

January 17, 2001

LTR: BYRON 2001-0011  
File: 3.03.800

United States Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Byron Station, Units 1 and 2  
Facility Operating License Nos. NPF-37 and NPF-66  
NRC Docket Nos. STN 50-454 and STN 50-455

Subject: Supplemental Information to Licensee Event Report (LER)  
454-99-002-00, "Design Package Fails to Classify Feedwater Vent Valves as  
Containment Isolation Valves and Results in Missed Technical Specification  
Surveillance," dated June 6, 1999

Attached is a supplemental report to LER 454-99-002-00 (i.e., 454-99-002-01), which contains revised information concerning the corrective actions to prevent recurrence. The original LER addressed missing Technical Specification (TS) 3.6.3, "Containment Isolation Valves," Surveillance Requirement (SR) 3.6.3.3 for several vent valves installed on Main Feedwater (FW) containment penetration piping segments during the Byron Station Unit 1 Steam Generator Replacement Project (SGRP). The SR requires these particular vent valves be verified closed every 31 days. These vent valves were not added to the procedure that satisfies this SR. The cause of the missed SR was determined to be unclear licensing basis documentation which allowed the design engineer to conclude that the vent valves installed as part of the SGRP did not have to be classified and tested as Containment Isolation Valves (CIVs).

The LER corrective actions to prevent recurrence involved, in part, revising licensing basis documents to clearly indicate test, vent, and drain (TVD) valves on containment penetration piping segments are considered CIVs. During the course of performing this corrective action, we have modified our conclusion regarding the licensing basis of TVD valves. In our existing licensing basis, the TVD valves are treated as a type of containment barrier distinct from the main in-line process CIVs.

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We also recognize that the basis of the 31-day position verification surveillance requirement encompasses more than just CIVs but also other containment barriers, such as blind flanges. Consequently, we have concluded the TVD valves are a type of containment barrier and subject to TS position verification surveillance, but are not considered CIVs. Consequently, we intend to review and revise, as appropriate, the licensing basis documentation to ensure it clearly indicates the licensing basis of TVD valves on containment penetration piping segments. This licensing basis will reflect that TVD valves on containment penetration piping segments are considered containment barriers and not CIVs; however, they are still subject to the TS position verification surveillance.

Please note that only the corrective actions section of the LER has been revised to reflect the revision to the previous corrective action. Should you have any questions concerning this letter, please contact Ms. P. Reister, Regulatory Assurance Manager, at (815) 234-5441, extension 2280.

Respectfully,



William Levis  
Site Vice President  
Byron Station

WL/JL/dpk

Attachment: LER 454-99-002-01

cc: Regional Administrator – NRC Region III  
NRC Senior Resident Inspector – Byron Station

**LICENSEE EVENT REPORT (LER)**

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the information and Records Management Branch (t-6 f33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office Of Management And Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**FACILITY NAME (1)** Byron Station, Unit 1 **DOCKET NUMBER (2)** STN 05000454 **PAGE (3)** 1 of 6

**TITLE (4)** DESIGN PACKAGE FAILS TO CLASSIFY FEEDWATER VENT VALVES AS CONTAINMENT ISOLATION VALVES AND RESULTS IN MISSED TECHNICAL SPECIFICATION SURVEILLANCE

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
05	09	1999	1999	002	01	01	16	2001	Byron, Unit 2	STN 05000455
									FACILITY NAME	DOCKET NUMBER

**OPERATING MODE (9)** MODE 1 **THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:** (Check one or more) (11)  
**POWER LEVEL (10)** 100

<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	73.71(b)
<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2203(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	73.71(c)
<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	20.2203(a)(4)	<input type="checkbox"/>	50.73(a)(2)(v)	<input type="checkbox"/>	OTHER
<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(vii)		(Specify in Abstract below or in NRC Form 366A)
<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)		
<input type="checkbox"/>	20.2203(a)(2)(iv)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)		
<input type="checkbox"/>	20.2203(a)(2)(v)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(x)		

**LICENSEE CONTACT FOR THIS LER (12)**  
**NAME** Penny Reister, Regulatory Assurance Manager **TELEPHONE NUMBER (Include Area Code)** (815) 234-5441 X2280

**COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
N/A									

**SUPPLEMENTAL REPORT EXPECTED (14)** YES (If yes, complete EXPECTED SUBMISSION DATE) X NO **EXPECTED SUBMISSION DATE (15)** MONTH DAY YEAR

**ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)**  
On 5/9/99, at 0115 hours, with Byron Station Unit 1 operating at 100% power, Operations personnel performed Byron Operating Surveillance 6.3.3-1, "Primary Containment Integrity Verification of Outside Containment Isolation Devices." This monthly surveillance verifies each containment isolation manual valve, remote manual valve and blind flange, located outside containment that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. While performing the surveillance, Operations personnel questioned the absence of four high point vent valves from the surveillance procedure since other valves similar in design and function were included in the surveillance procedure. The four valves were immediately verified closed with pipe caps installed. The four high point vent valves were added to the Feedwater System in Byron Station Unit 1 Refueling Outage 08 that ended 03/09/98. On 05/10/99, Engineering personnel reviewed the design for the four valves in question and determined they met the criteria for containment isolation valves and should have been included in the surveillance procedure. Failure to verify the four valves closed every month was determined to be a condition prohibited by the Technical Specifications and reportable in accordance with 10 CFR 50.73(a)(2)(I)(B). The cause of the event was determined to be an error in the design package. The design package did not identify the vent valves as containment isolation valves. It was determined that there was no safety significance to the event. Corrective actions include changing the monthly surveillance procedure for containment isolation valves to include these four manual vent valves. A recurring events search found no events where previous corrective actions should have precluded this event.

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

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the information and Records Management Branch (t-6 f33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office Of Management And Budget, Washington, DC 20503. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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

**A. Plant Conditions Prior to Event:**

Event Date/Time: -May 9, 1999 / 1315 hours

Unit 1 - Mode 1    Reactor Power - 100%    RCS [AB] Temperature/Pressure NOT/NOP  
 Unit 2 - Mode 1    Reactor Power - 100%    RCS [AB] Temperature/Pressure NOT/NOP

**B. Description of Event:**

Byron Station Unit 1 replaced the four Steam Generators during the eighth refueling outage (i.e., B1R08) that ended on March 9, 1998. One modification associated with the replacement of the Steam Generators was the addition of four manual high point vent valves (i.e., 1FW 118A/B/C/D) to the Auxiliary Feedwater [BA]/Feedwater [SJ] tempering line piping outside of containment in the Main Steam Isolation Valve (MSIV) rooms. The function of these valves is to vent a high point in the piping that resulted from the new tie-in of Auxiliary Feedwater (AFW) to the Main Feedwater line. The four valves were designed for use during outages for filling and venting the feedwater system.

During the design phase of this portion of the modification, questions were raised relative to whether the additional vent valves should be considered containment isolation valves. Review of design information, including Technical Specifications and the Updated Final Safety Analysis Report (UFSAR) incorrectly concluded that these valves were not containment isolation valves.

Near the conclusion of B1R08, the four manual high point vent valves were verified closed with Byron Operating Procedure (BOP) Main Feedwater System Valve Lineup (FW-M1) prior to Byron Station Unit 1 entering Mode 4 at 0545 hours on 02/27/98.

Limiting Condition for Operation (LCO) 3.6.3, "Containment Isolation Valves," requires containment isolation valves to be operable during Modes 1, 2, 3, and 4. Therefore, these manual vent valves were required to be operable and closed from 02/27/98 at 0545 hours when Byron Station Unit 1 entered Mode 4, until 2237 hours on 03/28/99 when Byron Station Unit 1 entered Mode 5 for refueling outage number 9 (B1R09).

Near the conclusion of B1R09, following filling and venting of the feedwater system, the four manual high point vent valves (i.e., 1FW 118A/B/C/D) were again verified closed with procedure BOP FW-M1 prior to Byron Station Unit 1 entering Mode 4 at 0727 hours on 04/21/99.

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**B. Description of Event (continued):**

On 05/09/99, with Byron Station Unit 1 in Mode 1 at 100% power, Operations personnel performed Byron Operating Surveillance (BOSR) 6.3.3-1, "Primary Containment Integrity Verification of Outside Containment Isolation Devices." This monthly Technical Specification surveillance procedure verifies each containment isolation manual valve, remote manual valve and blind flange, located outside containment that is not locked, sealed, or otherwise secured and is required to be closed during accident conditions, is closed. While performing the surveillance, Operations personnel questioned the absence of valves 1FW 118A/B/C/D from the surveillance procedure since other valves similar in design and function (i.e., 1FW 029A/B/C/D) were included in the surveillance procedure. The four valves were immediately verified closed with pipe caps installed. A Corrective Action Program's Problem Identification Form (PIF) was generated by Operations personnel requesting an evaluation and resolution to the apparent discrepancy.

It should be noted that prior to implementation of Improved Technical Specifications (ITS) on 02/05/99, the applicable Surveillance Requirement 4.6.1.1 was slightly different. The requirement was for each penetration not capable of being closed by an operable automatic CIV and required to be closed during accident conditions, the penetration was to be verified closed by valves, blind flanges, or deactivated automatic valves secured in their position every 31 days. There was no allowance for eliminating the performance of the surveillance for valves or devices that are locked, sealed, or otherwise secured.

On 05/10/99, Engineering personnel reviewed the design for the four high point vent valves (i.e., 1FW 118A/B/C/D.) Engineering personnel determined the valves met the 10 CFR 50, Appendix A, General Design Criterion (GDC) 57 for closed system isolation valves and should have been included in the surveillance procedure. As a component of review, Engineering personnel reviewed a previous event at Byron Station documented in Licensee Event Report (LER) 97-015. In that document, Byron Station had endorsed a NRC position that test, vent, and drain (TVD) valves associated with lines that penetrate containment that meet GDC are to be considered containment isolation valves and subject to the 31 day Surveillance Requirement. In 1995, Byron Station had incorrectly interpreted the regulations governing TVDs and had removed TVDs from the 31 day Surveillance Requirement. The corrective actions for LER 97-015 focused on correcting the error made in 1995 by returning the TVDs to the 31-day surveillance procedure. No corrective actions were generated to document the reversal of the station position in design documents since the station was returning to the original position. The information regarding this 1997 LER and NRC position relative to TVD valves was not a requirement to be reviewed by the modification design organization during the design phase of the Steam Generator Replacement modification.

**LICENSEE EVENT REPORT (LER)**  
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**B. Description of Event (continued):**

Failure to verify the four valves closed every month, from 02/27/98 to 03/28/99, when the unit was in the Modes of Applicability for LCO 3.6.3, was determined to be a condition prohibited by the Technical Specifications and reportable in accordance with 10 CFR 50.73 (a) (2) (i) (B).

**C. Cause of Event:**

The cause of the event was failure of the design engineer to properly interpret design information relative to the containment isolation function and to identify the high point vent valves as containment isolation valves. Although the station had documented a position in LER 97-015 clarifying the relationship between TVD valves and the containment isolation function, that information was not promulgated into any document required to be used in the design process. While the issue of containment isolation requirements was raised during the design and installation of the subject vent valves, the design process, and subsequent reviews, including the 10 CFR 50.59 Safety Evaluation did not properly conclude that these valves were containment isolation valves.

**D. Safety Analysis:**

This event had no impact on the health and safety of the public. The four manual vent valves (i.e., 1FW118A/B/C/D) form a portion of the containment isolation boundary for a closed system (i.e., feedwater system) and are required to perform a containment isolation function in the event Steam Generator tubes fail. During the timeframe that the valves were not verified closed, Byron Station Unit 1 had no indications of a Steam Generator tube failure. In the unlikely event the new Steam Generator tubes had experienced a failure, reasonable assurance is provided the valves would have provided a containment pressure boundary. This assurance is based on the knowledge that the valves were verified closed on 01/26/98, prior to Byron Station Unit 1 entering Mode 4 following B1R08 and that no evidence exists to suggest the valves were manipulated until after Byron Station Unit 1 entered Mode 5 (i.e., exited the Mode of Applicability of LCO 3.6.3) at 2237 hours on 03/28/99. In the unlikely event the high point vent valves had been opened, both steam and condensate would have been identified in the MSIV rooms during operator rounds. Neither steam nor condensate was identified in the MSIV rooms during this time period from the valves.

NRC FORM 366A (6-1998)		U.S. NUCLEAR REGULATORY COMMISSION		APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001		
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**E. Corrective Actions:**

A review of other recent modifications that added valves to the station was performed and found that the valves required to perform the containment isolation function were properly classified as CIVs.

A procedure change incorporating these four high point vent valves (i.e., 1FW 118A/B/C/D) has been made to surveillance procedure 1BOSR 6.3.3-1 which satisfies the 31 day CIV position verification of Surveillance Requirement (SR) 3.6.3.3.

The station will change the UFSAR and Technical Specification Bases to reflect the station position that TVD valves on lines that penetrate containment that meet GDC are containment isolation valves. As an interim actin, a memo has been submitted to the Design Engineering organization highlighting the issue of TVD valves and the containment isolation function.

The station will change the Electronic Work Control System database to reflect the station position that TVD valves on lines that penetrate containment that meet GDC are containment isolation valves.

During the course of performing the above corrective actions, we have modified our conclusion regarding the licensing basis of TVD valves. In our existing licensing basis, the TVD valves are treated as a type of containment barrier distinct from the main in-line process CIVs. We recognize that the basis of the Technical Specification (TS) 3.6.3, Containment Isolation Valve, 31-day position verification surveillance requirement encompasses more than just CIVs but also other containment barriers, such as blind flanges.

Consequently, we intend to review and revise, as appropriate, the licensing basis documentation to ensure it clearly indicates the licensing basis of TVD valves on containment penetration piping segments. This licensing basis will reflect that TVD valves on containment penetration piping segments are considered containment barriers and not CIVs; however, they are still subject to the 31 day TS position verification surveillance requirement.

**F. Previous Occurrences:**

Other than the event (i.e., LER 97-015) discussed above in Section B, "Description of Event," no other events misinterpreting design information relative to the containment isolation function were identified.

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**G. Component Failure Data:**

None