LICENSEE EVENT REPORT (LER)

Facility Name (1)	Docket Number (2)	Page (3)
Byron, Unit 2	0 5 0 0 0 4 5 5	1 of 0 3

Title (4) REACTOR TRIP DUE TO 2 OUT OF 4 LOGIC ON OVER TEMPERATURE CHANNEL - 1 CHANNEL OUT FOR REQUIRED REACTIVITY COMPUTER, 1 CHANNEL OUT DUE TO FAILED REACTOR COOLANT RESISTANCE TEMPERATURE DETECTOR WITH UNKNOWN CAUSE.

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 Names	Docket Number(s)
0 1	1 5	8 7	8 7	--- 0 0 1	--- 0 0	0 2	1 3	8 7	Byron Unit 1	0 5 0 0 0 4 5 4 0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)			
	2	___ 20.402(b)	___ 20.405(c)	X 50.73(a)(2)(iv)	___ 73.71(b)
POWER LEVEL (10)	0 0 0	___ 20.405(a)(1)(i)	___ 50.36(c)(1)	___ 50.73(a)(2)(v)	___ 73.71(c)
		___ 20.405(a)(1)(ii)	___ 50.36(c)(2)	___ 50.73(a)(2)(vii)	___ Other (Specify in Abstract below and in Text)
		___ 20.405(a)(1)(iii)	___ 50.73(a)(2)(i)	___ 50.73(a)(2)(viii)(A)	
		___ 20.405(a)(1)(iv)	___ 50.73(a)(2)(ii)	___ 50.73(a)(2)(viii)(B)	
		___ 20.405(a)(1)(v)	___ 50.73(a)(2)(iii)	___ 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
	AREA CODE
T. Schuster, Assistant Technical Staff Supervisor Ext 2244	8 1 5 2 3 4 - 5 4 4 1

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
X	A B	T I T	R 1 3 5	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		Expected Submission Date (15)	Month	Day	Year
X	Yes (If yes, complete EXPECTED SUBMISSION DATE)		0 6	3 0	8 7
___	NO				

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

At 2240 on January 15,1987 a Unit 2 Reactor Trip occurred due to a Reactor Coolant Resistance Temperature Detector (RTD) failure, concurrent with a previously tripped bistable required for a startup test procedure. Prior to the trip, an Initial Criticality/Low Power Physics Start-up test was in progress which required the Rector Coolant Loop D Over Temperature Delta Temperature OTΔT and Over Temperature Delta Temperature Turbine Runback Rod Withdrawal Stop bistables to be tripped. During performance of the test the a Loop C Narrow Range RTD failed low. The combination of the previously tripped Loop D OTΔT bistable and Loop C oTΔT bistable trip due to the RTD failure, satisfied a 2/4 Reactor Trip logic coincidence for OTΔT. Following the trip all systems responded as required. The event did not compromise plant and/or public safety as a more conservative plant condition resulted. The cause of the RTD failure is unknown, and it was replaced by an installed spare. Further investigations will take place on Unit 1 RTD failures and the results will be reported in a supplement to this report.

(1221M)

IE22
1/1

A. PLANT CONDITIONS PRIOR TO EVENT:

MODE 2 - Startup Rx Power 0% RCS [AB] Temperature/Pressure Normal Operating

B. DESCRIPTION OF EVENT:

At 2240 on January 15, 1987, while critical at 0% reactor power, Unit Two experienced a reactor trip [JG]. The primary system remained at normal operating temperature and pressure after the trip.

Prior to the trip, Initial Criticality/Low Power Physics Testing (procedure 2.32.83) was in progress. This procedure required the temporary installation of a Reactivity Computer for Core Physics Testing. In order to facilitate this the Nuclear Instrumentation System [IG] Power Range Channel N-44 had to be de-energized. Technical Specifications requires Loop D Over Temperature Delta Temperature ($OT\Delta T$) and Over Temperature Delta Temperature Turbine Runback Rod Withdrawal Stop bistables to be tripped if channel N-44 is out of service. Concurrent with these described test requirements, a Loop C Narrow Range Resistance Temperature Detector (RTD)[AB-T1T], 2TE-431B, failed low. This produced a spurious delta temperature above the $OT\Delta T$ setpoint. The combination of the test required $OT\Delta T$ Reactor Trip bistable and the $OT\Delta T$ Reactor Trip bistable of the failed RTD resulted in a 2/4 Reactor Trip logic coincidence for $OT\Delta T$ and the subsequent Reactor Trip.

All plant systems responded as required. No other equipment failures contributed to or resulted from the event. The Reactor Coolant Sytem was borated to the required shutdown margin after the trip. This event is reportable pursuant to 10CFR50.73 (a)(2)(iv).

C. CAUSE OF EVENT:

The intermediate cause of the trip was the Loop C cold leg temperature Narrow Range RTD failing to a low resistance. This resulted in a $OT\Delta T$ Reactor Trip bistable actuation in Loop C. A contributing factor to this event was the previously tripped Loop D $OT\Delta T$ Reactor Trip Bistable. The Loop D bistable was tripped to place it in a conservative state while one of its inputs (NIS Channel N-44) was de-energized. The root cause of the RTD failure is unknown. If a cause is determined as a result of efforts mentioned in the Corrective Action Section, it will be reported in a supplemental report.

An NPRDS search was conducted for similar RTD failures. The root cause for those events, which were similar, were typically indeterminate.

D. SAFETY ANALYSIS:

The plant and public safety was not compromised by the event. As a result of the instrument failure the reactor was shutdown as designed, thus placing the plant in a more conservative configuration. The safety consequences would have been the same had this event occurred under different initial conditions.

E. CORRECTIVE ACTIONS:

The failed RTD, 2TE-431B, was replaced by installed spare 2TE-430B. The instrument loop was then recalibrated and returned to service. Nuclear Work Request B40815 was issued to replace the failed RTD during the next outage of sufficient duration. No further corrective action is planned at this time.

Byron Unit 1 has experienced several similar failures. During its first refueling (Spring 1987), these failed RTD's will be removed and inspected in an effort to determine their cause of failure. Any corrective action determined by this inspection will be considered for application on Unit 2. The results will be reported in a supplement to this report. This activity is tracked by Action Item Record 6-87-37.

F. PREVIOUS OCCURRENCES:

RTD failures have occurred previously on Unit 1, however they did not cause a reportable occurrence.

G. COMPONENT FAILURE DATA:

a)

MANUFACTURER	NOMENCLATURE	MODEL NUMBER	MFG PART NUMBER
RDFS-140	Resistance Thermal Detector	21204	N/A

b) RESULTS OF NPRDS SEARCH:

An NPRDS search yielded 54 Reactor Coolant RTD failures. These events have been reviewed for any information that may have aided our investigation. No trends in failure causes were determined.

Commonwealth Edison
Byron Nuclear Station
4450 North German Church Road
Byron, Illinois 61010

February 13, 1987

LTR: BYRON 87-0194

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)(iv) which requires a 30 day written report.

This report is number 87-001-00; Docket No. 50-455.

Very truly yours,

R. E. Querio
Station Manager
Byron Nuclear Power Station

REQ/JL/bf

Enclosure: Licensee Event Report No. 87-001-00

cc: J. G. Keppler, NRC Region III Administrator
J. Hinds, NRC Resident Inspector
INPO Record Center
CECO Distribution List

IE22
1/1

#3/017