

RELATED CORRESPONDENCE

September 7, 1984

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

'84 SEP 10 AM 1:01

In the Matter of )  
 )  
THE CLEVELAND ELECTRIC )  
ILLUMINATING COMPANY )  
 )  
(Perry Nuclear Power Plant, )  
Units 1 and 2) )

Docket Nos. 50-440 OL  
50-441 OL

AFFIDAVIT OF  
GARY R. LEIDICH  
ON AS-BUILT STATUS  
OF SLCS INITIATION

STATE OF OHIO )  
 : ss  
COUNTY OF LAKE )

Gary R. Leidich, being duly sworn, deposes and says as follows:

1. I, Gary R. Leidich, am General Supervising Engineer, Nuclear Construction Engineering Section, of The Cleveland Electric Illuminating Company. My business address is 10 Center Road, Perry, Ohio 44081. In my position, I have responsibility for all engineering activities to support construction, including the engineering activities to support construction of the Standby Liquid Control System ("SLCS"). A summary of my professional qualifications and experience is

8409110250 840907  
PDR ADOCK 05000440  
PDR

attached hereto as Exhibit "A." I have personal knowledge of the matters set forth herein and believe them to be true and correct.

2. In general terms, the SLCS consists of a storage tank for boron solution, a test water tank, two pumps (SLCS Pumps C001A and C001B), two motor operated pump suction valves (Storage Tank Outlet Valves F001A and F001B), two explosive operated injection valves (squib valves F004A and F004B), associated local valves, piping, instrumentation and controls. Except for the controls, there would be no differences in the configuration of the SLCS whether its initiation mode were manual or automatic. The controls which would be used to manually initiate SLCS are the two key-locked switches, C41A-S01A and C41A-S01B, which are located in Control Panel 1H13-P601 (the ECCS benchboard).

3. The controls for an automatically initiated SLCS would be in addition to that for the manually initiated system. In general terms, automatic initiation would involve bringing the appropriate plant status indications (i.e., temperature, pressure) from the plant to the control system logic and sending appropriate activating signals from the control system logic to the SLCS pumps and valves. The control system logic for automatic initiation was built into the Redundant Reactivity Control System ("RRCS") panels (control room panels 1C22P001 and 1C22P002). The RRCS panels are the standard General Electric ATWS panels and include all Alternate 3A

features, including automatic initiation. The automatic initiation capability is provided in a few of the plug-in printed circuit cards and memory chips which are incorporated in the RRCS panels. These panels were installed in the control room in early 1984.

4. The RRCS panels themselves cannot automatically initiate SLCS. To convert to automatic initiation, considerable additional equipment would have to be built into the plant. This includes the following circuits:

<u>Circuit Designation</u>	<u>From Control Room Panel (1H13P) or Motor Control Center (1R24S)</u>	<u>To Control Room Panel</u>
C22AXX010	1H13P601	1C22P001
C22AXX012	1H13P601	1C22P001
C22AXX014	1H13P601	1C22P001
C22AXX018	1H13P601	1C22P002
C22AXX110	1H13P632	1C22P001
C22AXX111	1H13P632	1C22P001
C22AXX112	1H13P632	1C22P001
C22AXX113	1H13P632	1C22P001
C22AXX114	1H13P632	1C22P002
C22AXX115	1H13P632	1C22P002
C22AXX116	1H13P642	1C22P001
C22AXX117	1H13P642	1C22P001
C22AXX118	1H13P642	1C22P002
C22AXX119	1H13P642	1C22P002
C22AXX120	1H13P642	1C22P002
C22AXX124	1H13P632	1C22P002
C22AXX125	1H13P632	1C22P002
C22AXX126	1H13P632	1C22P002
C41AXX012	1H13P632	1H13P601
C41AXX018	1H13P632	1H13P713E
C41AXX019	1H13P642	1H13P710A
C41AXX021	1H13P601	1H13P702B
C41AXX022	1H13P601	1H13P642
C41AXX023 <sup>1/</sup>	1H13P601	1H13P632

<sup>1/</sup> This cable had been placed in floor duct prior to issuance of FDDR No. KLI-964 (see para. 6 below), but not terminated at either end.



C41AXX026	1H13P601	1H13P702E
C41AXX029	1H13P601	1H13P702E
1C22B7A	1R24S018	1H13P713E
1C22B8B	1R24S023	1H13P710A
1C22C54A <sup>2/</sup>	1R24S018	1H13P713E
1C22C55A	1R24S018	1H13P713E
1C22C58B <sup>2/</sup>	1R24S023	1H13P710A
1C22C59B	1R24S023	1H13P710A

Additional relays would also be required:

<u>Designation</u>	<u>Location (Control Room Panels)</u>
C41A-K3A	1H13P632
C41A-K4A	1H13P632
C41A-K5A	1H13P632
C41A-K6A	1H13P632
C41A-K3B	1H13P642
C41A-K4B	1H13P642
C41A-K5B	1H13P642
C41A-K6B	1H13P642

Pump switches C41A-S01A and C41A-S01B which now have an 8 contact configuration would have to be replaced by a 10 contact size. Except for the cables mentioned in footnotes 1-2, none of these additions or replacements were ever installed at Perry.

5. As noted above, the installed RRCS panels included automatic initiation capability. This was in accordance with the statement in a letter from CEI to GE (H.L. Hrenda and H.A. Putre to R.C. Mitchell, dated August 9, 1982, Exhibit "B" hereto) that the manual initiation feature "should not be incorporated on the [RRCS] panels prior to delivery," but that

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<sup>2/</sup> These cables were pulled from the motor control center to the control room and terminated at both locations. They were never connected to the appropriate control panel. They are now identified as spares.

GE should perform its work so that the change to manual initiation "can be made after equipment delivery." This was done to avoid delays in delivery which could impact construction and fuel load schedules.

6. Because GE had not yet revised the electrical elementary drawings to reflect manual initiation, CEI on July 22, 1983 directed GE to issue the appropriate documentation to assure that equipment needed for automatic initiation was not installed in Perry. Exhibit "C" hereto. GE's Field Disposition Disposal Request ("FDDR") No. KLI-964, originated October 20, 1983, was issued as a result. Exhibit "D" hereto. Except for the circuits identified in footnotes 1-2, which were installed before FDDR No. KLI-964 was issued, and the RRCS panels, none of the SLCS automatic initiation equipment was ever installed.<sup>3/</sup>

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<sup>3/</sup> The statement in an internal CEI memorandum dated September 28, 1983 that GE had been requested to prepare an FDDR "to remove the cables that were involved with automatic initiation" (Exhibit "E" hereto), meant that the cables should be removed from the drawings and did not indicate that the cables had already been physically installed.

7. As of the date on which the final ATWS rule was issued (June 26, 1984), the SLCS installation was essentially complete. Installation of the manual initiation feature is at least 90% complete; all circuits are installed and only a few circuits have not been terminated. On August 27, 1984, SLCS subsystem C41A was turned over by Construction to Nuclear Testing. On July 31, 1984 SLCS subsystem C41B was turned over. This permits manual testing of the SLCS from the motor control centers. Thus, as of the date the ATWS rule was issued, the Perry SLCS was already being built as a manually initiated system.

8. Based on the facts set forth in this affidavit, the SLCS cannot be considered to have been built to include automatic initiation.

Gary R. Leidich  
Gary. R. Leidich

Subscribed and sworn to before  
me on this 7 day of September, 1984.

Patricia G. Dedek  
Notary Public

My Commission Expires:

PATRICIA G. DEDEK, Notary Public  
STATE OF OHIO (Lake County)  
My Commission Expires April 16, 1988



RESUME OF  
GARY R. LEIDICH

EDUCATION

- AND TRAINING:
- Bachelor of Science, Electrical Engineering, University of Toledo, 1972
  - Master of Science Degree in Engineering Sciences, University of Toledo, 1974

EXPERIENCE:

1974-Present - The Cleveland Electric Illuminating Company

Joined CEI in 1974 as an Associate Engineer in various fossil plant electrical engineering responsibilities in Plant and Substation Engineering Department. Responsible Engineer for precipitator retrofit.

In 1975, was assigned to the Perry Project and was Responsible Engineer for procurement of plant electrical equipment. Also responsible for Perry electrical system design calculations, voltage and short circuit studies and transmission system interface criteria.

In 1978, served as Lead Electrical Engineer and was responsible for supervision of personnel involved in all electrical engineering aspects.

In 1980, was Senior Engineer on assignment as Supervisor of Construction Quality Engineering. Responsibilities included supervision of personnel involved in monitoring contractors' QA/QC performance during construction.

In 1982, was Senior Engineer in Nuclear Construction Engineering Section. Responsibilities included supervision of engineering personnel, providing construction support for electrical, civil, structural and chemical disciplines. Was also responsible for cost and schedule control of all primary engineering consultants.

In 1984, was named to present position of General Supervising Engineer, Nuclear Construction Engineering Section and responsible for the on-site engineering to support the construction program for the Perry Plant.

PROFESSIONAL  
MEMBERSHIPS:

- Secretary, Nuclear Power Engineering Committee of Power Engineering
- Society of Institute of Electrical and Electronic Engineers
- Registered Professional Engineer, State of Ohio



P.O. BOX 97 ■ PERRY, OHIO 44081 ■ TELEPHONE (216) 259-3737 ■ ADDRESS-10 CENTER ROAD

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August 9, 1982

PY-CEI/GEN-598

Mr. R. C. Mitchell  
Project Manager  
General Electric Company  
175 Curtner Avenue  
San Jose, CA 95125

Re: PNPP Units #1 and #2  
Quotation No. 149A  
Request for Modification

Dear Mr. Mitchell:

As previously discussed, to prevent inadvertent injections of boron into the reactor vessel, it has been determined that the automatic SLCS initiation and RWCU isolation provided by the subject quote should be replaced by a manual initiation system. Because of uncertainty concerning the final ATWS mitigation system requirements this change should not be incorporated on the panels prior to delivery. The manual initiation system design should detail the changes required to the documents and equipment so that these changes can be made after equipment delivery in the event manual initiation of the SLCS is allowed by the final ATWS rule, or if no rule is issued prior to startup of the Perry Plant.

The manual initiation design should include annunciators to ensure the operator is informed of the event and is able to determine the necessity for SLCS initiation and RWCU isolation within the 120-second period available. The operator will make this determination based on the APRM readings and/or rod position indication after the 25-second delay associated with ARI operation. Since the SLCS initiation/RWCU isolation time has not been changed no further plant analysis should be required. An assessment should be made of the impact of this change on system reliability.

To support licensing schedules, it is requested that this design be completed and issued by September 15, 1982. Additional manhours should be provided by T&M estimate by August 23, 1982. General Electric is authorized to proceed on this design subject to approval of the estimated manhours.

Very truly yours,

H. L. Hrenda  
Responsible Engineer

H. A. Patre  
Senior Engineer

HLH/iw

cc: E. M. Buzzelli - R230  
D. R. Green - W225  
E. C. Willman - W250  
NDS File 41.2/C22/SP-M  
PO/DC - R290

Exhibit "B"



THE CLEVELAND ELECTRIC TOOL WORKS COMPANY  
**MEMORANDUM** SO/7921

☐ I no longer wish to  
receive this material.

TO J. J. Larsen ROOM  
GE-NEBO

FROM E. C. Willman  
PHONE 5238 ROOM W240

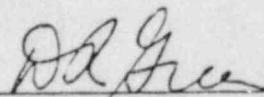
SUBJECT Manual Initiation of Standby  
Liquid Control System C41

DATE July 22, 1983

Please write a FDDR to remove the following cables from FDI WNVB:

C22A-XX-110	C22A-XX-119
C22A-XX-111	C22A-XX-120
C22A-XX-112	C22A-XX-121
C22A-XX-113	C22A-XX-122
C22A-XX-114	C22A-XX-123
C22A-XX-115	C22A-XX-124
C22A-XX-116	C22A-XX-125
C22A-XX-117	C22A-XX-126
C22A-XX-118	C22A-XX-142

This will remove features not required for our manual initiation concept  
for the Standby Liquid Control System C41.

  
D. R. Green  
Senior Project Engineer

ECW/iw

cc: J. H. Bellack  
E. C. Christiansen - TW3  
R. E. Coleman - R230  
P. A. Nichols - W250  
F. R. Stead - S245  
Electrical File  
PO/DC - R290

Exhibit "C"

		DATE OF ISSUE ISSUED BY PD & RC <b>DEC 16 1983</b>		NOV 11 1983 FDDR NO. <b>KL1-964</b> REVISION <b>C</b> SHEET <b>1</b> OF <b>51</b>	
		FIELD DEVIATION DISPOSITION REQUEST		FDDR ORIGINATOR <b>N. R. Barker</b> DATE <b>10/20/83</b>	
PROJECT <b>Perry</b> UNIT <b>1</b> EQUIPMENT (IMPL OR DESCRIPTION OR BOTH) <b>C41-1050 SLC</b>					
DOCUMENT NO.	SH NO.	REV.	TITLE		
			Standby Liquid Control		8Y063
DEVIATION DESCRIPTION ATWS FDI's issued for site work for SLC are not in agreement with the latest PAID. CEI has requested SLC be returned to manual initiation (see PWA 4264 Rev. 0). CEI has requested some changes recommended by their human factors study. Issued FDI's involved are WNST, WNSV, WNTF, WNVB, WNUX.					
Changes detailed on the attached sheets are required.					
SITE QC CONCURRENCE <b>N/A</b>		DATE		FIELD CONCURRENCE <b>N.R. Barker</b> DATE <b>10/20/83</b>	
<input checked="" type="checkbox"/> SUGGESTED DISPOSITION <input type="checkbox"/> EXPEDITED DISPOSITION					
See attached					
RECEIVED JAN 12 1984 PERRY PROJECT ELECTRICAL					
DISPOSITION NEED DATE <b>R346</b>		EXPEDITED DISPOSITION APPROVAL BY		DATE	
FINAL DISPOSITION <b>SUGGESTED DISPOSITION IS APPROVED WITH IDENTIFIED CHANGES &amp; ADDITIONS.</b> <b>DOC. AFFECTED</b> <b>AS SITE SPARES.</b> <b>SEE SN. 13</b> <b>NEW MATERIAL REQUIRED</b> <b>CHIA-53 AB - 169C9490 P023 - 2EA.</b> } E.I. KL1-964 REV.0 <b>CHIA-54 AB - 169C9490 P032 - 2EA.</b> } <b>Q.A. REQUIREMENTS - SAME AS LISTED P&amp;Z'S</b> ECA ECH <b>E.I.S.</b> FDI NO <b>N/A</b>					
JUSTIFICATION OF DISPOSITION DECISION (SAFETY, RELIABILITY) <b>THE MANUAL ATWS SLC'S DESIGN IS STILL MORE RELIABLE THAN THE NON-ATWS SLC'S DESIGN. THERE IS NO SPECIFIED OVERALL RELIABILITY REQUIREMENTS FOR MANUAL SLC'S DURING AN ATWS EVENT</b>					
DESIGN VERIFICATION STATEMENT <b>THE CHANGES MADE ON THIS FDDR-KL1-964 R.O WILL NOT DEGRADE THE SAFETY AND RELIABILITY OF THIS SYSTEM PER DESIGN SPEC. 22A6093. R-2</b>					
APPROVALS <b>M. P. C. [Signature]</b> <b>12-16-83</b> QUALITY <b>N/A</b> VAIL. ADJ. ENGR <b>A. Allen</b> <b>12/15/83</b> LEAD SYSTEM ENGR <b>C. E. McGee</b> <b>12/16/83</b> ENGR MANAGER <b>R. Spotts</b> <b>11-23-83</b> RESPONSIBLE ENGR <b>S. C. Lowe</b> <b>12/16/83</b> PROJECT MANAGER		DRP NO. IF APPLICABLE APPROVALS DISTRIBUTION CODE INTERNAL <b>037B 765</b> <b>429VF 432</b>			
VERIFIED <b>THE DESIGN OF THE ELECTRIC ILLUMINATING CIRCUIT</b> SAFETY FUNCTION IS AFFECTED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO REQUIRED BY A. E. E. DIMENSIONS SET FORTH IN CONTRACT DOCUMENTS AND NOT SET FORTH IN CONTRACT RETURNED WORK ORDER FROM HIS OBLIGATION AS TO DETAIL, WORKMANSHIP AND GUARANTEES DISPOSITION COMPLETE DATE <b>1/12/84</b> FIELD MANAGER					

4549-97-2531-0

DEVIATION DESCRIPTION AND SUGGESTED DISPOSITION

1. Deletion of valve indication for C41-F037A, B, C41-F038 A, B, C41-F040 A, B, from 828E234CA and H13-P601 is required to agree with P&ID 762E433 CA Rev. 1.
2. On 828E234CA, Sheet 5 and P601, delete DIV 2 indication of C41-F031 as one indication considered sufficient.
3. Delete the circuit from C41-F036 to the Division 2 out-of-service indication. The input to DIV. 1 from C41-F036 will be maintained to indicate valve F036 closure.
4. Delete valve C41-F008 from 828E234CA sheet 1 table.
5. Delete the SLC pump auto trip indication to be consistent from a Human Factors standpoint with other like control. Pump or MOV overload or PWR loss indication already exists on the system status panel.
6. Delete SLC Manual override indication since CEI is not installing automatic SLC injection.
7. Delete "RRCS Test Fault" to out-of-service window on P601-18B and 19B as SLC is being made manual and there is a "RRCS trouble" annunciator and "RRCS Test Fault" indicator on P680.
8. Revise SLC control back to manual operation. Maintain existing control switches, *EXCEPT FOR ITEM 9 BELOW.* *RKS 11-27-83*
9. Move locally mounted control switches for C41-C001 A, B and C41-F001A, B from the containment to the Motor Control Center to resolve the concern of qualification of the CR2940 switch for containment environment. Delete the local status indication of C41-C001 A, B. *CHANGE SWITCHES TO KEY LOCKABLE.* *RMB 11-27-83*
10. For SLC test tank valves C41-F016 and C41-F31 change from valve status light indication on H13-P601 to an annunciator window on H13-P601.
11. The annunciator window should read  

SLC in Test  
Test TNK VLV Open
12. On Elementary 828E2342A sheet 2 correct reference sheet number from SH2 to SH7 at SRU-1, SRU-2, SRU-3.
- B. Suggested Disposition
  1. Refer to ECA 800619-2, Rev. 3, PWA 4160KL, Rev. 1 and this FDDR for authority.



188 RES  
11-28-83

2. Modify H13-P601-10A, -19B, panels H13-P632, P642, P710, P713 arrangement in accordance with the attached sketches and instructions. Revise necessary wire list and panel drawings for completion of this FDDR package.
3. Revise FDI's WNST, WNSV, ~~WNTR~~ <sup>WNTE WNTE RES 11-28-83</sup>, ~~WNTP~~, WNVB and WNUT to make changes necessary for implementation of this FDDR and PWA 4160KL.

#### FDI SUMMARY

##### WNST

WNST Rev. 0 will not be implemented. The FDI needs revision to delete the switches and indicating lights 53A, B, 54A, B and red and green lights for 54A, B.

##### WNSV

- |        |  |
|--------|--|
| 4.3.1  | Do not install the two new indicating lights                   |
| 4.3.2  |  |
| 4.3.3  | Do not install the new C41A-S01B                               |
| 4.3.4  | Do not install the for switch indicators                       |
| 4.3.5  |  |
| 4.3.6  | Install only the marker for the new meter                      |
| 4.3.8  | Do not install J438, J439                                      |
| 4.3.10 | Do not add wiring to above deleted devices                     |
| 4.4.1  | Do not install the two new indicating lights or switch 4.4.2   |
| 4.4.3  | indicators   |
| 4.4.4  | Do not install new C41A-S01A                                   |
| 4.4.5  | Do not install switch indicators and legends                   |
| 4.4.6  | Install only legend for meter                                  |
| 4.4.7  | No change  |
| 4.4.8  | Do not install jacks associated with deleted junctions above   |
| 4.4.9  |  |
| 4.3.10 | Do not install conduit associated with deleted functions above |
| 4.3.11 | No change  |

WNTE

- 4.3.1 Do not delete relay C41A-K2A  
4.3.2  
4.3.3  
4.3.7 Do not install relays C41A-K3A, K4A, K5A and K6A

WNTF

- 4.3.1 Do not delete relay C41A-K2A B  
4.3.2  
4.3.3  
4.3.6 Do not install relays C41A-K3B, K4B, K5B and K6B

WNVB

- 4.3.3 Do not remove cable C41AXX012  
4.10.4 Do not install cable C22AXX118  
4.10.5 Do not install cable C22AXX119  
4.10.10 Do not install cable C22AXX120  
4.12.2 Do not install cable C22AXX115  
4.12.10 Do not install cable C22AXX124  
4.12.16 Do not install cable C22AXX125  
4.12.17 Do not install cable C22AXX110  
4.12.18 Do not install cable C22AXX112  
4.12.22 Do not install cable C22AXX126  
4.12.23 Do not install cable C22AXX111  
4.12.24 Do not install cable C22AXX113  
4.14.47 Do not install cable C22AXX114  
4.14.48 Do not install cable C22AXX116  
4.14.73 Do not install cable C22AXX117  
4.10.1 Do not install cable C41AXX019  
4.12.3 Do not install cable C41AXX018  
4.12.4 Do not install cable C41AXX012  
4.15.4 Do not install cable C41AXX021  
4.15.5 Do not install cable C41AXX026  
4.15.8 Do not install cable C41AXX029

- 4.10.2 DO NOT INSTALL CABLE C41AXX022  
WNUX 4.12.6 DO NOT INSTALL CABLE C41AXX023

- 4.4.2 Do not install TM041  
4.6.3 Do not install TM060  
4.2.1 Do not install TM063  
4.2.2 Do not install TM075  
REVIS THIS IS A DUAL MODULE  
AND TM 675 IS REQUIRED.

FRS  
DRG

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

MEMORANDUM

☐ I no longer wish to  
receive this material.

TO D. R. Green ROOM W225 FROM E. C. Willman DATE September 28, 1983  
PHONE 5238 ROOM W240  
SUBJECT Status of Standby Liquid Control System  
C41 Design Change

At the present time GE has made very little progress on removing the automatic initiation of the Standby Liquid Control System (SLCS) C-41. They have still not issued the modification kit to the elementary diagrams that we requested in September, 1982, except on a preliminary basis. We have repeatedly asked that a design reviewed mod kit be issued. A promise was made by GE that this would be done at the last quarterly meeting on July 18 and 19, 1983. Repeated requests for issuance of the mod kit have brought no results.

On July 22, 1983, we requested GE to prepare a FDDR to remove the cables that were involved with automatic initiation (see attached). This effort in conjunction with GAI's incorporation of the mod kit would complete the design change. As of this date no significant effort has taken place on this FDDR and GE-San Jose has informed me it is on hold.

GE is now requesting approval of a work authorization of \$80,000 to complete the design change and bring all affected documents up-to-date. I discussed this some time ago with Bob Mitchell and at that time he estimated this to be a \$2,000 to \$4,000 effort. Also, this was just for revising drawings to include the mod kit. No indication was given that extra effort would be required to have a complete design change.

The work authorization includes the following:

1. Issue Revised Redundant Re-activity Control System (RRCS) Design Specification and Data Sheet.
2. Issue revised balance of plant information document.
3. Update Operations and Maintenance Manual.
4. Revise Manual Action Procedure.
5. Revise RRCS Elementaries and Functional Control Diagrams.
6. Revise SLCS elementaries and Functional and Control Diagrams.
7. Prepare New RRCS Panel Schematic and Connection Diagram.
8. Change the Programmed Read Only Memory (PROM) in the RRCS Panel.
9. Prepare FDI's to implement cable and PROM changes in the control room.

Exhibit E



September 28, 1983

In addition, I pointed out to GE that number 8 is software and there must also be a hardware change. They agreed but had no cost estimate for the hardware. This item (8) also accounts for approximately one-third of the entire effort. GE is estimating 17 weeks to complete the work authorization.

From the preceding discussion you can see that we have made very little progress since July. GE has not met their promises and virtually ignored our requests. We need to determine if proceeding in the manual direction is still correct. If so, we will have to approve the work authorization. Management attention will be required to ensure GE's prompt completion of the effort.

ECW/iw