

RESPONSE TO PETITION MADE BY
THE OFFICE OF THE ATTORNEY GENERAL, STATE OF ILLINOIS,
IN THE MATTER OF REINFORCING STEEL DAMAGED DURING
THE INSTALLATION OF CORED HOLES AND CONCRETE EXPANSION ANCHORS
LASALLE COUNTY, UNITS 1 AND 2

Commonwealth Edison Company
Chicago, Illinois

March 31, 1982

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1.0

Summary of Allegation

The Office of the Attorney General, State of Illinois, has brought forward information alleging, "...that, during the construction of LaSalle County, Units 1 and 2, certain practices related to the drilling of holes in the concrete walls, floors and ceilings of the Units 1 and 2 buildings have created a potentially hazardous condition which, upon the operation of either unit at full power, may be injurious to the public health and safety." The subject petition contends that, as a matter of course, an unknown number of drilled holes, ranging in the order of thousands, were likely to have been cut through the reinforcing steel. The petition, which is based on the affidavit of [REDACTED] indicates that records of these situations were made at the time the alleged practices occurred, and that the practice of drilling through reinforcing steel was discontinued or subjected to the case-by-case approval of an engineer some time in late 1979, early 1980. The petition also states that the State of Illinois has no information which suggests that any engineering approval was ever obtained from Commonwealth Edison Company's engineering consultant prior to 1980. A second affidavit by Mr. Dale Bridenbaugh states that, if the reinforcing steel was damaged or severed without

appropriate structural analysis, and if the drilling practice was wide-spread, "...it seems nearly certain that some safety related structures...would have been affected."

2.0 Response to Allegation

2.1 Introduction

Commonwealth Edison Company, throughout the course of the LaSalle County, Units 1 and 2 construction, has controlled the drilling through concrete for either cored holes or the installation of concrete expansion anchors via appropriate quality control procedures and has documented and assessed reinforcing steel reported as having been contacted (hit or cut) during this operation.

A distinction is made between a cored hole and a hole drilled in the concrete for the installation of a concrete expansion anchor. A cored hole is one in which (a) the hole passes completely through the concrete element to allow for the passage of a mechanical or electrical component, such as a pipe or electrical conduit, or (b) the hole penetrates only partially into the concrete element, and in which an anchor bolt is set and grouted. A cored hole is typically 3" in diameter or larger. Holes drilled for the installation of concrete expansion anchors, on the other hand, vary from 1/4" in diameter to 1" in diameter, with the corresponding hole depth varying from 1-1/4" to 8". Holes drilled for concrete expansion anchors do not pass completely through the concrete element.

2.2 Disposition of Cored Holes

2.2.1 Cored Holes Passing thru Concrete Elements

The need for cored holes is determined in either the initial design phase during the routing of mechanical and electrical components, or by the contractor in the case of field routed electrical and mechanical components. In the first situation, the cored holes are located on the structural design drawings, and a conservative structural assessment is made by Sargent & Lundy for Commonwealth Edison Company of the effects of the removal or damage to reinforcing steel due to the installation of the cored hole. This assessment is made prior to the release of the drawings and the coring of the hole. In the second situation, the contractor is required to submit a Field Change Request (FDR), requesting permission to install a cored hole for field routed components prior to the coring operation. Commonwealth Edison Company, on the recommendation of Sargent & Lundy, approves this request only after a structural assessment has been made of the effects of reinforcing steel which may be removed or damaged during this operation. These cored holes are subsequently indicated on the structural design drawings. It should be emphasized that, in both these situations, engineering approval is obtained prior to cutting the reinforcing steel. Where the engineering assessment has determined that it is not permissible to cut or damage

reinforcing steel during installation of cored holes, this requirement has been specified on the appropriate structural design drawing. The following are some examples of this situation:

- A. General Note No. 44 on Drawing No. S-199 states that, "For cored holes marked E, less than 8" diameter, use metal detector to locate existing reinforcing prior to core drilling. In case of interference with rebar, holes may be cored in alternate location within ± 3 " radius from location shown on drawing."
- B. Drawing No. S-213, concerning the Reactor Building floor framing plan at Elevation 761'-0", Note 11 requires the use of metal detectors to avoid cutting of reinforcing steel in this area.

2.2.2 Cored Holes for Grouted Anchor Bolts

Cored Holes for grouted anchor bolts are indicated on either the mechanical or structural design drawings. Grouted anchor bolts are utilized primarily to anchor equipment foundations or pipe support baseplates to concrete elements. These cored holes are, likewise, reviewed by the consulting engineer. This review consists of an assessment of the effects of the reinforcing steel

likely to be damaged due to the installation of the cored hole.

The installation of cored holes for the support of pipe support baseplate assemblies essentially commenced during the summer of 1980. Mechanical Drawing No. M-1100, Sheet 23, issued in January, 1980, controls the coring of holes for these baseplate assemblies, and requires that the concrete be carefully notched to expose the reinforcing steel in both directions prior to coring the hole, to avoid damage to the reinforcing steel.

The location of the cored holes for the installation of grouted equipment anchor bolts are plotted and located on a separate set of structural design drawings for the purpose of assessing the effects of reinforcing steel likely to be damaged in the coring operation. The structural assessment has determined that the structural integrity of the concrete elements has not been impaired by the coring operation for grouted anchor bolts for mechanical equipment foundations.

2.3

Disposition of Drilled Holes for Concrete Expansion Anchors

The drilling of holes for concrete expansion anchors is controlled by Form LS-CEA. This form was initially issued in September, 1976, and contained the following strict provisions for the protection of the reinforcing steel:

- A. During the installation of concrete expansion anchors, drilling through concrete reinforcement will not be permitted. For nuclear safety related work, contractor shall use a deep magnetic detector to locate the reinforcement in concrete.
- B. For all anchors in a connection, drill holes into the concrete with carbide tipped solid masonry bits. (Carbide tipped solid masonry bits are not capable of drilling through reinforcing steel. These bits can produce only a shallow, 1/16" deep, smooth and well rounded depression in the reinforcing steel).
- C. Concrete expansion anchors shall not be used for any other work without prior approval of the Consulting Engineers.

Form LS-CEA, Revision 1, was issued on December 7, 1976. This revision relaxed the requirements for the use of the metal detector in non-critical areas, based upon a structural assessment performed by Sargent & Lundy for

Commonwealth Edison Company. Specific guidelines were given, defining these areas, and required that the consulting engineers be notified of all cases in which a reinforcing bar was cut or nicked where a metal detector was required to be used. Sargent & Lundy has reviewed for Commonwealth Edison Company the damaged reinforcing steel reports submitted by the contractors in accordance with this requirement, and has determined that the structural integrity of the nuclear safety related structures has not been impaired.

Revision 2 to Form LS-CEA was issued on November 29, 1978, However, it did not alter the reinforcing steel control provisions of Revision 1.

Revision 3 to Form LS-CEA was issued on July 20, 1979. This revision incorporated a standard form for reporting cut or nicked reinforcing steel during the installation of concrete expansion anchors. In addition, the contractor was also required to document the location of nicked reinforcing steel in those non-critical areas in which a metal detector was not required. The contractor was also permitted to cut one reinforcing bar in these non-critical areas, the extent of such area being defined by the spacing of the reinforcing steel. Additional requirements were also given to the contractor to permit him flexibility

in relocating concrete expansion holes when reinforcing steel was encountered.

Revision 4 to Form LS-CEA was issued on September 7, 1979. This revision differentiated. The documentation of the installation and inspection requirements by the following categories:

- (a) Safety related work in safety related areas (complete documentation of installation & testing was required)
- (b) Non-safety related work in safety related areas (documentation of inspection was waived).
- (c) Non-safety related work in non-safety related areas (most documentation waived, cutting of rebar not permitted.)

Revisions 5, 6, and 7 to Form LS-CEA were issued on December 10, 1979, February 13, 1980, and October 27, respectively. However, these revisions did not alter the reinforcing steel control provisions of Revision 4.

During the period 1978 through 1981, Commonwealth Edison Company conducted extensive investigations to determine the effect on reinforcing steel which is nicked during the installation of concrete expansion anchors. These investigations conclusively demonstrate that reinforcing steel, nicked by a carbide tipped drill bit during the installation of concrete expansion anchors, does not impair

the structural integrity of reinforced concrete elements. This conclusion was based upon both laboratory testing and analytical assessment. Form LS-CEA, Revision 8, was subsequently issued on May 13, 1981, deleting the requirements for reporting of nicked reinforcing steel.

3.0 Conclusion

In summary, the drilling operations performed at LaSalle County, Units 1 and 2, has not degraded the safety margins of safety related structures, and has not violated the quality requirements imposed by the U.S. Code of Federal Regulation, 10CFR, Part 50, Appendix A, General Design Criteria for Nuclear Power Plants, and Appendix B, Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. Commonwealth Edison Company has implemented appropriate procedures to control reinforcing steel damage and exercised sound engineering judgement and due precaution with regard to the drilling of concrete for cored holes and holes for the installation of concrete expansion anchors.

March 30, 1982

OFF-GAS BUILDING ROOF REPORTPURPOSE

The purpose of the report is to present information regarding the second allegation (Page 6, Request to Institute a Show Cause Proceeding and for other Relief - Tyrone Fahner, Attorney General of the State of Illinois) on the Off-Gas Building roof.

BACKGROUND

The concrete enclosure above grade as part of the Off-Gas Building is a non-safety related structure which houses Off-Gas Building HVAC Air Handling Units, HVAC Water Cooled Condensing Units, HVAC Exhaust Filter Units, HVAC Control Panels and associated motor control centers and switchgear. The specification concrete compressive strength is 4000 psi at 90 days. While detailed quality assurance requirements were not required due to the building being non-safety related, they were applied as part of the overall Commonwealth Edison/Walsh Construction Company quality effort.

FINDINGS

The Off-Gas Building enclosure concrete (walls and roof) was poured on November 7, 1975. Walsh Construction Company (WCC) Q.C. Form QCP-9A (Pour Checkout Card) was signed by the appropriate construction and Q.C. personnel and countersigned by a Commonwealth Edison Company Field Engineer. Additionally, WCC Q.C. Forms QCP-6A (Reinforcing Steel Placement Audit) and QCP-9B (Concrete Placement Control Audit Form) were utilized and signed by WCC Q.C. personnel. Concrete testing during the pour by A&H Engineering Corporation showed the concrete was within specification requirements for slump, air content and placing temperature. The concrete met compressive strength requirements, the lowest cylinder break was 4670 psi at 90 days.

On September 25, 1979, Commonwealth Edison Company Quality Assurance pointed out some surface cracking in the bottom of the Off-Gas Building roof. The area had a high density of concrete expansion anchors. An inspection performed by WCC Q. A. Supervisor, WCC General Superintendant and CECO. Structural Engineer found the cracking to be surface in nature and no further action was required.

A temporary construction power center transformer and switchgear were set on the roof in 1976. The unit weighed approximately 6700 pounds. The unit was set over a concrete beam in the longitudinal direction and one end rested on the east concrete wall. A check was made to insure the roof would take the unit loading prior to installation. The unit was removed in late 1981 as it was no longer required.

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The slab thickness has been checked on two different occasions. On March 10, 1982 a single point check showed the slab as 1' - 2 1/4" thick including roofing material. Roofing material is approximately 1-3/4" - 2" thick. Additional slab thickness checks were made on March 29, 1982. Fifteen (15) points checks showed the slab plus roofing material varied from 1' - 1-5/8" to 1' - 3-3/4". A check made effectively eliminating the roofing material showed the slab thickness varied from 11-1/4" to 1'- 1-1/4".

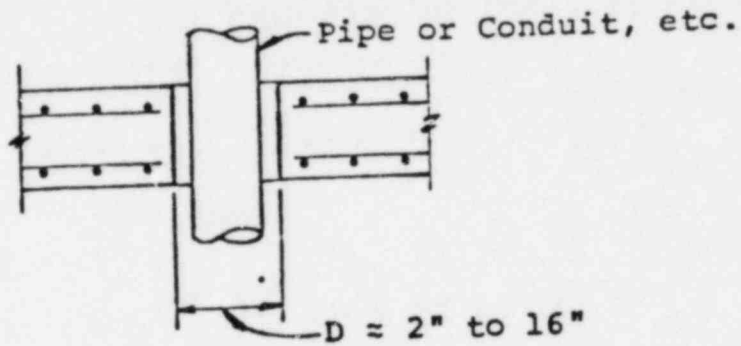
A visual survey of the roof underside was made by WCC Q.A. and CECO. on March 27, 1982. The survey showed no abnormal concrete cracking. The area under the former electrical equipment showed no abnormal concrete cracking.

SUMMARY

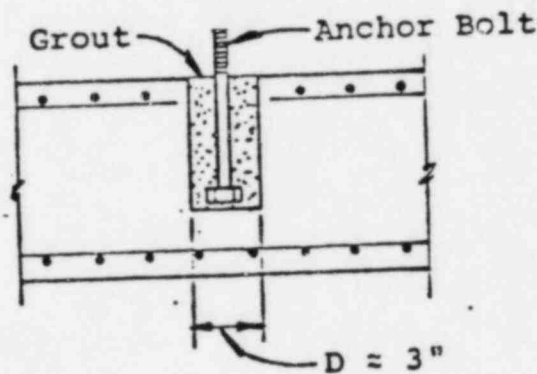
The Off-Gas Building roof concrete is 12 inches thick per specifications. There is no abnormal concrete cracking due to concrete expansion anchors and/or the electrical equipment formerly placed there. The roof will serve its' intended function.

TYPES OF CORED HOLES

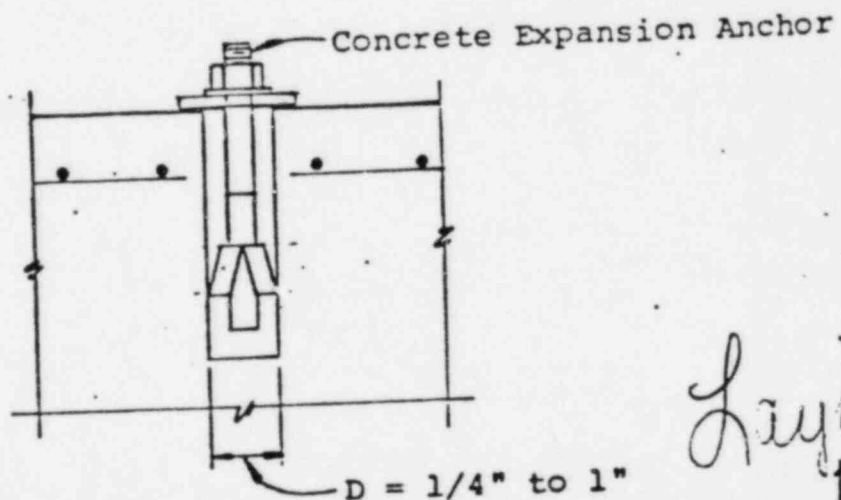
- A. Holes passing through concrete element to allow for passage of an electrical or mechanical component.



- B. Holes partially penetrating a concrete element for a grouted anchor bolt.



DRILLED HOLES FOR CONCRETE EXPANSION ANCHORS



SUMMARY OF ENGINEERING REVIEW OF CORED HOLES

- I THE LOCATION OF ALL CORED HOLES PASSING THRU CONCRETE ELEMENTS FOR OFFICE ROUTED COMPONENTS ARE LOCATED ON STRUCTURAL DRAWINGS. PRIOR TO THE RELEASE OF THE DRAWINGS, AN ENGINEERING ASSESSMENT IS MADE OF THE EFFECTS OF THE REINFORCING STEEL LIKELY TO BE DAMAGED BY THE CORING OPERATION. THIS ASSESSMENT HAS CONSISTED OF ENGINEERING JUDGEMENT BASED UPON THE STRESS LEVELS IN THE CONCRETE ELEMENTS IN RELATION TO THE LOCATION OF THE CORED HOLE.
- II CORED HOLES FOR FIELD ROUTED COMPONENTS ARE REQUESTED BY THE CONTRACTOR VIA A FIELD CHANGE REQUEST (FCR). AN ENGINEERING ASSESSMENT, SIMILAR TO THAT PERFORMED FOR OFFICE ROUTED COMPONENTS, IS MADE PRIOR TO THE APPROVAL OF THE FCR. THE LOCATION OF THESE CORED HOLES ARE SUBSEQUENTLY INDICATED ON THE STRUCTURAL DESIGN DRAWINGS.
- III SUBSEQUENT DETAILED CALCULATIONS RECENTLY PERFORMED FOR A SAMPLE OF CORED HOLES HAVE SUBSTANTIATED THAT ENGINEERING JUDGEMENT WAS APPROPRIATE.
- IV CORED HOLES FOR EQUIPMENT FOUNDATION AND PIPE SUPPORT BASEPLATE ASSEMBLIES ARE INDICATED ON THE MECHANICAL DESIGN DRAWINGS.
 - A. THE CORING OF HOLES FOR PIPE SUPPORT BASEPLATE ASSEMBLIES, WHICH COMMENCED IN THE SUMMER OF 1980, WAS CONTROLLED BY DRAWING NO. M-1100, SHEET 23, WHICH REQUESTED THAT THE CONCRETE BE NOTCHED TO EXPOSE THE REINFORCING STEEL TO AVOID REBAR DAMAGE. THIS REQUIREMENT PRECLUDED ANY REBAR DAMAGE.

- B. CORED HOLES FOR EQUIPMENT FOUNDATION ANCHOR BOLTS ARE PLOTTED ON THE RHS DRAWINGS. AN ASSESSMENT BASED UPON ENGINEERING JUDGEMENT HAS BEEN MADE ON THE ASSUMPTION OF THE REINFORCING STEEL LIKELY TO BE DAMAGED BY THE CORING OPERATION IN RELATION TO THE EXISTING STRESS LEVELS IN THE CONCRETE ELEMENTS.

Exh. b. 7 4

SUMMARY OF ENGINEERING REVIEW OF
DRILLED HOLES FOR CONCRETE EXPANSION ANCHORS

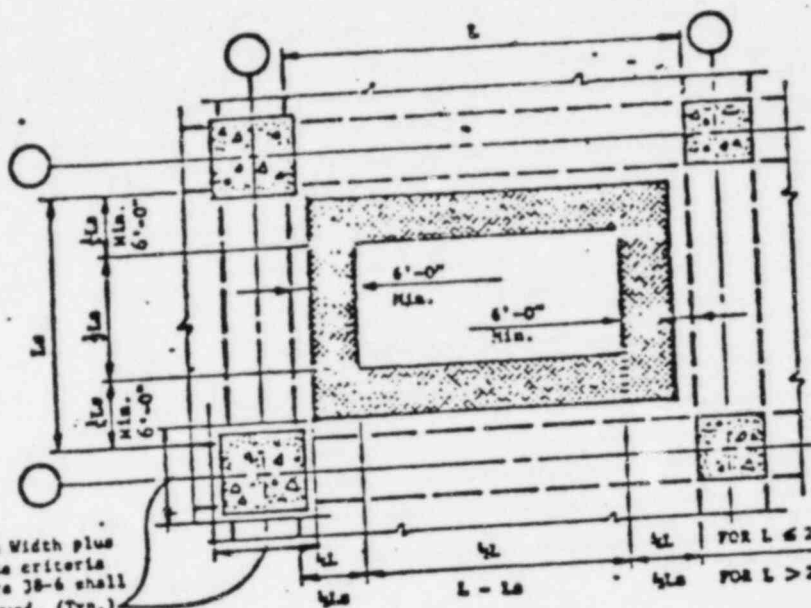
- I ENGINEERING CONTROL ON REINFORCING STEEL DAMAGED DURING CONCRETE EXPANSION ANCHOR INSTALLATION IS INITIALLY EXERCISED VIA FORM LS-CEA, WHICH:
 - A. DEFINES AREAS IN WHICH A METAL DETECTOR MUST BE USED TO AVOID REINFORCING STEEL DAMAGE, AND REQUIRES THE CONTRACTOR TO OBTAIN ENGINEERING APPROVAL PRIOR TO CUTTING A BAR AND TO SUBSEQUENTLY REPORT THIS OCCURRENCE.
 - B. PROHIBITS THE USE OF CONCRETE EXPANSION ANCHORS WITHOUT PRIOR APPROVAL FROM THE CONSULTING ENGINEER.
 - C. DEFINES AREAS IN WHICH CONCRETE EXPANSION ANCHORS MAY NOT BE INSTALLED WITHOUT THE SPECIFIC APPROVAL OF THE CONSULTING ENGINEER.
- II INITIAL ENGINEERING REVIEW AND DISPOSITION OF DAMAGED REINFORCING STEEL REPORTS SUBMITTED BY THE CONTRACTOR
 - A. INDIVIDUAL DAMAGED REBAR REPORTS WHICH ARE SUBMITTED ARE REVIEWED BY THE CONSULTING ENGINEER TO DETERMINE THE IMMEDIATE, LOCAL IMPACT OF THE DAMAGED BAR. THIS REVIEW, IN MOST INSTANCES, CONSISTS OF ENGINEERING JUDGEMENT BASED UPON THE EXISTING STRESS LEVELS IN THE CONCRETE ELEMENT.
 - B. THE REBAR DAMAGE REPORTS ARE SUBSEQUENTLY LOGGED IN, INDEXED AND PLOTTED ON A SEPARATE SET OF STRUCTURAL DRAWINGS (RHS DRAWINGS).

Exhibit 5

SARGENT & LUNDY
ENGINEERS

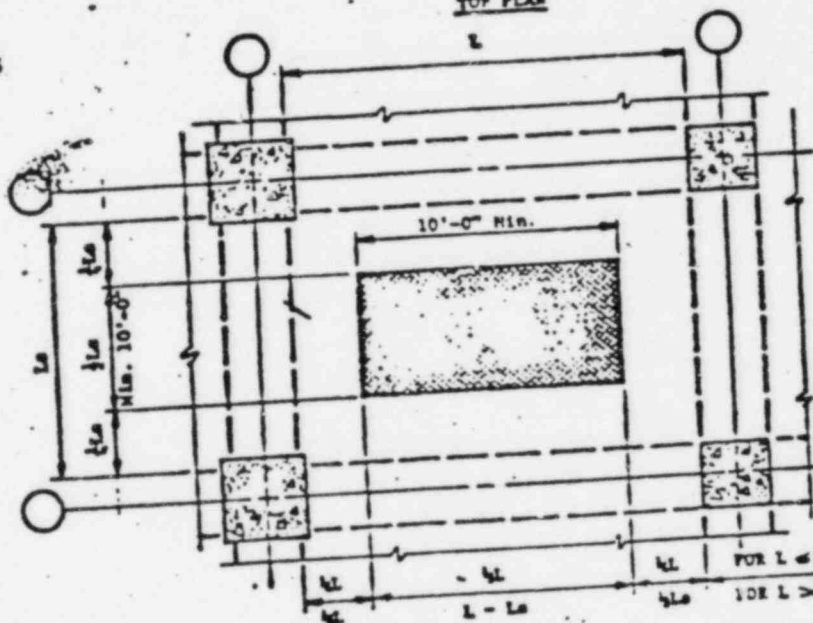
September 30, 1976

Rev. 3, 7-20-79

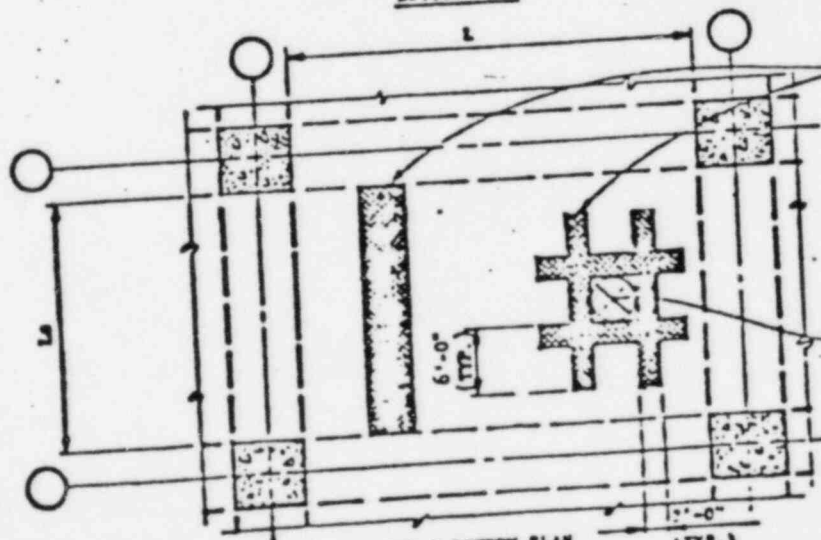


R3 For Beam Width plus 2'-0" the criteria in Figure 38-6 shall be followed. (Typ.)

TOP PLAN



BOTTOM PLAN



Additional reinforcing shown on plan (for equipment, coverings, block wall, etc.).

Rectangular or circular opening

TOP & BOTTOM PLAN

(TYP.)

FIGURE 38-7 CRITERIA FOR DRILLING OF HOLES FOR EXPANSION ANCHORS IN CONCRETE SLABS

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Exhibit 6

III FINAL ENGINEERING REVIEW AND DISPOSITION OF DAMAGED REINFORCING STEEL

- A. THE ASSESSMENT OF THE OVERALL EFFECTS OF THE ACCUMULATION OF DAMAGED REINFORCING STEEL OCCURS DURING THE FINAL LOAD CHECK, JUST PRIOR TO INITIAL FUEL LOAD.
- B. THIS REVIEW HAS CONSISTED OF ENGINEERING JUDGEMENT BASED UPON THE FINAL STRESS LEVELS IN THE CONCRETE ELEMENTS WITH RESPECT TO THE LOCATION OF THE DAMAGED REBAR. DETAILED CALCULATIONS WERE NOT WARRANTED DUE TO THE RANDOM DISTRIBUTION OF THE DAMAGED REINFORCING STEEL IN THE SAFETY RELATED AREAS. CALCULATIONS RECENTLY PERFORMED IN RESPONSE TO THE PETITION HAVE SUBSTANTIATED THAT ENGINEERING JUDGEMENT WAS APPROPRIATE.

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Exhibit 7

Margins in Sample Areas with Congested Rebar Hits forLaSalle County, Unit 1Table 3-1

Area No.	Building	Slab/Wall (Panel Size)	Elevation	Wall Location or Slab Panel No.	No. of Damaged Rebar Locations	No. of Cored Holes	Margin Without Holes	Margin With Holes	Ratio
									$\frac{\text{Margin With Holes}}{\text{Margin Without Holes}}$
1	Reactor (S-201)	Wall 19.67'x56'	Above 673'-4"	Diagonal Wall at Col. C & 14	5	2	1.25	1.05	1.19
2	Reactor (S-211)	Slab 12.5'x32'	740'-0"	56" Slab between Col. J & H, 11-2 & 12-8	31	0	2.24	1.23	1.02
3	Reactor (S-215)	Beam 3'x24.5'	786'-6"	Beam at Line 14 between Col. D & E	1	0	3.55	3.13	1.13
4	Reactor (S-219)	Slab 10'x26' Each Slab	820'-6"	IRS 719	2	1	1.71	1.36	1.26
				720	5	0	1.88	1.50	1.25
5	Reactor (S-219)	Wall 14.7'x33'	Above 820'-6"	Between 11 & 13 & Col. J & G	12	1	2.16	1.27	1.70
6	Reactor (S-223)	Wall 21.2'x27'	Between 673'-0" & 694'-6"	Col. Row J between 14 & 15	19	2	4.00	3.00	1.33

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7	Reactor (S-237)	Wall 19.17'x28'	673'-0" & 694'-6"	Row 15	9	0	2.85	2.53	1.13
8	Reactor (S-274)	Wall 19.17'x27'	Between 673'-4" & 694'-6"	At Line 8 - 9 between Col. J & G	6	0	1.73	1.34	1.29
9	Auxiliary (S-572)	Wall 18'x25'	Above 731'-0"	At Line 11 - 3 running	9	0	1.34	1.22	1.10

*All these bar damages are in top of slab scattered in the entire bay.

Exhibit 8

Table 3-1 (Continued)

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ORIGINAL

In the Matter of:

COMMONWEALTH EDISON COMPANY

LaSalle County Nuclear
Generating Station, Unit 1
and Unit 2

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:
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:
:

DOCKET NOS. 50-373 and 50-374

DATE: March 31, 1982

PAGES: 1 - 77

AT: Bethesda, Maryland

ALDERSON  REPORTING

400 Virginia Ave., S.W. Washington, D. C. 20024

Telephone: (202) 554-2345

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1 UNITED STATES OF AMERICA
2 NUCLEAR REGULATORY COMMISSION

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4 In the Matter of :
5 COMMONWEALTH EDISON COMPANY : Docket Nos. 50-373
6 LaSalle County Nuclear : and
7 Generating Station, Unit 1 : 50-374
8 and Unit 2 :

9 - - - - -x

10 Room P-422,
11 7920 Norfolk Avenue,
12 Bethesda, Maryland.
13 Wednesday, March 31, 1982.

14 The meeting in the above-entitled matter was
15 convened at 1:03 p.m., when were present:

16 APPEARANCES:

- 17 H. Denton
- 18 R. Purple
- 19 A. Bournia
- 20 R. Tedesco
- 21 A. Schwencer
- 22 C. Norelius
- 23 C. Williams
- 24 B. Shoemaker
- 25 R. Hoefling

1 APPEARANCES (continued):

2 P. T. Yuo
3 S. P. Chan
4 R. E. Lipinski
5 J. Bigley
6 B. Lee
7 L. Delgeorge
8 M. Miller
9 P. Steptoe
10 D. Shamblin
11 T. Quaka
12 K. Kostal
13 V. Reklactis
14 C. Schroeder
15 M. Morris
16 T. Longlais
17 J. Goodie

18 * * *

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P R O C E E D I N G S

(1:03 p.m.)

1
2
3 MR. DENTON: Let me thank you for attending
4 this meeting on such short notice and tell you what I
5 would like to do. I want to call your attention to the
6 fact that a transcript is being taken. We will provide
7 a transcript to the various parties. The reason I am
8 taking a transcript is to facilitate our review of this
9 information. So we will assume that whatever we hear
10 from the company today is valid information and we can
11 use it in doing our review of this issue, unless you
12 choose to modify the information you present here
13 today.

14 I received a petition from the Attorney
15 General of the State of Illinois dated March 24th,
16 requesting that we initiate a show cause proceeding and
17 initiate other relief because of some circumstances
18 alleged at LaSalle. There are two types of problems
19 that the petition is concerned with. One is the boring
20 of holes through important walls in the building or
21 either partially the way through, and the other is with
22 regard to the adequacy of the roof design on the off-gas
23 building.

24 We have made a cursory examination of what we
25 know about these issues and have talked to the Region

1 regarding their knowledge of these issues. What I would
2 like to do today is to give the company an opportunity
3 to explain its position on the matters of concern.

4 One reason for not just noticing this for 30
5 days and going with our normal pace in these matters is
6 the pendency of the completion of the plant and its
7 readiness for an OL review. We have been meeting with
8 the company quite extensively over the last few months
9 in anticipation that the plant would be finished in the
10 near future. I understand it may be finished in the
11 next week or so.

12 So the kind of information that we would be
13 interested in hearing about today, if you have it
14 available, relate to the number of holes drilled, the
15 size of the holes including the depth of penetration,
16 your procedures for mapping the holes that get rebars,
17 tendons, liners, on the general layout drawings,
18 describe the condition of the damage that you might have
19 expected to have occurred in each case; namely, with a
20 rebar cut, partially cut, was the concrete cracked.

21 We will also be interested in the load
22 conditions that exist in these wall panels that are
23 affected by the holes. We would be interested in where
24 the rebar reinforcement is placed in these walls where
25 the holes have been drilled. We will also want to hear

1 about the procedures and acceptance standards that you
2 have issued to the drilling crews and the field
3 engineerings, including the dates for when these
4 procedures were implemented. And most importantly, I
5 want to understand your methodology and techniques for
6 evaluating the safety significance of any such
7 penetrations drilled through walls.

8 Let's see, Bob, any other points I should
9 cover at the beginning here?

10 MR. PURPLE: Well, we would want similar
11 information on the design questions relating to the roof
12 of the off-gas building. We are not involved with the
13 drilling of holes, but the questions of the thickness in
14 its design.

15 MR. DENTON: With that introduction then, let
16 me go around the room and make sure we all know who is
17 attending here. I am Harold Denton from NRR. Why don't
18 we turn to the right?

19 MS. GOODIE: I am Judith Goodie, Assistant
20 Attorney General of Illinois.

21 MR. BOURNIA: Anthony Bournia, from NRR.

22 MR. SCHWENCER: Al Schwencer, from NRR.

23 MR. NORELIUS: Chuck Norelius, Region 3.

24 MR. KNIGHT: Jim Knight, NRR.

25 MR. PURPLE: Bob Purple, NRR.

1 MR. HOEFLING: Dick Hoefling, counsel for the
2 Staff.

3 MR. LEE: Byron Lee, Commonwealth Edison.

4 MR. DELGEORGE: Lou Delgeorge, Commonwealth
5 Edison.

6 MR. LONGLAIS: Tom Longlais, Sargeant & Lundy.

7 MR. STEPTOE: Philip Steptoe, Isham, Lincoln &
8 Beale.

9 MR. MILLER: Mike Miller, Isham, Lincoln &
10 Beale, for Commonwealth Edison.

11 MR. BIGLEY: Jack Bigley, NRC staff.

12 MR. SHOEMAKER: Bob Shoemaker, IE.

13 MR. WILLIAMS: Cordell Williams, Region 3.

14 MR. KUO: Jim Kuo, NRB.

15 MR. CHAN: Sy Chan, NRB.

16 MR. LIPINSKI: Ron Lipinski, NRB.

17 MR. SHAMBLIN: Dan Shamblin, Commonwealth
18 Edison.

19 MR. QUAKA: Tom Quaka, Commonwealth Edison.

20 MR. KOSTAL: Ken Kostal, Sargeant & Lundy.

21 MR. REKLACTIS: V. Reklactis, Sargeant & Lundy.

22 MR. SCHROEDER: Chuck Schroeder, Commonwealth
23 Edison.

24 MR. MORRIS: Mike Morris, Commonwealth Edison.

25 MR. DENTON: With that introduction, Byron,

1 why don't I turn it over to you to tell us what you know
2 about these issues, and let me point out that we are
3 pleased to have Ms. Goodie here, and I will provide you
4 an opportunity to comment at some periodic intervals but
5 figure that you are mainly here as an observer.

6 MS. GOODIE: I understand that.

7 MR. DENTON: And don't feel that we will
8 expect you to contribute directly more than you have
9 done in raising the issues in the petition.

10 MR. LEE: Thank you. We do, too, also
11 appreciate the holding of this meeting on short notice,
12 but we agree that it is absolutely necessary. I would
13 start by saying that we are deeply concerned about the
14 potential delay of low power licensing of LaSalle Unit
15 1, especially based on a single construction worker's
16 allegation of some possible concerns. And even reading
17 the affidavit, it is pretty much an indication that
18 there were fairly decent controls in place in marking
19 and so forth.

20 We are concerned that the Attorney General's
21 office did not come to us with this issue as they have
22 done with several other technical issues in the past,
23 and we have been able to resolve those issues. We
24 continue to believe that our practices and our control
25 of engineering and construction at LaSalle County are

1 excellent. We have had many discussions in the last few
2 months with you on that issue with NRR and with Region
3 3, and we think that all of that has pretty much
4 indicated that we have had good records. I think that
5 what we will tell you today will just support and
6 substantiate that even further, as we are now into some
7 details.

8 One of our other major concerns is the
9 diversion of some key people, both ours and yours, from
10 the major effort that we have all been at for the last
11 several months. This does have some significant impacts
12 on our customers and on our stockholders. We do need
13 LaSalle County Unit 1 for capacity. It is not an excess
14 capacity unit that we are building just because we want
15 to complete it.

16 So it is important to us in that respect. And
17 of course, it is always important to our customers and
18 stockholders to finish. Even our own Illinois Commerce
19 Commission has reached that decision. As a result, we
20 do ask for a quick review and resolution of the
21 problem. And we do appreciate your getting into it so
22 quickly.

23 In any event, I think that after today we can
24 hopefully give you enough of an indication to show you
25 that there is absolutely no reason for interrupting the

1 issuance of a low power license and the testing
2 process. So with that, I would like to ask Lou
3 Delgeorge, who is our Director of Licensing who has been
4 deeply involved in the LaSalle County project for quite
5 a few years, to kind of narrate and handle our
6 presentation.

7 MR. DELGEORGE: What I would like to do is
8 review the allegations presented in the petition as we
9 understand them, stating the facts and the information
10 we have which we think will resolve the concerns that
11 have been raised in your mind.

12 I would like to start with the questions
13 raised relative to the off-gas building because we feel
14 that to be a less complicated issue that can be more
15 easily dispositioned.

16 First, there is an allegation that the roof
17 thickness is eight inches as opposed to the 12 inch
18 design thickness. I would like to say at the outset
19 that although this building is a non-safety related
20 building containing no safety-related equipment and not
21 requiring the implementation of our quality assurance
22 program, we did in fact apply our quality assurance
23 program to the construction of this building, which has
24 given us greater confidence in the accuracy of the
25 information that we will be providing to you.

1 As a result of our receipt of the petition we
2 made a survey specific to verifying the thickness of the
3 slab in question. This was done within the last week.
4 We took 15 measurements of that slab thickness and
5 determined that the average thickness of the slab was
6 slightly greater than 12 inches. Of the measured
7 thicknesses, the lowest value was 11 1/4 inches. This
8 measure was taken in what we believe to be an area of a
9 floor drain on the slab roof and can be justified on
10 that basis.

11 We have no reason to believe that the
12 thicknesses that we have measured and the thickness of
13 that slab is not consistent with the design requirement
14 for the off-gas building roof.

15 The second allegation that was made --

16 MR. DENTON: Can we discuss that one just a
17 bit? I have forgotten how big this roof is. We
18 described it as the roof of the off-gas building. Is
19 there a separate building called the off-gas building?
20 Can you characterize the size of the roof that we
21 discussed?

22 MR. DELGEORGE: I will call on Dan Shamblin
23 from our site construction staff.

24 MR. SHAMBLIN: My name is Dan Shamblin, I work
25 at the LaSalle Commonwealth station. I guess the

1 simplest way to show you this is with this picture
2 here. This is the roof we are talking about here for
3 this concrete enclosure (indicating). It is roughly
4 dimension-wise, it is roughly 34 feet by 75 feet.

5 MR. PURPLE: Lou, one part of the allegation I
6 did not hear you address was transformers sitting on the
7 roof and cracks through the --

8 MR. DELGEORGE: I am just going to get to
9 that.

10 MR. PURPLE: I see, okay.

11 MR. DENTON: Do you think there is any
12 confusion in nomenclature that the allegation should not
13 be read narrowly to be the off-gas building? Have you
14 read the whole text? Do you think you have identified
15 the roof they had in mind?

16 MR. DELGEORGE: I will ask for any comments
17 from our staff if they disagree with what I am about to
18 say, but there is no information contained in the
19 affidavits presented in the petition from which we can
20 conclude that any slab other than the off-gas building
21 roof is the slab in question.

22 And I am not aware of any additional
23 information that may have come to our attention that
24 would suggest some other slab being involved.

25 MR. DENTON: Have you had this allegation

1 called to your attention before?

2 MR. DELGEORGE: Sir, it is my understanding
3 that until the issue was raised through the attorney
4 general's office that we were not aware of this
5 potential deficiency.

6 MR. DENTON: Let me ask the regional
7 representatives if they would like to ask any questions
8 about the building.

9 MR. SHAMBLIN: Excuse me. The issue of the
10 roof thickness was presented to us in early March
11 through our legal department.

12 MR. DELGEORGE: But it was as a result of
13 information developed through the inquiry by the
14 attorney general.

15 MR. SHAMBLIN: That is correct, yes.

16 MR. DENTON: Chuck, do you have any questions
17 on this?

18 MR. NORELIUS: No, I don't think I have any
19 questions on this particular subject.

20 MR. DENTON: Let me ask you how you measured
21 it. Did you have access to --

22 MR. DELGEORGE: To address your previous
23 question of whether we could conclude that we have, in
24 fact, covered the area in question, the specifics of
25 other portions of the allegation relative to the

1 placement of a transformer and identified surface
2 cracking, we have in fact identified the transformer in
3 question and were aware of surface cracking in this
4 particular slab identified on our own initiative
5 sometime ago. And taking those facts into account I
6 think we can conclude that we are addressing the slab
7 that was discussed in the affidavit.

8 MR. DENTON: Why don't you go ahead, then?

9 MR. DELGEORGE: The next allegation I had
10 intended to address was the placement of the transformer
11 on the roof of the off-gas building. It is, in fact,
12 true that a temporary construction-related transformer
13 was placed on that slab. The transformer has been
14 removed from the slab and it was removed in late 1981
15 before we became aware of the issue in controversy
16 here. The placement of that transformer did not exceed
17 any of the posted live loads allowable for that slab.

18 We have surveyed the under surface of the slab
19 and detected no apparent damage in the vicinity of the
20 placement of the transformer. We have no reason to
21 believe that the placement of that transformer caused
22 any structural damage to the off-gas building roof.

23 MR. DENTON: How big a transformer was this?
24 What was it intended to do?

25 MR. DELGEORGE: It provided

1 construction-related loads and weighed, as I understand
2 it, on the order of 6700 pounds.

3 MR. DENTON: Let me go back to a question I
4 asked earlier about how did you determine the thickness
5 of the roof.

6 MR. DELGEORGE: We conducted a field survey.
7 Given a reference zero, we were able to determine the
8 height of the under surface of the slab, and from the
9 same reference zero, we determined the height of the top
10 surface of the roof, which included both the concrete
11 slab and surface roofing materials. In order to verify
12 the thickness at the points of survey, we measured the
13 thickness of the roofing material; subtracting those
14 values allowed us to establish the concrete thickness.
15 We have prepared a report which discusses those
16 measurements and we are prepared to leave that report
17 with you.

18 MR. DENTON: I take it these are measurements
19 made in situ and not taken off of drawings?

20 MR. DELGEORGE: That is correct.

21 MR. DENTON: I think we would like to have the
22 report. Perhaps you can give us a copy and we will
23 attach it to the transcript and make sure it is
24 available.

25 MR. NORELIUS: This may be in the report, Lou,

1 but how did you come to the conclusion that 15 selected
2 points was appropriate to give you a good picture of
3 what the roof thickness was?

4 MR. SHAMBLIN: The roof is made up of a series
5 of beams, and I essentially told the surveyors to take
6 measurements between the beams. Essentially, the center
7 span of the slab. It worked out to be three
8 measurements per span between the beams, turning out to
9 be 15 measurements.

10 MR. PURPLE: There is yet another item in that
11 particular allegation. Are you going to get to that?

12 (Laughter.)

13 MR. DELGEORGE: I am ready. The last
14 allegation suggested that the concrete associated with
15 this slab had been cracked substantially. Commonwealth
16 Edison discovered surface cracking of the subject slab
17 through its own site quality assurance department in
18 September 1979. As a result of the deficiency
19 identified, an inquiry was made at that time which
20 included an engineering evaluation and which also
21 included the tracing of the crack depth by chipping at
22 the concrete in the vicinity of the cracks.

23 As a result of that review, it was established
24 that the crack depth did not exceed one quarter inch;
25 that the cracking was, in fact, surface cracking, and as

1 a result, it was patched. We have no reason to believe,
2 based on that investigation, that the cracking alleged
3 is the result of drilling of anchor bolt holes. It is
4 our opinion, based on that evaluation, that the cracks
5 observed are normal shrinkage cracks associated with
6 this type of slab.

7 MR. DENTON: Now, from the dates you gave, you
8 observed those cracks before the transformer was placed
9 on the top.

10 MR. DELGEORGE: No, sir, the transformer was
11 placed at the time the observation was made.

12 MR. DENTON: So the transformer was taken off
13 the date you measured, but it had been on for a
14 considerable period of time?

15 MR. DELGEORGE: Yes.

16 MR. SHAMBLIN: That is correct. The
17 transformer was placed sometime in 1976. We do not have
18 the exact date, but we suspect it was in the second half
19 of 1976.

20 MR. DENTON: And when you repaired the cracks
21 then, or examined for depth, the transformer was still
22 there?

23 MR. DELGEORGE: Yes, sir.

24 MR. DENTON: And you did not remove it until--

25 MR. DELGEORGE: Until late 1981.

1 MR. SCHWENCER: None of these cracks went
2 through the support points of the transformer?

3 MR. SHAMBLIN: That is correct.

4 MR. DELGEORGE: I am not sure I understand
5 your question.

6 MR. SCHWENCER: The point at which you
7 fastened the transformer to the roof or where it was in
8 contact with the roof, none of the cracks were
9 associated with that contact area?

10 MR. SHAMBLIN: That is correct, none of the
11 cracks were associated with the contact area of the
12 transformer.

13 MR. DENTON: Let me ask the project manager
14 what categorization we gave that roof.

15 MR. BOURNIA: It is a non-safety grade
16 building. I have the reviewer here. We did not
17 consider this as a safety grade building.

18 MR. DENTON: What is under the roof?

19 MR. BOURNIA: What is this?

20 MR. DENTON: What is under it?

21 MR. DELGEORGE: That is described in our
22 report. The concrete enclosure above-grade as a part of
23 the off-gas roof is a non-safety related structure which
24 houses off-gas building, heating/ventilating/and air
25 conditioning, air handling units, HVAC, water cooled

1 condensing units, HVAC exhaust filter units, HVAC
2 control panels and associated motor control centers and
3 switchgear.

4 MR. DENTON: Does that mean there is no
5 Category 1 safety-related equipment in that building?

6 MR. DELGEORGE: Yes, sir.

7 MR. DENTON: Any questions? We can come back
8 to this, but I thought we would give the company a
9 chance.

10 MR. PURPLE: There still remains yet one more
11 feature of that particular allegation. Maybe you are
12 going to get to it. It is the part that says there were
13 holes drilled through rebars in the roof. I have not
14 heard an answer that you did not have such holes or if
15 you did, what they meant.

16 MR. DELGEORGE: We did not address the
17 potential for drilling of bar in that roof, separate
18 from the question presented in the primary allegation
19 which we will address. You will see, based on the
20 evaluation that we have done relative to the overall
21 question of rebar damage, that we have addressed all
22 slabs. Correct me if I am wrong. Is it true that our
23 evaluation would have included that building.

24 We can verify that for you, but it is our --

25 MR. RECKLACTIS: It did include this building,

1 also.

2 MR. PURPLE: Can you say whether or not the
3 roof of this building was in fact drilled and did go
4 through some rebar specifically?

5 MR. RECKLACTIS: As I understand it, the
6 transformer did not even have any bolts. That is what I
7 was told.

8 MR. DELGEORGE: I am not sure we are prepared
9 to answer that question completely. We will get back to
10 you, though.

11 MR. DENTON: What is the design basis for the
12 thickness of that roof? Why did you pick 12? What
13 controls?

14 MR. LEE: Why 12 inches?

15 MR. KOSTAL: Why 12 inches? Okay. My name is
16 Ken Kostal from Sargeant & Lundy. The thickness of a
17 number of slabs -- we generally have a minimum thickness
18 of concrete related to structural elements such as slabs
19 and walls. The 12-inch thickness is typically
20 associated with a certain amount of load which would
21 accompany that particular slab. So I would say in
22 general, the 12-inch represented the thickness required
23 to support a live and dead load attributable to that
24 particular area.

25 MR. KNIGHT: May I ask, by that you mean there

1 was a, let us call it, a design live load that is
2 selected for convenience and utility, if you will?

3 MR. KOSTAL: Yes.

4 MR. KNIGHT: Keeping in mind they you are in a
5 heavy industrial area, you provide sufficient capacity
6 for--

7 MR. KOSTAL: We provide a certain minimum
8 capacity -- meaning we provide a certain minimum live
9 load capacity-- to allow for construction conditions, to
10 allow for initial installation, equipment storage such
11 as the example given by Mr. Delgeorge relative to the
12 transformer, and that generally constitutes our initial
13 criteria in terms of original design load capabilities.

14 MR. KNIGHT: Did you have a standard live load
15 used throughout the facility?

16 MR. KOSTAL: A minimum live load for this
17 particular plant is 100 pounds per square foot. That is
18 associated with all concrete slabs.

19 MR. DENTON: Can you describe the construction
20 of the slab a bit more? Is it reinforced?

21 MR. KOSTAL: It is a typical concrete
22 reinforced one-way slab with concrete beam elements. I
23 do not know the exact spacing of them, but it is a
24 general one-way beam type slab design, reinforcing top
25 and bottom, top reinforcing across the beams carrying

1 negative moment, bottom carrying positive moment, and
2 temperature reinforcing to account for normal
3 construction and shrinkage cracking that could occur.

4 MR. DENTON: Any other comments on this part?

5 (No response.)

6 MR. DENTON: If not, let me ask Ms. Goodie if
7 you would like to comment on this part before we go
8 ahead.

9 MS. GOODIE: My only comment here would be
10 that as I understand it, someone at Region 3 has spoken
11 to the informant who provided us with this information,
12 and I understand there is a report in Region 3 about
13 this information. It is my understanding from the
14 person I spoke to at Region 3 that the allegations of
15 the less-than-design thickness of the roof were
16 correct. I have not seen this report.

17 MR. DENTON: Would you like to comment?

18 MR. NORELIUS: We received allegations on this
19 some months ago and evaluated it in-office. I do not
20 have those with me. I am not sure that I know they say
21 exactly what she said, and I have not read them
22 carefully. But we were aware of the allegation. It was
23 evaluated within our office and I think, in recognition
24 of our manpower considerations, we chose not to delve
25 deeply into this at the field level because of its

1 Category 2 nature.

2 MR. DENTON: I think on this one it might be
3 well to just reiterate that Staff silence does not mean
4 consent with the utility's view on this.

5 MS. GOODIE: I understand.

6 MR. DENTON: It is more the fact that we are
7 trying to get the facts from which we would proceed to
8 do a review.

9 MR. NORELIUS: Could I ask Ms. Goodie, did you
10 speak to someone in our office on that?

11 MS. GOODIE: Yes.

12 MR. NORELIUS: Who did you talk to?

13 MS. GOODIE: I spoke to two different people.
14 I believe this one was from Jim Foster. I can check my
15 notes on that.

16 MR. NORELIUS: Jim was one of our
17 investigators.

18 MR. DENTON: All right, let us move to the
19 second issue.

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1 MR. DELGEORGE: The second issue addressed the
2 damage to reinforcing steel by the drilling through
3 reinforced concrete slabs. I attempted to outline the
4 allegations presented by that petition item, and I will
5 address each of them as I understand it.

6 We have also prepared a report in this area
7 describing the procedural controls that we have had in
8 place. That report identifies the controls, their date
9 of implementation, and attempts to describe why we
10 believe this prevents the type of unrestricted damage
11 that has been suggested by the petition.

12 The first allegation presented is that
13 thousands of holes are drilled through reinforced
14 concrete slabs as a matter of course. I believe that we
15 can, through the report, demonstrate to you that the
16 process of drilling all reinforced slabs has been a
17 control process, that this program was implemented in
18 late 1976 before the time period at which the contractor
19 employee, whose affidavit is contained in the petition,
20 made his -- discusses the problem that he alleges
21 exists.

22 And in fact, we have conducted an engineering
23 evaluation of all reported structural -- or
24 reinforcement steel damage and have concluded, based on
25 that evaluation, that the structural integrity of all

1 the walls, of all the concrete reinforced slabs in the
2 plant have not been repaired.

3 I would point out at this point in time that
4 our review is not yet complete. However, it is
5 substantially complete, and we have no reason to believe
6 at this point that there is any question relative to the
7 structural integrity of the slabs.

8 The second allegation presented is that there
9 is an unknown number of holes. We are also in a
10 position to discuss with you the numbers of holes that
11 have been either cored or drilled at LaSalle County. A
12 rough estimate of the number of holes, inasmuch as we
13 have not fully tabulated all our records, is on the
14 order of 50,000.

15 We have developed as a practice, given the
16 program we have implemented, a program of recording the
17 placement of the holes and reporting any rebar
18 reinforcement damage associated with the drilling of a
19 hole.

20 MR. DENTON: Let me ask you, how does a
21 driller know that he has struck rebar or reinforcing
22 steel?

23 MR. DELGEORGE: In general, the techniques
24 used for producing the hole would have used drill bits
25 that are not capable of penetrating reinforcement

1 steels. That practice was not 100 percent uniform,
2 however, and I will ask the people from the site to
3 address this also, where he did use a bit capable of
4 penetrating the steel.

5 MR. KOSTAL: It sounds different.

6 MR. DELGEORGE: It would be decidedly
7 different. Again, I will ask our site people, our
8 engineering people to discuss that further.

9 MR. KOSTAL: Do you want to discuss that?

10 MR. SHAMBLIN: Relative to hardness of steel
11 versus concrete, when you hit it with a soft drill bit,
12 it just will not go through it. It will meet a stiff
13 resistance there, plus the sound that it produces, the
14 different sound when you hit that reinforcing rod.

15 MR. QUAKA: In some cases you will get a very
16 large squeaking sound when you come in contact with
17 steel. So it is not only you being the driller, but 20
18 feet around you, you know, everybody knows you have
19 contacted the steel.

20 MR. DELGEORGE: I think we would agree with
21 your statement in the affidavit that your ability to
22 drill through the concrete once steel has been contacted
23 is significantly diminished.

24 [REDACTED] whose affidavit is attached to
25 the petition, made it clear that [REDACTED] knew when [REDACTED] had

1 contacted steel. And I guess our general feeling is
2 that that would be representative of both people put in
3 that position.

4 MR. DENTON: Did you make measurements
5 everywhere or only for the steel that was struck?

6 MR. DELGEORGE: Tom Quaka, from our site
7 assurance department will address that.

8 MR. QUAKA: As a normal course, work is not
9 done unless there is some engineering document that
10 either specifies that an anchor be installed in a
11 location, or there there has been some request to
12 install one and appropriate approval given to do that.
13 So there is a record that demonstates where the hole is
14 or where the anchor is going to go. And then ther is a
15 separate set of records that identifies situations where
16 the rebar is contacted or cut through.

17 MR. DENTON: Can you describe normal
18 engineering practice of the architect-engineer in this
19 area? Do you try to locate these holes from the
20 knowledge of the rebar in the wall from the drawing, or
21 is it more cf a field installation kind of thing where
22 you take your chances when you drill such a hole?

23 MR. DELGEORGE: Mr. Denton, we have a full
24 presentation on that engineering evaluation, which will
25 follow my discussion.

1 MR. DENTON: All right, we will postpone
2 that.

3 MR. DELGEORGE: A point we would like to make
4 here is the fact that we believe the petition clearly
5 indicates that records were kept of rebar damage. This
6 point is noted in many places both in the petition and
7 in the contractor employee's affidavit. This
8 information, we believe, supports the integrity of our
9 control program, which is described in more detail in
10 the report.

11 The records involved here are substantial, and
12 we have over the course of the years during which this
13 program has been in place -- and as I say, that began in
14 1976 -- we have monitored the performance of the
15 contractors under this program.

16 The next allegation presented is that no
17 information exists which suggests an engineering
18 approval occurred relative to the potential for damaging
19 rebar prior to 1980.

20 Unfortunately, this conclusion was reached on
21 the basis of a site laborer whom we would not expect to
22 be privy to the fundamental basis for the program we had
23 in place.

24 However, we have been able to verify that the
25 foreman of the specific laborer whose affidavit is

1 contained in the petition participated in more than one
2 training session in which the overall control program
3 for drilling and coring of holes, which included an
4 engineering evaluation, took place.

5 In other words, the supervision for the
6 laborer in question participated in four recorded
7 training sessions, whose dates I can provide to you,
8 which we believe is sufficient to assure that the
9 program that we had in place was in fact followed.

10 We take greater confidence in this in the fact
11 that [REDACTED] the laborer involved, attested to the
12 fact that [REDACTED] was required to provide rebar damage
13 reports.

14 MR. DENTON: Who conducted these training
15 courses you referred to?

16 MR. DELGEORGE: The programs in question were
17 conducted by site contractors. The site contractors,
18 Foley being the contractor involved here, had received
19 direction from our site management personnel associated
20 with Commonwealth Edison's organization, although we do
21 not provide that training ourselves.

22 As I have said earlier, the procedures in
23 question have existed since 1976. In the case of cored
24 holes, which are identified in the petition as larger
25 holes, prior engineering review of the holes is done to

1 either prevent reinforcement steel damage or to assess
2 the impact of reinforcement steel damage.

3 For drilled holes that have been characterized
4 in the petition as "smaller holes" used for concrete
5 expansion anchor-bolted supports, our engineering
6 evaluation program included the specification of certain
7 areas in the plant where concrete expansion anchors were
8 to be limited. So that we did an engineering evaluation
9 in advance to limit the areas in which such drilling
10 could take place.

11 In addition, there was an engineering
12 evaluation made of all reported damage upon receipt by
13 the architect-engineer of the drilling reports, which
14 are recognized in the petition.

15 We have a more substantial presentation to
16 review for you that engineering evaluation process. It
17 may, in fact, be appropriate to do that now, inasmuch as
18 the last issue of substance that we perceived in the
19 petition dealt with the question of whether or not
20 corrective action, if necessary, was required
21 immediately. We can address that after the discussion
22 by our architect-engineer, the evaluation program, if
23 you would like.

24 MR. DENTON: Okay, let us go that route.

25 MR. DELGEORGE: I would like to introduce Tom

1 Longlais from Sargent & Lundy.

2 Let me say first that I have copies of the
3 report prepared by Commonwealth Edison which discusses
4 the procedural controls that have been in place at the
5 LaSalle County site.

6 I will offer those for your review. We also
7 have copies of the materials that Mr. Longlais is going
8 to present now. And I will offer those for your
9 review.

10 [Slide]

11 MR. LONGLAIS: I would like to start the
12 presentation with first differentiating the different
13 types of holes that have been drilled at LaSalle.

14 [Slide]

15 Exhibit 1 defines basically two types of
16 holes: one which we call a core hole; the other is what
17 we consider to be a drill hole.

18 There are essentially two types of core
19 holes. The first type of core hole is one in which it
20 is drilled through the concrete, and it passes
21 completely through the concrete element. This hole has
22 been put in the element to allow for the passage of the
23 electrical and mechanical components, such as a pipe or
24 conduit.

25 The second type of core hole is one in which

1 it is only drilled partially through the depth of the
2 concrete. The purpose of this type of core hole is to
3 allow for the setting and grouting of an anchor bolt for
4 either the support of equipment foundations, or for the
5 support of mechanical piping and baseplate assemblies.

6 In the first situation for the cored holes
7 which pass completely through concrete, their diameter
8 varies anywhere from 2 inches to 16 inches in diameter.

9 In the case of holes that are cored partially
10 through the concrete for the installation of an anchor
11 bolt, that diameter is approximately 3 inches. Its
12 depth would vary anywhere from 1 foot to maybe 2 feet,
13 2-1/2 feet, depending upon the size of the anchor bolt.

14 The second category of holes we have are what
15 we consider to be drilled holes. Holes are drilled
16 primarily for the installation of concrete expansion
17 anchors. These holes tend to be much smaller in
18 diameter. They vary from 1/4 inch to 1 inch, and the
19 depth of embedment varies anywhere from 1-1/4 inch to 8
20 inches.

21 Again, it is important to have an
22 understanding of the types of holes, since the
23 engineering assessment is somewhat different for each
24 type of hole.

25 [Slide]

1 Exhibit 2: I will discuss the engineering
2 evaluation for cored holes. These are the holes that
3 pass directly through the concrete or the holes that are
4 partially drilled into the concrete for the setting of
5 an anchor bolt.

6 For holes that pass directly through concrete
7 elements, these holes are located, in the case of
8 office-audited components -- in other words, when our
9 engineers are auditing the piping and electrical
10 components in the office, and they have got to penetrate
11 a concrete element, they will indicate that penetration
12 on a structural drawing.

13 Prior to the release of that structural
14 drawing indicating the core hole, it is reviewed by
15 structural engineers. It is at this point in time that
16 our structural engineers make an assessment of the
17 effects of the reinforcement steel that will be cut by
18 this operation.

19 In most cases, this assessment has consisted
20 primarily of engineering judgment based upon the stress
21 levels in the reinforcing steel in relation to the
22 location of the cored hole.

23 In the case of cored holes that are requested
24 by a contractor in the field for field audit components,
25 the contractor is required to submit to Commonwealth

1 Edison Company a field change request requesting
2 permission to drill this hole.

3 This field change request is approved by the
4 consulting engineers. And again, a similar assessment
5 is made prior to approving this field change request.

6 We assess the reinforcing steel that is likely
7 to be damaged by the coring of this hole prior to
8 releasing of the FCR for the drilling operation.

9 MR. PURPLE: Question. Have you ever
10 disapproved a field change request because the
11 engineering evaluation told you that it was not right to
12 put the hole there?

13 MR. LONGLAIS: Not to my knowledge. The
14 location of the holes that are generated via a field
15 change request likewise get picked up at a later date on
16 the structural drawings. So a complete record of all
17 cored holes does appear on the structural design
18 drawings.

19 MR. PURPLE: The engineering assessment, is it
20 written?

21 MR. LONGLAIS: Up to this point in time, all
22 our engineering assessment on cored holes has been based
23 upon engineering judgment.

24 MR. PURPLE: It is not written down?

25 MR. LONGLAIS: It is not been written down.

1 We have not made detailed structural calculations.

2 Over the last week or two, in response to the
3 petition, we have made some detailed calculations for a
4 sample of cored holes. And we have proved that our
5 engineering judgment was appropriate in these instances
6 and found that the effects of the reinforcing steel did
7 not affect the structural integrity of any of the
8 safety-related structures.

9 MR. LEE: Tom, "engineering judgment," I
10 gather, is kind of the standard approach for this kind
11 of evaluation?

12 MR. LONGLAIS: Yes, it is; yes, it is.

13 MR. KNIGHT: Could I pursue just one step
14 further? What you are saying is the system was in
15 force, the area to be drilled was identified, and an
16 engineer in the office was made aware that the hole was
17 to be drilled. And he said either yes or no based on
18 his judgment?

19 MR. LONGLAIS: Yes; that is correct.

20 MR. DELGEORGE: And in the case of field
21 change requests, there would be documentary evidence
22 that the review had been completed, although there might
23 not be analytical evidence of something other than
24 engineering judgment?

25 MR. KUO: But the judgment was made one by

1 one. Say, for instance, a slab may have more than 10
2 holes there. Do you make a judgment looking at all the
3 10 holes or just 1 where it was drilled?

4 MR. LONGLAIS: We make a judgment on both. We
5 have to make it first individually as each cored hole is
6 submitted and requested. As I mentioned before, all
7 these core holes are eventually indicated on the
8 structural drawings. So when our engineers are adding
9 other cored holes in an area, they have a history of all
10 the other cored holes that have been installed. They
11 would take this into consideration when making the
12 assessment of the effects of this additional cored hole
13 that is being requested.

14 MR. KUO: So all the holes were considered, in
15 your judgment?

16 MR. LONGLAIS: That is correct.

17 MR. KNIGHT: Can you give me a feel, there was
18 a number mentioned earlier, 50,000 holes. I am going to
19 assume that a very large percentage of that 50,000 were
20 anchor bolts.

21 MR. LONGLAIS: That is correct.

22 MR. KNIGHT: Can you give me the other side of
23 that number as far as 2 inches larger, this type of
24 thing? Do you have any feeling for how many of those
25 there were?

1 MR. LONGLAIS: I would venture a guess at
2 something less than 1000 at this point. I believe 1000
3 could definitely be an upper bound.

4 MR. DENTON: Can you characterize the issues
5 that you considered in reaching such a judgment about
6 holes? What were the elements that are important in
7 reaching that judgment?

8 MR. LONGLAIS: The critical decision was
9 looking at the distress level in reinforcing steel where
10 the hole is being put. In some areas, the cored hole is
11 being put in an area where the reinforcing steel is not
12 stressed. This would be totally acceptable to core the
13 hole.

14 MR. LEE: Which you will get to in a moment.

15 MR. LONGLAIS: Yes. In other areas, the
16 stress levels in the reinforcing steel have sufficient
17 margin for the final design loads. We make an
18 assessment on this basis that we can accept some
19 reduction in the stress levels since we have sufficient
20 margin currently available for those reinforcing bars.

21 MR. DENTON: Should I assume that you could
22 put an 8-inch hole in any wall, safety-related wall; or
23 are there some areas in that wall that are already near
24 limits and this would degrade it?

25 MR. LONGLAIS: There are a number of areas

1 where we have, after our engineering assessment, we have
2 become concerned about additional coring in which if we
3 assume that X number of bars would be cut by putting
4 this cord hole in that we feel it would not be
5 appropriate, would not be acceptable, we have put
6 appropriate notes in our drawings and appropriate
7 controls requiring that the contractor use a metal
8 detector to find the reinforcing steel before he makes
9 the coring.

10 MR. DELGEORGE: And we have examples of those
11 notes which we can provide and show to you here. I
12 think as a part of this package you will find three
13 examples of notes of that type.

14 MR. LONGLAIS: There has not just been
15 indiscriminate coring of bars. We have identified the
16 areas, and where we have areas of concern we do require
17 that the metal detector be used.

18 MR. SCHWENCER: Has that process been in
19 effect since 1976?

20 MR. LONGLAIS: That process has been in effect
21 once we determined that that particular concrete element
22 could not tolerate many more bars. That could have been
23 '77, '78, '79. There really has not been any for later
24 years that, as the coring operations increased, that we
25 can see as certain areas being defined that we do not

1 want to lose any more strength margin that we put these
2 notes on the drawings.

3 MR. DENTON: If you take a typical wall -- I
4 am not sure you have a typical wall -- where are the
5 moments the largest on the wall? Where would you least
6 like to see a hole?

7 MR. LONGLAIS: I would like to get into that
8 in a few minutes when I talk about some of the concrete
9 expansion anchors. I am prepared to discuss that.

10 MR. DENTON: I was wondering if you could just
11 tell me is it near the top or near the bottom? I do not
12 want to jump too far ahead, but I would like to have a
13 feel for where moments are largest.

14 MR. MILLER: Exhibit 5.

15 MR. LONGLAIS: Exhibit 5, for example, for
16 slabs. I do have other flimsies if you want to talk
17 about other ones. This is a typical two-way slab. A
18 typical area in a two-way slab. We are talking about
19 the reinforcing steel on the top of the slab.

20 The critical area would be the exterior core
21 span. That is this area that is shaded. This area
22 would tend to have negative design moments, and the
23 reinforcing steel would tend to be stressed in this
24 area.

25 In the middle region of the slab, the area

1 that is not shaded in, the reinforcing steel would not
2 be stressed in these cases. The stress is all carried
3 by the bars in the outer periphery.

4 In the case of the reinforcing steel on the
5 bottom of the slab, it is the bars that are in the
6 middle region of the slab, the middle half span of the
7 bars, that primarily carry the stress. The bars toward
8 the periphery are much less stressed than the bars in
9 the center.

10 There are also other areas, bars that have
11 been provided around trim steel for major openings or
12 where additional bars have been provided in the slab to
13 carry heavy elements, to carry a concrete wall or to
14 carry a concrete block wall, where we have provided
15 additional reinforcing steel. We have called for not
16 drilling in those areas.

17 MR. DENTON: Thank you.

18 [Slide]

19 MR. LONGLAIS: Cored holes for anchor bolts
20 and pipe support baseplate assemblies are indicated on
21 the mechanical design drawings.

22 The coring for the mechanical baseplate pipe
23 support assemblies commenced approximately in the summer
24 of 1980. In January of 1980 we issued Drawing M-1100,
25 Sheet 23, which required that all the concrete be

1 notched to expose the reinforcing steel to avoid rebar
2 damage under this operation.

3 So for any concrete, any coring operation for
4 this particular application, it was controlled by
5 requiring that the reinforcing steel be exposed before
6 the drilling was done.

7 MR. DELGEORGE: That activity involving
8 mechanical components would not have been observed by
9 the contractor employee whose affidavit is contained in
10 the petition, inasmuch as he worked as a subcontractor
11 to our electrical site contractor, and he was gone at
12 that time anyway.

13 [Slide]

14 Exhibit 3 is the continuation of the cored
15 holes for equipment foundation anchor bolts. In this
16 situation what we have done is we have plotted the
17 location of all equipment foundation anchor bolts that
18 require coring in a separate set of drawings called RHS
19 drawings, rebar hit schedule drawings.

20 From these drawings we assess the amount of
21 reinforcing steel that is likely to be damaged by this
22 coring operation. The assessment which we performed
23 subsequently is engineering judgment on the damage and
24 the effects that this likely damaged reinforcing steel
25 will have on the strength capacities of the concrete

1 elements.

2 The engineering judgment again is based upon
3 the location of the cored holes and the damaged
4 reinforcing steel in relation to the existing stress
5 levels in the concrete elements.

6 Exhibit 3A is a set of approximately 90
7 drawings, which we have marked all the rebar damage,
8 both due to the coring operations and due to the
9 drilling operations at the site.

10 MR. KOSTAL: There are approximately 90
11 drawings in there that will document exactly what Mr.
12 Longlais commented on.

13 MR. DENTON: Are these drawings of different
14 walls and such?

15 MR. LONGLAIS: This is all the reinforcing
16 steel that has been contacted. "Contacted" means either
17 nicked or cut.

18 MR. SCHWENCER: So that is 100 percent
19 drawings of those that have been contacted or cut?

20 MR. LONGLAIS: Yes, that is for Unit 1.

21 MR. DELGEORGE: Based on those damage reports
22 that have been received from the field at the time the
23 drawing was prepared. And we are still in the process
24 of verifying that all reports have been received and
25 incorporated into the drawings.

1 MR. DENTON: Maybe we can look at them during
2 a break to see if we need those.

3 MR. KOSTAL: I think it is relevant that these
4 drawings have been in preparation over the last 6
5 years. So they are not drawings that we just made
6 within the last few days.

7 We have been documenting these during the last
8 6 years as they have occurred and as we have received
9 the data from various contractors.

10 MR. LONGLAIS: I should clarify that we have
11 -- this item, the plotting of the core holes for the
12 anchor bolts were made recently.

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1 (Slide)

2 In Exhibit 4 I would like to pursue the
3 engineering review of drill holes for concrete expansion
4 anchors. The engineering control for the drilling of
5 holes for concrete expansion anchors began long before
6 the drilling is initiated.

7 By that I mean there are a number of
8 engineering controls which are contained in Form LS/CEA
9 which contains all the specification requirements for
10 the drilling of concrete expansion anchors at La Salle.
11 In Exhibit 4A we have here the entire eight revisions to
12 the specification, which were issued between the period
13 September 1976 and May of 1981.

14 There are a number of engineering controls in
15 this particular document. Probably the most important
16 is the recognition of the fact that there are stressed
17 and nonstressed areas in the structures. LS/CEA defines
18 the stressed and nonstressed areas. The areas which are
19 stressed areas, we require that a metal detector be used
20 to avoid reinforcing steel damage. It requires that the
21 contractor obtain engineering approval prior to cutting
22 a bar and to subsequently report any damage or nicks
23 that may have been made to a bar by the use of a metal
24 detector.

25 There are areas -- again, I did go through

1 this slide before, but the areas where a metal detector
2 would be required to be used in the case of a two-way
3 slab would be the shaded area in the exterior quarter
4 span, and the top of two-way slabs, in the middle span
5 section, in the bottom of two-way slabs, and in areas
6 adjacent to penetrations, and to areas where we have
7 provided additional reinforcing steel on the slab to
8 carry additional loads.

9 MR. PURPLE: A general question. All of these
10 control programs, do they apply to all of the buildings
11 for which you have design responsibility, unrelated to
12 whether they are safety-related structures or not?

13 MR. LONGLAIS: That is correct. That is
14 correct.

15 MR. DENTON: If you take a wall that is, say
16 20 by 50, what kind of spacing would you typically find
17 on the reinforcing bars?

18 MR. LONGLAIS: I believe between 9 to 12
19 inches on center.

20 MR. DENTON: So when you are installing anchor
21 bolts, then you would have enough discretion to move
22 around a foot or two?

23 MR. LONGLAIS: Yes. Well, a foot or two? In
24 the later versions of the concrete expansion anchor
25 program, I believe when you get into Revisions 6, 7, and

1 8, we have added provisions in the specification which
2 gives the contractor guidelines in relocating expansion
3 anchor plates. If he does contact reinforcing steel, we
4 give him the latitude to move the plate plus or minus 3
5 inches in either direction so he can avoid drilling
6 through and damaging the bar.

7 (Slide)

8 It has consistently been our intention at the
9 beginning of the job to minimize the use of concrete
10 expansion anchors. However, when a field contractor is
11 routing small bore piping or electrical conduit, he has
12 an option of trying to attach to an embedded plate or
13 existing structural steel or use expansion anchors.

14 We have a requirement in the specification
15 that should he elect to use a concrete expansion anchor
16 baseplate assembly, that he contact us for prior
17 approval before he can use this type of anchor.

18 We have further defined in the specification
19 areas in which a concrete expansion anchor may not be
20 installed without the specific approval of the
21 consulting engineer. This is irregardless of the stress
22 level.

23 One example of the situation would be the
24 containment building wall. The last control that we do
25 have, and it was mentioned earlier, is that beginning in

1 1976 with Revision 0, we required that only a solid
2 carbide-tipped drill bit be used for drilling the hole.
3 Now this type of drill bit is not capable of drilling
4 through reinforcing steel. The most damage this drill
5 bit could do would be to make a very small, well-rounded
6 depression approximately 1/16 of an inch deep in the
7 reinforcing steel.

8 We have conducted a number a tests. The
9 Commonwealth Edison Company has conducted a number of
10 tests, both laboratory testing and analytical
11 assessment, and we have proved that these type of nicks
12 are not detrimental to the integrity of the reinforcing
13 steel.

14 MR. DENTON: What size reinforcing steel is
15 typically used in walls and floors?

16 MR. LONGLAIS: Walls, typically in
17 safety-related structures would probably vary from
18 number 9 to number 11 bars. Slabs would probably vary--

19 MR. LEE: Which is what size, for us
20 nonstructural --

21 MR. LONGLAIS: Number 9 bar is about 1-1/8
22 inch in diameter, and Number 11 bar is approximately
23 1-3/8 inch in diameter. For slabs, the reinforcing
24 steel would vary from probably a Number 6 bar which is
25 about 3/4 inch in diameter, again to a Number 11 bar

1 which is 1-3/8 inch in diameter.

2 (Slide)

3 What I just described is the engineering
4 precautions that have taken place in the specifications
5 and are in force prior to going into operations. During
6 the drilling operations should a contractor contact or
7 drill through a reinforcing bar with our approval, it is
8 required that the contractor submit a rebar damage
9 report.

10 When these damage reports are submitted, they
11 are reviewed by the structural engineers to determine
12 what I consider to be the immediate local impact of the
13 damaged bar. Again, we look at where the damaged bar
14 occurred, whether it be a cut or a nick, in relation to
15 stress level in the slab to determine if it is
16 acceptable.

17 Should we not determine it is acceptable, we
18 would have to come back and do some subsequent
19 modifications. However, we have never found this to be
20 the case in any of the holes that have been contacted or
21 drilled at La Salle. This review on the part of the
22 engineer was based primarily on judgment, again with
23 respect to location of the hole, and the existing stress
24 level.

25 After the engineer has reviewed the effect of

1 this damaged reinforcing steel, the damaged bar, be it
2 hit -- by that I mean nipped or cut through -- is
3 plotted on the BHS drawings, which we have submitted as
4 Exhibit 4-A.

5 MR. LIPINSKI: Excuse me. Since when did you
6 start this practice?

7 MR. LONGLAIS: This practice was initiated in
8 September 1976.

9 MR. DENTON: That includes Steps II-A and II-B?

10 MR. LONGLAIS: The II-A, the review of the
11 damaged rebars was performed when the first damaged
12 rebar report was submitted to us, which I believe was in
13 early 1977. II-B, the plots were started, I believe,
14 towards the latter part of 1978 or 1977, the early part
15 of 1978. It really was not until this latter part of
16 1977 that we had substantial enough rebar hit reports to
17 warrant studying of the drawings at that time.

18 MR. KNIGHT: Along those lines, to work up the
19 numbers like 50,000 holes or 1000 or so poured, which
20 makes a pre-assessment, could you give me a ballpark
21 figure for the number of rebar hit reports or rebar
22 damage reports that have accumulated over the years?

23 MR. LONGLAIS: We estimate today there are
24 approximately 3000 to 3500 reinforcing steel bars that
25 have been damaged. Of that 3000 to 3500 bars, we

1 believe a number of these bars to be only nicked bars.
2 Between the period 1977-1979, contractors were not
3 required to differentiate between a cut and a nicked bar

4 After Commonwealth Edison Company did the
5 laboratory investigation on the effect of nicked bars
6 and concluded that nicked bars were not detrimental, did
7 we eliminate the requirement for reporting of nicked
8 bars.

9 MR. KUO: In making your engineering judgment,
10 do you have any guideline or criteria as to what
11 percentage of the steel could be damaged or cut?

12 MR. LONGLAIS: The guideline is that as long
13 as you don't impair the safety or the integrity of the
14 concrete structure, as long as you still have sufficient
15 margin to carry the design loads, whether that be one
16 bar, two bars or ten bars. That has to be determined on
17 a case-by-case basis. That is not a function of a
18 percentage.

19 MR. KNIGHT: Somewhere in your discussion
20 there is a distinction between a cut and a nick.

21 MR. LONGLAIS: Yes.

22 MR. KNIGHT: You show situations where you
23 take about half a bar out sometimes. Do you have any
24 way to differentiate?

25 MR. LONGLAIS: The nick that I am speaking of

1 is the nick that would be made by a solid carbide-tipped
2 drill bit in which you get this -- .

3 MR. KNIGHT: Okay. When I am talking about
4 taking a half-bar --

5 MR. LONGLAIS: That would be a core.

6 MR. KOSTAL: To clarify, the kind of drills
7 used are like your everyday household drills. Unless
8 you have a tempered steel bit, I think all of us have
9 been aware of the difficulty of trying to drill through
10 anything with a typical carbon steel bit that you buy at
11 Sears Roebuck. That is the kind of drill we are talking
12 about here. It is impossible to go through a rebar with
13 that bit. You will eat up the bit before you will go
14 through the bar.

15 MR. LIPINSKI: Do you know of any cases or can
16 you quantify perhaps for us when a remedial action or a
17 design change was necessary as a result of --

18 MR. LONGLAIS: We have never run across a case
19 at LaSalle. In any -- we are positive that of all our
20 drilling operations we have not found one place where
21 the structural integrity of any concrete element has
22 been impaired.

23 MR. CHAN: Does the driller of the holes know
24 whether the hole is going to be in the tension area or
25 the compression area?

1 MR. LEE: The driller, you said?

2 MR. CHAN: Yes, the driller.

3 MR. LEE: I would say probably not.

4 MR. SHAMBLIN: He is given the direction to
5 drill a hole in this location.

6 MR. DELGEORGE: The driller would not be
7 aware whether he was drilling in an area of tension or
8 compression, the driller as opposed to the contractor
9 supervision to whom that man reports. Let me paint what
10 I think is an accurate picture.

11 The driller is only aware that his job is to
12 drill a hole. The contractor, based on the program we
13 have in place, is aware that with certain restrictions,
14 he is able to drill holes in concrete elements in
15 certain areas of the plant. The engineer, Sargent &
16 Lundy, has through his design specifications and design
17 drawings identified those areas capable of having holes
18 drilled. So there is a different level of understanding
19 of what the impact of an individual hole would have on
20 the reinforcing steel.

21 We do not believe that it is essential that
22 the individual performing the drilling operation be
23 aware of the entirety of that program or how we reach
24 the point that he drill a specific hole.

25 MR. LONGLAIS: The final disposition in the

1 review of damaged reinforcing steel in the drilling
2 operations occurs at the time of load check performed
3 just prior to fuel load. In this instance we are
4 looking at the effect of the accumulation of all the
5 damage to the reinforcing steel which is plotted on the
6 RHS drawings.

7 This review again consists primarily of
8 engineering judgment based upon the final stress levels
9 in the concrete elements with respect to the location of
10 the damaged reinforcing steel. Detailed calculations
11 were not warranted due to the random distribution of the
12 damaged reinforcing steel in the safety-related areas.

13 By random distribution I mean that the density
14 in any one area is very, very low. We see the bars
15 nicked, scattered here, maybe up in that corner, down in
16 the bottom corner, but they are not concentrated
17 effects. We have subsequently performed some
18 calculations in response to this petition and we have
19 substantiated that this engineering judgment is
20 appropriate.

21 MR. PURPLE: Question. Independent of the
22 petition, was this review you are discussing, has it
23 been completed?

24 MR. LONGLAIS: The engineering judgment has
25 been completed.

1 MR. PURPLE: And documented?

2 MR. LONGLAIS: Yes -- Well, engineering
3 judgment?

4 MR. PURPLE: No, I mean but there is a final
5 review?

6 MR. LONGLAIS: The final load check is
7 completed and documented.

8 MR. DELGEORGE: To the extent that the
9 architect engineer has received all the reports from the
10 field.

11 MR. SCHWENCER: That is the tie-in I was --
12 you mentioned earlier you were not sure that had all the
13 reports in it yet. The only ones you are aware of.

14 MR. DELGEORGE: We are in the process now of
15 verifying that he is in receipt of all the reports.

16 MR. SCHWENCER: So Item A is not done yet.

17 MR. LONGLAIS: Not to the extent that we have
18 received all the reports. But I believe from what we
19 have seen so far we are confident that it is.

20 MR. LEE: We are confident that it is, but
21 since that question obviously will come up, we felt it
22 necessary to go back and assure ourselves.

23 MR. KOSTAL: To clarify, we believe we have
24 every report in the house. The documents that were just
25 submitted to us are nothing more than a -- we are going

1 to scrutinize each one of those documents regarding the
2 document we have in house to make sure that we have the
3 same corresponding document.

4 That is the review that is taking place. The
5 review of the final load check has totally been
6 complete, but it covers a lot of other multitude of
7 ingredients besides this ingredient of the damage to
8 rebar.

9 MR. LONGLAIS: What we have done is we have
10 taken a look at what we feel to be nine areas in which
11 the concentration of the damaged rebar has been somewhat
12 higher than what you normally would see looking at the
13 entire sets of drawings. We have calculated the design
14 margins in the slabs both before and after the coring
15 operations.

16 (Slide)

17 I should first define what we mean by design
18 margin. The design margin, we consider it to be the
19 ratio of the strength of a concrete element as
20 determined by ACI 318 divided by the actual design
21 stresses that have been calculated in accordance with
22 the LaSalle FSAR commitments.

23 What you are looking for is a design margin
24 equal to or greater than one. You would like to design
25 for a margin exactly equal to one. This represents an

1 economical and optimally designed structure.

2 Now there are a lot of reasons why design
3 margins do exceed one. There are many cases in
4 safety-related structures, particularly in a nuclear
5 power plant, in which shielding controls a design and
6 structural strength does not control. So we have a lot
7 of concrete elements that are a lot thicker and a lot
8 bigger than required by structural design.

9 So you will see some margins greater than
10 one. You will see some up here of about three or so.
11 What we would like to see is about one.

12 MR. LIPINSKI: Before you take this down, I
13 see that in area number 2 there is no number of holes
14 cored, and yet the design margin is different. Why is
15 that?

16 MR. LONGLAIS: I am sorry?

17 MR. LIPINSKI: Second line.

18 MR. MILLER: It says 31 damaged rebar.

19 MR. SCHWENCER: Drilled to the core.

20 MR. LONGLAIS: These are the reinforcing steel
21 damaged due to drilling; these are the numbers due to
22 damage due to coring.

23 MR. LIPINSKI: So the number of bars damaged
24 were due to --

25 MR. LONGLAIS: Drilling, and this column is

1 ending.

2 MR. LIPINSKI: Okay.

3 MR. KUO: Can you explain the last item there,
4 the ratio of margin of holes as against margin without
5 holes? Is that 1.13?

6 MR. LONGLAIS: Well, this is the percent
7 decrease. The number was put down wrong. This is the
8 percent decrease in margin. For this case the design
9 margin without the holes was 3.55, the design margin
10 with the holes was 1.33. This represented about a 13
11 percent reduction in design capacity. The ratio was
12 computed wrong here. I must admit that when we prepared
13 these tables, we were pulling them off the typewriter
14 yesterday as we were heading for the plane, but that is
15 a percent you are looking at.

16 MR. KUO: That is a decreasing margin?

17 MR. LONGLAIS: Yes; 13 percent is the percent
18 reduction in the design margins. These design margins
19 that you see listed here are very conservative design
20 margins. One item of conservatism is the fact that when
21 we do the final load check, we assume a minimum piping
22 load of about one kip per square foot. In many areas
23 the actual component support load is less than one kip
24 per square foot.

25 We also have not taken into account any actual

1 material strengths in the field such as the actual
2 poured-in-place concrete strength or the actual strength
3 of the reinforcing steel. This would typically increase
4 your design margin from anywhere from 10 to 15 percent.

5 MR. DENTON: How did you pick these locations
6 for samples?

7 MR. LONGLAIS: We looked at the density of the
8 number of bars in a given area, the number of areas that
9 stand out as looking like it has a high concentration of
10 bars.

11 MR. DENTON: These are average cored and
12 damaged locations or more severely damaged? How would
13 you characterize them?

14 MR. LONGLAIS: I would characterize these
15 areas as having a greater density of nick bars.

16 MR. KNIGHT: Take in item number 3, this is
17 probably just one bar. How does that fit into the
18 framework of what you were just saying?

19 MR. LONGLAIS: This one bar happened to be
20 what we consider to be a critical area. It was in a
21 highly stressed area.

22 MR. LIPINSKI: So just to pursue this line a
23 little bit further, did you give any consideration to
24 the stress concentration of the given particular area
25 that he selected for this, or just density of the holes?

1 MR. LONGLAIS: Density was the primary one.

2 In this situation here, stress was the critical one.

3 MR. LIPINSKI: So both factors were considered?

4 MR. LONGLAIS: Yes.

5 MR. LIPINSKI: Density of the holes and stress
6 concentration?

7 MR. LONGLAIS: Yes.

8 MR. DENTON: How did you go back and calculate
9 a margin with the damaged bar? Did you assume that the
10 bar did not exist analytically?

11 MR. LONGLAIS: Yes, we had discounted the
12 entire bar.

13 MR. DENTON: And the concrete, or does it
14 matter?

15 MR. LONGLAIS: Concrete has no effect.

16 MR. NORELIUS: Even on the damage basis you
17 are discounting the entire bar?

18 MR. LONGLAIS: We assumed in this case the
19 damage to be a cut. As I said, between the period 1977
20 and 1979, the contractors were not required to
21 differentiate between a cut and a nick, so unless we saw
22 specific notes on the rebar damage report that would
23 lead us to believe the fact that we did have only a
24 nick, we considered these to be cuts.

25 MR. DENTON: How do you do such a

1 calculation? You have otherwise uniformly distributed
2 slabs on a bar and one is cut. How do you go about
3 determining the margin?

4 MR. LONGLAIS: Let's say in the case of a
5 two-way slab you divide that slab up into middle strips
6 and end strips. You calculate a design moment for the
7 middle strip and then subsequently the area of steel
8 required for that design moment. If you knock one bar,
9 or two bars, or three bars out of that middle strip, you
10 subtract that area, recompute a new moment, and compare
11 that with your applied moments.

12 MR. DENTON: So it is as though the bar was
13 not there at all.

14 MR. LONGLAIS: That is how we have done that
15 calculation, correct.

16 MR. LIPINSKI: Perhaps you can explain why you
17 said that the area of concrete removed has no effect. I
18 will agree with you that it is in the zone where there
19 is a tension, but in the case of compression, concrete
20 is the vital element.

21 MR. LONGLAIS: The concrete area removed would
22 be so small.

23 MR. LIPINSKI: Depending on the diameter of
24 the holes. If you have a little hole, that is fine, but
25 if you have holes, say, 12 -- we know the diameter of

1 the holes was up to 16 inches, right?

2 MR. LONGLAIS: Typically in these plants, and
3 structural considerations for the most part do not
4 govern the design. It is shielding requirements. The
5 reinforcement steel ratios that we have used are very
6 low. And subsequently the concrete compressive stresses
7 are very low. So if we drill out a 16-inch core out of
8 a slab, the stresses could redistribute itself to
9 adjacent concrete elements, and there would be really no
10 effect on the slab itself.

11 The stresses are very low. The compressive
12 stresses do not govern concrete design. You have to get
13 up to very, very high reinforcing steel ratios before
14 compressive stresses govern, and we are not anywhere
15 near those reinforcing steel stresses.

16 MR. DENTON: Are any of these walls or floors
17 pressure bearing, and by that I mean pressure-retaining
18 walls or floors?

19 MR. LONGLAIS: Do you recall off-hand?

20 MR. REKLACTIS: We had some holes in the
21 containment wall, a few holes, but they were not true
22 through holes through the walls. They were for
23 expansion anchors up to 6 inches deep and maybe one inch
24 in diameter.

25 MR. KNIGHT: How thick was that wall?

1 MR. REKLACTIS: That wall would be 6-foot
2 thick.

3 MR. DELGEORGE: And those were all on the
4 outer surface.

5 MR. REKLACTIS: On the outer surface. They
6 did not compromise the boundary of the containment.

7 MR. KOSTAL: That is a post-tension element.

8 MR. LIPINSKI: In the affidavit there was a
9 statement that the drillings were holes made in the
10 reactor building at elevation 710 and 735 in the reactor
11 building wall. Now in this presentation you do not show
12 an area -- these are internal walls. Is that right?

13 MR. LONGLAIS: These are all the walls and
14 slabs.

15 MR. DELGEORGE: On a BWR containment you have
16 to be sure to distinguish between the primary
17 containment boundary and the reactor building walls.
18 Those are two different surfaces.

19 MR. LIPINSKI: If I remember right in the
20 affidavit a statement was made that it was the elevation
21 that I indicated, and in the reactor building and the
22 primary containment. Is that correct?

23 MR. DELGEORGE: No reference was made to
24 primary containment that I can remember.

25 MR. DENTON: I had assumed the reference was

1 to so-called secondary containment, not primary
2 containment. That is a good point.

3 MR. SCHWENCER: On page 4 of the affidavit,
4 the affidavit says reactor building, Unit 1 at elevation
5 below 710.

6 MR. CHAN: In that table in the last column,
7 do you think the numerator and the denominator ought to
8 be reversed?

9 MR. LONGLAIS: Yes, that's right, it should
10 be. That is why we are getting a number greater than
11 one. Yes.

12 MR. DELGEORGE: One point of interest that we
13 might comment on is that there are two specific
14 allegations in the affidavit by [REDACTED] with
15 respect to [REDACTED] activities in two areas of the plant. We
16 believe, because of the record-keeping process that we
17 have had in place, that we have been able to identify
18 the records associated with those two areas.

19 In fact, I believe we have one of them here.
20 You will remember from the affidavit an indication that
21 the phalanges of a beam were contacted as the result of
22 drilling through a floor. We have identified what we
23 believe to be the source of that report. There is, in
24 fact, a non-conformance report written and documented
25 evidence of an engineering evaluation of the reported

1 damage.

2 Now, given the vagaries of the information
3 provided in the affidavit, we cannot be certain that
4 what we found was what was alleged to have existed.
5 However, it appears to us that we can find the damage
6 suggested in the affidavit.

7 This is true of the other instance as well,
8 but I am reluctant to talk about that one in more detail
9 because we have not confirmed it ourselves, the point of
10 the discussion being that we believe our records are
11 very complete.

12 MR. NORELIUS: What confidence do you have
13 that these hits and all have been put into the record?

14 MR. DELGEORGE: As we indicated earlier, that
15 have been both audits and surveillances conducted by
16 site contractor and Commonwealth Edison QA personnel
17 during the course of drilling and coring of the holes
18 initiated in the late seventies through 1981-1982. We
19 have, because of the emphasis placed by this petition,
20 gone back to assure ourselves by requesting each site
21 contractor to identify all damage reports so that we can
22 cross-correlate those records received by the architect
23 engineer versus those records prepared by the site
24 contractors, and we are in the process of verifying that
25 we have in fact reviewed each of the reports developed

1 at the site.

2 Based on the review that has been conducted to
3 date, we are not aware of any discrepancies in that
4 process.

5 MR. NORELIUS: You mentioned that the program
6 started in 1976, the control program that you have. How
7 does that relate to the drilling that has been done?

8 MR. LEE: Dan?

9 MR. SHAMBLIN: Yes. We went back and took a
10 look at where we stood on electrical and mechanical
11 installation from our progress reports, and in the
12 electrical area from a cost control report for the
13 period ending October 20, 1976, which is a period of
14 approximately when the first revision of LSC came out,
15 the first draft of it. Cable pan installation, we had
16 11,260 feet of cable pan out of 119,800 feet of cable
17 pan installed. The 119,000 was based on two units.
18 That represents 9.4 percent of the cable tray
19 installed.

20 Exposed conduit: We had no exposed conduit
21 installed at that point in time. Lighting: We had
22 2,163 of 9,876 fixtures installed at that point in
23 time. I think we used the shorter anchors on the
24 lighting, quarter-inch anchors. We had no cable pulled,
25 and this again is consistent with if we didn't have any

1 exposed conduit installed we wouldn't have any cable
2 pulling.

3 In the area of piping installation, for the
4 period ending December 31, 1976, piping supports, we had
5 1,917 of 17,745 piping supports installed. Piping,
6 2-1/2 inch and larger, we had 51,657 feet of 310,926
7 feet installed; and stainless steel piping, we had 3,909
8 feet of 79,269 feet of stainless steel piping, all
9 sizes, installed. Now these numbers include the whole
10 plant, both safety and nonsafety-related areas.

11 In reviewing one of the progress reports at
12 that point in time, we did find out that the HVAC
13 contractor was not working in any safety-related areas
14 at that point in time. This was the progress report
15 dated December 10, 1976. He was working in the
16 nonsafety areas only and he had not started work in the
17 safety-related areas.

18 MR. LEE: Primarily in the service building?

19 MR. SHAMBLIN: Primarily in the service
20 building, and the lower elevations of the turbine
21 building. The main electrical contractor was installing
22 lighting in reactor number one and number two and in the
23 aux buildings.

24

25

1 He was installing cable pans in the reactor
2 one turbine and aux buildings, and he was installing
3 communications, which is a -- the type of anchors you
4 may use on that is similar to the lighting in the
5 reactor area aux building, service building, and lake
6 screen house.

7 The piping contractor was installing service
8 water, cycle condensate, clean condensate, closed
9 cooling water piping in the reactor building Unit 1, and
10 he had just started the installation of Section 3 high
11 and low pressure core spray and residual heat removal
12 hangers.

13 You have to remember that the amount of
14 expansion anchor work that would have been going on at
15 that time would have been very, very minimal, because it
16 was a clear building that the contractors were able to
17 get into and hang from the embedment plates. So we are
18 concluding that the amount of concrete expansion anchor
19 work that went on prior to September 1976 or the fall of
20 1976, was very, very minimal.

21 MR. NORELIUS: Thank you.

22 MR. DENTON: Let me return to the slide that
23 you have shown. The lowest margin appears to be in area
24 number one. That is down to 1.05. Your sample is
25 actually rather small. In view of the large number of

1 potentially damaged bars. How far do you intend to look
2 for remedial action? Are you going to look back, wall
3 by wall? Do you consider this a sample to base a
4 judgment on?

5 MR. LONGLAIS: We feel satisfied that our
6 initial engineering judgment was adequate. We feel that
7 we have picked out nine critical areas. We have
8 demonstrated that we still have a factor of greater than
9 one. We do not feel it is necessary to go back at this
10 point in time.

11 MR. DENTON: It is not very much greater than
12 one. Your sample is --

13 MR. LONGLAIS: All we need is "one."

14 MR. LEE: We have been accused of overbuilding
15 there, or some of the utilities have recently, that we
16 have not paid enough attention to quantities, and what
17 have you, and that we are overdesigned. So "one" does
18 not mean here that if we go to .99 the building is going
19 to fall down.

20 MR. DENTON: Well, I was trying to relate to
21 the number that Jim Knight raised where he said there
22 may be 50,000 holes either drilled or cored. There may
23 be a thousand of those that are greater than 2 inches,
24 or some such number. Of those 1000 holes that may be
25 greater than 2 inches, how many of them are sampled in

1 this table? It looks like --

2 MR. LONGLAIS: Maybe less than 1 percent.

3 MR. LEE: There were only 3000 that had any
4 kind of even a nick report, let alone a cut or an actual
5 rebar replacement. So out of the 50,000, only
6 3000-and-some had any indication of contact with a
7 reinforcing bar.

8 MR. DENTON: Well in the column labeled
9 "number of damaged rebar locations," do you assume all
10 these are cut?

11 MR. LONGLAIS: We assume all of these to have
12 been cut, when in fact the number may have only been
13 nicked.

14 MR. KOSTAL: I would like to clarify one
15 thing. that 1.05 in Tom's earlier comment regarding the
16 margins that exist, if we took the actual concrete
17 strength, that number is actually 1.2. It is not 1.05,
18 because we typically have 10 to 30 percent increase in
19 capacity of the concrete and steel that exists out in
20 that plant compared to the original design. So that is
21 not even taken into account.

22 So when it says "from an engineering point of
23 view we feel we have adequate safety margins," there are
24 additional margins on top of that 1.05 that are
25 available to us, if any additional assessment was

1 required, which we do not believe is needed.

2 MR. DENTON: Are you saying then that these
3 calculations of margins with and without holes are using
4 design strength, not --

5 MR. KOSTAL: That is design strength, not
6 actual material strength; and it is automatically
7 required required that the actual material strengths
8 must be greater than design strengths, and we have-- you
9 know, Edison has documentation to show that the level of
10 that increased capacity range is well above the 15
11 percent range.

12 MR. LIPINSKI: But that depends on how we
13 define the margins. If the margin is defined on the
14 basis of ACI 3.18, then we are using the code
15 allowables.

16 MR. KOSTAL: The margin is defined based upon
17 what is committed to in the FSAR, which was reviewed and
18 agreed to by Staff.

19 MR. LIPINSKI: Fine. Then we are talking
20 about--

21 MR. KOSTAL: Which is greater than ACI. Your
22 margins are less than what is allowed for ACI.

23 MR. LIPINSKI: No, but you bring up another
24 point. You bring up the actual concrete strength.

25 MR. KOSTAL: I am saying that it is available

1 if it is required to be called upon, which is not taken
2 into account in this assessment.

3 MR. LIPINSKI: We are aware of that fact, but
4 if we are assessing the margin on the basis of code
5 allowables, then this is one thing. But you bring up
6 another point.

7 MR. LONGLAIS: The margin is based upon the
8 design strength of the concrete element. That design
9 strength is calculated per the applicable requirements
10 of ACI 3.18. That is divided by the design stresses in
11 the concrete element, which were calculated using the
12 committed-to design requirements in the LaSalle FSAB.

13 MR. DENTON: I want to get back to statistical
14 confidence just one more time. The number of damaged
15 bars for which you have done this calculation cannot add
16 up to much over 100.

17 MR. LONGLAIS: That is correct.

18 MR. DENTON: And you are saying the number of
19 bars actually damaged is what? 3000?

20 MR. LONGLAIS: Approximately that, yes.

21 MR. DENTON: And then you tried to select
22 these, picking ones that you thought were more likely to
23 show deterioration than not. But still, what level of
24 confidence do you think this represents where you have
25 identified holes that will actually keep the structure

1 from performing its function?

2 MR. LONGLAIS: I personally feel we have done
3 a complete job in this assessment. I believe we have
4 been very conservative in our engineering assessments
5 throughout the entire program. And in all the areas we
6 have looked at in selecting highly congested rebar
7 damages, be they nicks or cuts, we have demonstrated
8 that we have a factor of safety greater than one.
9 Again, I think the proof of the pudding is in looking at
10 the drawings and looking at how sparsely most of these
11 reinforcing steel damages do occur.

12 We have tried to select areas that appear to
13 be congested. One area here where it appeared that we
14 had a stress problem, we did isolate that and showed
15 that we still had sufficient margin.

16 MR. DELGEORGE: The point that needs to be
17 made is that the engineering evaluation is 100 percent
18 complete for all concrete elements. That is, we have
19 reviewed these drawings and performed an assessment for
20 each of the concrete elements. We have done an
21 additional analytical assessment to verify the
22 evaluation that has been done for all walls, and we have
23 found that there is nothing in this analytical
24 assessment of the nine walls shown to suggest that the
25 100 percent review that we did was inadequate.

1 So on that basis statistically we have looked
2 at 100 percent of the elements involved, and we have
3 done an over-inspection of a limited number of those
4 walls, or concrete elements.

5 MR. DENTON: I propose that we take a break in
6 a moment to perhaps mull over what we have heard; but
7 before we do, let me ask Mrs. Goodie if she would like
8 to make any comments?

9 MS. GOODIE: Not at this point, thank you.

10 MR. PURPLE: One part of the petition speaks
11 to asking us to not allow fuel to be loaded, because if
12 fuel would be loaded you would be unable to have access
13 to areas that needed repair, and so forth and so on. Do
14 you have anything to provide on that?

15 MR. DELGEORGE: Yes. If you will remember, I
16 asked that we defer that, and now looks like a good time
17 to talk about it. The petition does say that immediate
18 attention is required prior to plant operation. In
19 materials that we have submitted to the Staff, you are
20 aware that our low-power test startup program involves
21 certain hold points.

22 From the date at which fuel is started to be
23 loaded into the reactor vessel, there is a period of
24 approximately two months before the first criticality is
25 reached. During that period of time, we do not feel

1 that there is any jeopardy to the continuation of an
2 evaluation, and there is no radiation level that needs
3 to be addressed anywhere in the plant.

4 Beyond that, it is our view, based on the
5 experience in starting up similar reactors at Dresden
6 and Quad Cities, that over the full course of the five
7 percent power license that we have requested, that the
8 radiation levels in those areas of the plant subject to
9 inquiry here would not be such that a continuing review
10 or inspection would be precluded. So it is our feeling
11 that the immediacy suggested in the petition is
12 overstated.

13 MR. LEE: And I guess I would say that in fact
14 after 12 years of operation on Dresden, it would not,
15 from a radiation standpoint, preclude evaluations and
16 inspections. After all, we do maintain all of that
17 equipment.

18 MR. DENTON: Any other questions anyone would
19 like to raise before we take a break?

20 (No response.)

21 MR. DENTON: Let us break for about 10 minutes
22 and try to get back a few minutes before 3:00.

23 (Recess.)

24 MR. PURPLE: Let's get started again.

25 (Pause.)

1 Harold was unable to come back. He was called
2 away. He asked me to continue the meeting -- continue,
3 or close the meeting, I suspect. I think Commonwealth
4 Edison has presented all you intended to present today,
5 I trust?

6 MR. DELGEORGE: I would like to supplement the
7 record with one fact.

8 MR. PURPLE: All right.

9 MR. DELGEORGE: Early in the discussion a
10 question was raised relative to whether or not we had
11 performed a reinforcement steel assessment of the
12 off-gas building roof. We have verified by
13 conversations with our consultant, and we have in fact
14 performed a similar evaluation of the off-gas building
15 roof to what has been described here. And is it true
16 that a drawing like this exists for that slab?

17 MR. BEKLACTIS: There are two cuts that were
18 noted, and they were observed, and there are several
19 nicks which are not detrimental.

20 MR. DELGEORGE: The point being that although
21 only safety related concrete elements are addressed in
22 the package we have provided you today, we have been
23 able to determine that the off-gas building roof, which
24 is a non-safety related structure, was also evaluated in
25 a similar way.

1 MR. PURPLE: Okay. Well, I bring Harold's
2 thanks for everybody who came on such short notice. The
3 information we have received today will certainly help
4 us kick off our review.

5 We will accept those 90 drawings and turn them
6 over to the Staff for a subsequent look. We are, and
7 have been I guess from an earlier notification of
8 possible problems with holes at the site, the Regional
9 Office has initiated its own inquiry into the facts, and
10 that is continuing and will continue.

11 We cannot identify today any specific
12 additional information we need from the utility to help
13 us complete it. It is possible that we may ask for
14 some. If so, we will certainly get the request to you
15 promptly. Recognizing your scheduler needs, we
16 certainly would intend to put what resources we need to
17 finish this up as rapidly as possible.

18 Harold did ask me to pass on, in follow-on to
19 the question he asked a couple of times, his concern
20 about the last chart we saw with statistics, and whether
21 or not that really gives you and him and us sufficient
22 statistical confidence that you really have found all
23 the places. I think if there had not been one number
24 that came as low as 1.05, he might not have been as
25 concerned; but again, I do not know that we are going to

1 ask that you do any more, but you may want to be
2 thinking about that.

3 I think you have delivered today all the
4 reports that you mentioned? Do we have all of that
5 information?

6 MR. DELGEORGE: I believe so. Before we leave
7 we will check with whoever you think has a complete
8 package, and we will --

9 MR. PURPLE: The Project Manager, I hope.

10 MR. LEE: I might just say, by responding to
11 that last concern of Harold Denton's, that in fact, I
12 think as Lou has said, that we have looked at we think
13 100 percent.

14 MR. PURPLE: Yes; I understand that.

15 MR. LEE: It is really only a sampling
16 verification, in a sense. So that a look by your
17 experts at these prints hopefully will give the same
18 conclusions. Again, we can only make the plea that we
19 have spent a lot of time on this effort.

20 We, just on a kind of a back-of-the-envelope
21 estimate, while we were having a quick sandwich before
22 we came over here, estimated that we probably spent more
23 than one man-year worth of effort in five days, and that
24 is not counting all the effort that is indicated here by
25 the people who have come who should be back at the site

1 trying to move that facility along.

2 If there is a problem, we would be anxious to
3 get into it as quickly as anybody. We are convinced
4 that there is no problem here, and that we ought to move
5 as quickly as we can. And there is certainly no
6 justification for holding up low-power testing.

7 MR. PURPLE: Mrs. Goodie, are there any
8 comments you wish to make?

9 MS. GOODIE: We certainly appreciate the
10 prompt response to the NRC to the petition. We
11 recognize that the decision is yours to make.
12 Unfortunately, we were not able to have our consultant
13 here, so there was very little, or nothing that I could
14 say technically, obviously. But he will be looking at
15 all the information as soon as I can get it to his
16 office.

17 MR. PURPLE: We were very glad to have you
18 here today.

19 If there is nothing further, the meeting will
20 be closed. Thank you very much.

21 (Whereupon, at 3:10 p.m., the meeting was
22 adjourned.)

23 * * *

24

25

26

NUCLEAR REGULATORY COMMISSION

This is to certify that the attached proceedings before the

in the matter of: Commonwealth Edison Company (LaSalle County Nuclear
Generating Station, Unit 1 and Unit 2)

Date of Proceeding: March 31, 1982

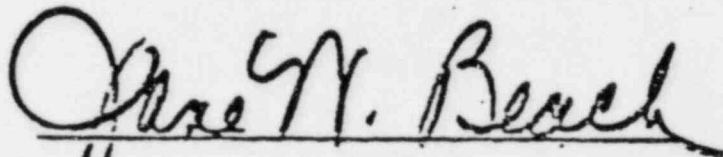
Docket Number: 50-373 & 50-374

Place of Proceeding: Bethesda, Maryland

were held as herein appears, and that this is the original transcript
thereof for the file of the Commission.

Jane N. Beach

Official Reporter (Typed)

A handwritten signature in dark ink, appearing to read "Jane N. Beach", written over a horizontal line.

Official Reporter (Signature)