

June 2, 1995

Office of Nuclear Reactor Regulations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ComEd

Attention: NRC Document Control Desk

Subject: Byron Unit 1 Cycle 7 Mid-cycle Inspection Plans
NRC Docket Number 50-454

- References:
1. August 1, 1994, letter from J. A. Bauer to W. T. Russell transmitting Byron Station's request for a license amendment to implement a 1.0 volt Interim Plugging Criteria, with supplements dated September 7, 1994, September 17, 1994, September 22, 1994, September 30, 1994, and October 17, 1994.
 2. October 24, 1994, letter from R. A. Capra to D.L. Farrar transmitting Safety Evaluation for Use of a 1.0 Volt Interim Plugging Criteria for Byron Unit 1.
 3. January 30, 1995, letter from G. K. Schwartz to J.B. Martin transmitting the Byron Unit 1 Cycle 6 Interim Plugging Criteria 90 Day Report and includes WCAP-14277, "SLB Leak Rate and Tube Burst Probability Analysis Methods for ODS/CC at TSP Intersections, dated January, 1995".

Reference 2, transmitted Nuclear Regulatory Commission's (NRC) Safety Evaluation Report (SER) for the use of a 1.0 volt Interim Plugging Criteria (IPC) for Byron Unit 1. In the SER, the Staff required Byron Station to submit plans for assessing the mid-cycle steam generator inspection data at least 60 days prior to the planned outage.

The inspection scope, inspection techniques, and analysis methodologies to be implemented during the Fall 1995 Byron Unit 1 mid-cycle inspection outage (B1P02) will be the same as implemented during the Fall 1994 Byron Cycle 6 refuel outage (B1R06) and approved by Reference 2. Reference 1 and Reference 3 provide an in-depth description of the inspection and analysis methodologies for implementing the 1.0 volt IPC at Byron.

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On February 13, 1995, ComEd requested an amendment to Technical Specification 4.4.5 to increase the IPC voltage limit from 1.0 volt to 3.0 volts. Approval of this revision was requested for B1P02 scheduled for September of 1995. The inspection scope leak and burst analysis methodologies described in this document assume that the currently approved 1.0 volt IPC would be applied. With approval of the proposed 3.0 volt IPC and related supplements, the associated inspection scope leak and burst analysis methodologies will be applied.

The following is a summary of the 1 volt IPC requirements which will be used to collect, analyze, and assess the steam generator (SG) tube inspection data during the B1P02 outage.

Inspection and Repair Scope: Byron will perform a 100% full length bobbin coil inspection of all hot leg and cold leg tubing. Byron has not experienced any outer diameter stress corrosion cracking (ODSCC) on the cold leg side. A 0.610 inch diameter bobbin probe will be used to inspect all intersections where IPC is applied.

In addition to the bobbin coil inspection, three coil rotating pancake coil (RPC) examinations will be performed on the following:

- All ODSCC indications at TSP intersections greater than 1.0 volt. Any confirmed indications >1.0 volt and < or equal to 2.7 volts will be plugged or repaired. All indications greater than 2.7 volts will be plugged or repaired regardless of RPC confirmation.
- All TSP intersections with dent signals greater than 5.0 volts. Any confirmed indications will be plugged or repaired.
- A 20% sample of TSP intersections with dent signals between 2.5 and 5.0 volts. The sample size will be expanded to 100% should any confirmed indication be indicative of PWSCC. The NRC will be promptly notified if any PWSCC indications are identified at the tube support plate intersections. All confirmed indications will be plugged or repaired.
- All TSP intersections with large mixed residuals that could cause a 1.0 volt indication to be missed or misread. Any confirmed indications will be plugged or repaired.
- A minimum sample of 100 TSP intersections that contain indications 1.0 volt or less.

IPC will not be applied to those intersections that are susceptible to collapse or deformation during a postulated LOCA + SSE event. The excluded tube intersections are identified in WCAP-14046, Revision 2, transmitted to the Staff on February 15, 1995.

Inspection Guidelines: The eddy current acquisition and analysis guidelines to be used during B1P02 are the same as those implemented during the B1R06 inspection and the Braidwood Unit 1 mid-cycle outage in February of 1995. These guidelines were included and described in Reference 1 and the associated supplements.

Methodology for Leakage and Burst Evaluations: The methodology for assessing tube leakage and burst considerations will be the same as that implemented during B1R06 and as approved in Reference 2. A detailed description of the methodologies is included in Reference 1 and Reference 3. Major aspects of the leakage and burst evaluations are as follows:

- The beginning of cycle (BOC) voltage distribution is determined by scaling the as-found voltage distribution by 1/POD (probability of detection) and then subtracting the indications that are repaired. A POD of 0.6 will be used for all voltage ranges.
- The BOC voltage distribution is adjusted for voltage growth and eddy current uncertainty by applying a Monte Carlo simulation to determine a projected end of cycle (EOC) voltage distribution.
- The Main Steam Line Break (MSLB) leakage and burst calculations are based on full Monte Carlo methodologies that account for parameter uncertainty.
- The MSLB leakage calculation is consistent with the methodology described in the draft Generic Letter for 1.0 volt IPC. This method uses a log-logistic probability of leakage model and the conditional leak rate versus voltage correlation.
- The conditional probability of tube burst assessment is consistent with the methodology in the draft IPC Generic Letter. This method uses a free span tube burst pressure versus voltage correlation and the conditional probability of burst model. As described in Reference 3, the probability of multiple tube ruptures is assessed with this analysis.

- The database for the leakage and burst correlations is the same database used for the Byron Unit 1 Cycle 6 evaluation (as described in Reference 3) with the inclusion of the Byron Unit 1 Cycle 6 and the Braidwood Unit 1 Cycle 4 tube pull results.

Please note that for the purpose of the leak and burst evaluations for B1P02, reference to the previous cycle is defined as from BOC-7 to the mid-cycle outage and reference to the next cycle is defined as the time period from the mid-cycle to EOC-7.

Reporting Requirements: Byron will satisfy the reporting requirements of Technical Specification 4.4.5.5 and the draft PC Generic Letter. Reports to the Staff will be made prior to restart as follows:

- If the estimated leakage based on the actual measured as found voltage distribution would have exceeded the site specific MSLB leakage limit. If the leakage limit would have been exceeded, then a safety assessment will be submitted to the NRC prior to plant restart.
- if circumferential crack-like indications are detected at the TSP intersections.
- If indications are identified that extend beyond the confines of the TSP.
- If the calculated conditional probability of burst exceeds 1×10^{-2} . A safety assessment is required to be submitted to the NRC prior to plant startup for this condition.

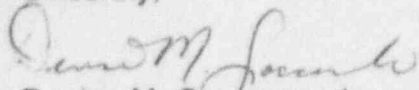
The final results of the inspection and tube integrity evaluation will be reported to NRC within 90 days following plant restart. Content of the 90 day report will be consistent with the reporting requirements stated in the draft Generic Letter and Reference 3.

Unit Restart: Prior to Byron Unit 1 restart, ComEd will submit any required reports or safety assessments as discussed above. It is ComEd's understanding that after reports and/or safety assessments are transmitted to the Staff, Byron Unit 1 will proceed with Unit Startup unless otherwise notified by the NRC. If no specific reports are required per the Technical Specifications or draft Generic Letter, Byron Unit 1 restart will proceed upon completion of all outage activities.

June 2, 1995

Please address any questions that you may have to this office.

Sincerely,



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