AMERICAN ELECTRIC POWER *Service Corporation*

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April 26, 1983
AEP:NRC:0765

Donald C. Cook Nuclear Plant Unit Nos. 1 and 2
Docket Nos. 50-315 and 50-316
License Nos. DPR-58 and DPR-74
POTENTIAL STEAM GENERATOR RELATED
GENERIC REQUIREMENTS (GENERIC LETTER NO. 82-32)

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

Dear Mr. Denton:

This letter responds to Mr. Darrell G. Eisenhut's letter of December 9, 1982, requesting comments on the draft final report written by Science Applications, Inc. (SAI) "Value-Impact Analysis of Recommendations Concerning Steam Generator Tube Degradations and Rupture Events". Considerable time has been spent on reviewing that report. Our comments are presented in Attachment 1 to this letter.

The report raises many issues of value. However, it is primarily concerned with plants in the "moderate to severe" tube degradation category. As noted in Attachment 1, we feel that the operating history of D. C. Cook Units 1 and 2 has been good. We believe, therefore, that the value-impact analysis is not relevant to a plant in this category. It follows, that programs designed to reduce steam generator tube degradation and rupture events should be plant and even unit specific.

Since this is a comment letter, it has not been subjected to our Corporate Procedures for transmittals to the Nuclear Regulatory Commission.

Very truly yours,

R. F. Hering

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R. F. Hering
Vice President
Mechanical Engineering

cc: (attached)

cc: John E. Dolan
R. S. Hunter
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R. W. Jurgensen
W. G. Smith, Jr. - Bridgman
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NRC Resident Inspector at Cook Plant - Bridgman

ATTACHMENT 1
COMMENTS REGARDING THE SAI DRAFT FINAL REPORT
VALUE IMPACT ANALYSIS OF RECOMMENDATIONS CONCERNING STEAM GENERATOR
TUBE DEGRADATIONS AND RUPTURE EVENTS

General Comments

1. The steam generator operating history of D. C. Cook Units 1 and 2 has been good. Although we have recently experienced some Row 1 "U" bend and anti-vibration bar problems in Unit 2, there have been no signs to date of tube wastage, tube denting or support plate corrosion in any of the plant's steam generators. The D. C. Cook Plant has not had any imposed special license or Technical Specification requirements in the areas of equipment inspection or water chemistry. It is therefore unwarranted, to apply to Cook Units 1 and 2 a value-impact anlysis that deals with plants in the "moderate to severe" tube degradation category. We feel strongly that programs designed to reduce steam generator tube degradation and rupture events should be plant and even unit specific.

2. SAI's summary states that by implementing the Proposed Action Items 1a, 2, 3 and 5 in combination with 6 we can obtain diagnostic and preventive benefits and their report has served as a valuable guide. However, we feel that each unit should be given the option to develop a unit specific program based on its unique experience and performance.

Section III.4.0 Radiation Exposures

The steam generators at the D. C. Cook Nuclear Plant (DCCNP) emit low radiation levels relative to those discussed in the report. A comparison of DCCNP experience with exposure rates given in Table III.4-1 for many steam generator locations shows that DCCNP is lower by factors of 2.5. Both the benefits and impacts of the occupational doses due to the different measures discussed in the report will be much lower for DCCNP. As an example, we note that the mean yearly occupational dose per unit for both D. C. Cook units was 22 man-rem over the period 1979-1982.*

From Table IV.5-7 of the report, the expected yearly avoided radiation dose for a medium unit is (1063/24) 44 man-rem (for the industry average it is (1416/24) 59 man-rem). Since DCCNP has already a low radiation dose history, it would benefit considerably less by taking the measures noted in the report. Unit specific measures are once again indicated.

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* Calculated from one half the sum of maintenance and steam generator total occupational radiation exposure as found in answer to Generic Letter 82-22, "Congressional Request for Information Concerning Steam Generator Tube Integrity", AEP:NRC:0727A.

Section IV Value - Impact Assessment

1. Prevention and Detection of Loose Parts and Foreign Objects

We agree with SAI's recommendations. DCCNP has a Loose Parts Monitoring System (LPMS) of the latest design in operation, capable of monitoring both the primary and secondary sides.

2. Steam Generator Inservice Inspection Program

We agree with the proposed requirements with the following exceptions:

Requirement 3 specifies a 100% C-2 inspection. It is difficult to see why this should be required in view of a) the large increase in the sample size in present C-2 inspections relative to the much smaller C-1 sampling requirement; b) the relatively small reduction in rupture frequency resulting from the total SG-ISI program (Table V-2 shows that SG-ISI gives a 5% reduction in rupture frequency); and c) the use of larger C-1 samples beyond the minimum required is discouraged by the requirement.

Requirement 4, which deals with denting, states that a gauging or profilometry inspection shall be performed if a standard diameter eddy current probe cannot pass through a tube. Since a standard probe cannot traverse the full length of Row 1 through Row 9 tubes, a clarification of the definition of denting is required for tubes in these rows.

Requirement 5 calls for an unscheduled STS inspection regardless of whether or not the primary to secondary leakage exceeds the leak rate limit in the STS. We believe that the negative aspects of this proposal outweigh the positive ones in that it discourages removal of the unit from service while the leak is still small.

3. Improved Eddy Current Techniques

We agree with the requirements set forth in this section although we believe that the cost of this program has been underestimated. In order to carry out the ECT proposed, it will be necessary to change probes during the testing of each steam generator. This results in increased radiation exposure. We therefore disagree with the statement in the last line of the paragraph at the top of page IV.3-6 which states, "There would be no impact on radiation exposures". In addition, one day of replacement power cost should be assessed to cover the extra day for an evaluation which is on the critical path.

4. Upper Inspection Port

We agree with the recommendations.

5. Secondary Water Chemistry Program -

We agree that there is a need for a good secondary water chemistry program to minimize steam generator tube degradation, and we addressed this previously in the proposed technical specifications for Cook Plant contained in Attachment A of John Tillinghast's letter of November 29, 1976 to Bernard Rusch of the NRC. This program is covered by appropriate plant procedures which state the secondary water chemistry limits and appropriate action levels. Our experience has demonstrated that these secondary water chemistry limits are adequate to protect the integrity of the steam generator materials when exposed to cycle contamination by the relatively low solids cooling water (Lake Michigan) from condenser tube leaks. We do not have denting and we do not have corrosion at Cook Plant. In addition, appropriate corrective action is taken to mitigate such inleakage when it does occur.

The action levels and secondary water chemistry limits proposed by the Steam Generator Owners Group are unnecessarily restrictive for Cook Plant. The plant cannot meet these water chemistry limitations with existing equipment. Compliance would require a large dollar expenditure for condensate cleanup demineralizer equipment which, in our opinion, would not be cost effective, nor would it necessarily lead to improved secondary water chemistry.

6. Condenser Inservice Inspection Program (CISIP)

In general, the basic concept of a CISIP is good. However, as proposed, it would not necessarily be cost effective for the Cook Plant condensers. A good operating/maintenance program to maintain condenser integrity is a more practical approach. The program presently followed by the Cook Plant provides for quick corrective action to be taken upon indication of circulating water inleakage to the steam side of the condenser. Each condenser has six parallel water circuits. The affected circuit is isolated from the circulating water flow providing the opportunity to inspect it for leaks and repair it without taking the unit out of service. It has been our practice not to wait for a unit outage to perform such repairs.

Once the affected water circuit is isolated and drained, the water-boxes are opened and entered for inspection and determination of the location of the leak. Our experience has shown that in-leakage is the result of tube leaks rather than tube to tube sheet joint leaks. The tube leak is repaired by plugging the tube. After the repair is completed the circuit is returned to service.

During refueling outages and/or other outages, both the steam and water side areas are given a thorough visual inspection, supplemented as needed by dye tests and tube sampling. Dye tests have been very effective in establishing the integrity of the condensers. Eddy current tests have been tried but, our experience with eddy current testing of condenser tubes has not been successful. Such tests have not provided reliable and positive indication of the tube conditions.

Air inleakage checks are performed when excessive flow rates are indicated at the discharge of the steam jet air ejectors.

We believe the proposed formal CISIP would be more costly in terms of manpower, equipment and unit availability and will not materially contribute to the improvement of condenser conditions at the D. C. Cook Plant. Our condenser inspection and maintenance program, coupled with the corrective action to meet chemistry limits is fully adequate and no formal CISIP is needed to meet our license requirements at the D. C. Cook Plant.

7. Stabilization and Monitoring of Degraded Tubes -

It is not necessary to stabilize or monitor plugged tubes on operating plants that have not exhibited signs of corrosion or fretting wear due to flow induced vibration.

8-12. No comments.

Section V Economic Benefits of Requirements in Combination

The assumption of statistical independence (allowing multiplicitive reduction factors) is open to some question. It may be true that individual uncertainties mask the effects of the assumption. It must, however, be realized that uncertainties are presumably random in nature while the assumption may introduce a bias. For a sufficient number of combinations the total uncertainty may not mask the bias. We expect a combined, dependent reduction factor to be larger than a combined independent reduction factor. This yields a smaller magnitude for the beneficial changes than calculated in the report.

Text Errors

Table IV.2-1: The 6/82 inspection at D. C. Cook Plant Unit 1 was not part of the ISI program which had an ISI in 7/81 and has the next one due in 11/84.