



April 14, 1997

**United States Nuclear Regulatory Commission**  
**Attention: Document Control Desk**  
**Washington, D.C. 20555**

**Subject:** LaSalle County Nuclear Power Station Units 1 and 2  
Application for Amendment of Facility Operating Licenses  
NPF-11 and NPF-18, Appendix A, Technical Specifications,  
Feedwater/Main Turbine Trip System Actuation  
Instrumentation Design Change.  
NRC Docket Nos. 50-373 and 50-374

Pursuant to 10 CFR 50.90, Commonwealth Edison Company (ComEd) proposes to revise Appendix A, Technical Specifications of Facility Operating Licenses NPF-11 and NPF-18, LaSalle County Station Units 1 and 2. The proposed changes include changes to the Technical Specifications (TS) to reflect a design change to the trip logic for the Feedwater/Main Turbine Trip System Actuation Instrumentation for the Reactor Vessel Water Level - High, Level 8 Trip Function. The TS affected is TS 3/4.3.8, Feedwater/Main Turbine Trip System Actuation Instrumentation. The proposed changes are based on a design change and are consistent with other LaSalle instrumentation Technical Specifications.

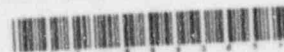
This proposed amendment request is subdivided as follows:

1. Attachment A gives a description and safety analysis of the proposed changes in this amendment.
2. Attachment B includes the marked-up License/Technical Specifications pages for LaSalle Units 1 and 2 with the requested changes indicated.
3. Attachment C describes ComEd's evaluation performed in accordance with 10 CFR 50.92 (c), which confirms that no significant hazard consideration is involved.
4. Attachment D provides an Environmental Assessment Applicability Review per 10 CFR 51.21.

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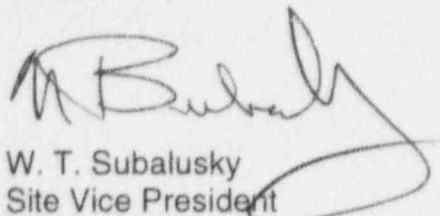
This proposed amendment has been reviewed and approved by ComEd Onsite and Offsite Review in accordance with procedures.

ComEd requests approval of this amendment request prior to startup from the current Unit 2 refueling outage, L2R07 and the current Unit 1 forced outage, L1F35, with an implementation time of 60 days. Unit 1 is scheduled to startup in September 1997, prior to Unit 2.

ComEd is notifying the State of Illinois of this application for amendment by transmitting a copy of this letter and its attachments to the designated state official.

If there are any further questions or comments concerning this submittal, please refer them to Perry L. Barnes, Regulatory Assurance Supervisor, at (815) 357-6761, extension 2383.

Respectfully,

A handwritten signature in dark ink, appearing to read 'W. T. Subalusky', with a large, sweeping flourish extending from the end of the signature.

W. T. Subalusky  
Site Vice President  
LaSalle County Station

Enclosure

cc: A. B. Beach, NRC Region III Administrator  
M. P. Huber, NRC Senior Resident Inspector - LaSalle  
D. M. Skay, Project Manager - NRR - LaSalle  
F. Niziolek, Office of Nuclear Facility Safety - IDNS

STATE OF ILLINOIS )

COUNTY OF LASALLE )

Docket Nos. 50-373  
50-374

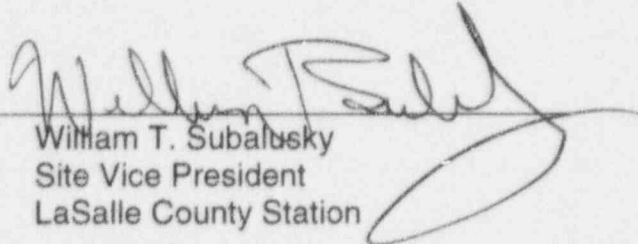
IN THE MATTER OF )

COMMONWEALTH EDISON COMPANY )

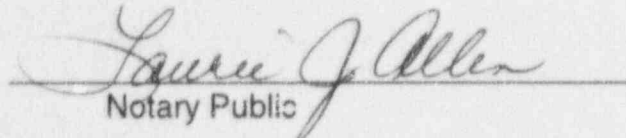
LASALLE COUNTY STATION - UNITS 1 & 2 )

### AFFIDAVIT

I affirm that the content of this transmittal is true and correct to the best of my knowledge,  
information and belief.

  
William T. Subalusk  
Site Vice President  
LaSalle County Station

Subscribed and sworn to before me, a Notary Public in and  
for the State and County above named, this 14<sup>th</sup> day of  
April, 1997. My Commission expires on  
October 1, 2000.

  
Notary Public



**ATTACHMENT A**  
**DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES**

**Description of the Proposed Change**

This proposed license amendment will change Technical Specification (TS) 3/4.3.8, Feedwater/Main Turbine Trip System Actuation Instrumentation, due to a design change to resolve a potential instrument line redundancy issue concerning the Reactor Vessel Water Level-High, Level 8, Trip Function. The actuation logic currently consists of three instruments with auxiliary relay contacts arranged in a two out of three trip logic. Therefore, when high reactor water level is sensed by any two of the three level instruments, an actuation signal is generated to trip the Feedwater Pumps and the Main Turbine.

There are only two variable water legs for the narrow range reactor water level instrumentation. As a result, two of the instruments for the Feedwater/Main Turbine Reactor Vessel Water Level-High Trip Function are on one narrow range variable (or active) water leg, the remaining instrument is on the other narrow range variable water leg.

A design change is being installed during the current outages for LaSalle County Station (LaSalle) Units 1 and 2 that adds an auxiliary contact from a RCIC Reactor Vessel Water Level-High instrument to channel C of the Feedwater/Main Turbine Trip System logic to prevent a failure to trip the Feedwater Pumps and Main Turbine on high level due to the loss of one of the two narrow range level variable water leg instrument lines. The Feedwater/Main Turbine Trip System logic will remain a two out of three logic.

As a result of the additional instrument channel in the two out of three trip logic, a TS change is required to change the minimum channels required to be Operable from three to four, and to revise the Limiting Condition for Operation Action Statements due to the additional instrument channel.

**ATTACHMENT A**  
**DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES**

**Description of the Current Operating License/Technical Specification Requirement**

Technical Specification Table 3.3.8-1, Feedwater/Main Turbine Trip System Actuation Instrumentation, requires three channels per trip system to be Operable. The number of channels matches the number of sensors and the associated actions fit both the number of channels required and the two out of three actuation logic of the current design. The Actions for inoperable channels are as follows:

- b. "With the number of OPERABLE channels one less than that required by the Minimum OPERABLE Channels per Trip System requirement:
  - 1. Within 7 days, either place the inoperable channel in the tripped\* condition or restore the inoperable channel to OPERABLE status.
  - 2. Otherwise, be in at least STARTUP within 6 hours.
- c. "With the number of OPERABLE channels two less than required by the Minimum OPERABLE Channels per Trip System requirement:
  - 1. Within 2 hours place or verify at least one inoperable channel in the tripped\* condition, and restore either inoperable channel to OPERABLE status within 72 hours, or,
  - 2. Be in at least STARTUP within the next 6 hours."

Note \* is as follows:

- \* "An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur."



## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

#### Bases for the Current Requirement

The design bases for the Feedwater Control system states that the system regulates feedwater flow to:

1. Maintain adequate water level in the reactor vessel according to the requirements of the steam separator.
2. Prevent uncovering the reactor core over the entire power range of the reactor.

The high reactor water level trip (55.5") of the Feedwater Pumps and Main Turbine is to maintain water level per steam separator requirements. Chapter 7.7.4 of the UFSAR states that this function is an equipment protective action preventing moisture carry-over in main steam from damaging the main turbine and preventing high pressure liquid discharge through the safety/relief valve discharge lines in the case of a Feedwater Controller Failure to Maximum Demand. The Bases for TS 3/4.3.8 addresses the trip preventing high pressure liquid discharge through the safety/relief valve discharge lines in the case of a Feedwater Controller Failure to Maximum Demand.

The trip system is not designed to any applicable IEEE standards, Reg Guides or 10CFR50 Appendix A General Design Criteria per UFSAR Table 7.1-2, "Codes and Standards Applicability Matrix". The trip system is not required nor designed to meet single failure criteria. This is a non-safety/non-divisional trip actuation, which is required in Operational Condition 1, Run Mode, by Technical Specification 3/4.3.8 such that high integrity is maintained. The current channel and trip system logic is depicted in Figures 2 and 4, attached.

Actions b and c assure that automatic trip capability is maintained, except for a maximum of 2 hours (Action c.1) and limits the time that a single failure of a remaining Operable instrument channel will not cause loss of automatic trip capability to 7 days in Action b.1 and 72 hours in Action c.1. No Bases is given for these actions in the current specifications and the UFSAR does not discuss inoperability of components beyond the ability to sustain the failure of one instrument channel for this logic.

## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

#### Description of the Need for Amending the Technical Specification

The level 8 trip utilizes three level signals to perform a trip function with 2 out of 3 logic. Even though the system is not divisionally separated, it still uses a separate power source for each water level signal and trip initiation circuit such that the loss of power to one trip signal will not prevent the trip from occurring. However, during a system design review for replacing the Reactor Water Level Control (RWLC) reactor water level instrument channel selector switch, it was identified that the loss of a single instrument variable water leg instrument line (line number 1(2)NB07) would result in the loss of the level 8 trip function due to reactor vessel narrow range water level transmitters 1(2)C34-N004B and 1(2)C34-N004C failing downscale. This failure would disable channels B and C of the Reactor Vessel Water Level-High, Level 8 trip logic of the Feedwater/Main Turbine Trip System Actuation Instrumentation. Figure 1 is a simplified diagram showing the high water level trip instrumentation.

A design change is being installed to add an additional high level trip signal from a separate sensor to the Feedwater/Main Turbine trip logic, while preserving the two out of three actuation logic. The added sensor will prevent the failure or loss of a single instrument variable water leg instrument line from preventing a Feedwater/Main Turbine trip system actuation on actual high reactor water level.

The addition of a contact to the Reactor Vessel Water Level-High, Level 8 trip logic of the Feedwater/Main Turbine Trip System Actuation Instrumentation, while maintaining the two out of three logic, requires a change to the TS in order to assure that proper actions are taken for channel inoperability for an inoperable sensor or instrument channel.

To distinguish between the 4 instrument inputs to the trip logic and the 3 trip channels of the trip system, The 4 instruments will be referred to as "instrument channels" and the three logic channels will be referred to as "trip channels".

## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

#### Description of the Amended Technical Specification Requirement

The Minimum Operable Channels per Trip System for Reactor Vessel Water Level - High, Level 8, Trip Function is proposed to be changed to 4 to account for the additional sensor that is being added to the Feedwater/Main Turbine Trip System Actuation Instrumentation for the Reactor Vessel Water Level-High, Level 8, Trip Function. The proposed TS Limiting Condition for Operation (LCO) Actions are:

TS 3.3.8 Actions b and c:

- b. With one or more channels required by Table 3.3.8-1 inoperable:
  - 1. Within two hours, verify sufficient channels remain OPERABLE or tripped\* to maintain trip capability, and
  - 2. Within 7 days, either place the inoperable channel(s) in the trip system in the tripped\* condition or restore the inoperable channel(s) to OPERABLE status.
- c. Otherwise, be in at least STARTUP within next 6 hours.

Note \* remains unchanged and is as follows.

- \* "An inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur."

Bases section 3/4.3.8 is proposed to be changed to insert the following text, regarding the logic change:

"The four instrument channels are arranged to make a two out of three trip logic. In order to eliminate the loss of the reactor vessel water level eight trip due to the loss of either variable leg instrument line for narrow range level instrumentation, trip channel C of the level 8 trip logic contains two reactor vessel water level 8 sensor trip relay contacts. Therefore, trip channel C contains two channels, providing the redundancy needed to prevent a failure to trip of the feedwater pumps/main turbine due to an instrument line failure. One of the four channels (one of the two channels in trip channel C) is from the Channel A, RCIC reactor vessel water level 8 trip relay, which is associated with TS 3.3.5. Reactor Core Isolation Cooling System Actuation Instrumentation.



## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

"Actions b.1 and b.2 are modified by a Note that states that an inoperable channel need not be placed in the tripped condition where this would cause the Trip Function to occur. This note acknowledges that an orderly shutdown per Action c is preferred to the transient that will occur if the trip were actuated.

"Action b.1 assures that whatever combination of channels are inoperable, that automatic trip capability either exists or is restored within two hours, which is sufficient for the operator to take corrective action and takes into account the likelihood of an event requiring actuation of this Trip Function. This will require a minimum of two channels Operable or one channel Operable with one channel in the tripped condition in order to satisfy Action b.1. If Action b.1 is satisfied, then Action b.2 is entered. If Action b.1 is not satisfied, then Action c must be entered.

"Action b.2 assures that each inoperable channel is placed in the tripped condition within 7 days. If each inoperable channel is in the tripped condition or declared Operable within 7 days, then continued unit operation is allowed, due to the remaining redundancy for single instrument failure. If one or more channels are inoperable, and cannot be placed in the tripped condition or declared Operable within 7 days, then Action c must be entered.

"An auxiliary relay contact of Channel A of the RCIC Reactor Vessel Water Level - High, Level 8 instrumentation channel is used as an input to trip Channel C of the Feedwater/Main Turbine Trip System Actuation Instrumentation. Therefore, the Limiting Condition for Operation and Surveillance Requirements of both TS 3/4.3.5 and 3/4.3.8 are applicable to the RCIC level 8 channel A instrumentation channel."

In addition, the Bases for TS 3/4.3.5, Reactor Core Isolation Cooling (RCIC) System Actuation Instrumentation is being revised to indicate that channel A of the Reactor Vessel Water Level - High, Level 8 instrumentation is an input to Feedwater/Main Turbine Trip System Actuation Instrumentation.

#### **Bases for the Amended Technical Specification Request**

The four instrument channels are arranged to make a two out of three trip logic (see Figures 3 and 4). The two out of three logic depicted in Figure 4 is not changed by this design change. In order to eliminate the loss of the Reactor Vessel Water Level-

## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

High, Level 8, trip due to the loss of either variable water leg instrument line for narrow range level instrumentation, trip channel C of the level 8 trip logic contains two high reactor vessel water level (level 8) sensor trip relay contacts. Therefore, trip channel C contains two instrument channels, providing the redundancy needed to prevent a failure to trip of the Feedwater Pumps/Main Turbine due to an instrument line failure. One of the four channels (one of the two channels in trip channel C) is from the Channel A RCIC high reactor vessel water level (level 8) trip relay, which is required to be Operable per LCO 3.3.5, Reactor Core Isolation Cooling System Actuation Instrumentation.

The original Feedwater/Main Turbine trip on high reactor water level consisted of three channels, channels A, B, and C, actuated by three reactor water high level 8 trip units, C34-K624A, B, and C, respectively. The differential pressure (level) transmitters are C34-N004A, B, and C, respectively. The design change adds the A channel (Division 1) of RCIC Reactor Water Level-High, Level 8, signal to the Feedwater/Main Turbine Reactor Water Level-High, Level 8, trip logic channel C using a spare contact of auxiliary relay B21-K705AX.

The use of a spare contact from the RCIC high water level trip auxiliary relay assures the two logics are electrically isolated from each other. As a result, the failure of the logic for either RCIC or Feedwater/Main Turbine trip on high reactor water level will not affect the other system's logic. Also, the power supplies for RCIC Channel A and Feedwater/Main Turbine Channel C are the same electrical division and both are 125 VDC.

As a result of the design change, TS 3.3.8 LCO Action Statements b and c are restrictive for the trip channel with two instrument channels. If both instrument channels in trip channel C were inoperable, placing both channels in the tripped condition has the same result as one instrument channel inoperable in either trip channel A or B. However, for the case with both instrument channels in trip channel C inoperable, the current Action c would apply, even though trip capability and redundancy is maintained by tripping both instrument channels or the trip channel.

## ATTACHMENT A

### DESCRIPTION OF SAFETY ANALYSIS OF THE PROPOSED CHANGES

As a result, TS 3.3.8 LCO Actions b and c are proposed to be changed to be similar to the LCO for TS 3.3.1, Reactor Protection System Action b.1 to assure trip capability, while being consistent with the allowed outage times of current TS 3.3.8. Also, the proposed action statements and allowed outage times are consistent with LCO 3.3.2.2, "Feedwater and Main Turbine High Water Level Trip Instrumentation", of NUREG 1433, Revision 1, Standard Technical Specifications, General Electric Plants, BWR4, dated April 1995. The limit on continued plant operation of 72 hours in current Action c.1, is overly restrictive, since with one inoperable channel tripped and one Operable channel, the Trip Function is restored to the same status as current Action b.1 (one more instrument failure will cause a failure to actuate on high reactor water level).

Therefore, although the proposed Actions are increasing the allowed outage time for the case with only one remaining Operable channel, from 72 hours to 7 days, the level of protection for automatic trip capability is maintained except for a 2 hour period during which trip capability may not exist. In addition, like current Action b.1, the proposed Actions assure that the longest time that automatic trip capability failure due to another instrument failure will exist is 7 days.

The Bases for TS 3/4.3.8 is being revised to help assure proper understanding of the new Actions. Also, the Bases for both TS 3/4.3.5 and 3/4.3.8 are being revised to document the dual use of the A channel of the RCIC Reactor Vessel Water Level - High, Level 8 instrumentation in the trip logic of both RCIC and Feedwater/Main Turbine.

#### **Schedule**

The approval and implementation of the proposed changes to the Technical Specifications is required prior to Startup of either Unit 1 or Unit 2 from the current outages, with an implementation time of 60 days. Unit 1 is scheduled to startup in September 1997, prior to Unit 2.

FIGURE 1

LEVEL TRANSMITTER PIPING CONFIGURATION

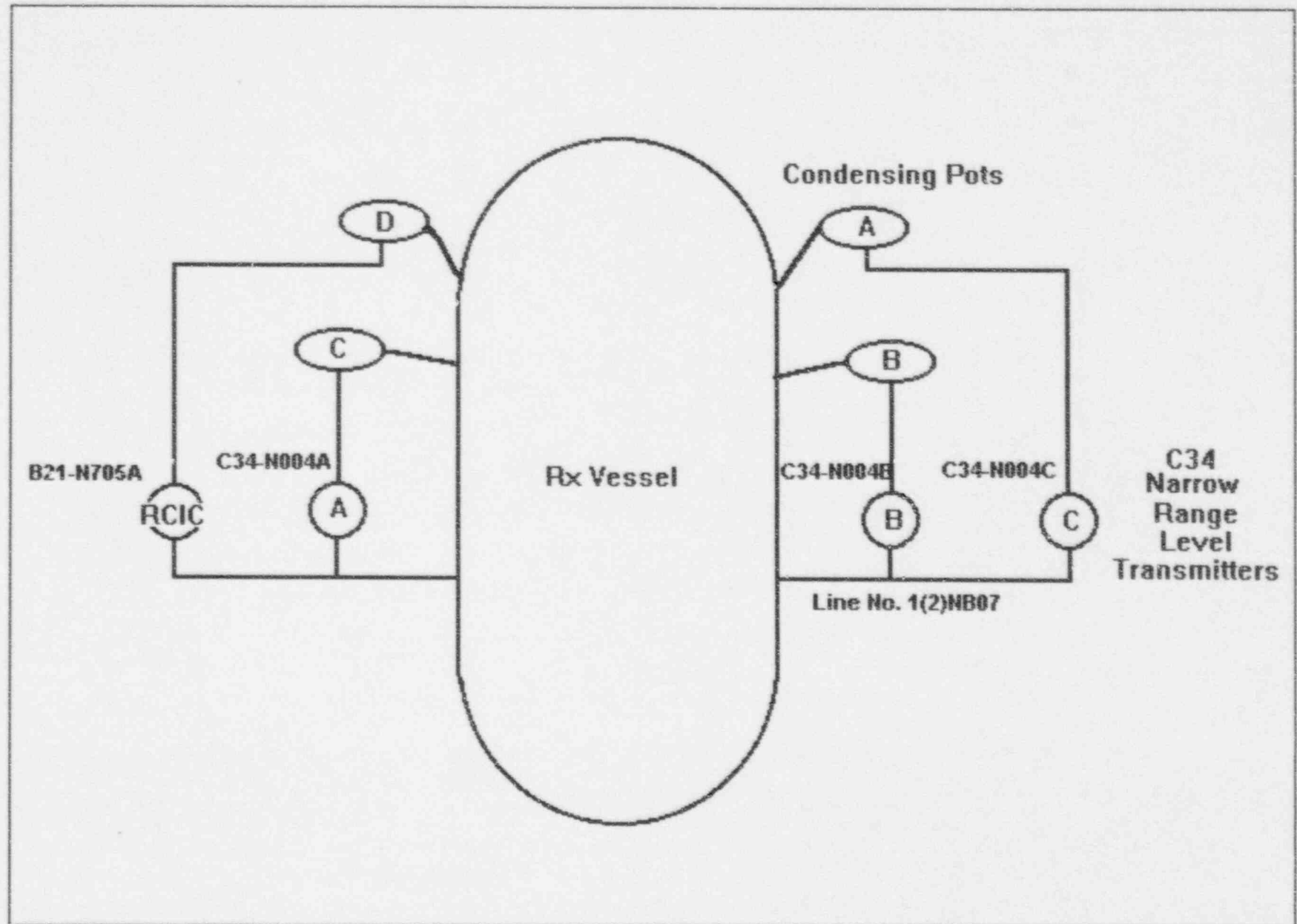


FIGURE 2

SIMPLIFIED LEVEL 8 TRIP ACTUATION LOGIC  
CURRENT CONFIGURATION

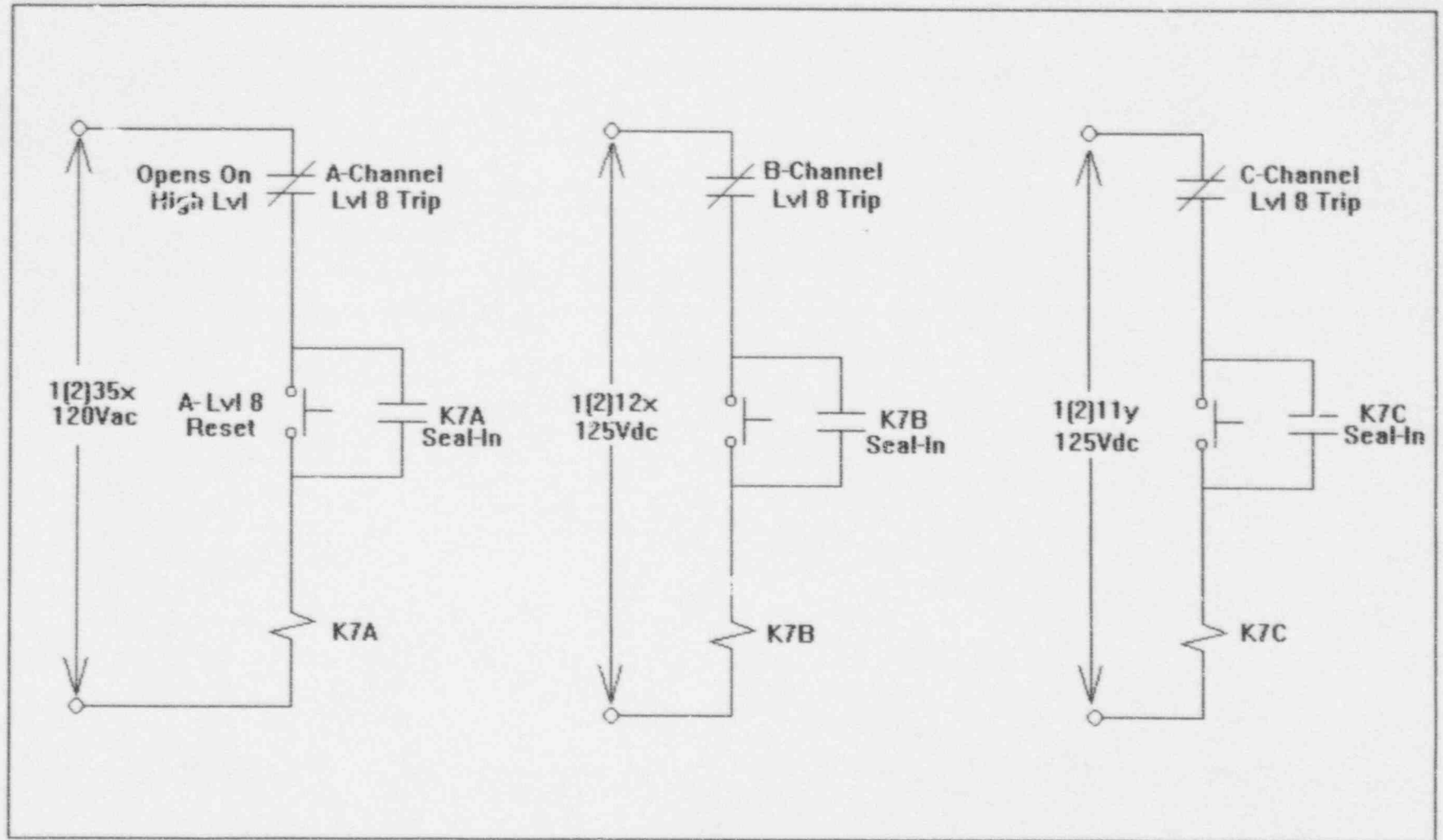




FIGURE 3

MODIFIED LEVEL 8 TRIP ACTUATION CIRCUIT  
(Addition of RCIC Division 1 Level 8 Trip Channel)

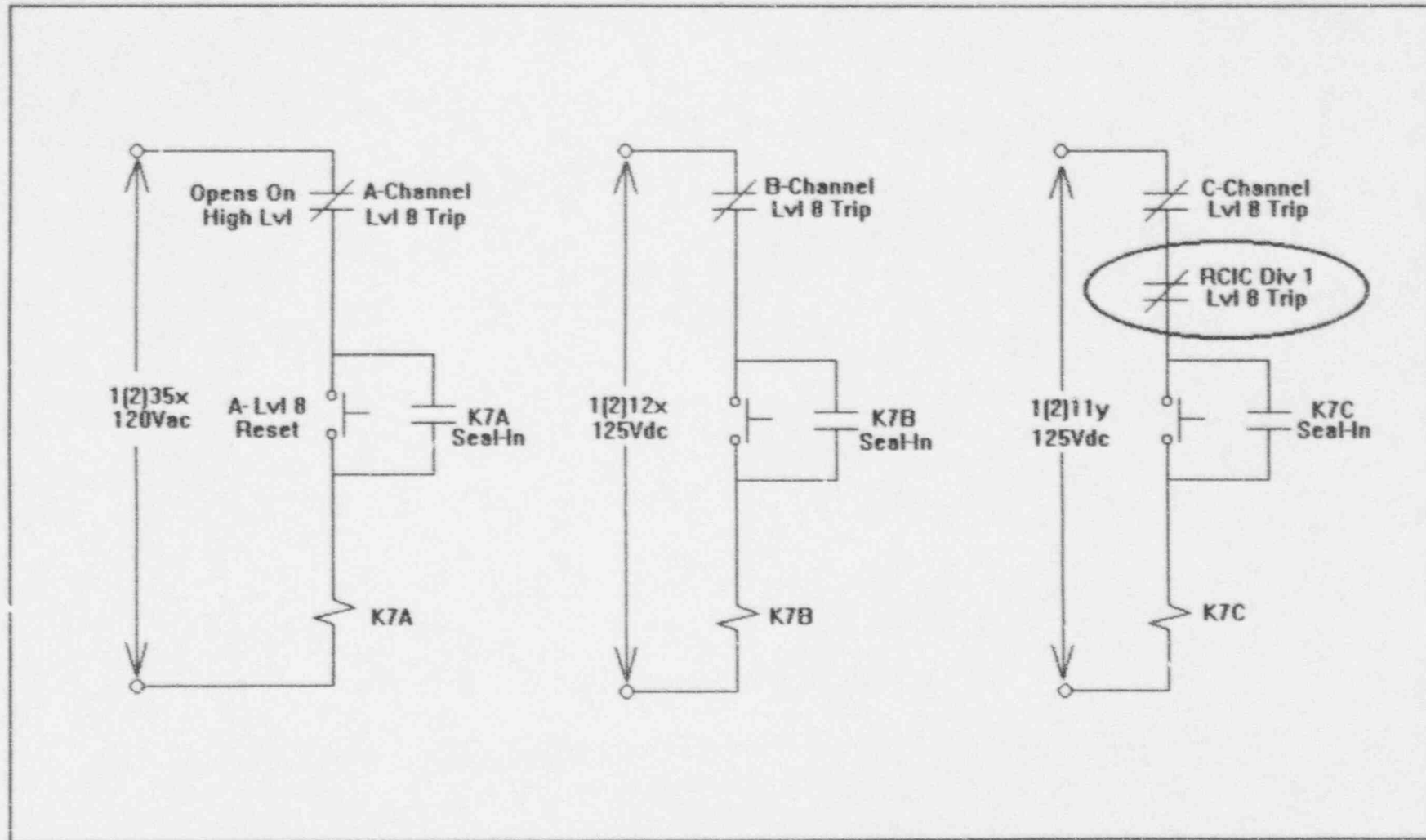


FIGURE 4

LASALLE COUNTY STATION "2 out of 3" TRIP ACTUATION LOGIC  
(Typical for Feedwater and Main Turbine Trips on Reactor High Water Level)

