

Commonwealth Edison Company
Byron Generating Station
4450 North German Church Road
Byron, IL 61010-9794
Tel 815-234-5441

ComEd

DATE November 21, 1995

LTR: BYRON 95-0379
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U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

The Enclosed Licensee Event Report from Byron Generating Station is being transmitted to you in accordance with the requirements of 10CFR50.73 (a) (2) (i) (B).

This report is number 95-006; Docket No. 50-454.

Sincerely,


K. L. Kofron
Station Manager
Byron Nuclear Power Station

KLK/PW/ba

Enclosure: Licensee Event Report No. 95-006

cc: H. J. Miller, NRC Region III Administrator
NRC Senior Resident Inspector
INPO Record Center
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SIGNATURE PAGE FOR LICENSEE EVENT REPORT

LER Number
454:95-006

Title of Event: Missed Surveillance During Steam Generator Tube Inspection

Occurred: 10-28-95 / 1100
Date Time

Licensee Contact: Joseph Lonigro

OSR DISCIPLINES REQUIRED: ABG, SEC

JPA / 11-16-95
VES DATE

Acceptance by Station Review:

M. Deanna / 43CFG / 11-17-95
OE Disciplines Date

Matthew Rae / AG / 11/17/95
SES Disciplines Date

Joseph Zube / AG / 11-18-95
for RAS Disciplines Date

_____/_____/_____
Other Disciplines Date

Joseph Zube / NONE / 11/17/95
Other Disciplines Date

Approved by: KC Kofun / 11/25/95
Station Manager Date

NRC FORM 366 (6-95)		U.S. NUCLEAR REGULATORY COMMISSION			APPROVED BY OMB NO. 3150-0104 EXPIRES 04/30/98						
LICENSEE EVENT REPORT (LER)											
(See reverse for required number of digits/characters for each block)											
FACILITY NAME (1)					DOCKET NUMBER (2)			PAGE (3)			
BYRON NUCLEAR POWER STATION					05000454			1 OF 5			
TITLE (4)											
MISSED SURVEILLANCE DURING STEAM GENERATOR TUBE INSPECTION											
EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER	
10	28	95	95	006	00	11	21	95	NONE	05000	
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
5			20.2201(b)			20.2203(a)(2)(v)			<input checked="" type="checkbox"/> 50.73(a)(2)(i)		
POWER LEVEL (10)			20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		
0			20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		
			20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)		
			20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)		
			20.2203(a)(2)(iv)			50.36(c)(2)			50.73(a)(2)(vii)		
LICENSEE CONTACT FOR THIS LER (12)											
NAME						TELEPHONE NUMBER (Include Area Code)					
J. LONIGRO, SITE ENGINEERING, EXT. 2166						815-234-5441					
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
A				N							
SUPPLEMENTAL REPORT EXPECTED (14)											
YES (If yes, complete EXPECTED SUBMISSION DATE).					<input checked="" type="checkbox"/> NO		EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

In March of 1993, during outage B1R05 steam generator (SG) eddy current inspections, 1C SG tube 34-13 was flagged as being dented. Meeting acceptance criteria, 1C SG tube 34-13 was tracked as dented in the Babcock and Wilcox (B & W) [contractor] data base and was placed back into service.

In September of 1994, during B1R06 SG bobbin eddy current inspections of 100% hot and cold leg tubes, B & W identified 1C SG tube 34-13 as obstructed. B & W carried 1C SG tube 34-13 as an open item in their data base.

On 10/02/94 (still in B1R06), B & W generated a list of all SG tubes with indications. This list was presented to the ComEd Site Engineering person (cognizant engineer) to review for tube plugging/repair candidates. Although 1C SG tube 34-13 was on this list and flagged as an open item, the cognizant engineer did not recognize 1C SG tube 34-13 as requiring further disposition.

B & W finished plugging/repairing SG tubes and completed the SG work without having dispositioned 1C SG tube 34-13. B1R06 was completed and 1C SG tube 34-13 was put back into service without having had additional eddy current inspections performed or being plugged/repared.

On 10/27/95, Westinghouse [contractor], in preparation for Byron's Mid-Cycle outage (B1P02), identified incomplete data recorded for tube 34-13 in the 1C SG at the ninth (9th) hot leg support plate. Westinghouse brought this information to the attention of the cognizant engineer. After a preliminary investigation, a Problem Identification Form (PIF) was generated the following morning to document the problem.

This event is reportable per 10CFR50.73(a)(2)(i)(B) - any operation or condition prohibited by the plant's Technical Specifications. The Surveillance Requirements for Technical Specification 4.4.5.2.d was missed for 1C SG tube 34-13.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

BYRON NUCLEAR POWER STATION	05000454	YEAR	SEQUENTIAL	REVISION	2 OF 5
		95 --	006 --	00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 10-28-95 / 11:00am

Unit 1 MODE 5 - cold SD Rx Power - 12 cps RCS [AB] Temperature/Pressure 98/depress

Unit 2 MODE 1 - Pwr Op Rx Power - 100% RCS [AB] Temperature/Pressure NOT/NOP

B. DESCRIPTION OF EVENT:

Tracked as dented since B1R01, 1C Steam Generator (SG) tube 34-13 always met the criteria to remain inservice utilizing a probe as small as 0.560 inch in diameter. In March of 1993, during B1R05 SG inspections, 1C SG tube 34-13 was again flagged as dented with a bobbin coil voltage of 91.53 volts. Meeting acceptance criteria, 1C SG tube 34-13 was tracked as dented in the Babcock and Wilcox (B & W) [contractor] data base and was placed back into service.

During B1R06, Byron Station implemented a 1.0 volt Interim Plugging Criteria (IPC). In accordance with Surveillance Requirement 4.4.5.2.d, 100% bobbin coil inspection of hot leg tube support plate intersections is required for implementation of the 1.0 volt IPC. In accordance with the draft Generic Letter on voltage-based plugging criteria, an intersection with a dent greater than 5.0 volts must be inspected by Rotating Pancake Coil to implement IPC.

In September of 1994, during B1R06 SG 100% hot and cold leg bobbin coil inspections, B & W identified 1C SG tube 34-13 as obstructed as it would not pass a 0.560 inch diameter probe. According to the B & W Data Manager's log for 9/28/94, B & W passed this information on to the ComEd Site Engineering person (cognizant engineer). At this time (per the log), the cognizant engineer verbally acknowledged that 1C SG tube 34-13 would be plugged/repared. B & W carried 1C SG tube 34-13 as an open item in their data base.

On 10/02/94, (still in B1R06) B & W generated a list of all SG tubes with indications. This list was presented to the cognizant engineer to review for tube plugging/repairing candidates. Although 1C SG tube 34-13 was on this list and flagged as an open item, the cognizant engineer did not recognize 1C SG tube 34-13 as requiring further disposition (i.e., additional exams to quantify the dent). The cognizant engineer additionally did not recall the conversation as documented in the 9/28/94 B & W Data Manager's log. Also in progress at this time were SG tube pulls, and a twenty (20) percent Rotating Pancake Coil (RPC) eddy current inspection at the top of the tubesheet.

On 10/03/94, the cognizant engineer generated the first of several plugging/repairing lists. 1C SG tube 34-13 was not on this list.

On 10/05/94, at approximately midnight, circumferential cracking was discovered at the top of the tube sheet area on the 1A SG. Based on the circumferential cracking indications found, a decision was made to perform a one-hundred (100) percent Rotating Pancake Coil (RPC) inspection at the top of the tube sheet in all four Unit 1 SGs. This RPC inspection, conducted over the next eight (8) days, changed the focus of the SG work.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

BYRON NUCLEAR POWER STATION	05000454	YEAR	SEQUENTIAL	REVISION	3 OF 5
		95	-- 006	-- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

B. DESCRIPTION OF EVENT: (cont.)

On 10/13/94, a new list (Top of Tube Sheet (TTS) RPC indications list) was generated containing results of the RPC tubesheet inspections from all four SGs. Again, this list (one computer printout broken out by individual SG) was reviewed for tube plugging/repairing candidates by the cognizant engineer. The cognizant engineer reviewed the TTS list and generated his final plugging/repair list (for all four SGs). B & W resumed plugging/repairing of tubes (in all four SGs) based upon the issuance of this final plugging/repair list.

On 10/14/94, B & W issued their final daily report for SG work. This final report did not indicate a discrepancy for 1C SG tube 34-13. Typically, a partially analyzed tube (such as tube 34-13) would have been identified on this report as an open item.

B & W finished plugging/repairing SG tubes and completed the SG work without disposition of 1C SG tube 34-13. B1R06 was completed and 1C SG tube 34-13 was put back into service without having had additional eddy current inspections or being plugged/repared.

On 10/27/95, Westinghouse [contractor], in preparation for Byron's Mid-Cycle outage (B1P02), identified incomplete data recorded for tube 34-13 in the 1C SG at the ninth (9th) hot leg support plate. Westinghouse brought this information to the attention of the cognizant engineer. After a preliminary investigation, a Problem Identification Form (PIF) was generated the following morning to document the problem.

This event is reportable per 10CFR50.73(a)(2)(i)(B) - any operation or condition prohibited by the plant's Technical Specifications. The Surveillance Requirements for Technical Specification 4.4.5.2.d was missed for 1C SG tube 34-13.

C. CAUSE OF EVENT:

The cause of this event is cognitive personnel error by the cognizant engineer in charge of the Steam Generator work during outage B1R06. One of the responsibilities of the cognizant engineer is to identify and resolve all SG tube indications. The cognizant engineer did not adequately address tube 34-13 as requiring additional disposition.

A contributing factor was the additional SG work in progress at the time the plugging/repair lists were generated (SG tube pulls, and the RPC eddy current inspection at the top of the tube sheet).

Although the responsibility for the SG work ultimately falls on the cognizant engineer, the contractor performing the SG work is contracted with these responsibilities. In this case, the contractor's process broke down as well.

Interviews conducted with the contractor and the cognizant engineer indicate that the most likely scenario for the process breakdown was that the tube in question (1C SG tube 34-13) was set aside because of ongoing questions with the tube. When the focus of the SG work changed to the top of the tube sheet inspection, disposition of the tube in question was not completed. Additionally, the contractor did not compare their SG data base against the SG inspection plan as a final check. This comparison is typically performed prior to installing the SG manways. Had the contractor performed this final check, the tube in question (1C SG tube 34-13) should have been identified as an open item and resolved before the SG was placed back into service.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

BYRON NUCLEAR POWER STATION	05000454	YEAR	SEQUENTIAL	REVISION	4 OF 5
		95	-- 006	-- 00	

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

D. SAFETY ANALYSIS:

The safety of the plant and the public was not affected by this event. 1C SG tube 34-13 performed its intended function (in that it did not leak or rupture) as demonstrated by the unit run from the conclusion of B1R06 through the beginning of B1P02. SG tubes are inspected to detect tube degradation which could impact tube integrity. A dent (greater than 5 volts) has the potential to mask a flaw at the dented intersection. In the case of 1C SG tube 34-13, no flaw has been detected at this intersection in previous inspections. If a flaw did exist that resulted in tube failure, the failure would be bounded by the SG tube rupture analysis of UFSAF section 15.6.3. Had 1C SG tube 34-13, or any other SG tube, failed during plant operations, plant procedures would direct reactor operators in the identification and mitigation of the event.

E. CORRECTIVE ACTIONS:

- a). The cognizant engineer has been counselled on the responsibilities regarding SG work and the importance of self-checking.
- b). Procedures 1/2BVS 4.5.0-1 will be revised to include a step that ensures the SG work contractor performs a final software data base comparison against the inspection plan. The comparison is to be performed after SG tube inspections and data base finalization. The comparison must be made and verified by the cognizant engineer before installing the SG manways. 1/2BVS 4.5.0-1 will also include guidance to the cognizant engineer on regenerating/ re-reviewing the tube plugging/repair list against any open items in the database following this final software data base comparison. These actions will be tracked by NTS #454-180-95-0006-01.

F. RECURRING EVENTS SEARCH AND ANALYSIS:

PIR 454-200-87-067: 1D SG returned to service with a misplugged tube due to a contractor personnel error.
PIR 454-200-94-032: Unplugged C SG tube created potential release path.

Both of these events are related to this event in terms of incomplete SG tube work. Corrective actions described below could not have been expected to prevent this event.

PIR 454-200-87-067 resulted when the SG outage work contractor (Babcock & Wilcox (B&W)) performed the SG tube plugging as well as the quality control and quality assurance for all work performed by them. Corrective actions from this event included: changing the Station's Maintenance procedures to include Technical Staff (so named at that time) personnel verification of proper tube plug locations prior to replacement of the SG primary manway, revising eddy current surveillances to include Technical Staff personnel verification of proper plug installation location, and the contractor (B&W) revising their SG tube plugging procedures to ensure correct and independent tube marking and plugging locations.

PIR 454-200-94-032 occurred when in the process of SG tube removal a requested/required plug was inadvertently not installed in the C SG on the cold leg side. This created a flow path from the secondary side to the primary side. This event was discovered during partial wet lay up of the C SG. Corrective actions from this event included: creation of SG primary and secondary side close-out checklists completed independently of original work personnel, and incorporation of these checklists in future SG work turnover to operations.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

BYRON NUCLEAR POWER STATION	05000454	YEAR	SEQUENTIAL	REVISION	5 OF 5
		95 --	006 --	00	

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G. COMPONENT FAILURE DATA:

NONE.