NMC
Committed to Nuclear Excellence

Kewaunee Nuclear Power Plant
Operated by Nuclear Management Company, LLC

NRC-03-010

10 CFR 50.73

February 3, 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 2002-003-00

In accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System," the attached Licensee Event Report (LER) for reportable occurrence 2002-003-00 is being submitted.

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

for

Thomas Coutu
Site Vice-President, Kewaunee Plant

GIH

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

Attachment

IE22

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NRC FORM 366 (1-2001) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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)

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TITLE (4)

Technical Specifications Action Requirements Not Followed – Inadequate Tech Spec Basis

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
12	05	2002	2002	-- 003 --	00	02	03	2003	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check all that apply) (11)

	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 Specify in Abstract below or in NRC Form 366A
	20 2203(a)(2)(iii)		50 46(a)(3)(ii)	50.73(a)(2)(v)(C)	
	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)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Gary I Harrington – Compliance	(920) 388-8559

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	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 12/5/2002 and 12/16/02, with the plant operating at 100% power, Nuclear Management Company (NMC) personnel determined that, in the past, Technical Specification (TS) 3.1.a.5, PORVs and PORV Block Valves, action requirements had not been implemented. This condition was discovered when questions were raised regarding the operability of the reactor coolant system (RCS) pressurizer (PRZR) power operated relief valves (PORVs) during surveillance testing. TS 3.1.5.a.5.A.2 requires "With one PORV inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve." A review of surveillance testing and operating events determined that contrary to this requirement, 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 TS. Contributing causes included conflicting requirements for the TS and a failure to perform a thorough review of the TS change documentation. Corrective actions included initiating procedure changes to accurately reflect the TS requirements, reviewing other plant documents for changes that may be required, and initiating a TS change to remove the automatic operation requirement for the PORVs. An assessment was performed that determined the risk to Public Health and Safety as a result of this condition was insignificant.

This report does not describe a safety system functional failure.

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

DESCRIPTION

On 12/5/02 and 12/16/02, while the plant was operating at 100% power, Nuclear Management Company (NMC) personnel determined that, in the past, Technical Specifications (TS) action requirements were not implemented. This was discovered following a change in interpretation of operability regarding the reactor coolant system (RCS)[AB] pressurizer (PRZR)[PZR] power operated relief valves (PORVs)[V]. In early June of 2000, while at power following a refueling outage, PRZR pressure instrument channels were calibrated. While the channels are calibrated PRZR PORV controls [PC] are placed in manual. Placing controls in manual disables the automatic open features of the PORVs. Because a calibration procedure can take many hours to perform, it likely resulted in disabling the automatic feature for longer than one hour. Plant logs are not detailed enough to determine the amount of time a given PORV may have been in manual. In May of 2001, the RCS pressure controls were placed in manual control for almost ten hours due to a controller failure. This action disabled the automatic open feature of PORV PR-2A. TS requires that if a PORV can not be returned to service within one hour, then within one hour the associated block must be closed and deactivated. Contrary to TS, on the occasions noted above, the associated block valves were not closed and deactivated.

When these events occurred, plant staff had a different understanding of the TS requirements regarding automatic operation of the PORVs. At the time, automatic operation of the PORVs was not considered required by TS. Therefore, the action statement of the TS would not have applied. This was based on a historical understanding of the TS. It wasn't until 11/15/02 that this understanding was determined to be incorrect.

TS 3.1.a.5.A.2 states:

> With one PORV inoperable due to causes other than excessive seat leakage, within 1 hour either restore the PORV to OPERABLE status or close its associated block valve and remove power from the block valve; restore the PORV to operable status within the following 72 hours or action shall be initiated to:
>
> - Achieve HOT STANDBY within 6 hours
> - Achieve HOT SHUTDOWN within the following 6 hours

The TS basis states:

> The pressurizer power-operated relief valves (PORVs) operate as part of the pressurizer pressure control system. They are intended to relieve RCS pressure below the setting of the code safety valves. These relief valves have remotely operated block valves to provide a positive shutoff capability should a PORV become inoperable.
>
> The pressurizer PORVs and associated block valves must be operable to provide an alternate means of mitigating a design basis steam generator tube rupture. Thus, an inoperable PORV (for reasons other than seat leakage) or block valve is not permitted in the HOT STANDBY and OPERATING modes for periods of more than 72 hours.

The requirement to deactivate the PORV block valves and the basis for operability to address steam generator tube rupture were both added under TS Amendment #108 in April, 1994.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

On 11/15/02, the Instrument and Control (I&C) Engineering group raised the question of PORV operability when PORV controls are placed in manual. The question was presented because surveillance procedure (SP) changes were being proposed to introduce on-line RCS pressure instrument channel calibration. The on-line calibration would result in extended periods, greater than one hour, where individual PORVs would be placed in manual control. In the past, with one known exception, the four channel calibrations had been performed while the plant was in a shutdown condition. However, the surveillance procedures used to perform the calibrations did not preclude on-line testing.

The purpose of the question was to get clarification on a previous request since the TS and TS basis were not clear on what an inoperable PORV meant. The question of operability and automatic PORV capability had been raised at least twice previously, in 1996 and 2000. In each case the previous conclusion was that automatic control was not required for the PORVs to fulfill their intended function. This determination was based primarily on the fact that automatic operation of the PORVs is not assumed in the accident analyses, and closing and deactivating the block valve prevents the PORV from being able to be used to mitigate a steam generator tube rupture, compared to a PORV being able to perform its intended function in manual.

Kewaunee PORV functions are:

1) Mitigation of a design basis steam generator [SG] tube rupture.
2) Removal of decay heat via feed and bleed operation (outside design basis).
3) Mitigation of an anticipated transient without a scram (ATWS) event via feed and bleed operation (outside design basis).
4) Relief of RCS pressure below the setting of the pressurizer safety valves [RV].

NOTE: Kewaunee does not use the PORVs for low temperature overpressure protection (LTOP).

In early June 2000, the plant was returning to full power operation following a scheduled refueling outage. During this time, June 2 through June 6, 2000, pressurizer pressure channels 1 through 4 were calibrated according to Kewaunee surveillance procedures.

Performance of these SPs requires that the automatic controls of the associated PORV be placed in manual control. Kewaunee plant design has two PRZR PORVs, PR-2A and PR-2B. Only one PORV was in manual at any given time. The start and stop times for the SPs were logged in the "Reactor and Control Room Logs" and reflected cumulative surveillance times from 12 to 27 hours.

Although the log entries show significant periods where the SP may have been in process, the log entries are conservative. Since any one of the SPs may result in a PORV being in manual control for more than one hour, it is being conservatively assumed that the associated PORV was in manual control for greater than one hour in each case. The plant's, "Master I&C Task Listing," lists the time it takes to perform an SP as six hours.

In May 2001, an annunciator [ALM] was received in the control room, "Pressurizer Pressure Control Abnormal." Operator review of control board [MCBD] indications revealed that the RCS pressure control output signal was cycling between 0% and 100%. To correct the plant transient, the Operators placed the RCS pressure controller in manual and took manual control of the PRZR heaters and spray valves to stabilize the plant. Placing the controller in manual results is disabling the automatic opening feature of one of the two PRZR PORVs, PR-2A. Following the transient, Control Room staff kept the control in manual while I&C personnel trouble-shot and corrected the control equipment. The controller was in manual for nine hours and 44 minutes.

Contrary to TS 3.1.a.5.A.2, at no time in either of the examples described above were the PRZR block valves placed in the closed and deactivated condition.

There is a potential that there were other occasions where failure to follow the subject TS action occurred. However, the consequences and significance of any additional events would be unchanged. The events discussed here were based on plant staff recollection of the controller failure in 2001 and a review of surveillance records for the preceding three years.

CAUSE OF THE EVENT

These events were caused by; inadequate understanding of the bases for the TS, conflicting requirements for the TS, and failure to conduct a thorough review of TS change documentation when the question of operability was raised in the past.

The Nuclear Regulatory Commission (NRC) issued TS Amendment #108, dated April 7, 1994. TS amendment #108 also added the information in the basis requiring the PORVs for steam generator tube rupture (SGTR). Prior to TS Amendment #108, TS did not require closing and deactivating the block valve for any problems related to the PORVs. The earlier TS, Amendment #100, only required the associated block valve to be closed when a PORV was inoperable, not closed and deactivated.

In the correspondence provided with Amendment #108, NRC noted that the amendment was submitted as a result of NRC recommendations pertaining to NRC Generic Letter 90-06 for Generic Issue (GI) 70, "Power-Operated Relief Valve (PORV) and Block Valve Reliability," and GI 94, "Additional Low-Temperature Overpressure Protection (LTOP) for Light Water Reactors." The safety evaluation report (SER) signified that the actions proposed by NRC for GI 70 were to improve the reliability of PORVs and block valves. The SER also refers to NUREG-1316, "Technical Findings and Regulatory Analysis Related to Generic Issue 70."

In the NUREG, NRC identifies PORVs were not designed or intended to be safety related. However, it was noted that they are relied upon to protect against three particular accidents. These accidents provide the basis for NRC requiring licensees to improve the reliability of PORVs and block valves. The accidents are; 1) Mitigation of steam generator tube rupture (SGTR), 2) LTOP during startup or shutdown and 3) Plant cooldown in compliance with Branch Technical Position RSB 5-1. In the SER NRC recognizes only one of the three accidents apply at Kewuanee, SGTR. There is nothing in the NUREG that indicates automatic operation of the PORVs as being required. The information provided by the NUREG and NRC SER actually supports the former interpretation of PORVs operability, automatic operation is not required by TS.

In the pre-11/15/02 interpretation of the TS, the first part of the basis was perceived to be in direct conflict with the second part. Additionally, since the design to automatically open was known not to be credited in safety analyses, deactivating the block valve closed was considered less safe and in conflict with what TS should require.

On 11/15/02, the TS submittal for Amendment #108 was reviewed in detail. This review revealed that the verbiage signifying the design of the valve to open before the code safety valves was specifically included in the proposed amendment to the NRC (Refer to functions previously defined.). Prior to this submittal no evidence of any specific credit for automatic operation of the PORVs had been found. The ability to open before the code safeties can only be relied upon if the PORVs are in automatic. Manual operation overrides this capability. Without regard to the earlier interpretation of the TS, Kewaunee's License, as submitted,

requires the action to close and deactivate the block valve if a PORV automatic open feature is disabled. Therefore, had the amendment submittal been reviewed in detail as opposed to relying on what the TS basis said and relying on an understanding of the plant design, the events described above could have been avoided.

Licensing Department personnel were involved in the past determination of operability and what the TS basis required. The determination of the effect automatic operation was discussed on separate occasions and a common staff understanding was reached in each case. The need to develop a formal interpretation was given low priority since normal on-line surveillance typically took less than one hour and there was no sense of urgency to develop a formal document.

ANALYSIS OF THE EVENT

This condition 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. This event is being reported under 10CFR50.73(a)(2)(i)(B), operation which was prohibited by TS.

Failure to close and deactivate the PORV block valves did not pose a significant risk to public health and safety. A risk calculation assuming unavailability of the A Train RCS PRZR PORV PR-2A for nine hours and 46 minutes was performed. The result is an integrated conditional core damage probability (ICCDP) of 2.9E-9 and an integrated conditional large early release probability (ICLERP) of 5.58E-12. Both the ICCDP and ICLERP are below the limits of 1.0E-06 (for ICCDP) and 1.0E-07 (for ICLERP) that would categorize this as risk significant. Therefore, this is characterized as risk insignificant per the PSA Applications Guide, EPRI TR-105396 (1995) and NUMARC-93-01, Rev. 2.

CORRECTIVE ACTIONS

The following corrective actions have been taken:

- Instrument and Control Procedures have been revised to include guidance to close and deactivate PORV block valves if instrument calibrations will result in the automatic control being in-operable for greater than one hour.

The following corrective actions have been initiated:

- Corrective actions have been created in the plant's corrective action program to instruct plant groups to review, and revise where applicable, their respective procedures and/or lesson plans to incorporate the current understanding of the TS relative to the PORVs.
- An additional corrective action has been initiated to revise the TS and eliminate the need to close and deactivate the PORV block valves if only the automatic operation capability of the PORVs is inoperable.

SIMILAR EVENTS

None