAGO, ILLINOIS
DRAWING RELEASE RECORD
REV
DATE
DESCRIPTION
DRAWN
CHECKED
ENGR APPROVAL
A
F1
B2
SARGENT & LUNDY
4266
IE-1-4201AM



1E-1-4201 AH
"G2" ECN ED-110-1
"G2" ECN ED-110-1
"G1"
"G2"
"G2" ECN ED-110-1
JXX 7-12-85
DRYWELL HIGH PRESSURE
RPV LOW WATER LEVEL
CONTINUED ON DWG 1E-1-4201AP
NUCLEAR SAFETY RELATED
EQUIPMENT IS SHOWN ON THIS DRAWING
SCHEMATIC DIAGRAM
AUTO DEPRESSURIZATION SYS. NB (B21C) PT8
LA SALLE COUNTY STATION UNIT 1
COMMONWEALTH EDISON CO.
CHICAGO, ILLINOIS
SARGENT & LUNDY
1E-1-4201 AH
07
DRAWING RELEASE RECORD
REV
DATE
DESCRIPTION
DRAWN
CHECKED
ENGR APPROVAL
PUSH BUTTON SWITCH
CONTROL SWITCH DEV.
"G2" PLS VERIFY ECN ED-110-1

To: JCRenwick (LSCS)

2.11.18R

Tech Spec

GENERAL ELECTRIC

NUCLEAR POWER

SYSTEMS DIVISION

GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125
MC 391, (408) 925-3798

ATTACHMENT E

Rec'd 2 Oct 83

• Full copy to JCRenwick
• Partial copy to augment our 21 Sept 83 letter to CW Behnke

September 29, 1983
LS-2894

Mr. T. E. Watts
Commonwealth Edison Company
One First National Plaza
Chicago, IL 60690

Dear Tom:

SUBJECT: LASALLE COUNTY STATION UNITS 1 & 2
ADS LOGIC MODIFICATION - TECHNICAL SPECIFICATION MODIFICATIONS AND TIMER SETTINGS

This letter provides the basis for selecting the timer settings for the ADS Logic Drywell Pressure Bypass Timer (DPBT) for the LaSalle units and provides technical specification revisions to reflect the modification.

Maximum and minimum setpoints for the DPBT are determined based on minimizing the operator actions related to the ADS logic, minimizing the chance for unintentional ADS and limiting the impact on design basis ECCS analysis. The nominal trip setpoints and allowable values are derived from maximum or minimum value after taking setpoint drift, accuracy and calibration prevision into account.

DPBT Analytic Limit

The DPBT Analytic Limit is based on design bases FSAR calculation of the main steam line break outside of containment. For this event, with HPCS assumed to be unavailable, manual ADS is currently modeled at a maximum of 10 minutes after the event begins. To account for the revised ADS logic, a revised calculation has been made with ADS occurring about 10 minutes after RPV level reaches Level 1. The design goal is to limit the PCT to about 1500°F. This limit is somewhat arbitrary, but has been set so that this event does not become the limiting design bases accident (DBA).

The results of the calculation (Figures 1 through 4) show that the final Peak Cladding Temperature (PCT) with the DPBT set at 10 minutes plus the existing 2 minute ADS initiation delay is 1493°F. The analytical limit for the DPBT is set at 10 minutes.

Trip Setpoint and Allowable Value

The trip setpoint for the DPBT is determined after consideration of the analytical limit, instrument setpoint accuracy, calibration and drift.

The allowable value determined by the methodology described in GE document 22A5261 yields a trip setpoint of 9.0 minutes and an allowable value of 9.5 minutes. (5% setpoint accuracy, .1 minute calibration error and .5 minute drift is assumed based on manufacturer information.)

With these values the LER avoidance probability is greater than 90%.

Minimum Setpoint

The minimum setpoint is such that the operator is not unduly burdened during an ATWS event by having to repeatedly reset the ADS logic initiation delay. The time delay should be long enough so that the operator has time to stabilize RPV water level (per EPGs Contingency 7) near the top of active fuel before manually inhibiting ADS with the new inhibit switch which is part of the logic modification. With this approach, the operator is keyed by the startup of the ADS initiation delay to either inhibit ADS or prepare for depressurization depending on whether RPV water level is stabilized or decreasing.

To determine the minimum time delay value, several assumptions have been made with regard to operator actions and responsiveness:

1. Following an ATWS event from full power with MSIV closure, water level will drop to near the RPV level 1 trip setpoint (L1) and then start to increase due to automatic initiation of HPCS at L2 and injection of boron through the Standby Liquid Control System (SLCS). No operator action is expected until suppression pool water temperature is observed to be greater than 110°F. If the RPV water level has dropped below L1, which starts the DPBT, RPV level is expected to increase above L1 before the operator manually controls RPV level. This allows the DPBT to reset. LaSalle Emergency Procedures are assumed to specify this action even though restoration above L1 is not specifically called for in the EPGs.

   Engineering judgment has been used to determine that for a limiting ATWS event, the RPV level will recover about L1 (if it goes below L1) before the DPBT runs out without operator action. This judgment, which is based on generic BWR/5 evaluations of ATWS events (NEDE 24222), assumes that:

   a. The proposed ATWS rule is implemented (draft 10CFR50.62, August 3, 1983).

b. SLCS injection location is repiped from the current lower plenum standpipe to the HPCS (vessel side of the HPCS injection valve).

c. The operator follows the BWR EPGs and initiates SLCS when the suppression pool temperature reaches 110°F.

With these assumptions, it has been judged that a 5-minute DPBT timer setpoint would allow avoidance of ADS during the initial stages of an ATWS event.

2. After taking manual RPV level control, the EPGs instruct the operator to lower indicated RPV water level to near the top of active fuel. When water level decreases below L1, the DPBT will start. Since the RPV wide-range level indication is at the bottom of its indicating range, the operator will need to stabilize the RPV level based on the fuel zone indicator (which will indicate well below the top of active fuel due to lack of pressure compensation relative to the fuel zone calibration condition). The time required from reaching L1 to stabilization of the water level is somewhat uncertain. It is judged that 5 minutes is adequate for stabilization of the RPV level under these conditions.

The above two considerations place a minimum setpoint at about 5 minutes for LaSalle. Since this is less than the trip setpoint determined above, use of the trip setpoint allows adequate time for operator action following ATWS events without becoming unduly burdened.

Technical Specification Modifications

NOT INCLUDED

The LaSalle technical specification and bases were reviewed to determine any modifications required due to implementation of this modification to the ADS logic. Tables 3.3.3-1, 3.3.3-2 and 4.3.3.1-1 require modification. Attachment A includes a markup of these two tables showing the required changes. ✓

NOT INCLUDED.

A slight clarification to the bases 3/4.5.1 and 3/4.5.2 should also be made. A markup showing these changes is also included on Attachment A. ✓

Finally, it should be noted that although no change to the technical specification is needed, the functional test procedure to conform with Section 4.5.1.d should be modified to include the DPBT function.

Very truly yours,

H. R. Peffer, Project Manager
LaSalle County Station Units 1 & 2

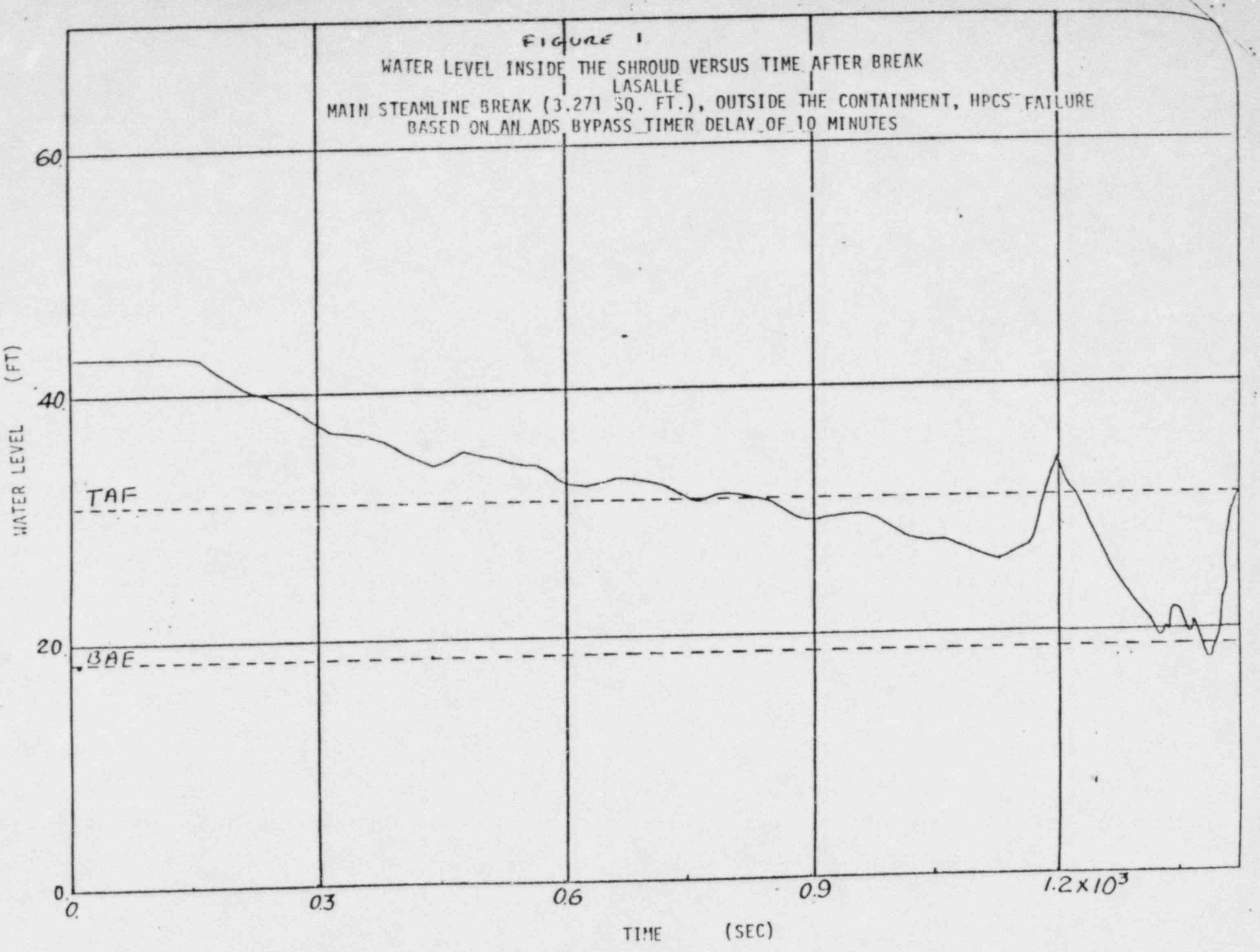
HRP:cal/K09294

Attachments

cc: J. E. Ellis
D. C. Haan
R. Janecek
P. B. Kavanagh
F. Leone
B. R. Shelton
R. E. Spencer
DBL/CTK

FIGURE 1

WATER LEVEL INSIDE THE SHROUD VERSUS TIME AFTER BREAK
LASALLE
MAIN STEAMLINE BREAK (3.271 SQ. FT.), OUTSIDE THE CONTAINMENT, HPCS FAILURE
BASED ON AN ADS BYPASS TIMER DELAY OF 10 MINUTES



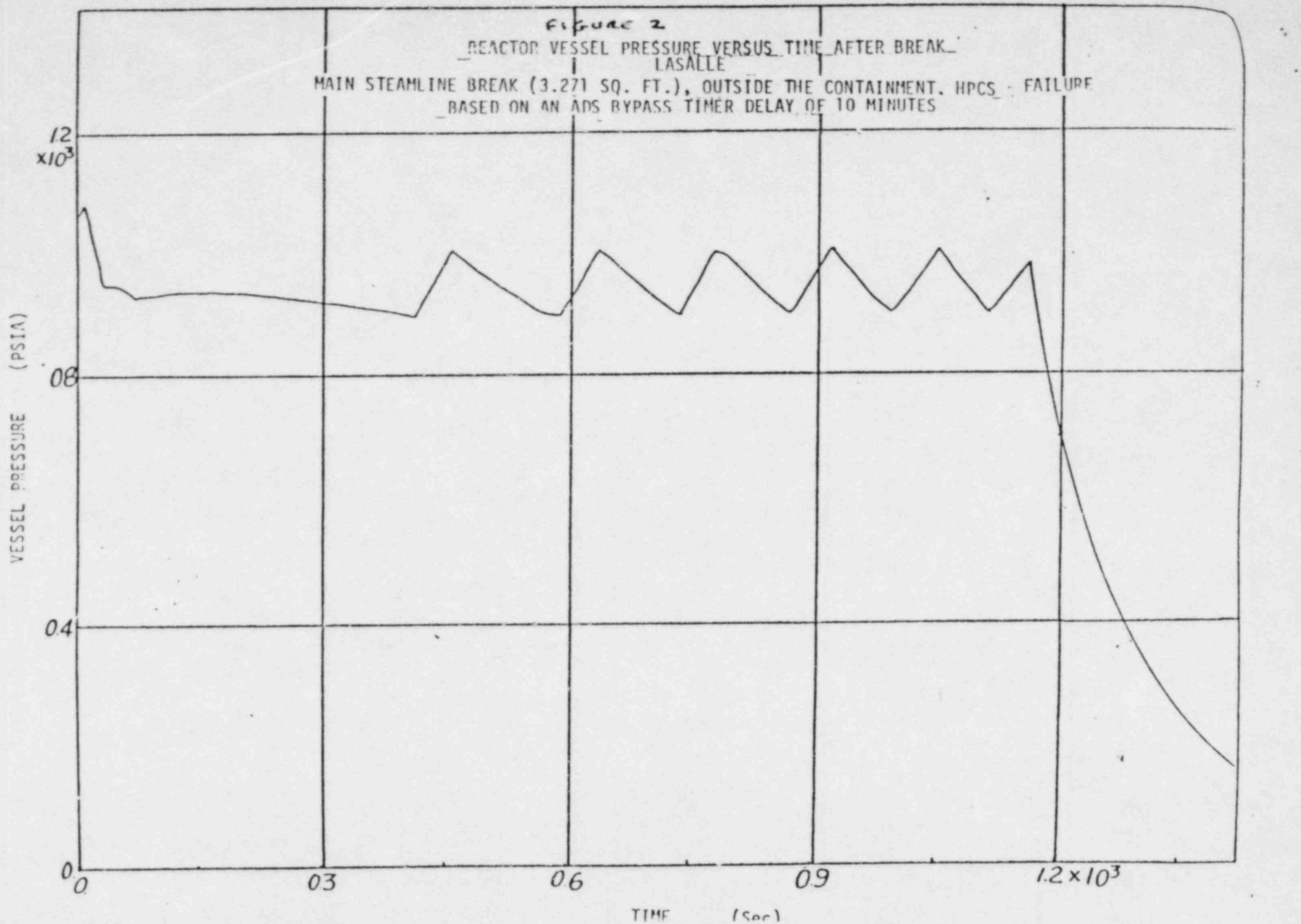


Figure 2

REACTOR VESSEL PRESSURE VERSUS TIME AFTER BREAK
LASALLE
MAIN STEAMLINE BREAK (3.271 SQ. FT.), OUTSIDE THE CONTAINMENT. HPCS - FAILURE
BASED ON AN ADS BYPASS TIMER DELAY OF 10 MINUTES

Figure 3

PEAK CLAD TEMPERATURE VERSUS TIME AFTER BREAK

LASALLE

MAIN STEAMLINE BREAK (3.271 SQ. FT.), OUTSIDE THE CONTAINMENT, HPCS FAILURE

BASED ON AN ADS BYPASS TIMER DELAY OF 10 MINUTES

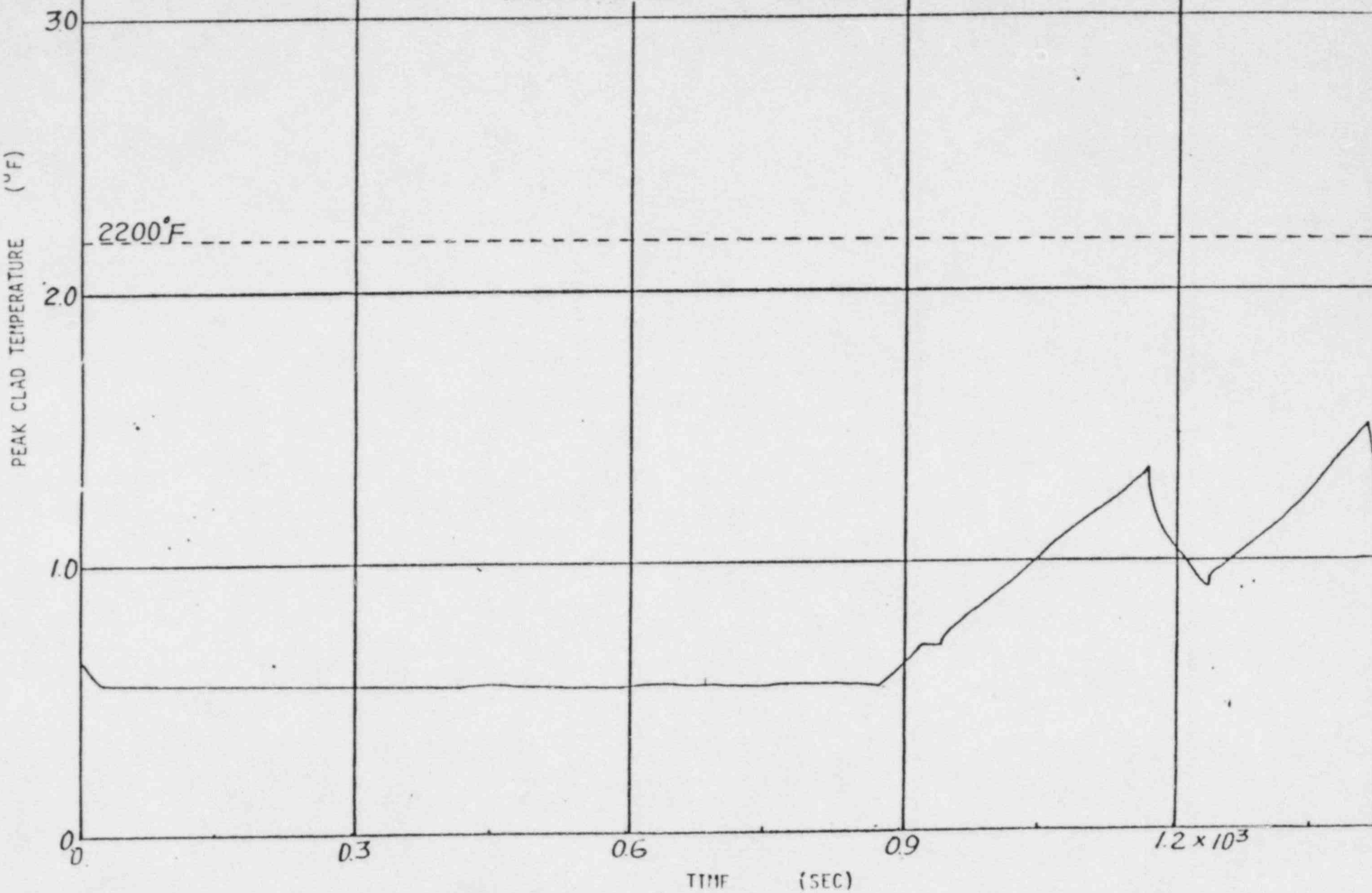


FIGURE 4

FUEL ROD CONVECTIVE HEAT TRANSFER COEFFICIENT VERSUS TIME AFTER BREAK
LASALLE
MAIN STEAMLINE BREAK (3.271 SQ. FT.), OUTSIDE THE CONTAINMENT, HPCS FAILURE
BASED ON AN ADS BYPASS TIMER DELAY OF 10 MINUTES