

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Matthew W. Sunseri  
President and Chief Executive Officer

July 23, 2012  
WM 12-0021

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

Subject: Docket No. 50-482: Licensee Event Report 2012-005-00, "Calculation Assumptions Lead to Inadequate Procedure, Resulting in LCO 3.0.3 Entry Due to Non-Functional Class 1E Electrical Equipment Air Conditioning Unit"

Gentlemen:

The enclosed Licensee Event Report (LER) is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) to report a violation of Technical Specification Limiting Condition for Operation 3.0.3 due to a Class 1E electrical equipment air-conditioning unit being nonfunctional.

This letter contains no commitments. If you have any questions concerning this matter, please contact me at (620) 364-4008, or Mr. Gautam Sen at (620) 364-4175.

Sincerely,

  
for Matthew W. Sunseri

MWS/rlt

Enclosure

cc: T. A. Beltz (NRC), w/e  
E. E. Collins (NRC), w/e  
N. F. O'Keefe (NRC), w/e  
Senior Resident Inspector (NRC), w/e

(10-2010)

**LICENSEE EVENT REPORT (LER)**

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

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 an 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.

<b>1. FACILITY NAME</b> WOLF CREEK GENERATING STATION	<b>2. DOCKET NUMBER</b> 05000 482	<b>3. PAGE</b> 1 OF 5
--	--------------------------------------	--------------------------

**4. TITLE** Calculation Assumptions Lead to Inadequate Procedure, Resulting in LCO 3.0.3 Entry Due to Non-Functional Class 1E Electrical Equipment Air Conditioning Unit

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	23	2012	2012	005	00	07	23	2012	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

<b>9. OPERATING MODE</b>  Mode 1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§:</b> (Check all that apply)									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
<b>10. POWER LEVEL</b>  100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER							
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A							

**12. LICENSEE CONTACT FOR THIS LER**

<b>FACILITY NAME</b> Gautam Sen, Manager Regulatory Affairs	<b>TELEPHONE NUMBER (Include Area Code)</b> (620) 364-4175
--	---

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

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

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b> MONTH: DAY: YEAR:
--	--

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

On June 4, 2012 at 0325 CDT, a Class 1E electrical equipment air conditioning (A/C) train was declared nonfunctional. Technical Requirement (TR) 3.7.23 allows a train to be nonfunctional if compensatory measures are established for the affected unit. During the operability determination and functionality assessment process it was determined that the operability of the associated train Class 1E electrical equipment could not be maintained without additional compensatory measures and for a limited period of time. Technical Specification (TS) Limiting Condition for Operation 3.0.3 was entered and a plant shutdown was commenced on June 6, 2012 at 0327 CDT. On June 6, 2012 at 0505, the Class 1E electrical equipment A/C train was restored to functional status and the plant returned to 100 percent power.

The cause of the event was a calculation that concluded one train of air conditioning was not capable of supporting both trains of Class 1E equipment while maintaining room ambient temperatures below the maximum specified operating temperature. Control room operators have been directed to enter the applicable TS on a loss of a Class 1E electrical equipment A/C train.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
WOLF CREEK GENERATING STATION	05000 482	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 5
		2012	-- 005 --	00	

**PLANT CONDITIONS AT THE TIME OF THE EVENT**

Mode 1

100 % power

No SSCs were inoperable that contributed to the event other than the nonfunctional Class 1E electrical equipment air-conditioning (A/C) [EIS: VI] trains.

**BACKGROUND INFORMATION:**

The Class 1E electrical equipment A/C trains provide a suitable environment for the Class 1E electrical equipment. These A/C trains provide temperature control for the Engineered Safety Features (ESF) switchgear [EIS: EB, SWGR] room components, DC switchgear [EIS: EJ, SWGR] room components, and 125 VDC 1E system battery [EIS: EJ, BTRY] room components. The Class 1E electrical equipment A/C trains consists of two independent trains that provide cooling of recirculated air in the rooms associated with that train. Each train consists of a prefilter, self-contained refrigeration system (using essential service water [EIS: BI] as a heat sink), centrifugal fans, instrumentation, and controls to provide for electrical equipment room temperature control.

**DESCRIPTION OF THE EVENT:**

During the week of May 23, 2012, a Nuclear Regulatory Commission (NRC) Problem Identification and Resolution team inspection identified several concerns with the incorporation of calculation GK-06-W, Revision 2, "SGK05A/B Class 1E Electrical Equipment Rooms A/C Units, Single Unit Operation Capability," into plant documents. One of the concerns related to the calculation requirements for the use of temporary ventilation fans and the fans not being powered from a safety related source. Operations procedure SYS GK-200, "Inoperable Class 1E A/C Unit," and the Technical Requirements (TR) Manual 3.7.23, "Class 1E Electrical Equipment Air-Conditioning (A/C)," considered the use of temporary fans as an enhancement.

On May 29, 2012 at 1625 CDT, SGK05B [EIS: VI, ACU] was declared nonfunctional due to degrading oil pump pressure. The compressor was replaced and SGK05B was restored to a functional status on May 31, 2012 at 1835 CDT. The SGK05B unit was restored to functional status prior to completing a prompt operability determination.

On June 4, 2012 at 0325 CDT, the compressor for SGK05A [EIS: VI, ACU] was found tripped on low oil pressure and the unit was declared nonfunctional. It was determined that the SGK05A oil strainer was clogged with oil sludge and particulate matter. The same type of oil sludge discovered in the oil strainer for SGK05A was also found in the oil strainer for SGK05B. Personnel were able to clean up the sludge, flush the compressor's oil reservoir and replenish it with new oil. SGK05A was restored to functional status on June 6, 2012 at 0505 CDT

During the operability determination and functionality assessment process, it was determined that the operability of the associated train Class 1E electrical equipment could not be maintained without additional compensatory measures and for a limited period of time (30 hours). Technical Specification (TS) Limiting Condition for Operation (LCO) 3.0.3 was entered and a plant shutdown was commenced on June 6, 2012 at 0327 CDT. On June 6, 2012 at 0505 CDT, SGK05A was restored to functional status. LCO 3.0.3 was exited and the power decrease was stopped at approximately 88 percent power. At approximately 0900 CDT on June 6, 2012, the plant returned to 100 percent power.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE		
WOLF CREEK GENERATING STATION	05000 482	YEAR	SEQUENTIAL NUMBER	REV NO.	3	OF	5
		2012	-- 005 --	00			

Calculation GK-06-W, Revision 1 was created in 1999 to determine the effect on the Class 1E electrical equipment room temperatures from heat loads within the rooms in the event a Class 1E electrical equipment room A/C unit is out of service. The calculation revision was used as a basis for the compensatory actions directed by TR 3.7.23 when a Class 1E electrical equipment A/C unit, SGK05A or SGK05B, is nonfunctional. The calculation revision showed that one functional A/C unit was capable of maintaining all of the Class 1E electrical equipment rooms at a temperature below 104 degrees Fahrenheit (F) with the opening of doors between equipment rooms. Approximately 11 years later, errors were identified in the calculation that, when corrected, resulted in the conclusion of Revision 1 being erroneous. Revision 2 of the calculation was released in April 2011 to correct the errors. Revision 2 of the calculation did not support the conclusion that the Class 1E electrical room temperatures would remain below the acceptance criteria of 104 degrees F, under worst-case initial conditions without taking credit for non-safety related cooling units in the rooms surrounding the Class 1E electrical equipment rooms.

**BASIS FOR REPORTABILITY:**

This LER is submitted pursuant to 10 CFR 50.73(a)(2)(i)(B) to report a condition prohibited by Technical Specifications. SGK05B was nonfunctional for approximately 50 hours during the event starting on May 29, 2012. SGK05A was nonfunctional for approximately 50 hours during the event starting on June 4, 2012. Because of the essential support function provided by the Class 1E electrical equipment A/C trains, the correct application of the TS, upon discovery of a nonfunctional Class 1E electrical equipment A/C train, is to immediately enter the applicable Conditions and Required Actions under TS 3.8.4, TS 3.8.7, TS 3.8.9, as well as LCO 3.0.3. In both events this resulted in a condition prohibited by Technical Specifications. A review of the last three years revealed multiple instances when one Class 1E electrical equipment A/C train was nonfunctional for greater than one hour. Each of these instances was reportable as a condition prohibited by Technical Specifications.

NUREG 1022, Rev. 2, Section 3.2.2, "Operation or Condition Prohibited by Technical Specifications," indicates that entry into LCO 3.0.3 should be considered reportable under this criterion (10 CFR 50.73(a)(2)(i)(B)) if the condition is not corrected within an hour, such that it is necessary to initiate actions to shutdown. As actions were initiated to shutdown the plant, this event is reportable pursuant to 10 CFR 50.73(a)(2)(i)(B) as an operation or condition which was prohibited by the plant's TSs.

One Class 1E electrical equipment A/C train and its associated train of Class 1E electrical equipment were available and remained operable at all times. As such, these events do not constitute a condition that would have prevented fulfillment of the safety functions required of the Class 1E electrical equipment. Room temperatures remained below the area temperature limits for qualification of electrical equipment. Additionally, an engineering disposition concluded that in the event the Class 1E equipment is exposed to temperatures in excess of 104 degrees F, the equipment would remain functional at the elevated temperatures. The Class 1E electrical equipment was originally specified to a mild environment, which specifies a maximum operating temperature of 110 degrees F. Per this requirement, most of the equipment was supplied with a maximum normal operating temperature of 104 degrees F. In the event the Class 1E electrical equipment were exposed to a relatively short-term duration of increased environmental temperature, the qualified life of the equipment might be affected, but the functionality of the equipment would not be affected.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
WOLF CREEK GENERATING STATION	05000 482	YEAR	SEQUENTIAL NUMBER	REV NO.	4 OF 5
		2012	-- 005 --	00	

**ROOT CAUSE:**

A calculation completed in 1999 contained incorrect methodology and assumptions, resulting in the conclusion that a single air conditioning unit is capable of cooling both trains of Class 1E equipment with specific optional compensatory measures. When the errors were recognized and the calculation was revised in 2011, correcting the deficiencies and incorrect assumptions and incorporating revised maximum postulated heat loads and worst-case initial conditions, the calculation conclusion is that one train of air conditioning is not capable in all conditions of supporting both trains of Class 1E equipment while maintaining room ambient temperatures below the original equipment maximum specified normal operating temperature (104 degrees F). When the new calculation revision was issued the system operating procedures and the technical requirements manual specified compensatory measures did not align with the requirements of the calculation revision. Engineering judgment was used to specify compensatory measures to be taken, via engineering disposition. However, these compensatory measures were not properly translated into the operating procedures and TRM. Consequently, when the TR specification and system operating procedure were utilized, the actions and requirements did not align with the analysis and the analysis did not support Operability in all conditions. Additionally, the engineering judgment was not supported by further analysis. Inability to meet the analysis requirements in all modes of potential operation resulted in entry into LCO 3.0.3 and commencement of plant shutdown.

**CORRECTIVE ACTIONS:**

Procedure SYS GK-200, "Inoperable Class 1E A/C Unit" has been deleted. Essential reading has been issued to the control room operators specifying that the failure of a Class 1E electrical equipment A/C train will result in declaring the affected Class 1E electrical equipment inoperable and entry into the Conditions/Required Actions of TS 3.8.4, TS 3.8.7 and TS 3.8.9 as well as entry into LCO 3.0.3.

Calculation GK-06-W will be revised. The results of the calculation will be used to incorporate requirements for the Class 1E electrical equipment A/C trains into the TS, revise the Technical Requirements Manual (if appropriate) and revise operations procedures.

**SAFETY SIGNIFICANCE:**

The event addressed by this LER is not safety significant. Only one train of Class 1E electrical equipment was potentially affected by a nonfunctional Class 1E electrical equipment A/C train at any time. The other Class 1E electrical equipment A/C unit was functional and its associated train of Class 1E electrical equipment was operable. Room temperatures remained below the area temperature limits for qualification of electrical equipment.

An engineering disposition concluded that in the event the Class 1E electrical equipment is exposed to temperatures in excess of 104 degrees F, the equipment would remain functional at the elevated temperatures. The Class 1E electrical equipment was originally specified to a mild environment, which specifies a maximum operating temperature of 110 degrees F. Per this requirement, most of the equipment was supplied with a maximum normal operating temperature of 104 degrees F. In the event the Class 1E electrical equipment were exposed to a relatively short-term duration of increased environmental temperature, the qualified life of the equipment might be affected, but the functionality of the equipment would not be affected.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
WOLF CREEK GENERATING STATION	05000 482	YEAR	SEQUENTIAL NUMBER	REV NO.	5 OF 5
		2012	-- 005 --	00	

OPERATING EXPERIENCE/PREVIOUS SIMILAR OCCURRENCES:

None