NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

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Sequoyah, Unit 2	0 5 0 0 0 3 2 8	1 OF 1 1

TITLE (6)
Pressurizer Code Safety Relief Valves Lift Settings Out Of Technical Specification Limits Due To Two Different Testing Methods Used For Establishing Setpoints

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 NAMES	DOCKET NUMBER(S)
0 4	0 2	8 8	8 8	0 1 6	0 0	0 4	2 8	8 8		0 5 0 0 0
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

OPERATING MODE (9)	3									
POWER LEVEL (10)	0 0 0	20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)	XX	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	XX	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)		10 CFR 21

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (AREA CODE)
Tom Rogers	6 1 5 8 7 0 1 - 7 2 5 4
J. L. Long, Plant Operations Review Staff	

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

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

During in-service pressurizer code safety valve lift pressure setpoint testing conducted on April 2 - 4, 1988, with unit 2 in hot standby, it was found that all three relief valves exceeded the technical specification (TS) lift setting. Upon this discovery, each valve was declared inoperable, the appropriate action statement of TS was entered, setpoint adjustments were made, and subsequent testing was conducted to ensure compliance with TS. The in-service testing performed on April 2 - 4, 1988, determined the valve lift settings through calculations based on measured parameters using a lift assist assembly (Trevitest). The previous testing and adjustment of these lift settings were made during a bench test at a contract laboratory using hot nitrogen pressure as the lifting medium.

On April 8, 1988, unit 2 returned to cold shutdown to locate and repair steam generator tube leaks. During this cold shutdown period, the relief valves were removed and sent to the same contract laboratory for additional bench testing. The bench testing was conducted using water as the lifting medium. Test pressure was controlled by regulating the nitrogen pressure which was loaded on the water system. During this testing, the valve lift settings did not meet the TS required setpoint until adjustments were made. The lift settings determined by this bench test were below the TS limit. Sequoyah chose to recognize these bench test results for the lift settings. With this position, the valves were rendered inoperable during the performance of the in-service testing. The cause of this event is attributed to the different methodology used to determine the valves' lift settings between the in-service and bench tests, the replacement of valve parts made before the most recent bench test was conducted, and the different environmental conditions between the in-service and bench testing.

As corrective actions to prevent recurrence, Sequoyah will use a consistent method to determine the pressurizer code safety valve lift settings.

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DESCRIPTION OF EVENT

On April 2 - 4, 1988, with unit 2 in mode 3, in-service testing was being performed on all three pressurizer code safety valves (EIIS Code AB) to ensure lift settings of 2485 psig ± one percent required by Technical Specification (TS) Limiting Condition for Operation (LCO) 3.4.3.1. Lift setting adjustments were made, and the acceptance criteria was met. On April 14 - 16, 1988, following plant cooldown to mode 5, the pressurizer code safety valves were removed, bench tested by Wyle Laboratories, and failed to meet the lift setting acceptance criteria by having low lift settings. The following report provides a synopsis of the conditions and activities associated with this event.

On April 2, 1988, Surveillance Instruction (SI)-747, "Verification of Pressurizer Safety Valve Setpoints," was initiated to perform in-service lift setpoint testing of pressurizer code safety relief valve 2-68-563 to ensure that previously identified valve seat leakage was not caused by a low lift setting. Valve seat leakage was indicated by the valves elevated temperature and the difficulty personnel were having in establishing a water seal at the valve seat. The leak rate was very slight as it did not cause sufficient leakage to exceed TS reactor coolant system (RCS) (EIIS Code AB) leakage limits. All seat leakage through the valve was collected in the pressurizer relief tank. The acceptance criteria of SI-747 is based on the lift setting specified in TS LCO 3.4.3.1 and was performed to meet the requirements of TS Surveillance Requirement (SR) 4.4.3.1. In order to satisfy TS SR 4.4.3.1, SI-747 requires two lifts to be within 2485 psig ± one percent without any required setpoint adjustments. SI-747 tests the relief valve lift setting using a Trevitest device by Furmanite while the reactor coolant pressure is between 1700 psig and normal operating pressure with a water seal at the valve seat maintained at an elevated temperature by external heaters. The Trevitest is a lift assist assembly that is mounted on the relief valve and lifts the valve spindle using hydraulic pressure. The lifting force required to open the valve is measured by a load cell and recorded on a strip chart to provide data necessary to calculate the valve set pressure. Valve disc lift is determined by a change in slope on the load cell trace and confirmed by test personnel listening for audible passage of flow through the valve's discharge piping. Once valve lift is determined, the corresponding lift force, as indicated by the Trevitest device, is used to calculate an equivalent pressure using the valve disc's area exposed to system pressure. The calculated pressure is then added to the system static pressure to determine the valve's setpoint pressure. This testing was being performed by Furmanite personnel under contract with direction from Sequoyah test personnel. This was the first performance of in-service setpoint testing of the pressurizer code safety valves at Sequoyah.

Previous pressurizer code safety valve lift testing used to meet TS SR 4.4.3.1 had been performed under contract with Wyle Laboratories. The Wyle Laboratory test was a bench test that used hot nitrogen as the lifting medium. For the Wyle test, the valve temperature was increased to obtain normal operating valve temperatures, and measuring devices were installed on the test assembly for determining system pressure and valve spindle lift. A loop water seal at the

valve seat, similar to actual plant operating conditions, was not simulated during this test performance. The nitrogen pressure was measured directly by a pressure gauge and recorded on a strip chart. The valve lift was measured using a linear voltage differential transformer (LVDT) mounted on the valve spindle, and the spindle displacement was recorded on a strip chart. The lift setting was indicated by a clear peak on the pressure strip chart and confirmed by spindle displacement measured by the LVDT.

At 1723 EST on April 2, 1988, while unit 2 was at 0 percent power, 1761 psig, 390 degrees F, and a loop seal temperature of 249 degrees F, using the Trevitest device, the pressurizer code safety relief valve 2-68-563 failed to meet the acceptance criteria when the calculated setpoint was determined to be 2634 psig. The valve was subsequently declared inoperable. TS LCO 3.4.3.1 requires all pressurizer code safety valves to be operable while in modes 1, 2, and 3, and therefore, the action statement of LCO 3.4.3.1 was entered. The action statement requires the valve to be restored to an operable status within 15 minutes or be in at least hot shutdown within six hours from a hot standby condition. In accordance with SI-747, the lift setting of 2-68-563 was adjusted as an attempt to get it within the acceptance criteria. To make the adjustment requires the removal of the Trevitest device to allow turning of a setpoint adjusting bolt. Following adjustment, the Trevitest device was reinstalled, the loop water seal was reestablished at the valve seat, and SI-747 was reperformed. During each test performance, it was difficult to reestablish the loop seal at the valve seat as valve leakage continued to be a problem. The valve design requires the water seal to be present in order to get accurate setpoint data.

From 1723 EST to 2158 EST, a series of setpoint adjustments with subsequent reperformance of SI-747 were made on 2-68-563 with the following calculated results:

Trevi TEST NO.	TIME	RESULTS
1	1723 EST	Failed at 2634 psig
2	1746 EST	Failed at 2628 psig
3	1848 EST	Failed at 2598 psig
4	1850 EST	Failed at 2657 psig
5	1925 EST	Failed at 2510 psig
6	2158 EST	Passed at 2486 psig
7	2229 EST	Passed at 2463 psig

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

At 2229 EST, operability of valve 2-68-563 with two consecutive setpoints within acceptable limits was verbally reported to the control room operators. At 2300 EST, a depressurization of the RCS was initiated in preparation of a unit cooldown while awaiting the administrative (paper work) close out of SI-747 for 2-68-653 acceptance. At 2310 EST, a declaration of an unusual event was made since a cooldown to mode 4 was being initiated to comply with the action statement of LCO 3.4.3.1. Emergency Plan Implementing Procedure (IP)-2, "Notification of Unusual Event," was implemented and a cooldown in accordance with General Operating Instruction (GOI)-3, "Plant Shutdown from Minimum Load to Cold Shutdown," of the RCS was initiated. At 2320 EST, the control room operators received the report documenting SI-747 completed satisfactorily for pressurizer code safety valve 2-68-563 and subsequently returned the valve to an operable status. The action statement of LCO 3.4.3.1 was subsequently exited, the plant cooldown was terminated at 370 degrees F, and IP-2 was exited. The adjustments made to the valve setting did not provide any corrective actions to reduce valve seat leakage.

Based on the results of SI-747 for 2-68-653, it was decided by plant management that the prudent course of action was to perform SI-747 on the remaining unit 2 pressurizer code safety valves (2-68-564 and 2-68-565) to ensure proper lift settings. At 1752 EDT on April 3, 1988, with unit 2 at 0 percent power, 2245 psig, 546 degrees F, and a loop seal temperature of 278 degrees F, pressurizer code safety valve 2-68-564 failed to meet the lift setting acceptance criteria when a 2678 psig lift setting was calculated during the performance of SI-747. The valve was declared inoperable, and the action statement of LCO 3.4.3.1 was entered. From 1752 EDT to 2022 EDT, a series of setpoint adjustments with subsequent reperformance of SI-747 were made on 2-68-564 with the following calculated results:

Trevi TEST NO.	TIME	RESULTS
1	1752 EDT	Failed at 2678 psig
2	1826 EDT	Failed at 2573 psig
3	1838 EDT	Passed at 2499 psig
4	1901 EDT	Failed at 2343 psig
5	2007 EDT	Failed at 2393 psig
6	2022 EDT	Passed at 2499 psig
7	2227 EDT	Passed at 2502 psig

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

At 2028 EDT, a declaration of an unusual event was made and IP-2 was initiated since a cooldown of the RCS was being initiated. At 2030 EST, a cooldown to mode 4 commenced, in accordance with GOI-3, to comply with the action statement of LCO 3.4.3.1. At 2227 EDT, a reperformance of SI-747 for reproducibility was completed (test 7) with satisfactory results with a calculated lift setting of 2502 psig. At 2241 EST, 2-68-564 was returned to an operable status, the action statement of LCO 3.4.3.1 was exited, the plant cooldown was terminated at 421 degrees F, and IP-2 was exited. Following the return of 2-68-564 to an operable status, there was indication of valve seat leakage similar to 2-68-563.

At 1344 EDT on April 4, 1988, while unit 2 was at 0 percent power, 1748 psig, 427 degrees F, and a loop seal temperature of 264 degrees F, pressurizer code safety relief valve 2-68-565 failed to meet the lift setting acceptance criteria when a 2660 psig lift setting was calculated during the performance of SI-747. The valve was declared inoperable, and the action statement of LCO 3.4.3.1 was entered. Following setpoint adjustment, 2-68-565 was retested and still found to be unsatisfactory with a calculated lift setpoint of 2456 psig at 1406 EDT. Additional setpoint adjustments were made, and SI-747 was reperformed with satisfactory results with a calculated lift pressure of 2488 psig at 1415 EDT. At 1454 EDT, reperformance of SI-747 for reproducibility was completed with satisfactory results with a calculated lift pressure of 2481 psig. At 1457 EDT, 2-68-565 was declared operable, and the action statement of LCO 3.4.3.1 was exited. It was not evident if valve seat leakage occurred following setpoint adjustment of 2-68-565.

On April 8, 1988, unit 2 was placed in a mode 5 condition to locate and repair the source of a primary to secondary leak identified in the number 3 steam generator. While in this mode 5 condition, the pressurizer code safety relief valves were removed and sent to Wyle Laboratories for bench testing and seat refurbishment. The action statement of LCO 3.4.2 was entered at 2358 EDT when the third pressurizer code safety valve was removed. LCO 3.4.2 requires at least one pressurizer code safety valve be operable while in mode 5. The action statement of LCO 3.4.2 requires the suspension of all positive reactivity changes and the placement of a residual heat removal (RHR) (EIIS Code BP) loop into operation in the shutdown cooling mode. The RHR system had previously been placed in-service to provide RCS temperature control during the cooldown to mode 5.

On April 14 - 16, 1988, bench testing of the relief valves was conducted. The test assembly used during this bench testing consisted of a tank of water pressurized by nitrogen. Pressure was controlled by the test directors operation of a pressure regulating valve. A stand pipe arrangement was used to introduce the nitrogen and prevent it from reaching the valve seat. This assembly closely simulated actual valve operating conditions by maintaining the

water temperature at approximately 120 degrees F at the seat of the valve. The valve temperature was increased to approximately 120 degrees F, in accordance with Sequoyah's Division of Nuclear Engineering personnel direction based on a new loop seal design that had been implemented in the plant, and measuring devices were installed to measure and record the system pressure and valve spindle displacement similar to the previously described Wyle Laboratory bench test. Thus, a direct means of determining system lift pressure and measuring valve spindle displacement was provided to determine valve lift pressure. Before mounting the valves on the test assembly, all three valves were refurbished; valve 2-68-563 had its disc insert replaced and valve 2-68-564 had its disc insert and its disc holder replaced. The replacement parts did change some of the valve dimensions in a manner that would have affected the settings determined during the in-service testing because a change in the valves spring compression had occurred.

Valve 2-68-563 failed the initial lift with a lift pressure of 2435 psig and a subsequent lift at 2384 psig. Adjustments were made to the lift setting and satisfactory test results were attained following an unsatisfactory lift at 2437 pisg, by lifting at 2472 psig, 2468 psig, and 2467 psig without additional setpoint adjustments.

Valve 2-68-564 failed the initial lift with a lift pressure of 2430 psig and a subsequent lift at 2432 psig. Following valve setpoint adjustments and a total of twelve valve lifts, 2-68-564 test results were satisfactory with consecutive lifts at 2502 psig and 2501 psig without setpoint adjustments.

Valve 2-68-565 failed the initial lift with a lift pressure of 2390 psig. Following valve setpoint adjustments and a total of six valve lifts, 2-68-565 test results were satisfactory with two consecutive lifts at 2492 psig without setpoint adjustments.

All three relief valves were seat leak tested at Wyle Laboratories following valve refurbishment and were determined to be satisfactory.

On April 17, 1988, valves 2-68-563 and 2-68-565 were reinstalled in the plant. At 2155 EDT on April 17, 1988, the action statement of LCO 3.4.2 was exited. On April 18, 1988, 2-68-564 was reinstalled in the plant.

CAUSE OF EVENT

The root cause of this event is attributed to the difference in methodology used to determine the lift pressure of the valve during the in-service testing and the bench testing. The in-service test procedure determines the valve lift at some pressure beyond the point at which the valve begins to unseat. This set pressure normally corresponds to a readily distinguishable change in slope on the strip chart which is measuring load cell output. Audible flow from the valve is used as a backup to the strip chart recording to help confirm the point

at which the setpoint is defined. Some subjectivity usually exists in making the setpoint determination. The bench test determines valve lift by strip chart measurement of pressure and spindle displacement. An LVDT is used to measure spindle movement and is accurate within 0.001 inch. Since the determination of valve lift pressure is based on the existing parameters (measured pressure or measured force) when valve lift occurs in both tests, the measured/calculated lift pressure will be dependent on the determination of valve lift occurrence. Additionally, differences in setpoint determinations can be attributed to the mathematical limits associated with the in-service testing, any environmental differences associated with bench test from the in-service conditions, (i.e., loop seal temperatures, lift medium, and valve loading) and the valve dimensional changes made when valve parts were replaced in 2-68-563 and 2-68-564 at Wyle Laboratories before the bench testing was conducted.

ANALYSIS OF EVENT

This report is submitted pursuant to the requirements of 10 CFR 50.73, paragraph a.2.i.B, as a condition prohibited by technical specifications.

The pressurizer code safety valves were bench tested, previous to the in-service testing, using hot nitrogen as the lifting medium, then tested while in-service using the Trevitest device on April 2 - 4, 1988, followed by another bench test on April 14 - 16, 1988, using water as the lifting medium. Though both the Wyle Laboratory and the Furmanite methods of testing relief valve settings have been accepted by the industry to meet the requirements of ASME Section XI testing, they have not demonstrated in this experience that they will determine an equivalent setting. The Wyle test determines a setpoint based upon valve unseating, while Trevitest setpoint is determined at some point between valve unseating and full lift. The current pressurizer code safety valve lift settings are based on the results of the bench testing by choice of Sequoyah's management. The bases for this choice is because the bench testing directly measures the actual lift pressure and measures when valve spindle displacement occurs, indicative of the disc unseating. The spindle displacement is measured using a linear voltage differential transformer with an accuracy of less than 0.001 of an inch. Since the pressure corresponding to significant valve spindle displacement is used as the lift pressure, it is necessary that both the pressure and spindle displacement be accurately determined in order to obtain an accurate lift setting of the relief valve.

On the other hand, the Trevitest in-service testing measures the lifting force applied to overcome the relief valve spring force, and the valve lift point is determined by looking for a slope change on the strip chart for the load cell, as well as by test personnel listening for flow passage through the valve. This information is then used to calculate the relief valve pressure lift setting based on the valve disc surface area exposed to system pressure and the system's

static pressure. Though this method provides the convenience of in-service testing and allows the valves to be tested under in-service conditions, it appears to Sequoyah personnel that this method has a larger tolerance for error in determining the valve lift settings. This conclusion was reached based on the subjectivity in determining valve lift and the larger tolerance from actual setpoint that may result in reading the strip chart graphs. Strip chart graph readings could lead to more error for the Trevitest because the readings are multipled by a conversion factor to convert the force to pressure.

Based on this position, the pressurizer code safety valves were rendered inoperable on April 2 - 4, 1988, while adjusting the lift settings to meet the test criteria as calculated from the Trevitest data. TS LCO 3.4.3.1 requires all three pressurizer code safety valves be operable with a lift setting of 2485 psig ± one percent while in mode 3. The adjustments made at that time were appropriate to comply with LCO 3.4.3.1 based on the Trevitest data and Sequoyah's definition of valve lift but actually rendered the valves inoperable by adjusting them to an artificially low setpoint as was later determined through an engineering evaluation and follow-up retesting at Wyle Laboratories on April 14 - 16, 1988. Therefore, unit 2 was in noncompliance with TS LCO 3.4.3.1 while in mode 3 from April 2 - 7, 1988, and TS LCO 3.4.2 while in modes 4 and 5 from April 7 - 13, 1988, since all the lift settings were lower than the specified tolerance. Compliance with TS was reestablished on April 13, 1988, following removal of the third pressurizer code safety valve for bench testing at 2358 EDT by entering the action statement of LCO 3.4.2.

The bases for LCO 3.4.3.1 to have all pressurizer code safety valves operable while in modes 1, 2, and 3 is to prevent the RCS from exceeding the 2735 psig safety limit. All three relief valves are required to provide sufficient capacity to relieve the pressure surge caused by a loss of load from 100 percent power, assuming no reactor trip until the first reactor protection system setpoint is reached (i.e., no credit is taken for a direct reactor trip on the loss of loads). This loss of load condition, however, is not applicable to the situation described in this report since the reactor was shutdown. If the reactor had been restarted and operated at 100 percent power and a postulated loss of load occurred, protection from reaching the pressure safety limit would still have been provided because the lift settings were set below the lift settings specified by technical specifications. However, an adverse condition could have resulted from an unwarranted lifting of a code safety valve due to the low lift setting.

A challenge to the pressurizer safety valve setpoints would be unlikely because additional means of overpressure protection is available via the pressurizer power operated relief valves (PORV). The PORVs are set to automatically open at 2335 psig and are provided with the controls for an operator to open, close, or isolate them. Accident analysis does not take credit for these valves; although, they are available to limit challenges to the code safety valves. The PORVs are sized to prevent a reactor trip (trip setpoint of 2385 psig) upon a loss of load from 100 percent power with the aid of the steam dump system (EIIS Code SB).

The bases for LCO 3.4.2 to have at least one pressurizer code safety valve operable while in modes 4 and 5 is also to prevent the RCS from exceeding the 2735 psig safety limit, but the relief capacity of a single safety valve is adequate to relieve any overpressure condition which could occur during shutdown conditions. The relief protection during this event was provided by the pressurizer code safety valves at a lower pressure than TS requires while in modes 4 and 5, but again, the valves could have lifted from an unwarranted pressure condition. Moreover, an overpressure condition sufficient to cause lifting of the code safety valves while in modes 4 and 5 has a low probability of occurring since the RHR system is placed in the shutdown cooling mode while in mode 4, at approximately 350 degrees F and 380 psig. The RHR system provides overpressure protection via an RHR relief valve set at 450 psig sized to provide relief capability from the flow of two charging pumps. Additional overpressure protection is provided via the pressurizer power operated relief valves. These valves are set to lift at 2335 psig and are provided with a means for an operator to close them or isolate them as previously described. During modes 4 and 5, the PORVs serve as cold overpressure protection by using a variable setpoint based on RCS temperature. The variable setpoint is armed at 350 degrees F and varies from 450 psig to 755 psig.

CORRECTIVE ACTIONS

As immediate operator actions upon declaring each safety valve inoperable from the in-service test results, the action statement of LCO 3.4.3.1 was entered and complied with. For 2-68-563 and 2-68-564, a declaration of an unusual event was made, IP-2 was entered, and a cooldown was initiated in accordance with GOI-3 to comply with the action statement of LCO 3.4.3.1. IP-2 was not required for 2-68-565 because sufficient time remained to comply with the action statement and allow further valve setpoint adjustment and retesting when the valve was returned to an operable status.

As corrective action to return the relief valves to an operable status during in-service testing, maintenance personnel made setpoint adjustments and conducted retesting of the valves until the acceptance criteria was met.

As a precautionary measure, all three relief valves were removed from the plant following entry into mode 5 and sent to Wyle Laboratories for additional bench testing using water as the lifting medium. The valve lift setting required additional adjustments during this testing. The resulting setpoints are the settings Sequoyah will use to satisfy TS LCO 3.4.3.1 pending the conclusion that any resultant pressure accumulation on the RCS caused during the passage of the water seal through the valve is within Sequoyah's transient analysis. The analysis is expected to be complete by May 6, 1988.

As corrective actions for the identified valve seat leakage, all three valves were refurbished and passed a seat leak test while at Wyle Laboratories.

To prevent recurrence of this event, Sequoyah will use consistent methods for defining and determining valve lift when determining the pressurizer code safety valve lift settings using water as the lifting medium. This definition will be provided in SI-112, "Testing and Setting of Setpoint of Pressurizer Safety Valves," by August 5, 1988.

ADDITIONAL INFORMATION

At 2310 EST, on April 2, 1988, an unusual event was declared from the failure of 2-68-563 to meet the setpoint requirements, resulting in the initiation of a plant cooldown. A notification of the unusual event was made at 2327 EST as required by 10 CFR 50.72, paragraph i.a, and 10 CFR 50.72, paragraph a.1.i.

At 1845 EDT on April 3, 1988, an information call was made to the NRC Operations Center and the NRC resident inspector concerning the failure of 2-68-564 to meet the setpoint requirements. At 2028 EDT on April 3, 1988, an unusual event was declared when the initiation of a plant cooldown was required. A notification of the unusual event was made at 2042 EDT as required by 10 CFR 50.72, paragraph 1.A, and 10 CFR 50.72, paragraph a.1.i.

At 1420 EDT on April 17, 1988, the NRC Operations Center and the NRC resident inspector were notified of the test results obtained at Wyle Laboratories on April 14 - 16, 1988, as required by 10 CFR 50.72, paragraph b.2.i, and 10 CFR 50.72, paragraph b.2.iii.

The Sequoyah pressurizer code safety valves are self actuating spring loaded valves manufactured by CROSBY - Model No. HB-86-BP.

There have been no similar occurrences of this event reported by Sequoyah.

This report is submitted pursuant to 10 CFR 21, in addition to 10 CFR 50.73, paragraph a.2.i, as an identified basic component that could contribute to exceeding a safety limit as defined by TS. The basic component in this content is the pressurizer code safety valves. These valves are provided to prevent exceeding the pressure safety limit of 2735 psig. No failure of the valves have occurred but the two procedures implemented to determine the valve settings have demonstrated significant changes were required to the valve settings. Sequoyah has used the services of Furmanite to provide in-service testing using a Trevitest device and Wyle Laboratories to provide bench testing of the valves under simulated plant conditions. The differences in the setpoints determined under these two testing methods for the Sequoyah valves can be attributed, in part, to changes made that are not related to the type of testing performed nor the procedures used in implementing the the tests. These items include the replacement of valve parts that were made after the Furmanite test and before the performance of the Wyle test, and changes made at the direction of Sequoyah for simulating loop seal temperatures. However, the occurrence of valve lift is not clearly defined for use in determining valve setpoints. During the

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performance of the in-service testing, Sequoyah used the Trevitest strip chart recording of pressure in conjunction with audible flow passage through the valve to determine valve lift. Valve lift as determined by this method is actually somewhere between the unseating of the valve and full flow passage. During the performance of the bench testing, valve lift was determined by approximately .001 inch of valve spindle displacement as measured using a LVDT. Valve lift as determined by this method is the point of the valve disc unseating. Since the determination of valve lift is critical in determining the valves setpoint, it is appropriate to report this condition under 10 CFR 21.

COMMITMENTS

Complete pressure transient analysis on the RCS resulting from pressure accumulation during pressurizer code safety valve lifting by May 6, 1988.

Revise SI-112 to provide a definition of relief valve lift when setpoint testing using water as a lift medium by August 5, 1988.

0924Q

TENNESSEE VALLEY AUTHORITY
Sequoyah Nuclear Plant
Post Office Box 2000
Soddy-Daisy, Tennessee 37379

April 28, 1988

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

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT UNIT 2 - DOCKET NO. 50-328 - FACILITY OPERATING LICENSE DPR-79 - REPORTABLE OCCURRENCE REPORT SQRO-50-328/88016

The enclosed licensee event report provides details concerning inoperable pressurizer code safety valves due to low lift settings caused by the use of different lift setting testing methods and the resultant setpoint adjustments. This event is reported in accordance with 10 CFR 50.73, paragraph a.2.i.b, as a condition prohibited by technical specifications and 10 CFR 21 as a defect in the determination of valve lift.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

S. J. Smith
Plant Manager

Enclosure
cc (Enclosure):

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