

NRC-03-030

10 CFR 50.73

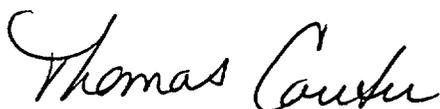
March 17, 2003

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

KEWAUNEE NUCLEAR POWER PLANT
DOCKET 50-305
LICENSE No. DPR-43
REPORTABLE OCCURRENCE 2003-001-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 2003-001-00 is being submitted. The report discusses failing to follow Technical Specifications logging requirements when the core axial flux differential monitor was out of service. The event was caused by personnel failing to follow procedure.

This letter contains no new commitments and no revisions to existing commitments.



Thomas Coutu
Site Vice-President, Kewaunee Plant

GIH

cc INPO Records Center
US NRC Senior Resident Inspector
US NRC, Region III

Attachment

Estimated burden per response to comply with this mandatory information collection request. 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1) Kewaunee Nuclear Power Plant	DOCKET NUMBER (2) 05000305	PAGE (3) 1 of 5
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TITLE (4)
Technical Specifications Action Requirements Not Followed – Personnel Failed to Follow Procedure

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
1	14	2003	2003	-- 001 --	00	03	17	2003	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 3: (Check all that apply) (11)									
POWER LEVEL (10) 100	20 2201(b)		20 2203(a)(3)(ii)		50 73(a)(2)(ii)(B)		50 73(a)(2)(ix)(A)			
	20 2201(d)		20.2203(a)(4)		50 73(a)(2)(iii)		50 73(a)(2)(x)			
	20 2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73 71(a)(4)			
	20 2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50 73(a)(2)(v)(A)		73 71(a)(5)			
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)		OTHER			
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in NRC Form 366A			
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)					
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)		50 73(a)(2)(vii)					
20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)						
20.2203(a)(3)(i)		50 73(a)(2)(ii)(A)		50.73(a)(2)(vii)(B)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Gary I Harrington – Compliance	TELEPHONE NUMBER (Include Area Code) (920) 388-8559
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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 1/14/2003, with the plant operating at 100% power, Nuclear Management Company (NMC) personnel recognized that Technical Specifications (TS) 3.10.b, Power Distribution Limits, action requirements had not been implemented. The condition was discovered when questions were raised regarding operability of the computerized axial flux differential monitor alarm system. TS 3.10.b.13 requires, "If the alarms are temporarily out of service, the axial flux difference shall be logged, and conformance with the limits assessed, every hour for the first 24 hours, and half-hourly thereafter." On 1/12/03, in response to several spurious "Power Range Upper Radial Flux Tilt" alarms, Control Room Operators entered a fixed computer input value to correct a 'bad acting' input. Entering the fixed value was not immediately recognized as disabling the axial flux monitoring alarm system. The requirements for logging were initiated according to plant procedure approximately 14 hours later, it wasn't until 1/14/03 that the incident was recognized as failing to comply with TS requirements. The root cause evaluation for the event determined the operating crew failed to implement the requirements of plant procedures due to a false sense of security in their actions. Contributing causes included; flawed assumptions that the action taken was the same as routine actions performed in removing computer points from scan, and comparing the action to taking an instrument out of service for surveillance purposes which had not required logging in the past. A number of administrative actions have been initiated to preclude recurrence. There was no public health and safety risk as a result of this event. Reactor flux levels remained stable throughout the event.

This report does not describe a safety system functional failure.

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DESCRIPTION

On 1/14/2003, with the plant operating at 100% power, Nuclear Management Company (NMC) personnel recognized that Technical Specifications (TS) 3.10.b, Power Distribution Limits, action requirements had not been implemented. The condition was discovered when questions were raised regarding operability of the computerized axial flux differential monitor [MON] alarm [ALM] system [IB]. On 1/12/03, in response to several spurious "Power Range Upper Radial Flux Tilt" alarms, Control Room Operators entered a fixed computer [CPU] input value to correct a 'bad acting' input. Entering the fixed value was not immediately recognized as disabling the axial flux monitoring alarm system. The TS action requirements were initiated according to plant procedure approximately 14 hours later, it wasn't until 1/14/03 that the incident was recognized as failing to comply with TS requirements. There was no public health and safety risk as a result of this event. Reactor flux levels remained stable throughout the event.

TS 3.10.b.13 states:

Alarms shall normally be used to indicate nonconformance with the flux difference requirement of TS 3.10.b.10 or the flux difference time requirement of TS 3.10.b.11.A. If the alarms are temporarily out of service, the axial flux difference shall be logged, and conformance with the limits assessed, every hour for the first 24 hours, and half hourly thereafter.

TS 3.10.b.10 defines the axial flux differential limits and actions to take if the limits are exceeded for reactor power levels greater than 90%. TS 3.10.b.11.A defines the axial flux limits and actions to take if the limits are exceeded for power levels between 50% and 90%. At Kewaunee, the plant process computer system (PPCS) provides the alarms used to monitor the axial flux difference to support the TS requirements.

During the week of January 5, 2003, the operating crews were receiving spurious actuations on Trouble Light Annunciator (TLA)-8 "Power Range Upper Radial Flux Tilt."

On 1/12/03 at 1825 the operating crew inserted a fixed value for computer point N2042A, nuclear power range instrument [IG] N-42, N-42 Top Detector [DET]. The crew operating logic for silencing the invalid alarm was to make any actual radial tilt alarms meaningful. The decision was made to insert a constant value for the computer point. The operating crew referred to abnormal operating procedure, A-CP-46, "Abnormal Honeywell Plant Process Computer" [ID]. This procedure prescribes action to take when a computer malfunction occurs. The guidance is based, in part, on what program is affected by the malfunction. In this event, two computer programs were affected by the erroneous N-42 input signal. According to A-CP-46, steps 4.4.3.b and 4.4.4.c should have been implemented. However, this requires the procedure user to recognize what programs are affected by the computer malfunction that is occurring.

A-CP-46 step 4.4.4.c refers to "Program 182, Core Tilt Monitor." This step only requires notification to the Nuclear Computer Group during normal working hours. A-CP-46 step 4.4.3.b refers to "Program 183, Delta Flux Monitor." This step requires immediate notification of the computer group and to perform step 4.5.2. Step 4.5.2 references Technical Specification 3.10.b.13 and states the requirement to log axial flux difference. The crew stated that they did not reference step 4.4.3.b. They focused on A-CP-46 step 4.4.4.c.

During the Root Cause Evaluation, the Computer Group was consulted. The Computer Group representative contacted stated that if step 4.6.4.a.1 "Remove a point from alarming" or 4.6.a.2 "Remove a point from scan"

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was performed, the delta flux monitoring would not have been affected and the desired effect of silencing the sporadic TLA-8 alarm would have been achieved. However, it was also stated that the operating crews do not have sufficient knowledge of the PPCS database points to perform this action without the assistance of the Computer Group.

Logging of axial flux difference was not performed until the logging requirement was recognized at 0800 on 1/13/03. PPCS point N2042A was returned to normal configuration at 0736 on 1/15/03. Axial flux difference continued to be logged until 1745 1/15/03, to verify conditions were stable, when logging was discontinued.

During the investigation of this event, it was also noted that logging axial flux difference was not required during performance of monthly surveillances of the power range instruments. Completed A-CP-46 data sheets, "Indicated Axial Flux Difference Log," were retrieved from the records vault to verify instances when axial flux difference was recorded. No completed data sheets were retrieved that corresponded to performance of surveillance procedure (SP) SP-48-003E, F, G and H, "Nuclear Power Range Channel 1 (2, 3, 4) N-41 (42, 43, 44) Monthly Test." These procedures, performed by the Instrument and Control (I&C) Group, do not list TS 3.10.b.13, and they do not require logging axial flux difference while the nuclear instruments (NIs) are out of service for testing. Therefore, the Operations Department has not recorded axial flux difference during these surveillances.

Review of Control Room Logs from September, 2002 to present indicate that the NI channel being tested typically takes greater than one hour. During this time the channel being tested is out of service as well as the associated input to the axial flux alarms. The Kewaunee Licensing Group has determined that the plant has inappropriately applied the requirements of TS 3.10.b.13 in that it was not recognized that removal of a power range channel for monthly surveillance would require logging axial flux difference. This historic interpretation of TS 3.10.b.13 may have led the operating crew to not consider logging axial flux difference when they defeated the alarm capability in the computer. They were conditioned to not log axial flux difference for monthly or quarterly surveillance activities when the entire power range channel was out of service, so simply removing the alarm capabilities from the computer for N42 Upper Detector could be interpreted as being similar to removing an entire channel from service.

This records review indicates other events where there would have been instances that the requirements of the TS were not followed in the past. These events would also be reportable conditions as failing to comply with the action requirements of the plant TS. However, the consequences of the previous events would be no different than the event that initiated this LER. There is no evidence to indicate that there have been any differential flux problems that may have occurred during the past surveillance periods. Typically NI monthly surveillances are completed within two hours and the quarterly surveillances within five. Therefore, the previous events are considered inclusive reportable events with this LER.

CAUSE OF THE EVENT

The root cause of this event was a human performance error. The actions that the crew took were contrary to the procedural guidance in A-CP-46 "Abnormal Honeywell Plant Process Computer" and as a result did not include the required assistance from the computer group.

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Significant contributing factors were:

- The Operating Crews remove computer points from scan on a routine basis, the crew on duty made the assumption that inserting a constant for N-42 Upper Detector was similar to the routine action of removing a point from scan. The crew did not understand that this assumption was flawed.
- Disabling the alarm function for N42 Upper Detector did not raise the issue of logging axial flux difference due to the site's understanding of TS 3.10.b.13. Axial flux difference was not logged when an entire channel of power range instrumentation is removed from service for periodic surveillance activities. Therefore, simply removing the alarm capability from an upper quadrant would also not require logging of axial flux difference.

The cause of the previous events whereby the TS action requirements were not initiated during surveillance testing was not specifically pursued. The previous events were likely the result of less than conservative TS interpretations from a historical perspective. This previous understanding of TS could have easily overlooked the TS requirement for logging. It could have been perceived that since the TS requires the instruments to be tested, it is acceptable to have them out of service for testing and no additional actions would be required, similar to cascading TS. However, given a literal interpretation of the TS and the conflict introduced by the TS testing requirements compared to the logging action statements, a more conservative approach is prudent. The corrective actions proposed by the initiating topic of this LER will also address the non-conservative TS interpretation.

ANALYSIS OF THE EVENT

This event is being reported under 10CFR50.73(a)(2)(i)(B), operation which was prohibited by TS. This event is not reportable as a Safety System Functional Failure. It does not involve any equipment failures and does not meet the reporting criteria of 10CFR50.73(a)(2)(ii), any event or condition resulting in the plant or safety barriers being seriously degraded or the plant being in an unanalyzed condition.

Failure to log the axial flux differential required by the TS did not pose a risk to public health and safety. Although the axial flux differential alarm function was defeated in the PPCS, the system continued to monitor, and record actual flux of the four nuclear power range upper and lower detectors. During the period that the alarm was disabled flux levels in the reactor remained stable. No differential limits were exceeded.

CORRECTIVE ACTIONS

The root cause of this event is attributed to inappropriate human performance. Tracking and trending of Operating Crew performance is an ongoing activity in the department. Ongoing action plans in Operations Department emphasize the importance of procedural compliance as well as overall human performance improvement. Action plans in Operations Department will continue to be monitored, but due to the nature of the root cause of this event, these actions cannot assure prevention of human performance errors in the future.

Corrective actions entered into and tracked in the plant corrective action program are:

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- The Assistant Plant Manager – Operations will prepare a briefing package to be discussed with each Shift Manager that relates the causes of this event and department expectations. A record of the issues discussed at these briefings will be kept on file in the Operations Department.
- The Instrument and Control Group (I&C) is to review I&C surveillance procedures, identify the impact of TS 3.10.b.13 and change affected procedures to ensure adequate guidance is provided to the operating crews to log axial flux difference.
- The Operations Department is to review Operations Department procedures, identify the impact of TS 3.10.b.13 and change affected procedures to ensure adequate guidance is provided to the operating crews to log axial flux difference.
- The Operations Training Group is to review Operation’s training material for impact concerning TS 3.10.b.13.
- The Operations Department was submitted procedure change requests to revise abnormal operating procedures A-CP-46, “Abnormal Honeywell Plant Process Computer,” and A-NI-48, “Abnormal Nuclear Instrumentation,” and normal operating procedure N-O-02-CLB, “Precritical Checklist,” to reflect logging requirements if the axial flux monitor is out of service.
- The Operations Department was submitted a procedure change request to revise Alarm Response Procedures for TLA-7, “Power Range Lower Radial Flux Tilt,” and TLA-8, “Power Range Upper Radial Flux Tilt,” to include actions to go to A-CP-46.
- A corrective action was entered into the system to perform an effectiveness review of the corrective actions for this event root cause evaluation (RCE).

SIMILAR EVENTS

LER 2002-003-00 was written to document Technical Specification 3.1.a.5, PORV and PORV Block Valve action requirements had not been implemented. A review of surveillance testing and operating events determined that contrary to the requirements of this Technical Specification, controllers for the PORVs were placed in manual for greater than one hour without performing the action requirements to close and remove power from the associated block valve. The apparent cause for this event was an inadequate understanding of the bases for the PORV Technical Specification.