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

ComEd

April 3, 1998

LTR: BYRON 98-0109
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(b)(2)(ii).

This report is number 98-008; Docket No. 50-454.

Sincerely,

K. L. Kofron
Station Manager
Byron Nuclear Power Station

KLK/MS/js

Enclosure: Licensee Event Report No. 98-008

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

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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)

Manual Reactor Trip due to Loss of Communication During Rod Drop Testing Caused by Procedure Deficiency

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
03	05	98	98	-- 008 --	00	04	03	98	None	05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	2
POWER LEVEL (10)	000

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

	20.2201(b)		20.2203(a)(2)(v)		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)	X	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, Root Cause Analyst	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
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		07	15	99

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

During performance of a Manual Rod Drop Time test, a manual trip was initiated in response to a loss of communication on sound powered headsets between the Main Control Room (MCR) and in-plant test personnel. The reactor trip was the expected response to the loss of communication as discussed in a pre-test brief.

The root cause was indeterminate since troubleshooting by Electrical Maintenance was not initiated on the headsets and cables immediately following the event. The apparent root cause is a test procedure deficiency. The installation of a voice amplifier on the MCR test participant's headset restored communication. The use of the voice amplifier by the MCR test participant either from the start of the test or immediately following the loss of communication (before the trip) may have prevented the reactor trip. The test procedure shall be revised to require appropriate use of voice amplifiers. Also, a maintenance request has been initiated to perform functional testing of the affected portions of the sound powered system including headsets and cables to validate the root cause.

All systems functioned as required and there were no unusual or misunderstood conditions associated with the manual trip. The safety of the plant and the public was not affected or challenged by this event. The event involved a loss of (sound powered head set) communication during performance of a rod drop test during mode 3 (Hot Standby). All systems functioned as required and there were no unusual or misunderstood conditions associated with the manual trip. This event is reportable under 10 CFR 50.72(b)(2)(ii).

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 03-05-98 / 2340

Unit 1 Mode 3 - Hot Standby Rx Power 00.0% RCS [AB] Temperature/Pressure NOT/ NOP

B. DESCRIPTION OF EVENT:

There were no systems or components inoperable prior to the event which contributed to the event.

As recorded on Problem Identification Form (PIF) B1998-01071, and confirmed through document review and personnel interviews, the following sequence of events occurred:

In preparation for the performance of test procedure 1BVS 1.3.4-1b revision 12, "Manual Rod Drop Time," a Heightened Level of Awareness (HLA) briefing was conducted on March 5, 1998 at 2230. The HLA Technical Briefing was properly attended and conducted, and documented in accordance with administrative procedure BAP 100-21 revision 1, "Conduct of Heightened Level of Awareness Activities and High Impact Activities." Sound Powered Headsets were required to be used during the drop test to avoid radio-interference with sensitive electrical instruments in proximity of the test personnel who were located in the Main Control Room (MCR), the Electrical Penetration Area, inside Containment (Digital Rod Position Indication [AA](DRPI) Data Cabinets), and the Rod Drive Room. The possibility of loss of communication while using the sound powered headsets was recognized and was discussed during the HLA briefing. It was stated during the briefing that in the event of a loss of communication during the test, the Unit Nuclear Station Operator (NSO) should take the conservative action of opening the reactor trip breakers.

The Shift Manager (SM) Log entry at 2326 states, "Entered special test exception 3.10.5 for Rod Drop Testing per 1BVS 1.3.4-1b." This is a prerequisite in the test procedure and is a Technical Specification physics testing exemption.

Following the procedure step 1.5 of opening both 50 amp breakers in Rod Position Indication 120 VAC Distribution Panel (1PI03J), the SM Log entry at 2340 states, "During performance of Rod Drop Testing with control bank B at 231 steps and all other rods at bottom, received Data 'A' and Data 'B' Failures on Digital Rod Position Indication (DRPI). The SED test participant in the MCR attempted to verify via sound powered headset that the DRPI indication was due to breakers opened per the surveillance. Could not communicate with SED testers in the plant so reactor trip breakers were opened as agreed upon during the HLA Briefing."

The SM Log entry at 2342 states, "Re-energized DRPI to verify all rods at bottom." At 0017 (March 6, 1998), the Reactor Trip Breakers were reclosed after reestablishing and verifying communications between the SED participant in the Main Control Room (MCR) and the in-plant test personnel.

An SM Log entry at 0106 and the Event Notification Worksheet state that the NSO's action of manually initiating a reactor trip was motivated by the MCR test participant's loss of verbal communication with testing personnel, and that the NSO's action was discussed as part of the pretest brief (HLA) and was identified during the brief as the proper action.

B. DESCRIPTION OF EVENT (cont.)

All systems functioned as required and there were no unusual or misunderstood conditions associated with the manual trip.

This event is reportable under 10 CFR 50.72(b)(2)(ii) for any event or condition that results in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS).

C. CAUSE OF EVENT:

The NSO's manual actuation of the RPS was directly prompted by the loss of communication between the SED participant in the MCR and the in-plant test personnel. The reactor trip was the expected response to the loss of communication.

The EA opened both 50 amp breakers in the Rod Position Indication 120 VAC Distribution Panel as specified in test procedure 1BVS 1.3.4-1b, "Manual Rod Drop Time." Following the opening of the breakers, the DRPI indication in the MCR was not immediately recognized by the NSO as an expected response. Several attendees of the HLA briefing stated that the DRPI response to opening of the breakers was not discussed in the HLA briefing. The NSO was not properly briefed on the expected DRPI response.

Though the NSO initially did not recognize that the DRPI response was normal and expected, the NSO recalled a prior experience which heightened his belief that it was normal and expected. The NSO primarily intended to verify this belief with the System Engineering Department (SED) in-plant test participant, and also recognized the course of action to request that the EA re-close the 50 amp breakers so that the rod position could be verified.

The MCR test participant was attempting to contact the SED in-plant test participant and/or the EA when the loss of communication was realized and the manual trip was initiated by the NSO.

Though the MCR test participant could hear/understand the test personnel, the test personnel could not hear/understand the MCR test participant. Ultimately, the addition of an amplifier to the MCR test participant's head set restored communication.

The head sets were tested as required by a prerequisite in the rod drop test procedure. Personnel statements indicate that the head sets were properly tested and were functional prior to the Rod Drop test.

Though indeterminate due to a lack of troubleshooting of the communication equipment, the most probable root cause is a test procedure deficiency in that the use of the voice amplifier was not required. The use of the voice amplifier by the MCR test participant either from the start of the test or immediately following the loss of communication (before the trip) would have restored communication and prevented the reactor trip. A supplemental report (tracked by Nuclear Tracking System (NTS) #454-180-98-SCAQ00008S1) will be submitted to validate the cause of the loss of communication, based on results of a functional check by the Electrical Maintenance Department.

Under the circumstances, the RPS actuation is not considered unnecessary due to the NSO's degree of uncertainty regarding the rod positions at the time of the loss of communication.

Document reviews, Event and Causal Factor Charting, and Personnel Interviews were conducted during this investigation.

D. SAFETY ANALYSIS:

The safety of the plant and the public was not affected or challenged by this event. The event involved a loss of (sound powered head set) communication during performance of a rod drop test during mode 3 (Hot Standby). All systems functioned as required and there were no unusual or misunderstood conditions associated with the manual trip. During the performance of the test, only one bank of control rods were withdrawn at a time per special test exception. All rods inserted to full in position.

E. CORRECTIVE ACTIONS:

Immediate actions:

- A manual reactor trip was initiated by the NSO. The EA was directed to reenergize DRPI so that rod position could be verified. No rods were stuck or misaligned. All rods were verified to be on bottom.

Corrective actions:

- Communication between NSO (through the SED test participant in the MCR) and test personnel in plant was restored by adding an amplifier to the MCR test participant's sound powered head set. No communication problems recurred during the performance of the rod drop test procedure. The rod drop testing was satisfactorily completed at 0326 March 6, 1998.

- Electrical Maintenance (EM) is to perform functional check and inspection of OPs and SED sound powered headsets/cables/(amplifiers). Also, EMD is to perform a functional check of the sound powered phone communication system between the MCR, Electrical Penetration Area, at DRPI Data Cabinets, and the Rod Drive Room. The intent of these checks is to determine if bad solder joints, an intermittent ground, short or open exists which could have caused a sound powered phone failure during Unit One DRPI testing. Tracked by Nuclear Tracking System (NTS) #454-180-98-SCAQ00008-01.

Corrective actions to prevent recurrence:

- Procedure 1BVS 1.3.4-1b, Revision 12 "Manual Rod Drop Time" shall be revised to (1) include a requirement that a voice amplifier be used by the MCR test participant during the conduct of the test, and (2) add a note stating the expected response of DRPI when 'Main Body' step 1.5 is performed. NTS item #454-180-98-SCAQ00008-02

- Procedure 2BVS 1.3.4-1b, Revision 12 "Manual Rod Drop Time" shall be revised to (1) include a requirement that a voice amplifier be used by the MCR test participant during the conduct of the test, and (2) add a note stating the expected response of DRPI when 'Main Body' step 1.5 is performed. NTS item #454-180-98-SCAQ00008-03

F. RECURRING EVENTS SEARCH AND ANALYSIS:

This event is not a recurring event. No previous similar Byron LERs were identified by searches of the All Regulatory Assurance (ALRA) and the Institute of Nuclear Power Operations (INPO) data bases.

G. COMPONENT FAILURE DATA:

None.