Commonwealth Edison
One First National Plaza, Chicago, Illinois
Address Reply to: Post Office Box 767
Chicago, Illinois 60690

July 6, 1983

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

Subject: LaSalle County Station Unit 2
Control Room Human Factors
NRC Docket No. 50-374

References (a): Cordell Reed letter to H. R. Denton dated April 14, 1983, "Response to NUREG-0737 - Supplement 1, Generic Letter No. 82-33.

(d): NUREG-0519 and Supplements, Safety Evaluation Report Related to the Operation of LaSalle County Station Units 1 and 2.

Dear Mr. Denton:

Commonwealth Edison Company has previously submitted information on Control Room Human Factors issues, which have been reviewed by the NRC and the results of that review have been documented in Reference (a).

With the advent of NUREG-0737 - Supplement 1, Generic Letter No. 82-33, all previous commitments and requirements regarding the Detailed Control Room Design Review (DCRDR) were superceded. Commonwealth Edison Company's response to Generic Letter No. 82-33 was provided by Reference (b). It is, therefore, our understanding that, Section C of Appendix C of Supplement 1 to the LaSalle SER (Reference (a)) has been superceded by our response.

Notwithstanding the above discussion of the DCRDR status, the NRR staff requested that three specific items be addressed for Unit 2 fuel load. These items are individually addressed in the attachments to this letter.

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

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One (1) signed original and forty (40) copies of this letter and attachments are enclosed for your use.

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

Very truly yours,

CW Schroeder 7/6/83

C. W. Schroeder
Nuclear Licensing Administrator

lm

Attachments

cc: NRC Resident Inspector - LSCS
Dr. A. Bournia (Fed. Express)

6899N

ATTACHMENT 1

NRC REQUEST:

1. Provide a detailed analysis of the duties and functions of the center desk operator, acting as a communications command center controller, during the course of an emergency requiring communications to-and-from the control room.

Response:

The center desk operator is the individual located nearest to the center desk communications facilities, and in most cases is the initial communicator at this location. However, in order to make the center desk operator available to assist the unit operator, the Shift Engineer often designates another individual to act as a communications command center controller. Designated communicator personnel include Engineering Assistants, Shift Foreman and Training Department Instructors. The designated communicator maintains an open and continuous channel with the NRC and closes this channel only when notified by the NRC. Information required by the communicator is obtained by verbal request from the communicator to an available operator or if necessary, by a written note describing the requested information.

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ATTACHMENT 2

NRC REQUEST:

2. Provide an analysis and operational plans for Unit 1 or Unit 2 operator interfaces with the mirror-imaged Unit 1/Unit 2 consoles and panels.

Response:

This item was reviewed by the Commonwealth Edison Company Production Training Department Human Factors Group. Their conclusions are as follows:

The only mirror-imaging at LaSalle County Station between Unit 1/Unit 2 is the location of auxiliary consoles and panels. However the arrangement of instruments and controls within each individual console and panel on Unit 1 and Unit 2 is identical. The station makes their operators aware of the mirror-imaging during their operator training program. In addition, each auxiliary console and panel on Unit 1 and Unit 2 is labeled to accentuate the differences between the units.

Each individual console and panel has a distinctly different appearance from each other console and panel (e.g., color coding, mimics, types of instruments). Because of these differences and the labeling, the fact that the locations are mirror-imaged does not present any major problems from a human factors engineering perspective. At most the mirror-imaging could cause a delay, in that the operator may start in the wrong direction for a certain panel but because of the distinct appearances and the labeling the operator should correct himself. Since these are auxiliary panels, a delay caused by this mirror-imaging is not expected to have any adverse effect on plant operations.

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ATTACHMENT 3

NRC REQUEST

3. Identify any Unit 1 control room design features that differ from Unit 1, assess these features for human factors concerns, and resolve any HEDs that might be associated with these differing design features.

Response

Commonwealth Edison Company performed a review to identify the differences in design and construction of the LaSalle units. The results of that review were previously provided to the NRC Region III by letter dated March 28, 1983, to Mr. J. McMillen from G. J. Diederich.

As a result of the NRC Request, a Human Factors survey and review using the Commonwealth Edison Copany Human Factors Checklist was performed on June 27, 1983. The results of that review (memo dated June 27, 1983) and a copy of the March 28, 1983 letter are enclosed for your review.

The discrepancies that were discovered in this review will be addressed on the following schedule:

Item		Status
Table 2	Item 2	To be addressed in DCRDR.
	Item 3	To be addressed in DCRDR.
	Item 4	Prior to Unit 2 fuel load.
Additional Findings		
	Item 1	To be addressed in DCRDR.
	Item 2	To be addressed in DCRDR.

6899N

June 27, 1983

TO: C. W. Schroeder

SUBJECT: LaSalle County Station, Units 1 and 2
Human Factors Review of Differences in Design

REFERENCE: Letter G. J. Diederich to J. McMillen, dated March 28, 1983; Subject: LaSalle County Station, Units 1 and 2 - Review of Differences in Design and Construction

As per your request, a Human Factors survey and review using the Commonwealth Edison Company, Human Factors Checklist was performed on June 27, 1983. The results of this review are presented using the Tables from the referenced letter as a base, and are attachments to this letter. If you have any questions, contact Andrew T. Bayer at the Production Training Center, extension 319.

A. T. Bayer

P. A. Lau

RDC/ATB/PAL/kjg

Attachments

XC: E. E. Fitzpatrick
G. J. Diederich
R. J. Squires

Attachment

Table 1 - Unit 1/Unit 2 Operational Differences

1-6. No Human Engineering Discrepancies.

Table 2 - Physical Differences on Controls and Indication in the Control Room on Unit 2

1. A modification removed the equalizer valves, therefore, indication in the control room is not needed - No Human Engineering Discrepancy.

2. The thumb switches on Unit 2 present No Human Engineering Discrepancies. It is recommended that the Keylock switches on Unit 1 be replaced with thumb switches identical to those on Unit 2.

3. The physical arrangement on Unit 2 present No Human Engineering Discrepancies. It is recommended that the Unit 1 arrangement be modified to reflect the arrangement of Unit 2. It is also recommended that lines of demarcation be installed to enclose the Heater Drain Tank Control arrangement.

4. Subsequent to the transmittal of the reference letter, the control switch for RCIC F090 valve has been installed on Unit 2. However, the mimic associated with the control switch shows it in series with F064. The mimic will be corrected prior to Fuel Load to show a parallel flow path by passing F064.

5. No Human Engineering Discrepancy.

Table 3 - Common System Alarms on Unit 2, Not on Unit 1.

1-4. No Human Engineering Discrepancies.

Table 4 - Common System Controls and Indication on Unit 2, Not on Unit 1.

1-2. Unit 1 does not have a Serv. Water Pump "O" Control, however, it does have Serv. Water Pump "O" Indication - No Human Engineering Discrepancies.

Table 5 - Unit 2 Plant Equipment/Miscellaneous Differences

These differences are located in the plant, not in the control room, therefore, they were not reviewed from a Human Factor's perspective.

Additional Findings:

1. The arrangement of Condenser Inlet and Outlet 2CW007A,B,C, and D Controls and Indicator Lights on panel 2PM03J are mirror images to the arrangement of the same Controls and Indicator Lights on Unit 1. This is a Human Engineering Discrepancy and it is recommended that the arrangement on Unit 2 be modified to reflect the arrangement on Unit 1.

2. The alarms associated with the Cycled Condensate Tank for Unit 2 are located on Unit 1. This is a Human Engineering Discrepancy and it is recommended that these alarms be located on Unit 2.

Commonwealth Edison
LaSalle County Nuclear Station
Rural Route #1, Box 220
Marseilles, Illinois 61341
Telephone 815/357-6761

March 28, 1983

Mr. J. McMillen
Nuclear Regulatory Commission
Region III
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: LaSalle County Station, Units 1 and 2 - Review of Differences in Design and Construction

Dear Mr. McMillen:

The purpose of this letter is to identify the differences in design and construction of the LaSalle units which could affect the licensed operators training program and possibly the necessity for license re-examination on LaSalle Unit 2. We believe there is sufficient justification to permit granting a waiver of all examination requests for Unit 2 license for Unit 1 license holders. Similarly, combination (U-1/U-2) examinations and licenses for all future license candidates, including the May 1983 applicants, are justified.

The Transient Analyses, Technical Specifications, Operating Procedures, Plant Layout, and Control Room Logic and Layout were reviewed for modification or design changes which licensed operators should be knowledgeable of prior to licensed operation of Unit 2. The Transient Analyses for both units are identical. The Technical Specifications will be identical except for minor differences due to modifications installed on Unit 2 and yet to be installed on Unit 1. The Plant Layout has some minor location differences but the equipment required to operate both units is identical. Operating Procedures will only be different where modifications have produced logic or step changes in the procedures. The operational differences are identified in Table 1 of this report. The logic differences in the Control Room will be the differences that would affect the Technical Specification.

Tables 1 through 5 list the differences between Units 1 and 2. The tables are identified as follows:

Table 1. Unit 1/Unit 2 Operational Differences

Table 2. Physical Differences on Controls and Indication in the Control Room

Table 3. Common System Annunciators on U-2 not on U-1

Table 4. Common System Controls on U-2 not on U-1

Table 5. Unit 2 Plant Equipment/Miscellaneous Differences

Most of the items on Tables 2 through 5 are design differences and do not affect plant operation.

For your review of the necessity to re-examine current Unit 1 license holders for Unit 2, we offer the following basis for not requiring a re-examination:

a. The current licensed personnel have had experience on Unit 2 through the U-2 Preoperational Test Program. Additionally, for the Control Room operators the normal assignment rotation includes Unit 1, the Center Desk and Unit 2. This rotation has been in effect since February 1982.

b. The licensed personnel will be trained and examined on the specific differences between Unit 1 and 2 as part of the continuous LaSalle Requalification Training Program. This program will be updated as required.

c. Replacement License Training will also include these differences prior to the May 1983 exams.

d. A review of the Plant Physical Layout, Technical Specifications, Transient Analysis, Plant Design and Procedures shows only a minor number of differences which are of importance to a licensed operator (Table 1).

In summary the differences between the two units are minor and do not appear to warrant a re-examination by NRC representatives to insure safe operation of the facility. Your serious consideration of these waivers is requested.

G. J. Diederich
Station Superintendent

GJD/WRL/lrw

xc: C. Sargent
W. Luett
D. Berkman
R. Raguse

Table 1

Unit 1/Unit 2 Operational Differences

1. The RHR discharge to Rad Waste Valves 40 and 49 only isolate on high drywell pressure or +12.5" Reactor level which is PCIS group 7. On Unit 1, the same valves isolate on Group 6 and high drywell pressure.

2. The RCIC turbine trip logic is different on Unit 2. High level +54.5" will not cause a turbine trip on this unit. High level closes the steam to RCIC valve (F045) and will reopen automatically at -50" reactor level which will restart RCIC with no operator action. On Unit 1, this trip must be reset after level signal clears in order to operate the RCIC turbine.

3. The Unit 2 RCIC control switches for F063 and F008 valves inboard and outboard steam supply valves are spring return to normal switches. Unit 1 has key locked maintained contacts for these valves. This difference is observed when an RCIC turbine trip or an isolation causing a turbine trip occurs. On Unit 1, when the isolation is reset and if the keylocks are in the open position, the F063 and F008 will open. On Unit 2, the switches will be in the normal position and the valves will be closed. The operator must manually operate the switches to open the valves.

4. The Main Turbine Control Valves on Unit 2 will all open to the same relative position when demanded by the operator. On Unit 1, these valves have a sequential order for opening and will not have the same relative position for all the valves. This will make performing the Closure Surveillance on U-2 different from Unit 1 as well as normal indication of valve position.

5. The High Pressure Core Spray System (HPCS) initiation reset logic is different on Unit 2. The HPCS will shutdown when the initiation is reset if Hi D.W. pressure is present but level has been restored. High D.W. pressure will only cause a restart if it clears and then returns. The Logic in Unit 1 will not shutdown the HPCS if High D.W. is present and the initiation is reset.

6. Unit 2 Head boltdown temperature is 86°F and on Unit 1 it is 80°F.

At the time of this report items 1, 2, 3, and 6 are modifications to be installed in Unit 1. Items 4 and 5 may or may not be installed in Unit 1.

Table 2

Physical Differences on Controls and Indication in the Control Room on Unit 2

1. There are no equalizing valves around the ECCS testable check valves on Unit 2 (327A, B, C, 333, 354, and 355 valves).

2. RCIC valves F063 and F008 have thumb switches on Unit 2, 2H13-P601 panel and keylock switches on Unit 1.

3. The 1PM03J on Unit 1 and the 2PM03J type on Unit 2 have identical control and indication but the physical arrangement of the following items is different.

   a. Heater Drain Tank Control

   b. Condensate Bypass Valve Control

   c. The Recorders are rearranged

4. Control switch for RCIC F091 Valve for warming the RHR Heat Exchangers prior to opening F064, has been installed. At the time of this report the valve for this switch has not been installed and may not be installed prior to plant operations.

5. Unit 2 feedwater control will use a solid state controller using hydraulic fluid for operating the turbine driven reactor feed pumps. Unit 1 uses mechanical linkage for it's control.

Table 3

Common System Alarms on U-2 Not on U-1

	Panel	Alarm #	Wording
1.	2PM01J*	A 402	TSC D/G Trouble
		A 403	TSC D/G Running
2.	2PM06J	~~A~~ B 105	Turb. Bldg. Rad Waste Wtr Tight Door Open
		A 105	Mach Shop Vent System Trouble L.P.
		A 109	Aux HVAC PNL OPA105 Trouble
		B 109	Aux Bldg. HVAC Local Panel Trouble
		B 208	Serv Bldg. HVAC Panel Trouble
3.	2PM10J	A 104	CQ Pwr Supply Alternate Source
4.	2PM13J	B 204	Has Off Gas Filter Building CAM OPL44JA Alarms
		B 302	Has Machine Shop and Refuel Floor OPLB1J Alarms

*U-1 panel has two Technical Support Center annunciators which have different meanings than those on U-2, but have the same panel location as U-2.

Table 4

Common System Controls and
Indication on U-2 Not on U-1

1. 2PM09J Serv. Water Pump "0" Control

2. 2PM10J Serv. Water Pump "0" Indication

Table 5

U-2 Plant Equipment/Miscellaneous Differences

1. Hydrogen Recombiner on 761' elevation in the Reactor Building.

2. Dry Well Pneumatics on 761' elevation in the Reactor Building.

3. Waste Sample Tank in Radwaste on U-1 Side 663 elevation.

4. Cycled Condensate Tank for Unit 2 on Unit 1 side 710' elevation.

5. Turbine Building Closed Cooling Water Expansion Tank in Radwaste Building 773' elevation.

6. Radwaste Equipment for Unit 2 on Unit 1 side.

   a. Waste Concentrator Head Tank.

   b. Fuel Pool Cooling and Cleanup Control Panel.

   c. Waste Demineralizer for Unit 2.

   d. Ultrasonic Resin Cleaner on Unit 1 for both units.

7. The Scram Discharge Volume has 2 vent and 2 drain valves in series on U-2 and 1 vent and 1 drain valve on Unit 1.

8. The Scram Discharge Instrument Volume has installed the new instrumentation which included redundant delta pressure sensors and float sensors. This change as in #7 above, does not affect the way the system operates.

9. RHR Service Water Pumps on Unit 2 have a different plant orientation for pumps A and B.