WOLF CREEK
NUCLEAR OPERATING CORPORATION

Britt T. McKinney
Site Vice President

MAY 23 2003

WO 03-0031

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

References: 1) Letter WO 03-0024, Special Report 2003-001, dated April 15, 2003, from Britt T. McKinney, WCNOC, to USNRC

Subject: Docket No. 50-482: Licensee Event Report 2003-002-00

Gentlemen:

Wolf Creek Nuclear Operating Corporation (WCNOC) submitted Special Report 2003-001(Reference 1) which provided preliminary information related to the inoperability of both "A" and "B" trains of Reactor Vessel Level Indicating System (RVLIS) for greater than the allowed Technical Specification Completion Time. Further evaluation of this event determined that this condition had existed for a period greater than that allowed by the Technical Specifications.

The enclosed Licensee Event Report (LER) 2003-002-00 is being submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) regarding inoperability of both "A" and "B" trains of RVLIS at Wolf Creek Generating Station (WCGS) for a period greater than that allowed by Technical Specifications.

Attachment I lists WCNOC's commitments contained in this letter. These commitments supersede those provided in Reference 1.

If you have any questions concerning this matter, please contact me at (620) 364-4112, or Mr. Tony Harris at (620) 364-4038.

Very truly yours,

Britt T. McKinney

BTM/rlr

Attachment
Enclosure

cc: J. N. Donohew (NRC), w/a, w/e
D. N. Graves (NRC), w/a, w/e
T. P. Gwynn (NRC), w/a, w/e
Senior Resident Inspector (NRC), w/a, w/e

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LIST OF COMMITMENTS

The following table identifies those actions committed to by Wolf Creek Nuclear Operating Corporation (WCNOC). Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Tony Harris, Manager Regulatory Affairs at Wolf Creek Generating Station, (620) 364-4038.

COMMITMENT	Due Date/Event
WCNOC will perform troubleshooting and the necessary repair and testing of the instrument channels associated with RVLIS.	During the next refueling outage, scheduled to begin in October 2003
RVLIS surveillance procedures will be revised to include acceptance criteria to support OPERABILITY of RVLIS channels at appropriate plant conditions.	During the next refueling outage, scheduled to begin in October 2003

NRC FORM 366 (7-2001) 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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4. TITLE
REACTOR VESSEL LEVEL INDICATING SYSTEM INOPERABLE FOR PERIOD LONGER THAN ALLOWED BY TECH. SPEC.

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
03	25	2003	2003	– 002	– 00	05	23	2003	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE	1
10. POWER LEVEL	100

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

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)	✔	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)			

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Karl A. (Tony) Harris, Manager Regulatory Affairs	(620) 364-4038

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	AB	LI	W120	Yes					

14. SUPPLEMENTAL REPORT EXPECTED			15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	✔ NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 1000 on March 25, 2003, the Wolf Creek Generating Station (WCGS) Shift Manager was notified that both "A" and "B" wide range trains of Reactor Vessel Water Level Indicating System (RVLIS) were not functioning as designed. Both "A" and "B" wide range trains of RVLIS in the Main Control Room were off-scale high (>120%), consistent with the plant computer point indication of 122.8%. Based upon discussion with vendor representatives and industry peers, WCGS concluded that this reading was approximately 12% higher than should be expected. The Shift Manager declared both "A" and "B" trains of RVLIS inoperable and entered Condition C of Technical Specification 3.3.3, Post Accident Monitoring (PAM) Instrumentation.

Although WCGS entered the applicable Technical Specification Required Action immediately following recognition of this condition, further evaluation determined that this condition existed for a time longer than permitted by Technical Specifications. As such, this issue represents a condition prohibited by Technical Specifications, and is reportable per 10 CFR 50.73 (a)(2)(i)(B).

Because various other means are available to plant operators to determine reactor vessel level, there is minimal safety significance associated with this issue.

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

Background Information

The Reactor Vessel Level Indicating System (RVLIS) [EIIS Code: AB] is an element of the Wolf Creek Generating Station (WCGS) Post Accident Monitoring (PAM) System [EIIS Code: IP] and is used to assist in detecting the approach to inadequate core cooling and the subsequent formation of gas bubbles or steam voids in the reactor vessel during forced flow conditions.

There are two trains of RVLIS, each utilizing two differential pressure transmitters, narrow range and wide range, which measure the pressure drop from the bottom of the reactor vessel to the top. This measurement provides an indication of the reactor vessel water level or relative void content of the fluid surrounding the core. Each RVLIS train includes narrow and wide range measurements to cover different flow behaviors, ranging from no reactor coolant pump operation to any combination of reactor coolant pumps running.

The outputs from the transmitters are density compensated and displayed on four reactor vessel water level indicators in the Main Control Room. The four level indicators are divided into two separate channels, each containing both narrow range and wide range indications. For the purposes of Technical Specification (T.S.) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a channel is considered a train.

The Limiting Condition for Operation (LCO) for T.S. 3.3.3 requires two channels of reactor vessel water level indication (i.e., RVLIS) to be OPERABLE in MODES 1, 2, and 3. Required Action C.1 requires restoring all but one channel to OPERABLE status in 7 days with two or more required channels inoperable. Condition E of T.S. 3.3.3 applies when the Required Action and associated Completion Time of Condition C is not met. Required Action E.1 requires entering Condition G and following the directions of T.S. 5.6.8, "PAM Report," which requires a report be submitted outlining the preplanned alternate method for monitoring, the cause of the inoperability, and the plans and schedule for restoring the RVLIS channels to OPERABLE status.

Plant Conditions at the Time of Event

MODE – 1
Power – 100 Percent
Normal Operating Temperature and Pressure

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Description of Event

In May 2000, a Westinghouse representative commented during instrument technician training that WCGS's RVLIS levels appeared slightly higher than had been observed at other plants, and that this could be improved by validation of head correction calculations and determining the actual differential pressure across the core. Subsequently, on February 1, 2001, Performance Improvement Request (PIR) 2001-0293 was written to review the scaling and calibration methodology used at WCGS. The evaluation of this item was extended to facilitate the collection and review of RVLIS level data during the next refueling outage RVLIS data was then acquired during the refueling outage in March and April 2002. In October 2002, the evaluation of this condition was again extended to allow for the review of this data, and to develop a calibration plan for the next refueling outage in October 2003.

In March 2003, Wolf Creek Nuclear Operating Corporation (WCNOC) engineering staff reviewed this historical RVLIS data and confirmed that RVLIS readings at WCGS were higher than what the vendor manual indicated was typical. During the investigation into determining the cause of the high readings, engineering staff noted the presence of a diode installed in the RVLIS circuitry that limits the voltage sent to the level indicators. Subsequent voltage measurements taken at a point in the circuitry, unaffected by this diode, indicate "A" train computer indication was approximately 144%, and "B" train indication was approximately 122.8%. Because the difference in levels between the two trains was greater than 20%, WCNOC engineering staff's initial concern was that a problem existed with the "A" train wide range channel. Further evaluation of the condition led to questioning the accuracy of both trains of wide range indication, and the Shift Manager's decision to declare both "A" and "B" trains of RVLIS inoperable. PIR 2003-0805 was written to evaluate this condition.

Root Cause

The root cause of this condition is a failure of WCGS to provide adequate surveillance activities to verify the OPERABILITY of RVLIS. While surveillance activities existed, the only acceptance criterion was a specified difference between the two trains of wide range indication. Although it was recognized that values greater than 100% were expected at full reactor power, neither the vendor manual nor WCGS staff established a criterion for a maximum value for this indication. Output gain adjustment to set the RVLIS wide range indication to 100% at 0% reactor power and with four Reactor Coolant System (RCS) pumps running was not incorporated into calibration and testing procedures. This was due, in part, to the lack of vendor-supplied specific guidance for performing this type of normalization, including specific points at which the electronic circuit cards can be adjusted to compensate for changes to the RCS flow, pressure, and temperature conditions.

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Basis for Reportability

RVLIS equipment is included within WCGS Technical Specifications as part of the plant PAM equipment. Once WCGS identified that neither train of RVLIS was OPERABLE, the Shift Manager immediately entered the Required Action C.1 of T.S. 3.3.3, which requires the restoration of at least one instrument channel to an OPERABLE status within 7 days. At the end of this period, when efforts to return either of the channels to OPERABLE status were unsuccessful, WCGS immediately entered Required Action B.1 of the T.S. which requires the submittal of a special report detailing the status, cause, and planned restoration actions. Special Report 2003-001 (WO 2003-0024) was issued on April 15, 2003.

The historical nature of this situation indicates that this condition existed prior to discovery for a period greater than seven days, the allowed Completion Time associated with Required Action C.1 of T.S. 3.3.3. As such, this situation represents a condition prohibited by Technical Specifications, and is reportable per 10 CFR 50.73(a)(2)(i)(B).

Safety Significance

There is minimal safety significance associated with RVLIS inoperability, as alternate means of monitoring reactor vessel level are available to operators in the Main Control Room. The sources of this information include:

1. Core exit thermocouples indications: Instruments are located on panel RP81A/B, and through monitoring of the Nuclear Plant Information System (NPIS) computer display.

2. Pressurizer level indication: Indicators BBLI0459A, BBLI0460A and BBLI0461.

3. RCS Subcooling Monitor: Indicators BBTI1390A and BBTI1390B. In the event the subcooling monitor is not available, this information may be obtained using steam tables along with wide range resistance temperature instruments or the core exit thermocouples.

While RVLIS indication is used in a limited way in WCGS Emergency Operating Procedures, guidance is provided in these procedures to direct operators to use the above alternate instrumentation should RVLIS not function correctly. Such guidance is provided in the following procedures:

EMG F-0, "Critical Safety Function Status Trees"
EMG FR-C2, "Response To Degraded Core Cooling"
EMG FR-C3, "Response To Saturated Core Conditions"
EMG FR-C1, "Response To Inadequate Core Cooling"
EMG ES-05, "Natural Circulation Cooldown With Steam Void in Vessel (Without RVLIS)"

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Corrective Actions

Actions to address the hardware reliability of the RVLIS include troubleshooting, repair, and calibration of the RVLIS transmitters, which are located outside containment in the Auxiliary Building. Since the sensing bellows that must be filled and vented during calibration of these instrument channels are located inside the Containment bioshield, close to the reactor vessel head, these activities can only be done during shutdown periods. WCNOC will perform troubleshooting and the necessary repair and testing of the instrument channels associated with RVLIS during the next refueling outage, scheduled to begin in October 2003.

RVLIS surveillance procedures will be revised to include acceptance criteria to support OPERABILITY of RVLIS channels at appropriate plant conditions. These revisions will be completed during the next refueling outage, scheduled to begin in October 2003.

The cause determination related to the historical performance of the RVLIS was conducted as part of an assessment of the WCNOC overall plant nuclear safety culture. WCGS performed a plant-wide survey which included questions to determine if plant personnel were aware of items related to materiel condition of plant equipment that were not being properly addressed. Each condition the survey identified has action plans in place.

Previous Occurrences

A review of Licensee Event Reports (LERs) associated with RVLIS was performed, including dates from 1993 though March 1, 2003. No relevant LERs were identified.