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

ComEd

November 21, 1997

LTR: BYRON 97-0276
FILE: 3.03.0800 (1.10.0101)

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 97-018; Docket No. 50-454.

Sincerely,

M Snow for

K. L. Kofron
Station Manager
Byron Nuclear Power Station

KLK/MS/js

Enclosure: Licensee Event Report No. 97-018

cc: A. B. Beach, NRC Region III Administrator
NRC Senior Resident Inspector
INPO Record Center
ComEd Distribution List

1/1

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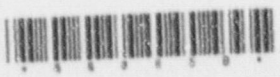

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 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.

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, UNIT 1	05000454	1 OF 5

TITLE (4)

Missed ECCS Venting Surveillance due to Ineffective Supervisory Methods

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	23	97	97	-- 018 --	00	11	21	97	Byron, Unit 2	05000455
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1
POWER LEVEL (10)	096

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)		50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	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)
David Young, SED Root Cause	815-234-5441 X3064

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

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

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

On October 23, 1997, during review of the Emergency Core Cooling System Monthly Venting Surveillance procedure and field walkdown, it was discovered that two Unit 1 vent valves were not included in the procedure. This resulted in entrance into Technical Specification 4.0.3.

Corrective actions following an event on May 22, 1997 (LER 97-009) were not effectively implemented due to failure to implement supervisory methods to control time pressure and distractions affecting the system engineers during performance of corrective actions.

Unit 1 and 2 Residual Heat Removal [BP] (RH), Chemical and Volume Control [CB] (CV), and Safety Injection (Low Head) [BP] (SI) piping isometrics were reviewed to ensure that no other vent valves existed that were not included in the venting procedure. A Temporary Procedure Change Request was initiated to add the vent valves to the surveillance procedure. The system was vented through the two vent valves, and no air was discovered at either location. This report was reviewed by the involved System Engineer and Supervisor for lessons-learned. A refresher of Human Error Reduction techniques for managing time pressure and work-place distractions shall be conducted with the System Engineering Department.

Plant and public safety was not affected by this event. The SI system was fully capable of performing its design function, including mitigation of design basis accidents. This event is reportable per 10 CFR 50.73(a)(2)(i)(B).

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 10-23-97 / 1415

Unit 1 Mode - 1 - Power Operation Rx Power 96% RCS [AB] Temperature/Pressure NOT/NOP

Unit 2 Mode - 1 - Power Operation Rx Power 98% RCS [AB] Temperature/Pressure NOT/NOP

B. DESCRIPTION OF EVENT:

As recorded on Problem Identification Form (PIF) B1997-03727, and confirmed through document review and personnel interviews, the following sequence of events occurred:

An event involving the Emergency Core Cooling System (ECCS) Venting And Valve Alignment Monthly Surveillances (1BOS 5.2.b-1 and 2BOS 5.2.b-1) on May 22, 1997, resulted in LER 97-009, "Missed Technical Specification Surveillance." The May 1997 event was similar to the current event in that the same monthly venting procedure, 1BOS 5.2.b-1, did not include the venting of particular components, resulting in entrance into Technical Specification 4.0.3 for failure to perform a surveillance requirement within the allowed surveillance interval.

System Engineer 1 stated that starting on May 23, 1997, Unit 1 and Unit 2 P & IDs and isometric drawings were reviewed by several engineers, and field walkdowns were initiated to verify the isometrics were correct. This was to ensure that all possible (appropriate) vents would be included in a revision to the ECCS Venting And Valve Alignment Monthly Surveillance. Since the 1SI051 and 1SI052 valves matched the isometric, they were not identified as discrepant. Valves 1SI051 and 1SI052 were not identified as vent valves and were not included in the Temporary Procedure Change Request initiated on June 13, 1997.

On October 23, 1997, during review of the Unit 1 ECCS Venting And Valve Alignment Monthly Surveillance (1BOS 5.2.b-1) and walkdown of the SI Cold Leg Injection piping, System Engineer 1 discovered that there were two vent valves that were not included in the 1BOS 5.2.b-1 procedure. An entry in the SI System Notebook on October 23, 1997, states that System Engineer 1 discovered that the 1SI051 and 1SI052 vent valves were not included in the monthly venting procedure. System Engineer 1 then walked down Unit 1 and 2 Residual Heat Removal [BP] (RH), Chemical and Volume Control [CB] (CV), and Safety Injection (Low Head) [BP] (SI) piping to ensure that no other vent valves existed that were not included in the venting procedure. The presence of System Engineer 1 in the Auxiliary Building for an appropriate duration (approximately five hours) was verified via Security Door Card Reader Transaction history.

Entries in the RH, CV, and SI System Notebooks on October 24, 1997, corroborate that system engineers 2 and 3 performed independent walkdowns of Unit 1 and Unit 2 RH, CV, and SI piping and verified that no vent valves in addition to 1SI051 and 1SI052 were excluded from the vent procedure. The presence of System Engineers 2 and 3 in the Auxiliary Building for an appropriate duration (approximately eight hours total) was also verified. The procedures were also independently reviewed.

This event is reportable per 10CFR50.73(a)(2)(i)(B), Operation Prohibited by Technical Specifications.

FACILITY NAME (1)	DOCKET	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
BYRON NUCLEAR POWER STATION, UNIT 1	05000454	97	-- 018 --	00	3 OF 5

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

C. CAUSE OF EVENT:

The first failed opportunity to include valves 1SI051 and 1SI052 in the 1BOS 5.2.b-1 procedure was when it was initially approved for use in 1984. The cause of the May 1997 (LER 97-009) event was attributed to deficient managerial methods which allowed the approval of 1BOS 5.2.b-1 and 2BOS 5.2.b-1 without adequate critique or technical review in 1984. The current event shares this common cause, however the root cause of the current event involves an ineffective corrective action following the May event. This event was attributed to a management deficiency. The supervisor failed to control the time pressure perceived by the system engineers, and failed to control the on-the-job distractions faced by the system engineers during the performance of corrective actions following the May event.

It is recognized that, had the May 1997 drawing reviews and field walkdowns been conducted in the same organized and systematic manner as the October 1997 reviews and walkdowns, the current LER would not have transpired. In May, the system drawings were reviewed and field walkdowns were initiated to identify and resolve drawing discrepancies. The walkdowns received no secondary review or verification. The May personnel performance was influenced by work-place distractions and a self-imposed time pressure.

During interviews, the ECCS System Engineer (Primary Group) and the Primary Systems Engineering Group Supervisor made independent statements referring to time pressure and distractions as the reason for the incomplete corrective action following the May 22, 1997 event. The recovery from the May 22, 1997 event (LER 97-009) involved no documentation other than system note book entries and the Temporary Procedure Change Request, therefore personnel statements were a primary basis for the cause determination. Personnel statements indicated that the corrective action of reviewing drawings and performing field walkdowns was affected by a self-imposed time constraint, and by work-place distractions. Though the May event recovery actions received senior management attention and direction, it has been determined that no time pressure was implied, and that any time pressure experienced by the system engineers was self-imposed. Distractions included formal and informal requests for information, a Containment Spray Operability Issue, Unit 1 shutdown on May 31, and an Emergency Technical Specification approval.

D. SAFETY ANALYSIS:

Operating surveillance 1BOS 5.2.b-1 was temporarily revised, and the system was vented through vent valves 1SI051 & 1SI052. No air was discovered at either location.

The Unit 2 SI piping has been vented monthly through vent valve 2SI052, with no indications of significant air accumulation. Unit 2 does not have a vent valve installed in the location that would be considered equivalent to the 1SI051 vent valve. The piping configuration for Unit 2 is similar to the piping configuration for Unit 1. Additionally, the 1SI087 vent valve, located on a local high point upstream of the 1SI051 and 1SI052 vent valves, has also been vented on a monthly basis with no indications of significant air accumulation.

These facts provide technical justification to conclude that the safety significance of this event is minimal. From a risk perspective, the surveillance issue did not increase the probability of an initiating accident that would require the SI system to mitigate the accident's consequences.

D. SAFETY ANALYSIS (cont.)

In addition, ComEd has determined that there was minimal impact on the functional capability of the SI system to perform its intended function of cooling the reactor core and providing shutdown capability following initiation of certain accidents.

ComEd has evaluated the piping configuration of the discharge piping of the ECCS subsystems and submitted the results to NRC staff in a letter dated March 12, 1990, in support of Amendments 47 & 36 to the Operating Licenses for Byron and Braidwood, respectively. A specific engineering evaluation of both a voided 2-inch and 8-inch RH line was performed. This evaluation concluded that the piping could withstand the dynamic loads caused by the maximum credible air void. Due to the higher pressure rating and smaller size of the SI and CV discharge piping, the evaluation is considered bounding for the ECCS systems.

ComEd has determined that the SI system was fully capable of performing its intended design function, including mitigation of design basis accidents.

E. CORRECTIVE ACTIONS:

Immediate Actions:

(1) Temporary Procedure Change Request Form 97-1-191 was initiated on October 23, 1997 to add valves 1SI051 and 1SI052 to the surveillance 1BOS 5.2.b-1. A permanent procedure change was also submitted.

(2) The system was vented through vent valves 1SI051 and 1SI052. No air was discovered at either location.

Corrective Actions:

(1) On October 23, 1997 the Unit 1 and Unit 2 ECCS piping was walked down by a System Engineer to verify vent configuration. It was verified that Unit 2 was properly vented per the as-built configuration and that Unit 1 valves 1SI051 and 1SI052 required venting and inclusion in the ECCS Venting Procedure in accordance with Technical Specification 4.5.2, ECCS Subsystems. On October 24, 1997, these conclusions were independently validated by two other System Engineers.

Corrective Actions to Prevent Recurrence:

(1) This report was reviewed and discussed with the involved System Engineer and the Primary Systems Group Supervisor to ensure that future performance could benefit from the Lessons Learned from the event.

(2) The Primary Systems Group Supervisor and the System Engineer completed a Human Error Reduction Training course on methods to control time pressure and a distractive environment, prior to the May event. A refresher session to review error prevention techniques for time pressure and work-place distractions shall be conducted with the System Engineering Department.
(NTS #454-180-97-SCAQ00018-01)

F. RECURRING EVENTS SEARCH AND ANALYSIS:

Data base searches were performed for similar Byron Station events. The Byron Regulatory Assurance (RABY) and the Institute of Nuclear Power Operations (INPO) data bases were searched. Keywords used were: ECCS VENT* and TECHNICAL SPECIFICATION*. The following event was most similar to the current event.

Byron Station Unit 1 Licensee Event Report (LER 97-009), "Missed Technical Specification Surveillance." (also Braidwood Unit 1 LER 99-006, "Tech Spec entry in 3.0.3 and Unit 1 Cooldown due to ECCS Venting Issue"). On May 22, 1997, Byron Station determined (and notified Braidwood) that the surveillance procedure for ensuring emergency core cooling system (ECCS) pumps were properly vented did not address venting the charging/high head safety injection pumps and their common discharge. The Byron and Braidwood stations determined that the event was caused by deficient managerial methods which allowed the approval of the common surveillance procedure without adequate technical review. This event is relevant to the current event in that the corrective actions should have identified the two vent valves which prompted the current LER.

G. COMPONENT FAILURE DATA:

No components failed.