



Commonwealth Edison

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July 1, 1983

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

Subject: LaSalle County Station Units 1 and 2
License NPF-11, Condition 2.C.(30).(1)
Modification of Automatic Depressurization
System Logic
NRC Docket Nos. 50-373 and 50-374

Reference (a): A. Schwencer letter to D. L. Farrar
dated April 11, 1983.

Dear Mr. Denton:

Reference (a) provided the NRC finding that Commonwealth Edison Company's proposed modification on the automatic depressurization system logic was acceptable, contingent upon the following:

- 1) Approval of the detail logic implementation.
- 2) A plant specific analysis must be provided to justify the bypass timer setting.
- 3) Technical Specifications must be provided for the bypass timer and manual inhibit switch.
- 4) The use of the inhibit switch must be addressed in the plant emergency procedures.
- 5) Installation on Unit 1 and Unit 2 must be completed prior to startup following the first refueling outage for each unit.

The purpose of this letter is to provide information addressing item 1) above. Enclosed please find an attachment which addresses the detailed logic to be implemented. Please note that a discussion of the analysis to be performed for item 2) above is also included.

To the best of my knowledge and belief the statements contained herein and in the enclosure are true and correct. In some respects these statements are not based on my personal knowledge but upon information furnished by other Commonwealth Edison employees and consultants. Such information has been reviewed in accordance with Company practice and I believe it to be reliable.

Boo
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H. R. Denton

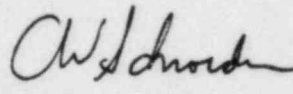
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July 1, 1983

Enclosed for your use please find one signed original and forty (40) copies of this letter and the enclosure.

If there are any further questions in this matter, please contact this office.

Very truly yours,

 7/1/83

C. W. Schroeder
Nuclear Licensing Administrator

lm

Enclosure

cc: NRC Resident Inspector - LSCS

6881N

Attachment

Background

Previous submittals are documented in LaSalle's FSAR Appendix L, Section L.62.

The first submittal was based on a BWR Owner's Group study which concluded that the intent of II.K.3.18 may be satisfied two ways: the ADS logic may be modified to automate depressurization for specific transients not producing a high drywell pressure signal, or the operator may be given specific guidance and training for performing manual actions under degraded conditions. LaSalle procedures developed from generic Emergency Procedure Guidelines provide the above mentioned guidance.

The second submittal addressed the relationship of ADS logic modifications to transient events and specifically reserved CECO. judgment on ATWS recovery as differing from that discussed by the BWR Owner's Group and the reactor vendor.

The third submittal, based on a BWR Owner's Group study, evaluated detailed ADS logic modification options. This submittal established that item II.K.3.18 is fully satisfied (1) by the present design of the ADS logic for design basis events and most transients, (2) by a future addition of an ADS bypass timer (bypasses the high drywell pressure signal) and a manual ADS inhibit switch for other ATWS transients, and (3) by the implementation of emergency procedures for extreme situations, such that operator response is the only safety action.

Commonwealth Edison's commitment for resolution of ATWS for LaSalle is included in a separate context than these ADS logic modifications; however, because the implementation of this ADS modification is consistent with CECO's planned resolution of ATWS on the BWR-5's, this modification is endorsed.

The LaSalle proposed modification responds to the NUREG-0737, II.K.3.18 requirement to eliminate the need for manual actuation to assure adequate core cooling for those transients not associated with a high drywell pressure.

Existing Logic Design

The existing automatic depressurization system logic design (Figure 2-1) requires a LOCA signal consisting of concurrent high drywell pressure and low reactor water level signals in order to actuate the ADS. The high drywell pressure signal is sealed into the initiation sequence and does not reset if the high drywell pressure subsequently clears. When both high drywell pressure and low water level signals have been received, the logic confirms the water level is indeed below the scram water level (to prevent spurious actuations) and starts the 105 second delay timer. The timer is automatically reset if the low water level trip clears before the timer times out. It can also be manually reset. The timer allows the operator time to bypass the automatic blowdown by resetting the logic if the conditions have corrected themselves or if the signals are erroneous. To complete the sequence, the low pressure ECCS pumps are automatically checked to provide some assurance that makeup water will be delivered to the vessel once it is depressurized.

Events such as a break external to the drywell or a stuck-open safety/relief valve (SRV) do not necessarily cause a high drywell pressure signal. The ADS system may be manually initiated, if required, for such events provided at least one low pressure ECCS pump is running.

With automation of the ADS logic, consideration has been given to events where automatic depressurization is not desired. These include spurious activation and ATWS events. For the situation where the reactor protection system has failed to function, the Emergency Procedure Guidelines (EPGs) direct the operator to prevent the ADS action. This may be accomplished by repeatedly resetting the 105 second timer or by locking out all low pressure ECCS pumps. Neither of these options is desirable in the long term considering the activity required of the operators during such events and the need for Suppression Pool cooling.

In addition, there are situations identified in the EPGs in which the operator is instructed to conduct an "emergency depressurization" to prevent containment damage or to establish steam cooling of the core. Although individual SRV control is available, the current logic requires at least one ECCS pump to be operating to permit use of the manual ADS logic. Modification of this portion of the design could facilitate implementation of the EPGs.

Proposed Modification

The proposed modification (Figure 2-2) will provide both a bypass of the drywell pressure signal after a set time delay and a manual inhibit function. This will further automate the ADS system by providing automatic ADS initiation, if required, for events such as a break external to the drywell or a stuck-open SRV. The modification also provides the capability for easier operation of multiple SRVs in accordance with EPGs.

The bypass is accomplished by incorporating into the logic design a second "bypass" timer actuated on the same RPV Level 1 trip point as in the current design. The trip picks up a new KX relay which satisfies the RPV Level 1 portion of the logic and starts the new nominal 8 minute time delay relay. This also activates an alarm that the bypass logic has been activated. After the set time delay, the time delay relay contacts located in the drywell signal bypass circuit are closed, affecting the bypass. The existing 105 second timer is then started and the ADS solenoid energized, after runout, provided that at least one low pressure pump in that division is running. When the low water level signal has cleared, or the reset pushbutton is pressed, the bypass timers are automatically reset.

A manual inhibit switch is also included in this modification as shown in Figure 2-2. The manual inhibit switch allows the operator to inhibit ADS operation without repeatedly pressing the reset pushbutton. One manual inhibit switch is to be provided for each division, a standard two-position maintained-contact type switch. Each switch activates a white indicating light and an annunciator to alert the operator of the inhibit action. The pressure relief function and the manual ADS or individual SRV control is not affected by operation of the manual inhibit switch.

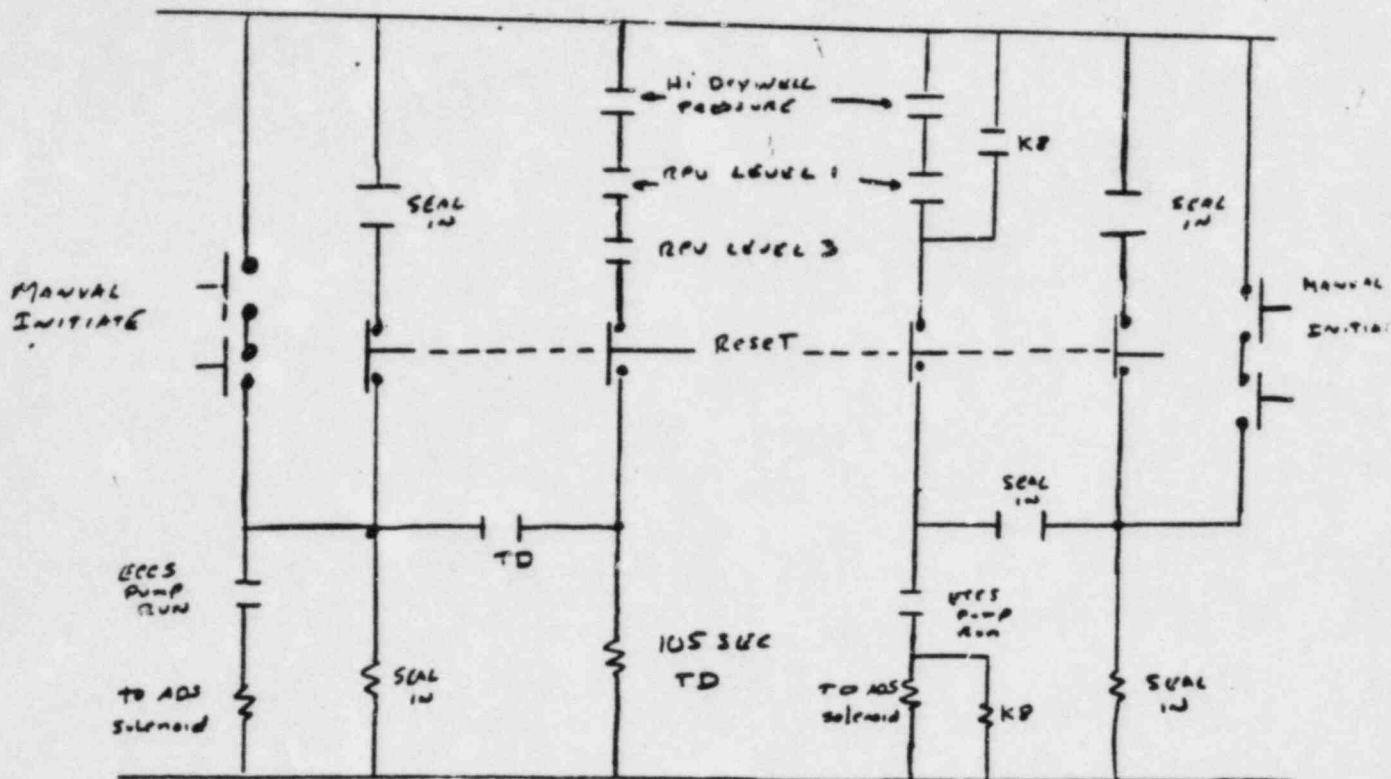
The manual initiation portion of the logic is modified as shown in Figure 2-2 such that a running ECCS pump is no longer a prerequisite to activate ADS manually. The seal-in feature in the current design is also modified so that seal-in only occurs after the ADS solenoids are actually energized. This eliminates the possibility of inadvertent depressurization if a low pressure ECCS pump is started and a previous seal-in had not been reset.

Analysis Required

A LaSalle-unique evaluation will be conducted to establish an acceptable range for the bypass timer and the recommended setpoint. The maximum acceptable timer setting will be determined based on not exceeding the 10CFR50.46 acceptance criteria for LCCA events.

Generic analyses conducted for the BWR Owner's Group have shown that adequate core cooling is assured for isolation events when the ADS blowdown is delayed 10 minutes after RPV water level decreases to Level 1. These results are typical for BWR/4-6. This evaluation establishes a timer setpoint that is long enough to preclude undesired ADS action, but short enough to not become the limiting design basis accident. Revised FSAR analyses will be provided with the selected timer setting.

The timer setting selection will consider: (1) a reasonable time for the operator to start a high pressure system pump and restore water level above the ADS actuation level (Level 1), (2) a reasonable time for the operator to inhibit the automatic ADS action during an ATWS event, or (3) the time required for level restoration to above the ADS actuation level (Level 1) during an ATWS event, taking into account the Emergency Procedure Guidelines.



NOTE: Similar for each of two Divisions

SIMPLIFIED ADS LOGIC ELEMENTARY DIAGRAM
EXISTING
~~EXISTING~~ DESIGN

Figure 2-1

