

James A. FitzPatrick  
Nuclear Power Plant  
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Michael J. Colomb  
Plant Manager

December 16, 1996  
JAFP-96-0499

United States Nuclear Regulatory Commission  
Attn: Document Control Desk  
Mail Station P1-137  
Washington, D.C. 20555

Subject: Docket No. 50-333  
LICENSEE EVENT REPORT: LER-96-013

Reactor Protection and Primary Containment Isolation  
System Actuation on False Low Reactor Water Level Due  
to Personnel Error

Dear Sir:

This report is submitted in accordance with 10CFR50.73(a)(2)(iv).

There is one commitment contained in this report.

Questions concerning this report may be addressed to Mr. W. Verne Childs at (315) 349-6071.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'Michael J. Colomb'.

MICHAEL J. COLOMB

MJC:WVC:las  
Enclosure

cc: USNRC, Region 1  
USNRC Resident Inspector  
INPO Records Center

Handwritten initials 'JVC' and a checkmark, likely indicating receipt or processing.

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EXPIRES 04/30/98

## LICENSEE EVENT REPORT (LER)

(See reverse for required number of  
digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 60.0 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 20558-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3160-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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DOCKET NUMBER (2)

05000333

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TITLE (4)

Reactor Protection and Primary Containment Isolation System Actuation on False Low Reactor Water Level Due to Personnel Error

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
11	16	96	96	-- 013	-- 00	12	16	96	N/A	05000
OPERATING MODE (9)		N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		000	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)		X 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

Mr. W. Verne Childs, Senior Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(315) 349-6071

## 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)

YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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## ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 11/16/96 at 1333 hours, an automatic Reactor Protection System and Primary Containment Isolation System actuation occurred during surveillance testing of reactor water level instrumentation. During attempted correction of an instrument isolation valve stem packing leak, a closed isolation valve was inadvertently opened enough to cause a pressure transient in the level sensing lines which caused instruments to sense a false low reactor water level. All fuel was in the spent fuel pool and no control rod motion took place. Primary containment drywell floor and equipment drain sump pump discharge lines to radwaste isolated, secondary containment isolated and Standby Gas Treatment automatically started as designed.

The inadvertent partial opening of the instrument isolation valve was due to personnel error. A critique was completed and the cause of the false low reactor water level was determined. Procedure changes were made and personnel were counseled to reduce recurrence probability. A formal root cause analysis will be performed to evaluate human performance considerations with regard to event initiation. LERs 90-001, 90-026, and 91-007 reported similar events.

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

EIIS Codes are in []

**EVENT DESCRIPTION**

On November 16, 1996 at 1333 hours, an automatic actuation of the Reactor Protection System (RPS) [JC] and Primary Containment [NH] Isolation System (PCIS) [JM] occurred as a result of a false low reactor water level signal during surveillance testing of reactor water level instrumentation. A refuel outage was in progress with the reactor in the refuel mode, all fuel was in the Spent Fuel Pool [DB] and actual reactor and spent fuel pool levels were at the refueling level. No control rod movement occurred because all control rods were fully inserted or the Control Rod Drives [AD] were withdrawn and disarmed (hydraulically isolated) to allow drive replacement, control rod blade replacement and blade relocation (shuffling).

Instrumentation and Control (I&C) personnel were preparing to perform routine scheduled calibration of reactor water level transmitter 06LT-52C which provides reactor water level signals to the Feedwater Control System [JB]. While attempting to correct a valve stem packing leak on an instrument isolation valve, the isolation valve was inadvertently opened slightly causing a hydraulic transient in the connected instrumentation sensing lines that resulted in reactor water level transmitters 02-3LT-101A and B sensing a momentary false low reactor water level.

Transmitters 02-3LT-101A and B provide signals to trip units and logic which in turn provide trip signals to RPS (scram) trip system A1 and B1 and PCIS. Reactor Building (secondary containment) [NG] ventilation [VA] isolation valves and primary containment [NH] drywell floor and equipment drain system [WD] sump pump discharge line isolation valves closed as designed. The false low reactor water level signal was also sent to several other isolation valves on systems that were removed from service and to the Standby Gas Treatment (SGT) System [BH].

The systems which were in service automatically isolated and SGT automatically started as designed. Cooling of the Spent Fuel Pool was not affected by the event. I&C personnel immediately placed test equipment and instrumentation in a safe condition and discontinued test activities.

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Operations personnel reset the Reactor Protection System, reset PCIS, restored Reactor Building ventilation, restored drywell floor and equipment drains to normal and returned the Standby Gas Treatment System to a normal (standby) status in accordance with plant procedures. These actions were completed approximately 15 minutes after the initiating event.

**EVENT CAUSE**

The event was caused by personnel error (Cause Code A). Contributing causes were the failure of the technicians to maintain a questioning attitude by contacting supervision about the valve packing leak, failure of the technicians to use procedure IMP-G17, "Whitey Valve Packing Adjustment\*" which was developed to adjust this type of valve packing, failure of ISP-3-10 to contain appropriate steps to identify and adjust valve packing on 06PT-53A,B,C, and failure of the field technician to close the test/drain valve for 06PT-53C while adjusting the instrument isolation valve packing (Cause Code D).

After removing reactor water level transmitter 06LT-52C and associated pressure transmitter 06PT-53C from service, a static pressure of 1054 psig was applied to transmitter 06PT-53C from test equipment in accordance with steps in the calibration procedure. Prior to application of differential pressure corresponding to the measurement range of level transmitter 06LT-52C, personnel noted a slow static pressure decrease on pressure indicator 06PI-90C indicating a leak on the pressure transmitter. Inspection revealed a small packing leak on the instrument isolation valve for pressure transmitter 06PT-53C. Test personnel depressurized transmitter 06PT-53C through the test equipment.

After depressurization of the pressure transmitter, the I&C technician attempted to tighten the valve stem packing nut while holding the valve handwheel. A reactor scram signal and PCIS signal occurred as the packing nut was turned.

A critique and cause determination were conducted and concluded that when the packing nut was turned, the technician slightly opened the isolation valve. The slight opening of the isolation valve resulted in a momentary pressure decrease in the reactor water level variable leg sensing lines connected to the transmitter and other transmitters connected to the same sensing lines. The critique and cause determined that when pressure transmitter 06PT-53C was depressurized after discovery of the valve stem packing leak, it is likely that a small volume of air was introduced into the transmitter due to the test equipment being physically located at a lower elevation than the transmitter and the test equipment drain valve being left open. When the pressure transmitter isolation valve was inadvertently opened slightly when adjusting the valve stem packing nut, the momentary pressure decrease in the sensing lines was great enough to be sensed as a low reactor water level.



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The conclusions and information from the event critique and cause determination were consistent with conclusions drawn from root cause analysis conducted in response to similar events that occurred in 1990 and 1991 (see LER-90-001, LER-90-026 and LER-91-007). Testing conducted on a mockup of reactor water level instruments demonstrated that opening of an instrument isolation valve on an instrument which is at a lower pressure than that present in the water level sensing lines can cause other transmitters which share the same sensing lines to sense a momentary false low level condition. Several factors, including the presence of air, isolation valve design, sensing line configuration and the degree to which the isolation valve is opened have an effect on the magnitude and duration of the false low level sensed by other instruments. In response to evaluation of the 1990 and 1991 events, procedures were revised to address the avoidance of trapped air in instruments, ball tip instrument isolation valves were replaced with regulating tip valves, and I&C personnel were trained on the instrumentation mockup to provide them with additional hands-on experience in situations where the effects of the differential pressure, trapped air and other variables could be observed.

During the event, the training and other changes made in response to the 1990 and 1991 events had no effect in terms of precluding the event because the isolation valve for pressure transmitter 06PT-53C was opened inadvertently. A formal root cause analysis will be completed to address the human performance considerations which may have influenced the event initiation.

**EVENT ANALYSIS**

The event requires a report under 10CFR50.73(a)(2)(iv) due to automatic isolation of the primary containment drywell floor and equipment drain sump pump discharge lines to radwaste. Actuation of RPS (scram), secondary containment isolation and automatic starting of SGT due to the invalid (false) low reactor water level do not require a report; however they are included in the discussion in order to present a complete description of the event.

The procedure being used by Instrument and Control personnel contained a precaution which noted that there was risk of producing an automatic actuation of RPS and PCIS; however, the precaution discussed the risk for conditions with the Reactor in the Run mode rather than at any time. As a result, the event is not considered to be part of a pre-planned sequence.

The event was not considered to be risk significant because no fuel was present in the reactor vessel and primary containment integrity was not required.

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CORRECTIVE ACTIONS

1. The Instrument Surveillance Procedure (ISP-3-10) was changed to indicate that there is a risk of scram and/or isolation actuation during instrument isolation valve manipulation under any plant condition. **(Completed November 17, 1996)**
2. Procedure ISP-3-10 and other procedures designated as high risk were reviewed and revised as necessary to include specific steps for identification and correction of valve stem packing leaks. **(Completed November 21, 1996)**
3. The event critique and cause determination was reviewed and discussed with Instrument and Control Department personnel. **(Completed December 4, 1996)**
4. The Instrument and Control personnel involved in the event were counseled on maintaining a questioning attitude and dealing with unexpected conditions. **(Completed November 22, 1996)**
5. A formal root cause analysis will be performed to evaluate human performance considerations that may have influenced initiation of the event. **(Completion Due Date 1/31/97)**

ADDITIONAL INFORMATION

Failed Components: None

Previous Similar Events: Previous events in which an automatic RPS (scram) and/or isolation actuation took place due to manipulation of instrument isolation valves are described in LER's 90-001, 90-026, and 91-007.

Attachment 1

LER-96-013

Commitment Status

Number	Commitment	Due Date
JAFP-96-0499-01	A formal root cause analysis will be performed to evaluate human performance considerations that may have influenced initiation of the event.	01/31/97