LICENSEE: Wisconsin Electric Power Company

November 8, 1995

FACILITY: Point Beach Nuclear Plant, Unit 2

SUBJECT: SUMMARY OF NOVEMBER 2, 1995, MEETING ON STEAM GENERATOR INSPECTION RESULTS AND REPAIR PLANS

On November 2, 1995, NRC staff members met in Rockville, Maryland, with representatives of Wisconsin Electric Power Company (WEPCo), B&W Nuclear Technologies, and Zetec. The purpose of the meeting was for WEPCo to present the results of the Unit 2 steam generator (SG) inspection results and to discuss repair plans. A list of meeting participants is included as Enclosure 1, and a copy of meeting handouts is provided as Enclosure 2.

The licensee opened the meeting with a history of the Unit 2 steam generators. The original inspection plan for the current outage was discussed, followed by a description of the enhanced inspection program based on the initial results. Inspection results were then presented together with repair options. Operational impacts and planned compensatory actions were also described.

The licensee stated that the preferred repair option for most unsleeved SG tube flaw indications in the tubesheet region would be to re-roll the tubes above the indications. The utilization of this technology would require a license amendment. WEPCo indicated that the proposed amendment would be submitted on or about November 9, 1995, with approval, if granted, requested by the end of November. The NRC staff indicated that resources were available to review the submittal on an emergency basis, but no completion date commitment was made.

The meeting closed with the licensee stating that they would be available to answer questions at any time, and to respond to any request for additional information in an exigent manner.

Original Signed By: R. Laufer
Allen G. Hansen, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-266 and 50-301

Enclosures: 1. List of Meeting Participants
2. WEPCo Handout

cc w/encls: See next page

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Docket File PDIII-3 Reading PUBLIC W. Axelson, RIII

DISTRIBUTION w/encl 1:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 8, 1995

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Richard J. Laufer for

Allen G. Hansen, Project Manager
Project Directorate III-3
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cc w/encls: See next page

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Point Beach Nuclear Plant
Unit Nos. 1 and 2

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NRC MEETING WITH WISCONSIN ELECTRIC POWER COMPANY

POINT BEACH UNIT 2

STEAM GENERATOR INSPECTIONS AND REPAIR OPTIONS

NOVEMBER 2, 1995

NAME	AFFILIATION
Allen Hansen	NRR/DRPW
Jack Roe	NRR/DRPW
Brian Sheron	NRR/DE
Robert Hermann	NRR/DE/EMCB
Ted Sullivan	NRR/DE/EMCB
Bob Link	WEPCo
Kevin Crowley	WEPCo
Marlin Conry	WEPCo
Fred Cayia	WEPCo
Tom Staskal	WEPCo
Tom Malanowski	WEPCo
Robert Vollmer	Zetec
Charles England	BWNT
Wayne Belden	BWNT
Gus Lainas	NRR/DE
H. F. Conrad	NRR/IDE/EMCB
Rich Laufer	NRR/DRPW

ENCLOSURE 1

Steam Generator Inspection

Point Beach Nuclear Plant

Unit 2

Fall, 1995 Refueling Outage

ENCLOSURE 2

History of Unit 2 Steam Generators

- *Inspection Programs and Techniques*
- *Results of Previous Inspections*
  - Degradation mechanisms identified
    - » *ODSCC*
    - » *Sleeved tubes*
    - » *Wastage*
    - » *Denting*

History of Unit 2 Steam Generators

- *Plugging/Sleeving Summary*

Mechanism	No. Tubes* Plugged	Mechanism	No. Sleeved
Hot Leg Crevice ODSCC	456	Sleeve Hot Leg Crevice ODSCC	2673
Sleeve Parent Tube Flaws	222		
Wastage	216	Sleeve Cold Leg Wastage	845
Other	51		
Total	945		3518

TOTAL EFFECTIVE % PLUGGED **17.02%**

(prior to this outage)

* Total for both generators

History of Unit 2 Steam Generators

- *Chemical Control Program*
  - Coordinated Phosphate Control
  - All-Volatile Treatment
- *Operating History*
  - Temperature
  - Pressure

History of Unit 2 Steam Generators

- *Special testing and monitoring*
  - Sludge lancing
  - 2000 psid (primary to secondary) test
  - 800 psid (secondary to primary) test
- *Leakage trends*
- *Summary*

Original Inspection Program

- *Scope*
  - The original inspection scope for the Fali, 1995 outage, as described in our response to GL 95-03 and response to NRC Request for Additional Information.

Original Inspection Program

	'A' SG	'B' SG
A. BOBBIN COIL PROBE		
1. Unsleeved tubes - full length inspected		
No. of tubes inspected	1513	1516
% of population	100%	100%
2. Sleeved tubes - unsleeved length inspected		
No. of tubes inspected	314	732
% of population	23%	55%
B. PLUS POINT PROBE		
1. Sleeved tubes - sleeved length inspected		
Cold legs	24	141
% of population	20%	20%
Hot legs	248	258
% of population	20%	20%

Original Inspection Program

- *Results*
  - Indications in >1% of HEJ-sleeved hot leg parent tubes in lower hardroll transition
  - Plus Point detected two indications in tubesheet region that were not detected by Bobbin
  - Special interest tubes

Final Inspection Program

- *Scope*
  - Inspected 100% of sleeves in hot legs of both S/Gs with Plus Point
  - Inspected full length of tubesheet in 100% of unsleeved tubes in hot legs of both S/G's with Plus Point

Final Inspection Program

	'A' SG	'B' SG
A. BOBBIN COIL PROBE		
1. Unsleeved tubes - full length inspected		
No. of tubes inspected	1513	1516
% of population	100%	100%
2. Sleeved tubes - unsleeved length inspected		
No. of tubes inspected	314	732
% of population	23%	55%
B. PLUS POINT PROBE		
1. Sleeved tubes - sleeved length inspected		
Cold legs	24	141
% of population	20%	20%
Hot legs	1343	1330
% of population	100%	100%
2. Unsleeved tubes - tubesheet area inspected		
Hot legs	1411	1547
% of population	100%	100%

Final Inspection Program

- *Results*

	'A' SG	'B' SG
HEJ Parent Tubes With Flaws	198	67
PWSCC at Roll Transition		
Axial	115	13
Circumferential	2	0
ODSCC in Tubesheet		
Axial	246	247
Circumferential	0	0
Tube Support Plate Wall Loss	6	5

Final Inspection Program

- *HEJ Parent Tube Flaws Have Been Plugged*

	'A' SG	'B' SG
No. of Tubes Affected	198	67
Effective % Plugged	6.1%	2.1%
Total Effective % Plugged	24.2%	17.5%

Recovery Plans for This Outage

- *Plugging*
  - Status At End of This Outage If All Pluggable Indications Were Plugged:

	'A' SG	'B' SG
No. Tubes Plugged This Outage	567	322
Total Tubes Plugged	1100	734
Total Effective % Plugged	35.5	25.3
Combined Total Effective % Plugged	30.41	

Recovery Plans for This Outage

- *Plugging (cont.)*
  - TSCR has been submitted based on 30% max plugging level
    - » *RCS flow limit reduced to 169,500 gpm*
  - Analysis being performed based on 38% max/35% average plugging with same flow limit
  - Alternative repairs which enable tubes to remain in service are preferable from an overall reactor safety standpoint

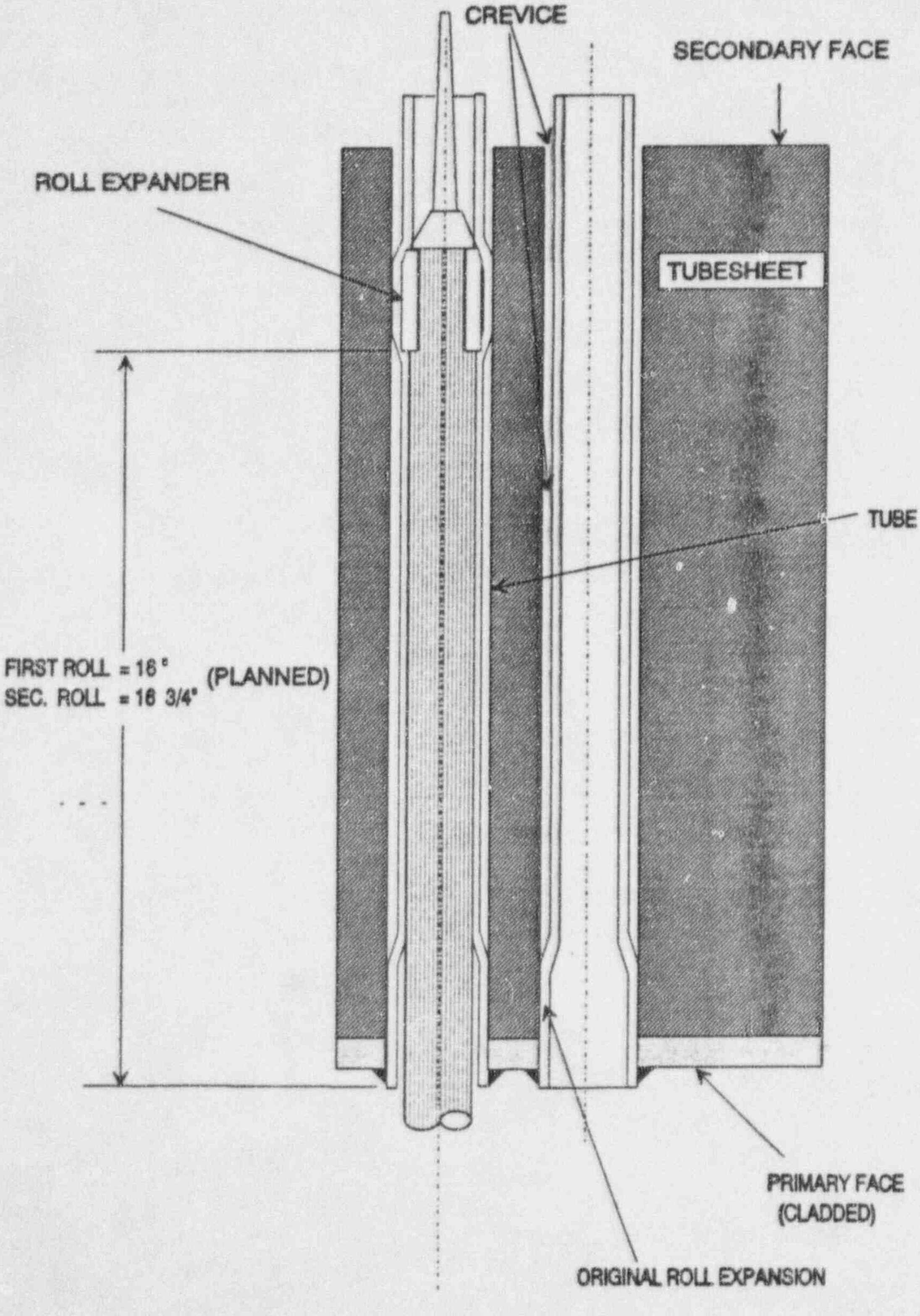
Recovery Plans for This Outage

- *Intra-Tubesheet Re-Roll and F* Criteria*
  - Hard roll placed in upper half of tubesheet
  - Forms new lower pressure boundary for tube
  - Requires evaluation for upper vs. lower re-roll
  - Requires adoption of F* criteria in TS

PB-2 REPAIR ROLL JUSTIFICATION APPROACH

- OBTAIN F* LICENSING APPROVAL
  - BASIS:
    - » SAME SGs AS IP-2
    - » SIMILAR OPERATING CONDITIONS
    - » APPROVED IP-2 F* SUBMITTAL
      - DOCKET 50-247, AMMENDMENT 180
      - MARCH 13, 1995
      - TOPICAL BAW-10195P
- IMPLEMENT USING IP-2 RE-ROLL QUAL.
  - ISSUE PB-2 REPAIR ROLL QUAL. REPORT
    - » BOUND THROUGH IP-2 QUALIFICATION
    - » TIE IN F* APPLICABILITY TO PB-2

REPAIR ROLL SKETCH



Recovery Plans for This Outage

- *BWNT "Short" Sleeve*
  - Sleeve spans indications in tubesheet
  - Joints are kinetically welded
  - Process successfully used at RG&E (Ginna)
  - Process implemented at PBNP under 50.59

Operational Impacts

	Plug All Indications	Re-Roll Only	Short Sleeve
Effective Tube Plugging			
'A' SG:	35.5%	26.2%	27.5%
'B' SG:	25.3%	17.9%	19.9%
Total:	30.41%	22.05%	23.7%
Loop Differential:	10.2%	8.3%	7.6%
RCS Flow Rate (gpm)			
Expected:	172,700	177,900	176,900
TS Limit:	169,500	174,000	174,000
Estimated Dose (man-rem):	5	10	25

Compensatory Actions

- *Administrative reduction of primary to secondary leak rate*
- *Administrative limit on primary to secondary leak rate step change*

Primary to Secondary Leak Rate Monitoring

- *—Combined Air Ejector Monitor*
- *—Unit Specific Steam Generator Blowdown Monitor*
- *—Unit Specific Air Ejector Monitor*
- *Air Ejector Monitor Alarms Established to Detect a 15 gpd Change*
- *Shiftly Assessment By Operations*
- *Chemistry Samples Reactor Coolant System and Air Ejector Off-Gas and Calculates Leak Rate Three Times Per Week*

Primary to Secondary Leak Rate Monitoring

Increased Primary to Secondary Leakage

Triggers More Frequent Assessment:

- *Leakage of Greater than 40 gpd*

OR

- *Step Change Increase of Greater Than 15 gpd*

Leakage is Assessed Every Four Hours Until Stable

Unit 2 Shutdown Criteria

The Following Administrative Action Levels Will Be Established Prior to Unit-2 Startup:

- *Confirmed Leakage of Greaer Than 100 gpd Requires Evaluation by Managers' Supervisory Staff to Consider Unit Power Reduction or Shutdown*

Unit Shutdown Will Be Required If:

- *Sudden Primary to Secondary Leakage Increase of 60 gpd in 1 Hour Confirmed by Chemistry Analysis*

OR

- *Primary to Secondary Leakage in Excess of 150 gpd Confirmed by Chemistry Analysis*

These Action Levels are Conservative to the EPRI Guidelines

Future of U2 Steam Generators

- *Project Scope and Schedule*
- *Status of replacement generator fabrication*
- *Status of installation effort*
- *Status of PSCW application*

Other Issues

- *U-Bends*
  - Tube material
  - Bending process
  - EPRI recommendation
  - U-bend inspection history
  - No more inspections of this area planned for this outage

Other Issues

- *Dented Tube Support Plate Locations*
  - Inspection conducted this outage
    - » *Full length of all unsleeved tubes inspected by Bobbin*
    - » *Unsleeved portion of sleeved tubes inspected by Bobbin (23%/55%)*
    - » *34 distorted indications by Bobbin*
    - » *no circumferential indications on followup with Plus Point*

Other Issues

- *Dented Tube Support Plate Locations*
  - Defects Associated With This Phenomena are Negligible

Other Issues

- *Dented Tube Support Plate Locations*
  - In-situ pressure test
    - » *3% of unsleeved tubes in one steam generator*
    - » *test pressure in accordance with RG 1.121 or ASME Code allowable*
    - » *followed by EC inspection followed by 800 psid (secondary to primary) leak test*