

**Constellation
Nuclear**

**Calvert Cliffs
Nuclear Power Plant**

*A Member of the
Constellation Energy Group*

May 14, 2001

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 2; Docket No. 50-318
Steam Generator Tube Inspection Results

REFERENCE: (a) Calvert Cliffs Unit 2 Technical Specifications

In the spring of 2001, Calvert Cliffs Nuclear Power Plant, Inc. conducted a scheduled refueling outage at Unit 2. An inspection of the Unit 2 steam generator tubes was performed during the outage. The results of the Steam Generator Tube Inspection fell into the C-3 category, as described in Technical Specification 5.5.9 (Reference a). In accordance with Reference (a), a verbal notification was made to the Nuclear Regulatory Commission Region I office on April 17, 2001. The required written follow-up report, providing a description of the investigations conducted to determine the cause of the tube degradation and corrective measures taken as a result of the inspection findings, is provided below.

INSPECTION SCOPE

The examination of Calvert Cliffs Unit 2 Steam Generators (Nos. 21 and 22) consisted of bobbin, motorized rotating pancake coil, and motorized rotating plus point (MRPP) inspection technologies.

A. Bobbin Coil Inspections

The bobbin coil examinations for Steam Generator Nos. 21 and 22 included 100% bobbin coil full length examination of all inservice tubes.

B. Motorized Rotating Plus Point Inspections

The MRPP examinations for Steam Generator Nos. 21 and 22 in-service tubes included:

1. One-hundred percent of the hot leg tubes at the top of the tube sheet (TTS), TTS +3" above to TTS -3" below.

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2. One-hundred percent of the cold leg tubes at the top of the tube sheet (TTS), TTS +3" above to TTS -3" below.
3. One-hundred percent of rows 1 & 2 from the 5th hot leg tube support to the 6th cold leg tube support.
4. One-hundred percent of rows 5 through 15 (Steam Blanket Region) from the 5th hot leg tube support to the 6th cold leg tube support in Steam Generator No. 21. One-hundred percent of rows 6 through 15 (Steam Blanket Region) from the 5th hot leg tube support to the 6th cold leg tube support in Steam Generator No. 22.
5. Twenty percent sample of the dented tube support plate intersections, the majority at the 9th hot leg support plate.

C. Special Motorized Rotating Plus Point Inspections

All MRPP tube inspections were performed using the "Plus Point" probe technology. All bobbin coil indications were dispositioned with the plus point probe.

EDDY CURRENT INSPECTION RESULTS

Attachment (1) contains the results of the MRPP and bobbin exams for Steam Generator Nos. 21 and 22. All steam generator tubes with axial or circumferential crack indications were plugged or sleeved. All circumferential indications not sleeved were stabilized and plugged. Volumetric indications that failed to confirm as non-degradation related artifacts were also plugged.

IN-SITU PRESSURE TEST RESULTS

No In-Situ Pressure Testing was performed on the Unit 2 Steam Generators in the 2001 Refueling Outage. None of the indications found during the inspection met the screening criteria and therefore, no testing was performed.

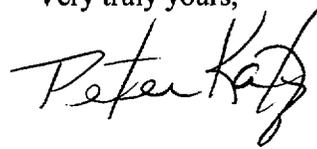
CAUSE OF TUBE DEGRADATION AND CORRECTIVE MEASURES

No new steam generator tube degradation mechanisms were identified by the 2001 Unit 2 steam generator eddy current examination. The predominant active degradation mechanism in both steam generators is outside diameter stress corrosion cracking (ODSCC)/intergranular stress corrosion cracking. Twenty-one tubes were identified with Primary Water Stress Corrosion Cracking (PWSCC) in the 21 and 22 Steam Generators. The increase in the overall number of PWSCC calls is attributed to inspecting to minus 3" below the top of tubesheet. This is a 2" increase below TTS compared to 1999. Mechanical wear is present, but the growth rate is small and is managed in accordance with the Technical Specifications, i.e., tubes with through-wall wear degradation greater than or equal to 40% are plugged.

The sizes of the eddy current flaw indications are best characterized as low voltage and short length. The 2001 Unit 2 examination voltage and length distributions compared favorably to that found during the 1997 and 1999 Unit 2 Steam Generator Eddy Current Exams. The mean flaw voltage and length were equal to or less than the 1997 and 1999 values, while the extremes of the distributions were less severe. The TTS degradation mechanism remains active, but the size of the defects are small and do not threaten tube integrity. The steam generators on Unit 2 are scheduled for replacement in the Spring of 2003.

Should you have questions regarding this matter, we will be pleased to discuss them with you.

Very truly yours,

A handwritten signature in black ink that reads "Peter Katz". The signature is written in a cursive style with a large, stylized "K".

PEK/GT/bjd

Attachment: (1) Results of the Motorized Plus Point and Bobbin Inspection of Steam Generator
Nos. 21 and 22

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ATTACHMENT (1)

**RESULTS OF THE MOTORIZED PLUS POINT AND
BOBBIN INSPECTION OF
STEAM GENERATOR NOS. 21 AND 22**

ATTACHMENT (1)
RESULTS OF THE MOTORIZED PLUS POINT AND BOBBIN INSPECTION OF
STEAM GENERATOR NOS. 21 AND 22

2001 STEAM GENERATOR INSPECTION RESULTS (TUBES AFFECTED)
BY DAMAGE MECHANISM

INDICATION TYPE	SG 21	SG 22
TOP OF TUBE SHEET AXIALS	217	214
TOP OF TUBE SHEET CIRC	8	56
VOLUMETRICS	4	7
UPPER BUNDLE STEAM BLANKET	11	8
LOOSE PARTS INDICATIONS	1	1
PREVENTATIVE	20 ¹	7 ²

REPAIRS	21 SG	22 SG
SLEEVES	210	155
PLUGS	51	138

In-Situ Testing: No In-Situ Testing was performed based on the fact that none of the indications met the in-situ screening criteria for testing.

¹ 5 Tubes – Wear Growth, 1 GEO Low Row, 14 SSI Eggcrate Wear

² 1 Tube – Wear Growth, 4 GEO's – Low Row, 1 PLP, 1 Stuck Probe