

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

June 13, 1997

ComEd

LTR: BYRON 97-0132
FILE: 1.10.0101

Director
Office of Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Byron Nuclear Power Station Units 1 and 2
Response to Notice of Violation - Supplement
Inspection Report No. 50-454/96009; 50-455/96009
NRC Docket Numbers 50-454, 50-455

REFERENCE: A. B. Beach letter to Mr. Graesser dated
February 27, 1997, transmitting Notice of Violation
and Imposition of Civil Penalties 50-454/96009; 50-455/96009

J. Lieberman letter to Mr. Graesser dated May 13, 1997,
Transmitting Request for Supplemental Response to Notice of
Violation describing actions taken to change Technical
Specification 3.7.5

Enclosed is Commonwealth Edison Company's supplemental response to the
Notice of Violation (NOV) which was transmitted with the first referenced
letter. The NOV cited two (2) Severity Level III violations and two (2)
Severity Level IV violations requiring a written response. ComEd's
supplemental response is provided in the attachment.

Our failure to recognize the significance of the issues associated with
the Essential Service Water (SX) system was due to three (3) root causes
associated with work control screening, procedure inadequacy, and lack of
design basis knowledge. This lack of recognition led to untimely corrective
action for conditions identified in 1993 with regards to the degraded
conditions within the SX system. To correct these problems, we intend to take
these actions:

- improving our recognition of significant issues by providing a
diverse review of new work requests
- perform periodic reviews of the backlog of open work requests to
recognize high priority issues
- clearly communicate management expectations for all personnel with
respect to surveillance performance
- increase the design basis knowledge level throughout our
organization

ComEd management recognizes the need for strong policies that enforce
the prioritization for resolving non-conforming conditions. Maintenance of
the design basis and design control is critical for Byron Station.

(p:\97byltrs\970132.wpf)

9706180296 970613
PDR ADOCK 05000454
G PDR



This letter contains the following commitments:

1. The Ultimate Heat Sink (UHS) calculations have been re-performed, and results of the re-calculations will be incorporated into appropriate surveillance and procedures.
2. Based on the issues found while reviewing the SX related surveillance procedures, conduct a review of all safety related non-technical specification surveillance procedures.
3. Management expectations regarding Non-Technical Specification surveillance are to be discussed in periodic training.
4. Safety related Non-Technical Specification surveillance will be reviewed by Site Quality Verification (SQV) to ensure that managements expectations are being met.
5. Essential Service Water Non-Technical Specification surveillance will be revised prior to the next execution to ensure they address potential operability impacts, and address immediate notification of supervisor and Shift Manager if the surveillance fails to meet any acceptance criteria.
6. The predefine program procedures will be revised to add direction as to the expected completion of both Technical Specification and Non-Technical Specification surveillance, and notifying the Shift Manager if it fails any acceptance criteria.
7. The procedure writers guide is being revised to ensure consistent guidance for developing all surveillance.
8. A Division-wide work procedure (NOD) is being implemented to address UFSAR/Design Basis conformance.
9. Design basis information retrieval training/guidance is being developed.

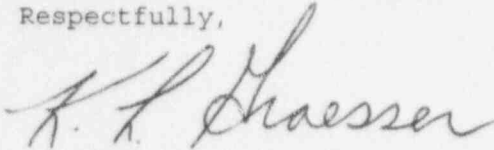
To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects these statements are not based on my personal knowledge, but on the information furnished by other ComEd employees, contractor employees, and/or consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

June 13, 1997

Page 3

If your staff has any questions or comments concerning this letter, please refer them to Don Brindle, Regulatory Assurance Supervisor, at (815) 234-5441 ext. 2280.

Respectfully,



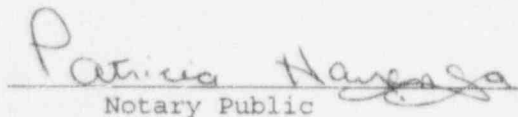
K. L. Graesser
Site Vice President
Byron Nuclear Power Station

State of Illinois

SS

County of Ogle

Subscribed and sworn to before me this
13th Day of June 1997



Notary Public



KLG/DB/rp

Attachment(s)

cc: A. B. Beach, NRC Regional Administrator - RIII
G. F. Dick Jr., Byron Project Manager - NRR
S. D. Burgess, Senior Resident Inspector, Byron
R. D. Lanksbury, Reactor Projects Chief - RIII
F. Niziolek, Division of Engineering - IDNS
D. L. Farrar, Nuclear Regulatory Services Manager, Downers Grove
Safety Review Dept, c/o Document Control Desk, 3rd Floor, Downers Grove
DCD-Licensing, Suite 400, Downers Grove.

ATTACHMENT I

VIOLATION ASSESSED A CIVIL PENALTY

1. 10 CFR Part 50, Appendix B, Criterion III, "Design Control", states, in part, that measures shall be established to assure that the design basis for those structures, systems, and components to which Appendix B applies, are correctly translated into specifications, drawings, procedures, and instructions. It further states that the design control measures shall provide for verifying or checking the adequacy of design, such as the performance of design reviews, by the use of alternate or simplified calculational methods.

Contrary to the above, as of October 15, 1996, design control measures were inadequate, in that ultimate heat sink cooling tower basin makeup calculation, NED-M-MSD-14, Revision 0, dated February 1992, and Revision 1, dated August 1992, did not correctly establish the volume of water needed in the ultimate heat sink to support Technical Specification 3.7.5 when relying on the deep well pumps for makeup capability. The calculation did not account for a reduced usable essential service water cooling tower basin water volume due to silt accumulation or due to the design of the anti-vortex drainage duct surrounding the essential service water pump suction pipe.

2. 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances and shall be accomplished in accordance with these procedures. The procedures shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, as of October 15, 1996, the licensee failed to ensure that appropriate acceptance criteria were included in its procedures for determining that an important activity was satisfactorily accomplished. Specifically, procedure OBVS SX-5, "Inspection of River Screen House and Essential Service Water Cooling Tower", Revision 2, dated November 25, 1991, failed to have appropriate quantitative acceptance criteria for allowable silt levels in the essential service water cooling tower basin to determine the operability of the essential service water system when inspections of the basin were performed.

This is a Severity Level III violation (Supplement I).
Civil Penalty - \$50,000.

REASON FOR THE VIOLATION

1. The cause of this issue is cognitive error on the part of engineering personnel. The engineer used input from a previous evaluation without a complete review of the limitations and inputs to the evaluation. The design basis calculations did not consider the acceptance criteria for silt buildup nor take into account an anti-vortex box in the basin design. Engineering did not probe thoroughly into the design basis of the Ultimate Heat Sink (UHS) with regards to volumetric requirements.

2. The original acceptance criteria were generated by an Architect Engineer letter, dated May 17, 1990. Due to a poor engineering review and lack of questioning attitude, the review did not identify the significance of levels of silt of the River Screen House (RSH) and Essential Service Water Cooling Tower (SXCT) basin relative to operability or that the acceptance criteria development did not adequately account for the design configuration of the UHS with regards to volumetric requirements.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. Immediate compensatory actions were instituted whereby an administrative basin level of 97 percent will be maintained whenever Technical Specification 3.7.5 action statements c, e, f, g, or h require 82 percent UHS level. This action was accomplished through the issuance of a Daily Order on 10/18/96, and associated procedure revisions.
2. Silt has been removed from the UHS and RSH intake structures.
3. Acceptance criteria for surveillance OBVS SX-5 has been revised to account for volumetric requirements, and hydraulic gradient and intake channel water depth with regards to supplying adequate flow to the SX makeup pumps.
4. Engineering is relying less on outside engineering, and performing more in-house.
5. A Technical Specification (TS) Change Package for Byron TS 3/4.7.5, "Ultimate Heat Sink", and associated Bases was submitted to the Office of Nuclear Reactor Regulation (NRR) on May 6, 1997.

The proposed TS changes revise the following Limiting Conditions for Operation (LCOs): the minimum water level in each Essential Service Water (SX) cooling tower basin, the maximum SX pump discharge temperature and the number of fans supporting heat removal.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

1. Re-performed the UHS calculations, and will incorporate results of the re-calculations into appropriate surveillance and procedures. NTS item# 454-201-96 998-01.1 tracks this action.
2. Based on the issues found while reviewing the SX related surveillance procedures, a review of all safety related non-technical specification surveillance procedures will be performed to ensure issues of quality, content and meaningfulness of acceptance criteria, connection with operability requirements, and notification of Shift Manager are addressed. NTS item# 454-200-96-0058-04 tracks this action.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on 05/06/97 when the Technical Specification Change was submitted.

ATTACHMENT II

VIOLATION ASSESSED A CIVIL PENALTY

10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action", requires, in part, that measures shall be established to assure that conditions adverse to quality, such as deficiencies, deviations, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

Contrary to the above, prompt corrective action was not taken on July 26, 1993, when a significant condition adverse to quality was identified when a diver recorded more than 14 areas where silt levels exceeded surveillance procedure OBVS SX-5 acceptance criteria in the essential service water cooling tower basin, the river screen house pump sumps, and the river screen house intake and forebay area. The silt buildup in the essential service water cooling tower basin changed the volume of water as analyzed in the final safety analysis report and therefore could change the consequences of the design-basis accident bounded in the updated safety analysis report. The cause of the silting condition was not determined and corrective actions inappropriately consisted of the diver "distributing" the silt to levels that met the surveillance acceptance criteria.

Contrary to the above, prompt corrective action has not been taken since July 26, 1993, to repair significant conditions adverse to quality for several portions of the essential service water cooling tower trash rack grating that had fallen away from the upper lateral supports, or were lying in the bottom of the essential service water cooling tower basins, or were leaning against the basin support columns. The safety function of the trash rack grating is to ensure that large objects do not enter the suction lines for the essential service water pumps.

This is a Severity Level III violation (Supplement I).
Civil Penalty - \$50,000.

REASON FOR THE VIOLATION

1. There was a misunderstanding at Byron Station that operability is not typically affected by Non-Technical Specification surveillance. The engineer was performing the surveillance based on past practice which dictated correcting the failure before the surveillance was completed. This practice had not been questioned by management from the initial surveillance execution. The expectations for Non-Technical Specification surveillance performance were not as clear as expectations for Technical Specification surveillance performance. Non-Technical Specification surveillance were not handled with the same rigor as Technical Specification surveillance. There were confusing expectations for dealing with failures of these surveillance. This was caused by a lack of management direction and conflicting program requirements.

2. A lack of design basis knowledge resulted in failure to recognize the impact of degraded trash racks on the operability of the system.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. Silt and debris were removed from the SXCT.
2. Inspected and removed silt from the RSH.
3. A letter was issued clarifying management expectations regarding Non-Technical Specification surveillance with respect to: scheduling, tracking, performing, and reporting failures.
4. Department Heads discussed management expectations regarding Non-Technical Specification surveillance at department tailgates.
5. Station Predefine Coordinator discussed management expectations regarding Non-Technical Specification surveillance with departmental Predefine coordinators.
6. Repaired trash racks and trash rack bolting.
7. Enhanced the Action Request (AR) screening.
8. Reviewed all open and canceled work requests for all systems, evaluating for low priority status and backlog.
9. The Conduct of Testing Manual which defines the requirements and expectations for system engineers when performing plant tests and surveillance was revised to ensure issues of quality, content and meaningfulness of acceptance criteria, connection with operability requirements, and notification of Shift Manager are addressed.
10. OBVS SX-5 was revised to make the area around the SXCT a Foreign Material Exclusion Area (FMEA) if the SXCT trash racks have been found degraded.
11. System Engineer Handbook was revised to include guidelines and management expectations on addressing low priority or old work requests.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

1. Include a discussion of management expectations regarding Non-Technical Specification surveillance in periodic training.
NTS item# 454-200-96-0058-18 tracks this action.
2. Perform a review of executed safety related Non-Technical Specification surveillance by Site Quality Verification (SQV) to ensure that managements expectations are being met. NTS item# 454-200-96-0058-56 tracks this action.

3. Revise SX Non-Technical Specification surveillance prior to the next execution to ensure they address potential operability impacts, and address immediate notification of supervisor and Shift Manager if the surveillance fails to meet any acceptance criteria.
4. Based on the issues found while reviewing the SX related surveillance procedures, a review of all safety related non-technical specification surveillance procedures will be performed to ensure issues of quality, content and meaningfulness of acceptance criteria, connection with operability requirements, and notification of Shift Manager are addressed.
NTS item# 454-200-96-0058-04 tracks this action.
5. Revise the predefine program procedures to add direction as to the expected completion of both Technical Specification and Non-Technical Specification surveillance, and notifying the Shift Manager if it fails any acceptance criteria. NTS item# 454-200-96-0058-13 tracks this action.
6. Revise the procedure writers guide to ensure consistent guidance for developing all surveillance. NTS item# 454-200-96-0058-16 tracks this action.
7. A Division-wide work procedure (NOD-0A.40) is being implemented to address UFSAR/Design Basis conformance. NTS Item # 454-100-96-00903 tracks this action.
8. Develop training/guidance for retrieving design basis information.
TS item# 454-200-96-0058-15 tracks this action.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on 12/11/96 when the degraded trash racks had been repaired, and silt was removed from the EXCT and RSH.

ATTACHMENT III

VIOLATION NOT ASSESSED A CIVIL PENALTY

10 CFR 50, Appendix B, Criterion XI, "Test Control", requires, in part, that test procedures provide provisions for assuring that adequate test instrumentation is available and used.

Contrary to the above, on October 15, 1996, inadequate test instrumentation (i.e., a diver's boot and arm) was used to measure the silt levels in the essential service water cooling tower basins during the performance of procedure OBVS SX-5, "Inspection of River Screen House and Essential Service Water Cooling Tower", Revision 2, dated November 25, 1991.

This is a Severity Level IV violation (Supplement I).

REASON FOR THE VIOLATION

OBVS SX-5 is a Non-Technical Specification surveillance. As part of its as-found acceptance criteria, it requires measurements of the amount of silt in both the River Screen House and the SX Cooling Towers. The surveillance indicates testing equipment as: underwater still camera, underwater video camera, video recorder, monitor, depth sounder, or mechanical depth gauge.

Due to the level of silt suspended in the water, it is essentially impossible to operate any form of camera/video equipment. Visibility as noted by the diver is essentially zero which requires inspections to be performed by feel only. Therefore, it had been a previous practice to have a diver measure the silt depth using his boot, arm, or a rod as the measurement tool and reporting the results to the system engineer via a radio.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. A commercial-grade ruler was utilized for subsequent performance of this surveillance.
2. The inspection frequency for SX Cooling Tower and River Screen House intake structures have been adjusted to quarterly.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

1. As part of the review of safety related Non-Technical Specification surveillance procedures, the M&T will be verified to work under conditions encountered in the field. NTS item# 454-200-96-0058-04 tracks this action.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on 12/04/96 when a commercial-grade ruler was utilized for silt measurement.

ATTACHMENT IV

VIOLATION NOT ASSESSED A CIVIL PENALTY

10 CFR 50.71(e) requires, in part, that the final safety analysis report (FAR) be updated periodically to assure that the information in the FAR contained the latest material developed. The updated FAR shall be revised to include the effects of: all changes made in the facility or procedures as described in the FAR; all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question. Revisions must be submitted within 24 months of either July 22, 1980, or the date of issuance of the operating license, whichever is later, and shall bring the FAR up to date.

Contrary to the above, the licensee's first updated FAR submittal dated December 12, 1988, and subsequent periodic FAR submittal failed to include the latest material developed. Specifically, based on the licensee's safety evaluation in 1981, the service water cooling tower basins (as reflected in FAR Figures 9.2-25, 9.2-26, and 9.2-27) were changed to include the anti-vortex drainage duct. The necessary changes to the FAR figures were not included in the licensee's required updated FAR submittal.

This is a Severity Level IV violation (Supplement I).

REASON FOR THE VIOLATION

Originally, the SX basins were designed with a box-form trash rack directly over the SX suction piping. Its intention was to prevent trash from entering the SX pipes and to forestall the formation of severe vortexes at the outlet pipe. However, in operation, the box-form trash rack did not effectively prevent vortex formation nor provide adequate capacity as a trash rack. As a result, an alternate design was chosen. A closed end conduit duct (anti-vortex structure) with slotted holes in it to allow flow was proposed which would be surrounded by a trash rack that encompasses the entire width of the basin.

This was all completed prior to initial licensing. When the FAR Figures and Plant Drawings were updated, not all applicable drawings were included. The root cause of this discrepancy was pre-startup cognitive personnel error

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

1. Performed an Operability Assessment (96-047) to determine system operability.
2. DCR #970047 has been issued to revise drawings S-249, S-250, M-900, sheets 7, 8 and 9, and NCT-683-4H. DRP #7-068 has been issued to revise UFSAR figures 3.8-65, 66, 67, 68, 69, 70, 71, 72, and 73, 9.2-23, 25, 26, and 27. A new figure is being added showing the anti-vortex duct and trash racks. UFSAR section 9.2.5.2.1 is being revised to add the anti-vortex duct and trash racks to the description of the SXCT.

CORRECTIVE STEPS THAT WILL BE TAKEN TO AVOID FURTHER VIOLATION

1. None.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on 4/24/97 when the appropriate UFSAR Figures and Tables along with applicable station drawings were updated (DCR # 970047 and DRP # 7-068) to show correct design configuration of SX basins, particularly the anti-vortex box and trash rack structure.