

LICENSEE EVENT REPORT (LER)

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

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FACILITY NAME (1) Cook Nuclear Plant Unit 1	DOCKET NUMBER (2) 05000-315	PAGE (3) 1 OF 3
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TITLE (4)
Failure to Perform Technical Specification Surveillance Analyses of Reactor Coolant Chemistry with Fuel Removed

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
10	30	1997	1999	004	01	07	01	1999	Cook Nuclear Plant Unit 2	05000-316
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)								
POWER LEVEL (10)	0%	20.2201(b)	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	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)		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. Lyle R. Berry, Compliance Engineer	TELEPHONE NUMBER (Include Area Code) (616) 465-5901 X1623

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	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)
 On February 16, 1999, Chemistry personnel determined that Unit 2 reactor coolant system (RCS) chemistry had not been analyzed for fluorides and chlorides, as required by Technical Specification (TS) Surveillance Requirement 4.4.7, while the unit was defueled. The analyses, required "at all times," were not performed from October 30 to November 23, 1997. Unit 2 has remained in Mode 5 or 6 since that time. Additional investigation identified a total of ten periods (6 for Unit 1 and 4 for Unit 2) since 1989, when the chemistry analyses had not been performed. TS Clarification (TSC) #54, which had been in effect since 1992, provided an inappropriate exemption from sampling while the core was off-loaded and RCS circulation was suspended. Since the surveillance requirements were not met, this event is reportable pursuant to the requirements of 10CFR 50.73(a)(2)(i)(B), as an operation prohibited by the plants' Technical Specifications.

The root causes for this event include: 1) ineffective management of Technical Specifications, and 2) ineffective ownership of Chemistry department performance.

Chemistry personnel have been instructed on the requirement to follow the TS as written without reliance on the use of TS clarifications or interpretations. The written job order activities used to control shutdown chemistry sampling were corrected to remove references to the Spent Fuel Pool as an alternate RCS sample point.

In each identified case when analyses were not done, the affected unit was at low pressure and temperature, and analyses completed prior to and after the missed analyses provided no indication of an out-of-limit condition. Based upon this information, this event had minimal impact on the health and safety of the public.

**LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION**

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
Cook Nuclear Plant Unit 1	05000-315	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 3
		1999	004	01	

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

Conditions Prior To Event

Unit 1 Mode 5, Cold Shutdown, at 0% power
Unit 2 Mode 5, Cold Shutdown, at 0% power

Description Of The Event

On February 16, 1999, Chemistry personnel determined that Unit 2 reactor coolant system (RCS) chemistry had not been analyzed for fluorides and chlorides, as required by Technical Specification (TS) Surveillance Requirement 4.4.7, while the unit was defueled. The analyses, required "at all times," were not performed from October 30 to November 23, 1997. Unit 2 has remained in Mode 5 or 6 since that time. Additional investigation identified a total of ten periods, for both units, since 1989, when the chemistry analyses had not been performed.

TS Clarification (TSC) #54, which had been in effect since 1992, provided an inappropriate exemption from sampling while the core was off-loaded and RCS circulation was suspended. TSC #54 was cancelled on July 23, 1997. However, although the TSC was cancelled, written direction based upon the TSC, which had been previously established by the chemistry department, remained in place. This direction stated that when fuel was removed from the RCS, the Spent Fuel Pool (SFP) became the RCS for chemistry sampling purposes. Thus the TS surveillance continued to be performed improperly, with the SFP sampled and analyzed instead of the RCS.

Cause Of The Event

The root causes for this event include:

- 1) Ineffective management of TS by Licensing and Plant management, demonstrated by the fact that Nuclear Licensing/Plant Management approved TS clarification letters containing inappropriate TS exceptions;
- 2) Ineffective ownership of department performance by Chemistry management, demonstrated by the ineffective establishment, communication and enforcement of appropriate standards and a lack of awareness of and involvement in department activities.

Contributing factors to this event include: 1) the relative difficulty in obtaining representative RCS samples when defueled, drained to half loop conditions with no recirculation flow and 2) a history of confusing sampling requirements and related interpretations for the RCS in the defueled condition. In January 1992, this culminated in TSC #54 which addressed those Technical Specifications applicable to conditions when no fuel was in the reactor pressure vessel or refueling canal. TSC #54 referenced two earlier TS clarification letters written in 1989 and 1990, which were "to be used to determine technical specification applicability with no fuel in the reactor vessel or refueling canal." Use of the unclear guidance in TSC #54 by Chemistry Department personnel to implement RCS sampling and testing requirements contributed to the described TS noncompliances.

Analysis of the Event

Technical Specification (TS) Limiting Condition for Operation (LCO) 3.4.7 requires the Reactor Coolant System (RCS) chemistry to be maintained within the limits specified in Table 3.4-1. Table 3.4-1 specifies steady state and transient limits for RCS dissolved oxygen, chloride and fluoride concentrations.

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

- Unit 2 TS Surveillance Requirement (TSSR) 4.4.7 requires RCS samples for fluoride, chloride and oxygen to be sampled at least once per 72 hours. Oxygen is exempted when Tavg is ≤ 250 °F. Applicability of TS 3.4.7 is defined to be "at all times".
- Unit 1 TSSR 4.4.7 requires RCS samples for fluoride, chloride and oxygen to be sampled 3 times per 7 days, not to exceed 72 hours. Oxygen is exempted when Tavg is ≤ 250 °F. Applicability of TS 3.4.7 is defined to be "at all times."

Contrary to TS, the investigation for this event identified a total of ten periods (6 for Unit 1 and 4 for Unit 2) since 1989, when the RCS chemistry analyses had not been performed. This is an operation prohibited by TS and is reportable pursuant to the requirements of 10CFR50.73(a)(2)(i).

In each identified case when analyses were not done, the affected unit was at low pressure and temperature. In each identified case, analyses completed prior to and after the missed analyses provided no indication of an out-of-limit condition.

The basis for the TS chloride and fluoride limits is to ensure that corrosion of the RCS is minimized and reduce the potential for RCS leakage or failure due to stress corrosion. Stress cracking corrosion requires several conditions. As the fluoride and chloride limits in the RCS before and after defueled periods were less than 0.02 ppm, well below the 0.15 ppm limits, temperatures were well below 200 °F, and the system was depressurized, it was unlikely the RCS integrity was compromised due to corrosion. It is believed that this event resulted in no equipment damage. Based upon this information, there were minimal implications to the health and safety of the public as a consequence of this event.

CORRECTIVE ACTIONS

Chemistry personnel have been instructed on the requirement to follow the TS as written without reliance on the use of TS clarifications or interpretations. The written job order activities used to control shutdown chemistry sampling were corrected to remove references to the Spent Fuel Pool as an alternate RCS sample point. TSC #54 was cancelled on July 23, 1997. Existing TS clarifications have been recently evaluated pursuant to Administrative Letter 98-10 and have been determined to be conservative and assure plant safety.

- 1) A TS Amendment for TS 3.4.7 will be prepared and submitted to address the RCS sample requirements for times when there is a lack of sufficient coolant inventory.
- 2) As a part of the restart effort, DC Cook is performing diverse programmatic and functional area assessments which will be used to address the improvement of performance. For example, the Chemistry self assessment program will be enhanced to place particular emphasis on sampling requirements and TS-related activities.
- 3) Existing Technical Specification Clarifications are being eliminated by incorporation into procedures, TS amendments or deletion, as appropriate.
- 4) A review of the Technical Specification Clarifications, both active and cancelled, will be performed to verify that no TSC provided an interpretation to the TS such that the TSC was used to procedurally define an exemption or alternative to a technical specification.

The above corrective actions will be tracked to completion under the D.C. Cook Commitment Management Program. Improvements to Management Oversight and the Technical Specification Surveillance Program are being addressed as described in the CNP Reply to Notice of Violation of October 13, 1998, dated March 19, 1999.

SIMILAR EVENTS

315/98-053-00