



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

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MAY 14 1982

PREVIOUS STAFF	
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DEPT I	<i>1/25/82 - 2/2/82</i>
<i>DEPT II</i>	<i>2/2/82 - 2/2/82</i>
DEP&OE	File <i>621</i>

Docket Nos.: 50-373/374

MEMORANDUM FOR: Darrell G. Eisenhut, Director  
Division of Licensing, NRR

FROM: Richard H. Vollmer, Director  
Division of Engineering, NRR

SUBJECT: SEB REPORT ON THE ATTORNEY GENERAL OF ILLINOIS ALLEGATIONS  
FOR LA SALLE

In conformance with your request, the Structural Engineering Branch, Division of Engineering, has prepared a report on the allegations made by the Office of the Attorney General, State of Illinois, for La Salle County Station, Units 1 and 2. This report summarizes the findings of the SEB staff from meetings, discussions and documents with the applicant and is contained in the enclosure.

*Richard H. Vollmer*  
Richard H. Vollmer, Director  
Division of Engineering, NRR

Enclosure: As Stated

- cc: H. R. Denton
- R. C. DeYoung
- E. G. Case
- C. E. Norelius *1'G W III*
- J. P. Knight
- R. L. Tedesco
- F. P. Schauer
- A. Schwencer
- D. C. Jeng
- R. Shewmaker
- A. Bournia
- F. Hawkins
- R. Lipinski
- S. P. Chan

CONTACT: S. P. Chan, SEB, X29534

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EVALUATION REPORT ON THE ATTORNEY GENERAL  
OF ILLINOIS ALLEGATIONS FOR LA SALLE PLANT

STRUCTURAL ENGINEERING BRANCH

BACKGROUND

The allegations made by the Office of the Attorney General, State of Illinois, on March 24, 1982, in the matter of La Salle County Nuclear Generating Station, Units 1 and 2, (Reference 1) can be summarized as follows:

1. That thousands of drilled holes may have been cut through the reinforcing steel and that the potential degradation in structural quality may cause failure of the structures and systems.
2. That the concrete roof of the Off-gas building was actually 8 inches thick instead of 12 inches that the specifications called for.

On March 31, 1982, a meeting was held in Bethesda, Maryland. Participants included NRC staff members; representatives of the Commonwealth Edison Company; Sargent and Lundy; and a representative of the Attorney General, State of Illinois. Mr. Denton of NRR conducted the meeting and the applicant presented his response to the petition made by the Attorney General of Illinois. Discussions among participants ensued and a transcript of the entire proceedings has been taken (Reference 2). The applicant later made some comments and clarification on this meeting transcript (Reference 3). At the end of this meeting the applicant left us for reference a copy of the specification for concrete expansion anchor work and a set of 109 engineering drawings showing the number and locations of drillings through concrete (References 8 and 9).

On April 7, two staff members of the Structural Engineering Branch went to the La Salle plant site to observe and to gather information on practice of drilling holes through concrete elements. The staff also attended the meeting at Sargent and Lundy in Chicago on April 8. Preliminary findings of this trip were documented in a trip report (Reference 4).

Other reports by IE and Region III concerning the issue of hole-drilling and

the Off-gas Filter Building have also been sent to us for review (References 5, 6 and 7). We have also reviewed the final report on allegations regarding rebar damage and Off-gas Building roof thickness submitted by the applicant (Reference 10).

#### DISCUSSION

The applicant has kept a complete record of cored and drilled holes passing through concrete elements, this includes permanent records for all reported damaged rebars due to drilling. We have verified at the plant site several groups of drilled holes through the use of the set of drawings that have been provided to us and believe that the record of drilled holes is reasonably accurate. In spite of the fact that thousands of holes have been drilled and thousands of rebars have been hit, the actual damage is believed to be too small to affect the structural integrity of the plant. Furthermore, there are no holes cored completely through the primary containment walls.

We have reviewed the applicants' quality control procedures and documentation procedures for cored holes either passing through or partially penetrating concrete elements and for damaged reinforcing steel due to drilling operations for concrete expansion anchors. These procedures require accurate records of drilled and cored holes and damaged bars, are consistent with good engineering practice, and are therefore acceptable. Although recorded details concerning damaged bars in drilled holes prior to 1976 were insufficient in our opinion, the conservative approach of assessment by taking hit bars as completely cut compensates for this deficiency.

We looked into the method of engineering assessment performed by the applicant. We are satisfied that the applicant distinction between a "nicked" and "cut" bar was appropriate as implemented; in particular that partially cut bars were regarded as completely cut because the residual strength of a partially cut bar is uncertain and unreliable. We questioned the basis of selecting sample groups and panels for assessment and subsequently agreed that the sampling based on

density of holes was appropriate. We have also audited and spot-checked engineering calculations performed to assess the significance of cut bars and found them to be acceptable.

In regard to the thickness of the roof of the Off-gas Building, we have visited the building and witnessed some crucial field measurements. Based on this field data and on the reports of IE and Region III (References 5, 6 and 7) we believe that the thickness of the roof slab is definitely 12 inches and not 8 inches as alleged.

#### CONCLUSION

In conclusion, we confirm our earlier observation with the following findings:

1. The controls and engineering evaluation of the effect of drilled and cored holes were such that there is reasonable assurance that they will not result in unacceptable degradation of structural elements.
2. The roof of the Off-gas Building is 12 inches thick.

In view of the above we are of the opinion that the allegations filed by the Attorney General of the State of Illinois are without merit.

REFERENCES

1. "Request to Institute a Show Cause Proceeding and for Other Relief" transmitted through a letter dated March 24, 1982 from T. C. Fahner, Attorney General of Illinois to Secretary, U. S. Nuclear Regulatory Commission. Attachments include affidavits by [REDACTED] and D. G. Bridenbaugh.
2. Transcript of the March 31, 1982 meeting held in Bethesda, Maryland, in the matter of Commonwealth Edison Company, La Salle County Nuclear Generating Station, Units 1 and 2. Attachments include: (a) Off-gas Building Roof Report, dated March 30, 1982, (b) Exhibits 1-8 at the meeting, and (c) 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, La Salle County, Units 1 and 2, by Commonwealth Edison Company, dated March 31, 1982.
3. Comments and Clarification on Meeting Transcript, March 31, 1982, transmitted by Commonwealth Edison Company on April 22, 1982 to U. S. NRC.
4. "Trip Report - Visit to La Salle Plant and Meeting on Hole-Drilling and Cut Rebars in Concrete" by R. E. Lipinski and S. P. Chan, April 14, 1982.
5. "Assessment of the Off-gas Filter Building at La Salle Nuclear Station" by R. E. Shewmaker, April 8, 1982.
6. "Assessment of the Response by Region III to Allegations concerning the Off-gas Filter Building at the La Salle Station" by E. C. Gilbert, April 16, 1982.
7. Region III Inspection Report No. 50-373/82-21 (DETP).
8. Sargent and Lundy: Specification for Concrete Expansion Anchor Work (Form LS-CEA) Rev. 0, September 23, 1976; Rev. 1, December 7, 1976, Rev. 2, November 29, 1978; Rev. 3, July 20, 1979; Rev. 4, September 7, 1979; Rev. 5, December 10, 1979; Rev. 6, February 13, 1980; Rev. 7, October 27, 1980; Rev. 8, May 13, 1981.
9. Sargent and Lundy: Engineering drawings showing locations of drilled holes and reinforcing steel bits. Partial list of CHS, RHS and RCS Series drawings.
10. Commonwealth Edison Company: Final report in 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 and drilled holes and the matter of the Off-gas Building roof for La Salle County, Units 1 and 2, May 7, 1982.