



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

October 3, 1990

Ltr: BYRON 90-0963


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).

This report is number 90-006; Docket No. 50-455.

Sincerely,

  
 R. Pleniewicz  
 Station Manager  
 Byron Nuclear Power Station

RP:mlm

Enclosure: Licensee Event Report No. 90-006

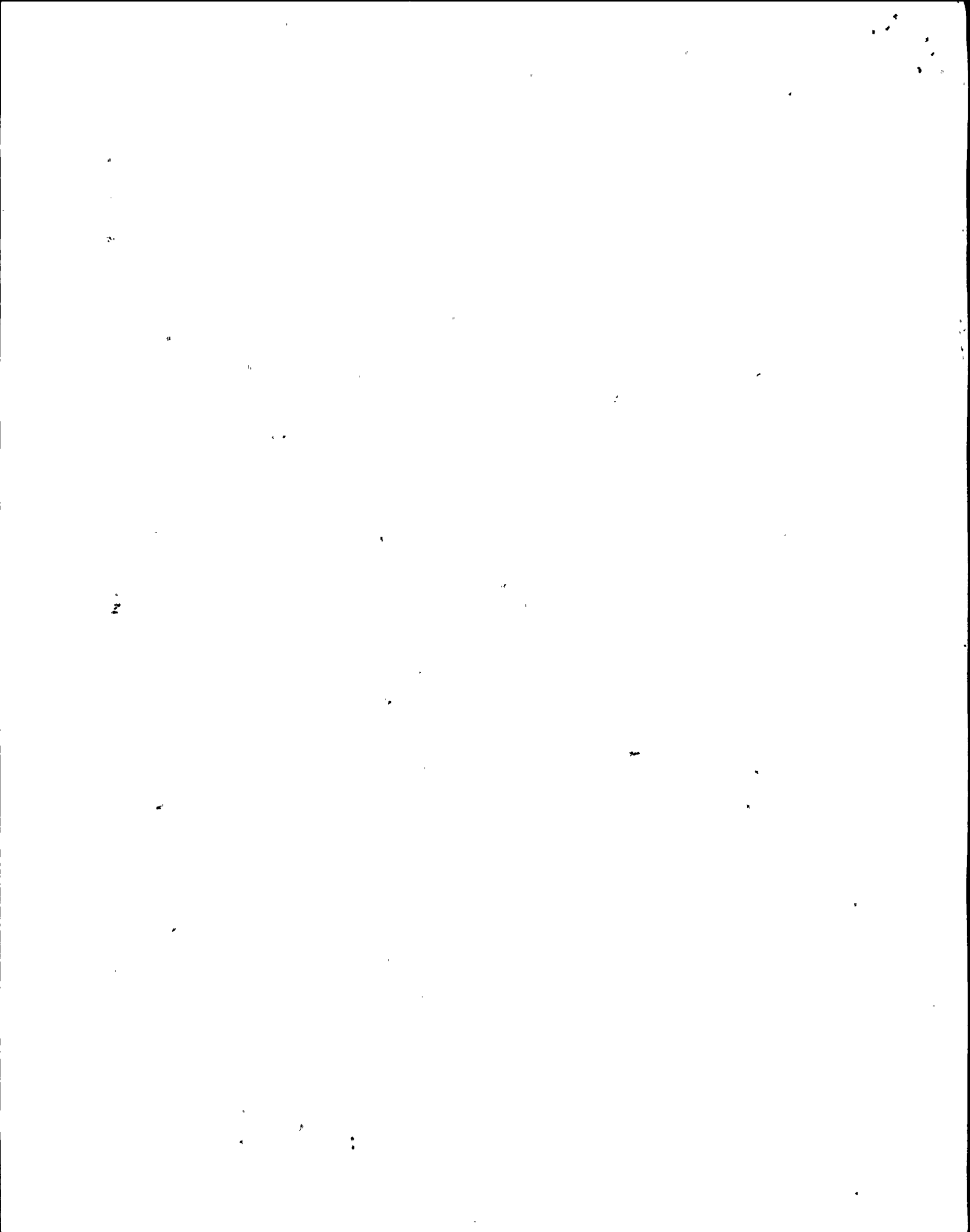
cc: A. Bert Davis, NRC Region III Administrator  
 W. Kropp, NRC Senior Resident Inspector  
 INPO Record Center  
 NRC Distribution List

(06498.0077R)

BYRON NUCLEAR STATION  
 COMMONWEALTH EDISON  
 BYRON, ILLINOIS 61010

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LICENSEE EVENT REPORT (LER)

Form Rev 2.0

Facility Name (1)

Byron, Unit 2

Docket Number (2)

01 5 | 0 | 0 | 0 | 4 | 5 | 5 | 1 | of | 0 | 5

Page (3)

Title (4)

Inadvertent Train A Safety Injection Signal Due to Miscommunication and Procedural 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 Names	Docket Number(s)
0	9	03	9	01016	010	11	03	9	NONE	01 5   0   0   0   1   1 01 5   0   0   0   1   1

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR

(Check one or more of the following) (11)

OPERATING MODE (9)	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
POWER LEVEL (10)	20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	Other (Specify in Abstract below and in Text)
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

LICENSEE CONTACT FOR THIS LER (12)

Name	TELEPHONE NUMBER
I. Gierich, Operating Engineer Ext. 2218	AREA CODE: 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 NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
X	V	10	B   K   R   W   1   2   10	N					

SUPPLEMENTAL REPORT EXPECTED (14)

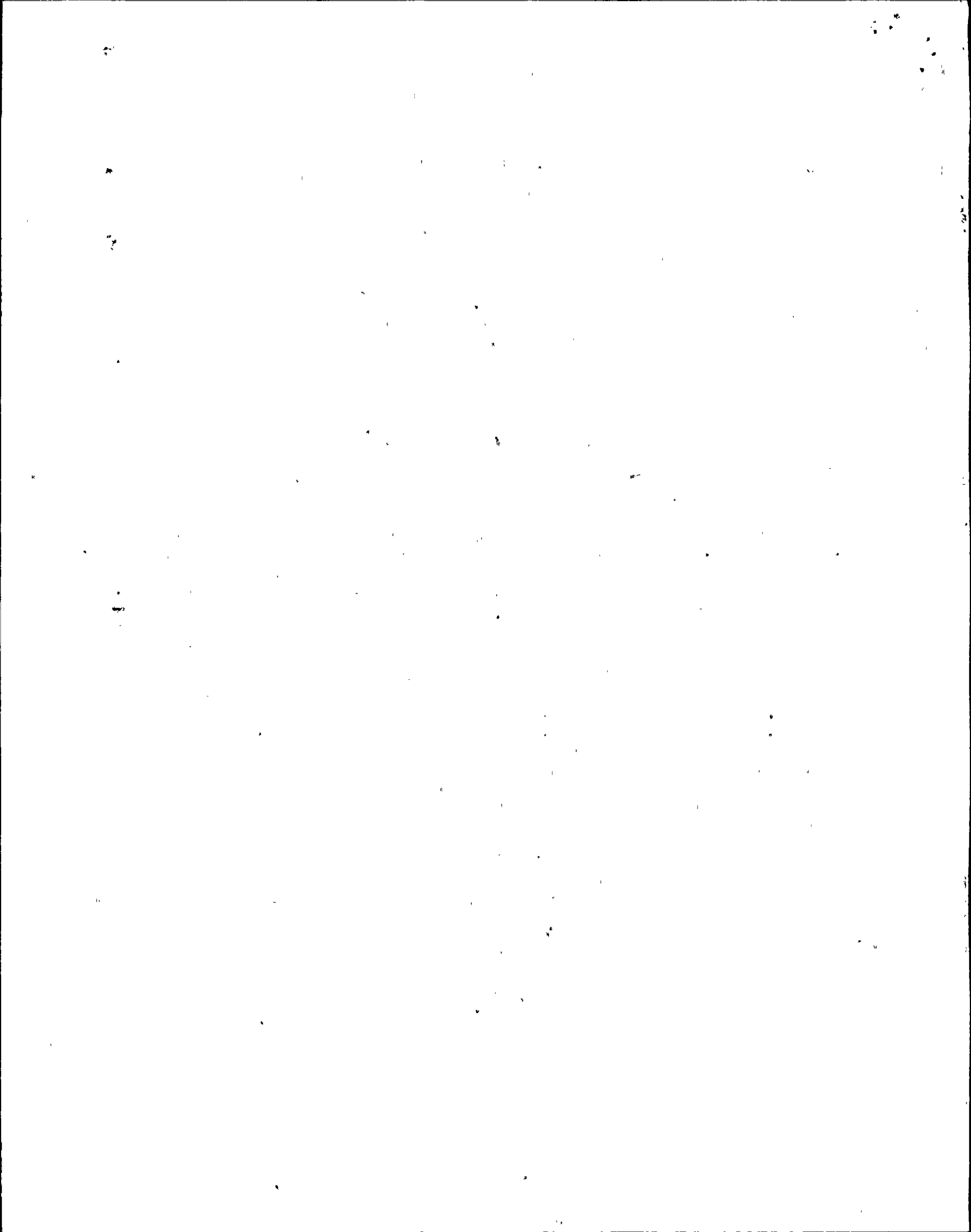
Expected Submission Date (15)	Month	Day	Year
X Yes (If yes, complete EXPECTED SUBMISSION DATE) NO	0	13	15

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

On 9-03-90 at approximately 0805, with Unit 2 in Mode 5 (cold shutdown) 2B05 3.2.1.1.a-1, "Unit Two Train A Manual Safety Injection Initiation and Manual Phase A Initiation Surveillance," was being performed per the refueling outage schedule. After performing the normal Safety Injection (SI) [JE], it was noted that the 2C Reactor Containment Fan Cooler (RCFC) low speed fan breaker did not close. Attempts to close the breaker were unsuccessful. At 0820, the 480 volt Bus that feeds the breaker was de-energized to allow removal of the breaker. At 0850, while stripping the Bus of its Alternating Current load, Instrument Inverters 211 and 213 were de-energized due to a communications breakdown. When the Instrument Buses were de-energized, the Pressurizer Pressure Low SI and Steamline Pressure Low SI blocks were lost on Train A. The Unit Reactor Operator was unaware that the blocks had been lost and the surveillance did not contain an emergency exit section to provide restoration guidance. At 0902, the Train A reactor trip breaker was closed per the surveillance and a Safety Injection signal resulted due to a loss of the Reactor Trip interlock (P-4) while cycling the reactor trip breaker.

Corrective actions include a procedure revision to the manual SI surveillance to include an emergency exit section. This event will also be included in Operator Required Listening. In addition, placards have been placed on the Control Board to verify the necessary blocks prior to cycling the reactor trip breakers.

This event is reportable pursuant to 10CFR50.73(a)(2)(iv) as a result of the Automatic Engineered Safety Feature Actuation.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
Byron, Unit 2	0   5   0   0   0   4   5   5	Year 9   0	Sequential Number 0   0   6	-	Revision Number 0   0	0   12	OF 0   15

TEXT Energy Industry Identification System (EII) codes are identified in the text as [XX]

A. PLANT CONDITIONS PRIOR TO EVENT:

Event Date/Time 9-03-90 / 0903

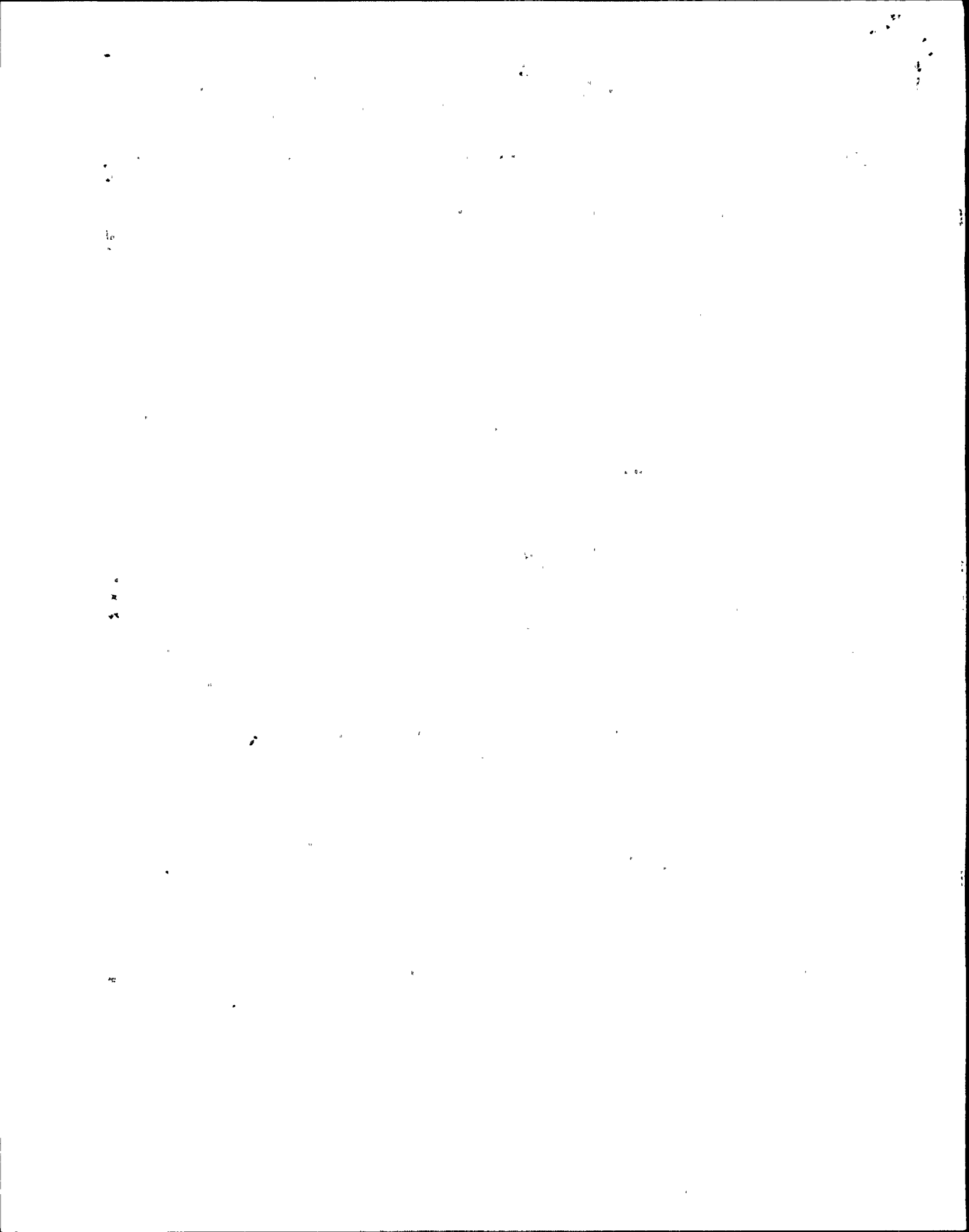
Unit 2 MODE 5 - Cold Shutdown Rx Power 0% RCS [AB] Temperature/Pressure 152°F / 365 psig

B. DESCRIPTION OF EVENT:

Prior to this event, on 9-3-90 at approximately 0805, with Unit 2 in Mode 5 at 152°F and 365 psig, Operating surveillance 2BOS 3.2.1.1.a-1, "Unit Two, Train A Manual Safety Injection Initiation and Manual Phase A Initiation Surveillance," was being performed per the refueling outage schedule. Train A Solid State Protection system (SSPS) was in NORMAL. Train B SSPS was in TEST. Train A Emergency Core Cooling System (ECCS) pumps were RACKED TO TEST. Train B ECCS pumps were operating as required. Pressurizer level was 70%. Instrument Air (IA) [LD] containment isolation valve 2IA065 had been reopened to restart charging and maintain pressurizer level.

After performing the manual Safety Injection (SI) [JE] from main control room panel 2PH05J, it was noted that the 2C Reactor Containment Fan Cooler (RCFC) high speed fan breaker (VQ) [VA] had tripped but the low speed fan breaker did not close as expected. A local inspection of the breaker cubical identified no external problems. An attempt was made to start the fan from panel 2PH06J as a method of troubleshooting the location of the problem with the breaker. The low speed breaker closed, but running amperes (amps) on the control board indicated excessive current (approximately 335 amps). The control switch was taken to pull-to-lock (PTL) but the breaker did not open. An attempt was made to open the breaker locally but the breaker did not open. At 0820, 480 volt safety related Bus 231X, which feeds the 2C RCFC was de-energized, and the suspect breaker was removed from its cubicle. At 0850, while Bus 231X was de-energized, Equipment Operators stationed at the 120 volt Instrument Inverters 211 and 213 were directed to shed the Alternating Current (AC) from Bus 231X. However, they opened all four breakers (AC and direct current (DC)) at the inverter panels due to a communications breakdown. The following components were lost:

- Instrument Bus 211
  - N31 Source Range
  - N35 Intermediate Range
  - N41 Power Range channel
  - Instrumentation and Control Cabinets (2PA01J, 2PA05J, 2PA13J, 2PA09J, 2PA45J, 2PA27J)
  - Main Control Board Power (Channel I)
  - SSPS Channel I Input Cabinet for 2PA09J and 2PA10J



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				Page (3)		
		Year	Sequential Number	Revision Number				
Byron, Unit 2	015101010141515	910	- 01016	- 010		013	OF 015	

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [XX]

B. DESCRIPTION OF EVENT: (Cont)

Instrument Bus 213

- N43 Power Range channel
- Instrumentation and Control Cabinets (2PA03J, 2PA07J, 2PA15J)
- Main Control Board Power (Channel III)
- SSPS Channel III Input Cabinet for 2PA09J and 2PA10J

At 0854, Bus 231X was restored. At 0858, Instrument Inverter 211 was re-energized. Instrument Inverter 213 could not be started. Instrument Bus 213 was re-energized from the Constant Voltage Transformer at 0910.

When the Instrument Buses 211 and 213 were de-energized, the Pressurizer Pressure Low SI and Steamline Pressure Low SI blocks were lost on Train A. However, since P-4 (Engineered Safety Features Actuation System Reactor Trip Interlock) was present, no automatic Safety Injection occurred. The NSO was unaware that the blocks had been lost and the surveillance was resumed.

At 0902, the A Train reactor trip breaker (RP) [JG] was closed to reset the Feedwater Isolation signal per the surveillance. A Safety Injection signal resulted due to a loss of the automatic SI block when P-4 was cleared by closing the train A reactor trip breaker. The SI only affected one valve since all other equipment was in the SI actuated state as a result of the manual SI initiated for the test. Valve 2IA065 closed which resulted in a loss of charging. Pressurizer level began dropping about 1% per minute.

An investigation was initiated by the Shift Control Room Engineer (SCRE, Senior Reactor Operator) and the Shift Engineer (SE, Senior Reactor Operator). Once the root cause for the SI was determined, immediate actions were taken to re-establish the Low Steamline and Pressurizer Pressure blocks and the SI signals were blocked. The Feedwater Isolation signal was reset.

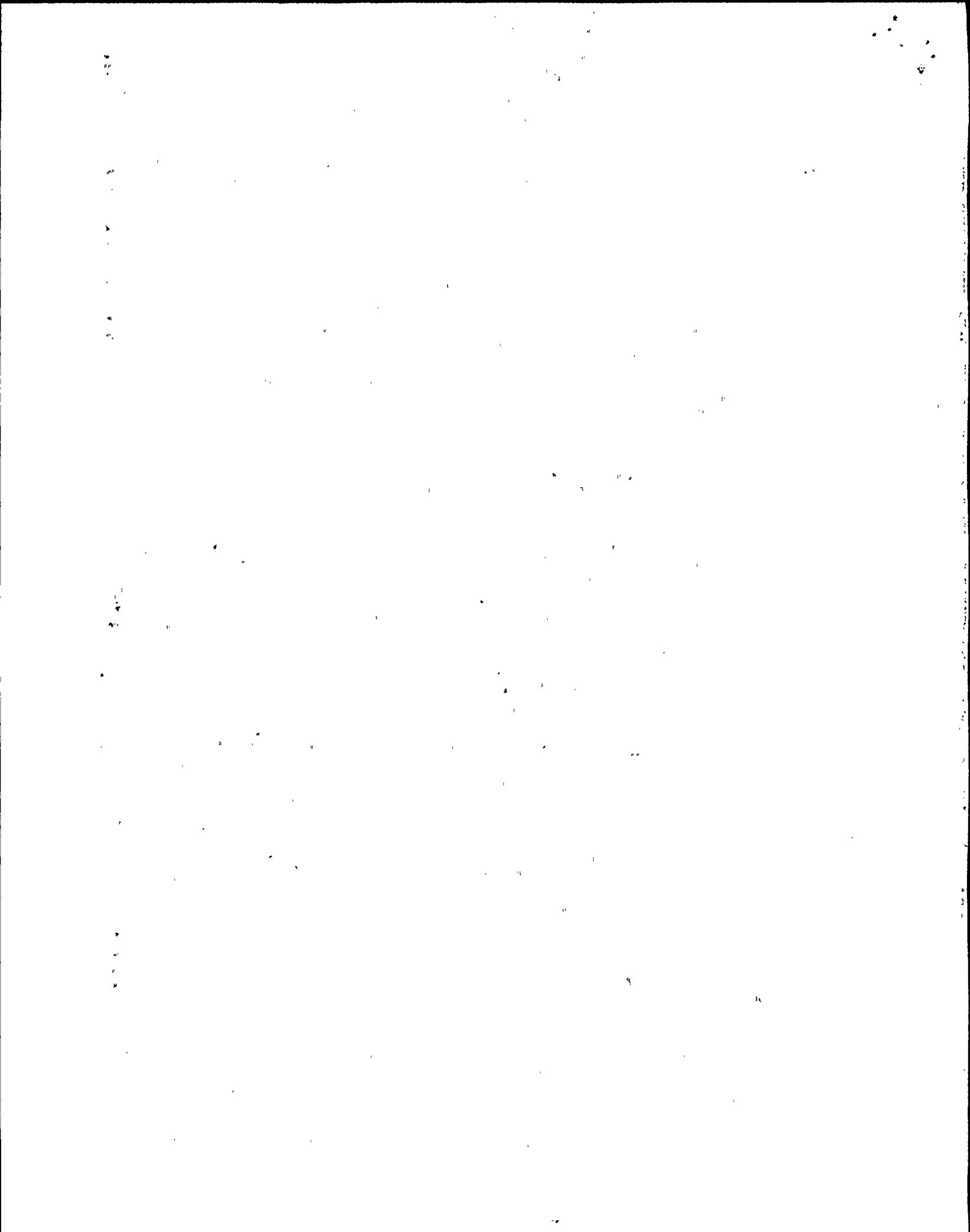
Component Cooling (CC) [CC] to the 2B Residual Heat (RH) [BP] Heat Exchanger was lost for approximately 10 minutes during each of the two manual SI initiation tests as expected due to procedural instructions. Due to the planned loss of CC to the RH Heat Exchanger during the surveillance, the temperature in the Reactor Coolant System (RCS) [AB] increased approximately 13°F. During the surveillance, the pressurizer level decreased to 20%. With the exception of these evolutions, plant conditions remained stable during this event.

The NRC Operations Center was notified of the event via the Emergency Notification System pursuant to 10CFR50.72(b)(2)(ii) as a result of the automatic Engineered Safety Feature actuation. This report is submitted pursuant to 10CFR50.73(a)(2)(iv).

C. CAUSE OF EVENT:

The root cause of the initiating failure of the 2C RCFC low speed fan breaker is unknown at this time. The breaker has been sent to Westinghouse for a failure analysis. A supplemental report will be issued when a root cause is determined.

The inadvertent de-energization of the Instrument Inverters was the result of a cognitive personnel error on the part of the Unit 2 NSO for not clarifying the directions he had given the Equipment Operators in the field.





LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev. 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
		Year	Sequential Number	Revision Number			
Byron, Unit 2	0-1-5-0-1-0-1-0-1-4-5-5	9-1-0	- 0 1 0 1 6	- 0 1 0	0 1 4	OF 0 1 5	

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

C. CAUSE OF EVENT: (Cont)

The intermediate cause of the Safety Injection signal when the surveillance was re-entered, was the loss of the two Instrument Buses which resulted in a loss of permissive P-11 (loss of Pressurizer Channels P-455 and P-457) which caused a loss of the blocks for Low Steamline and Pressurizer Pressure Safety Injection. The root cause of the inadvertent SI was due to a procedural deficiency since there was not an emergency exit section to instruct the Operators how to restore/verify plant equipment to normal configuration.

The failure of the Instrument Inverter 213 to restart was investigated under Nuclear Work Request (NWR) 76632. It was determined that the IR resistor had failed open and caused the 1FU fuse was blown. With this resistor open, the capacitors in the Inverter could not be charged prior to starting the Inverter. The current drawn by closing the input breaker to the Inverter would have exceeded the rating of the 1FU fuse causing it to blow.

D. SAFETY ANALYSIS:

Plant and public safety was not affected by this event. No water was injected into the RCS during this event. Only one valve (2IA065) was affected by the Safety Injection due to the testing that was in progress at the time of the event (Train A in NORMAL and Train B in TEST). With Unit 2 in Mode 5, no Safety Injection signals were required to be operable. Had two Instrument Inverters been de-energized with the Unit in Mode 5 and both trains of ECCS in normal operation, both trains of ECCS would have actuated on a Safety Injection signal. Under more severe initial conditions, (i.e. loss of two Instrument Inverters in Mode 1) both trains of ECCS would have actuated on a Safety Injection signal and resulted in a reactor trip. The temperature increase in the RCS would not have occurred during normal plant operation in any mode. The RCS temperature was monitored at all times by the Reactor Operator and could have been reduced by starting the 0 CC pump if necessary. Pressurizer level could have been restored by resetting the SI relays and restoring charging.

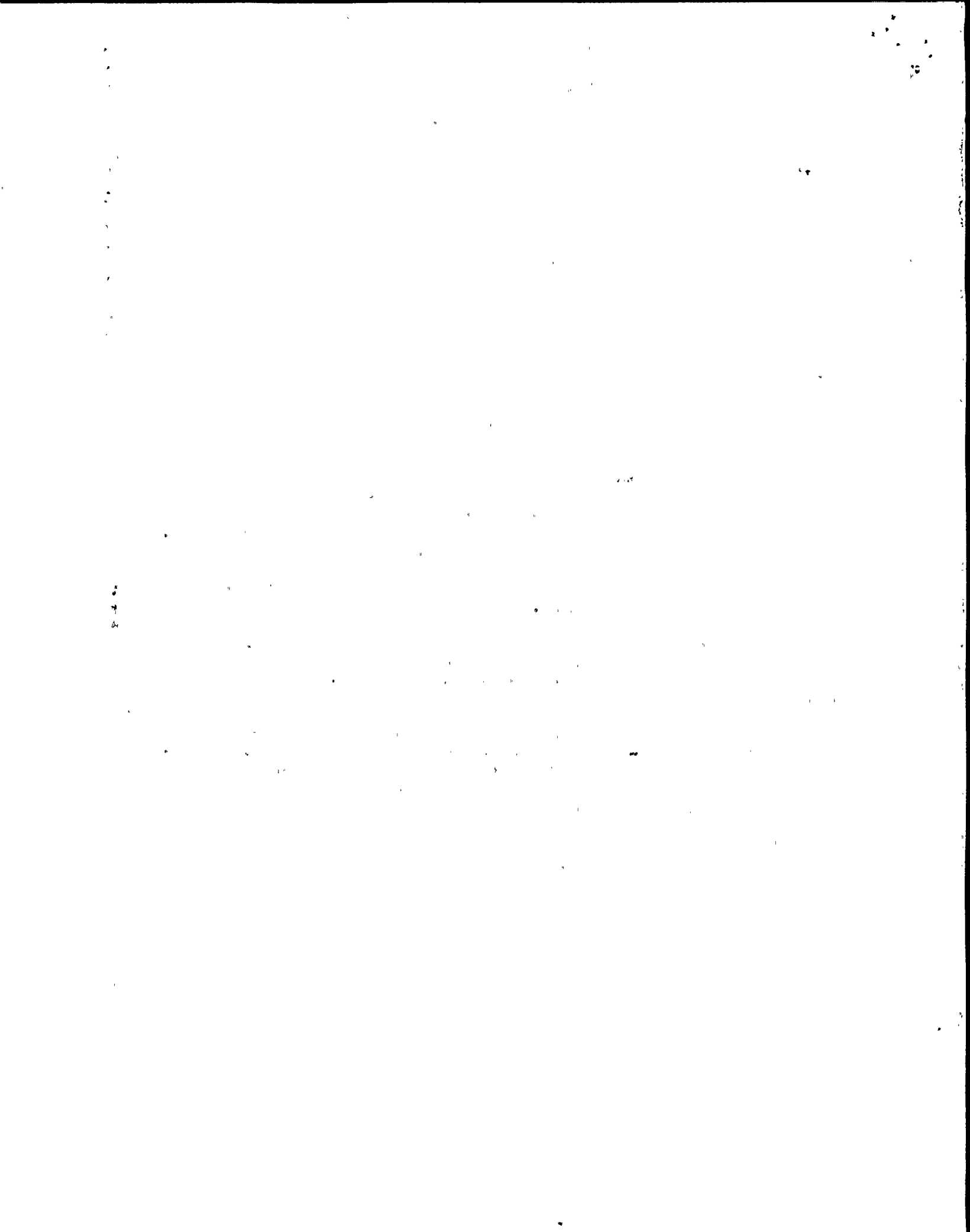
The most significant equipment that lost power during this event was Nuclear Instrumentation (NR) [IG] Source Range Channel N31. Because Train B SSPS was in TEST, Source Range Channel N32 Boron Dilution Prevention System (BDPS) was not available. Due to the short duration (8 minutes) power was lost. Technical Specification Action Requirements were adhered to and there were no safety consequences. In addition, count rate was always available on N32.

E. CORRECTIVE ACTIONS:

The 213 Instrument Inverter IR resistor and 1FU fuse were replaced. The Inverter was re-energized. No further corrective actions to the Inverter are planned.

As interim corrective action, the 2C RCFC low speed fan breaker was replaced under NWR B79257. The failed breaker was sent to Westinghouse to determine the failure mechanism. Corrective action will be determined after completion of the inspection by Westinghouse and documented in a supplemental report. Action Item Record (AIR) 90-228 is tracking this item.

An Event Evaluation Board was held with Senior Station Management and the personnel involved with this event. The following preventive actions were agreed upon at the board.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

Form Rev 2.0

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			Page (3)		
Byron, Unit 1	0151001020241515	Year	Sequential Number	Revision Number			
		91	01016	010	015	OF	015

TEXT Energy Industry Identification System (EIS) codes are identified in the text as [XX]

1. 1/2005 3.2.1.1.a-1/2 will be revised to incorporate an Emergency Exit section. AIR 90-222 is tracking the completion of this procedure revision.
2. This event will be included in Operator Required Listening to stress the importance of proper communication. AIR 90-226 is tracking this action.
3. Placards have been placed on the Main Control Board stating to verify the necessary blocks are in place prior to cycling the Reactor Trip Breakers.
4. Technical Staff will investigate the need to stroke Instrument Air isolation valve 2IA065 during the Manual SI surveillance. AIR 90-223 will track this item.

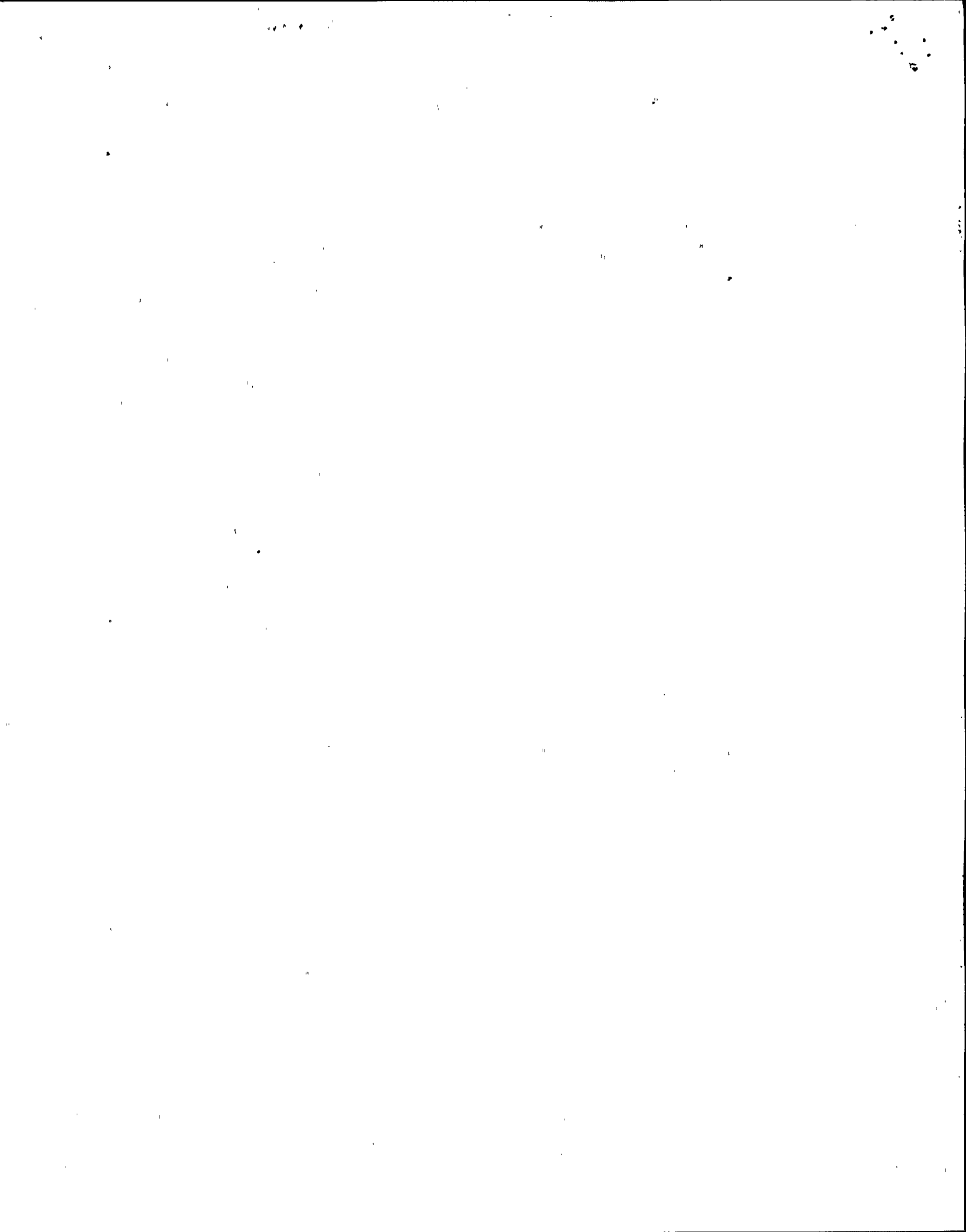
F. PREVIOUS OCCURRENCES: The following LERs are similar in that communication breakdowns contributed to the events.

Number	Title
90-009 (Docket 454)	Missed Sample Required by an Inoperable Radiation Monitor Due to Miscommunication and Personnel Error.
90-001 (Docket 454)	Containment Purge Not Verified Operable 100 hours Prior to Core Alterations Due to Miscommunication and Inappropriate Tracking Mechanism.

G. COMPONENT FAILURE DATA:

Inverter Instrument Bus 213	MANUFACTURER	MODEL NUMBER	MFG PART NUMBER
Westinghouse	Resistor	---	443A321117
Gould	fuse	---	A50P150

The RCFC breaker has been returned to Westinghouse for a failure analysis. The component failure information will be provided in a supplemental report.





FLORIDA POWER & LIGHT COMPANY

MAY 13 1987

L-87-207  
10 CFR 50.73

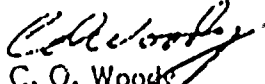
U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D. C. 20555

Gentlemen:

Re: St. Lucie Unit 1  
Docket No. 50-335  
Reportable Event: 87-10  
Date of Event: April 14, 1987  
Reactor Trip Due to Loss of  
Instrument Buses Caused by Personnel Error

The attached Licensee Event Report is being submitted pursuant to the requirements of 10 CFR 50.73.a. to provide notification on the subject event.

Very truly yours,

  
C. O. Woods  
Group Vice President  
Nuclear Energy

COW/MSD/jp

Attachment

cc: Dr. J. Nelson Grace, Regional Administrator, Region II, USNRC  
Senior Resident Inspector, USNRC, St. Lucie Plant

