



**Commonwealth Edison**

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April 18, 1986

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

Subject: LaSalle County Station Units 1 and 2  
Snubber Reduction Program Topical Report  
NRC Docket Nos. 50-373 and 50-374

Dear Mr. Denton:

The attached topical report is submitted for NRC review and approval. The report describes advanced methodologies for stress analysis of piping systems recently approved by various industry standards committees for the purpose of removing excessive conservatism built into piping system designs. These conservatisms have resulted in the installation of a large number of unnecessary snubbers and restraints in recently built nuclear power plants.

In seeking to reduce snubber related problems, Commonwealth Edison initiated a snubber reduction pilot program at LaSalle County Station, a BWR-5, Mark II plant. The purpose of the pilot program was to examine the feasibility of removing snubbers by reanalyzing piping systems using current understanding of piping systems behavior. Results indicate that up to 80% of the snubbers can be removed from the plant while maintaining conservative design margins.

The pilot program incorporated a variety of PVRC recommendations and made comparisons of alternative design criteria and load combination methods. PVRC damping values were used. The program also applied the independent support motion technique, comparing results of the Absolute Sum method of combining group responses to the Square Root of the Sum of the Squares (SRSS) method. The advantage in using the dynamic stress as opposed to secondary stress criteria was evaluated. Load cases were modified to remove excessive conservatisms. Snubber optimization subroutines were used. The program utilized existing piping analytical models and minimized the conversion of snubbers to struts.

Methods and techniques used for the pilot program were subsequently compared to the recommendations made by the NRC Piping Review committee in NUREG-1061, and results integrated into the attached topical report. The report follows the guidelines of NUREG-1061 with minor exceptions which are clearly identified therein.

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Unit 1 at LaSalle County Station is currently in the final stages of its first refueling outage. Snubber functional testing during the outage has revealed the magnitude of snubber-related problems. At this time, 9.3% of all snubbers tested have failed the test acceptance criteria, mostly due to a high drag force. Consequently, all 1251 snubbers on Unit 1 and common systems are being tested.

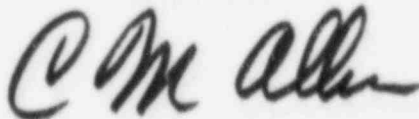
Testing so many snubbers has proven to be extremely costly in terms of occupational radiation exposure, manpower and engineering resources, and reduced plant economics. Half of LaSalle's snubber population is in the primary containment and other high radiation areas. Plant personnel who remove, test, and reinstall snubbers have accumulated over 100 man-rem of exposure during this outage alone. Engineering evaluations of the effects of failed snubbers on attached piping and support components and corrective actions to prevent failed snubber recurrences are expected to cost in excess of a half-million dollars. In addition, the snubber inspection is expected to extend the Unit 1 outage.

LaSalle Unit 2 first refueling outage is scheduled to begin in September, 1986. Commonwealth Edison seeks expedited approval of its snubber reduction program so that it can be implemented in the upcoming outage. To effect snubber reduction on Unit 2, Commonwealth Edison is pursuing the following schedule:

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| i) Send topical report to the NRC describing design methodology.                             | 4/86       |
| ii) Hold a meeting with the NRC to present methodology, answer questions, and get consensus. | mid-May    |
| iii) Revise specification for full-scale implementation based on meeting consensus.          | End of May |
| iv) Finalize implementation schedule and make award.   | 7/21/86    |
| v) Begin work.   | 8/01/86    |

Your expeditious response is requested on this matter, and if further information is needed by your staff, please contact this office.

Sincerely,



C. M. Allen  
Nuclear Licensing Administrator

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Attachment

cc: Resident Inspection - LSCS  
Dr. A. Bournia - NRR

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