

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 4 1 1 4				PAGE (3) 1 OF 0 5								
TITLE (4) Technical Specification Violation Because Of The Implementation Of Inadequate Compensatory Measures Due To A Management Deficiency																						
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 N/A				DOCKET NUMBER(S) 0 5 0 0 0									
0	2	2	4	8	8	8	8	0	0	8	0	0	3	2	5	8	8	0	5	0	0	0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)																						
OPERATING MODE (9) 3		20.402(b)				20.405(a)				50.73(a)(2)(iv)				73.71(b)								
POWER LEVEL (10) 0 1 0 1 0		20.405(a)(1)(i)				50.76(a)(1)				50.73(a)(2)(v)				73.71(e)								
		20.405(a)(1)(ii)				50.70(a)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)								
		20.405(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(vii)(A)												
		20.405(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(vii)(B)												
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(x)												
LICENSEE CONTACT FOR THIS LER (12)																						
NAME Julio G. Torre, Associate Engineer - Licensing										TELEPHONE NUMBER 710 14 317 13 1-18 1012 19												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																						
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC												
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 fifteen single-space typewritten lines) (16)

On February 23, 1988, at 2359 hours, a 48 hour action statement expired concerning the Acoustic Monitoring instrumentation for the Pressurizer Safety Relief valves position indication. A compensatory action had been established to monitor each valve's discharge line temperature in order to determine valve position during abnormal conditions. However, the compensatory action was later determined to be inadequate due to the specified Resistance Temperature Detectors (RTDs) not being qualified for use in a post accident Containment environment. The violation of Technical Specifications began at 0559 hours on February 24, 1988, when the Unit was not placed in Mode 4, Hot Shutdown, as required. The violation ended the same day when the Acoustic Monitoring instrumentation was restored to operability at 1130 hours. The Unit was in Mode 3, Hot Standby, during this incident.

This incident is attributed to a management deficiency. The Acoustic Monitoring instrumentation was returned to operability before any reduction in Reactor Coolant temperature was initiated. This incident will be reviewed with all Shift Supervisors. A Technical Specification Interpretation will be issued to clarify which instrumentation is required for Pressurizer Safety Relief valve position indication.

The health and safety of the public were unaffected by this event.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Catawba Nuclear Station, Unit 2	0500041488	—	008	—	00	02	OF 05

TEXT (If more space is required, use additional NRC Form 365A's) (17)

BACKGROUND:

The Pressurizer (EIIS:PZR) (PZR) Safety Relief valves (EIIS:V) operate to prevent the Reactor (EIIS:RCT) Coolant (EIIS:AB) (NC) System pressure from exceeding its safety limit of 2735 psig during severe transients. There are three PZR Safety Relief valves per Unit, each with a setpoint of 2485 psig (+1%). The combined relief capacity of the three valves is greater than the maximum surge rate resulting from a complete loss of load without Reactor trip or any other control. Flow through the safeties is detected by an acoustic flow detection system, which uses accelerometers to sense vibrations in the discharge piping of each valve. The acoustical vibrations are proportional to the amount of flow. Output from the accelerometer is converted to a voltage which is then processed by the TEC 914 Valve Monitoring Module and displayed on a 10-segment LED bar graph as relative valve flow rate. If a predetermined flow rate is exceeded from any of the three valves, a safety related indicator light on control board 2MC10 will be illuminated, and a non-safety related annunciator alarm will sound. The bar graphs on the monitor can then be used to determine which valve is open. In addition to the acoustic monitor, a non-safety related resistance temperature detector (RTD) provides an alarm and temperature indication in the Control Room. There is one RTD on each safety valve discharge line. Discharge through the safety valves is directed to the Pressurizer Relief Tank (EIIS:TK) (PRT) where it is condensed and cooled. The PRT temperature, pressure, and level are monitored by non-safety related instrumentation, and annunciator alarms are generated in the Control Room when these parameters exceed their nominal values.

Additional overpressure protection for the NC System is provided by three PZR Power Operated Relief Valves (PORVs), which are normally set to open at 2335 psig. These valves are designed to limit pressure in the NC System to below the high pressure Reactor trip setpoint for all design transients up to and including a 95% step load decrease with steam dump actuation. The operation of these valves also limits the undesirable opening of the spring loaded safety relief valves. Discharge from the PORVs is also directed to the PRT.

Technical Specification 3.3.3.6 (Accident Monitoring Instrumentation) specifies that one channel of Pressurizer Safety Relief Valve Position Indication for each valve must be operable in Mode 3, Hot Standby, and above. The Technical Specification does not specifically identify the Acoustic Monitoring instrumentation as the required position indication channel. However, Operations personnel are aware that the specification covers the Acoustic Monitors and not the temperature indication. If the Acoustic Monitoring instrumentation is inoperable, it must be restored to operability within 48 hours, or the Unit must be placed in Mode 3 within the next 6 hours, and Mode 4, Hot Shutdown, within the following 6 hours. The Unit is permitted to enter Mode 3 from Mode 4 with this instrumentation inoperable providing the requirements of the action statement are met.

PT/2/A/4150/01A, NC System Leak Test, is performed after the NC System pressure boundary has been closed following maintenance or refueling. During the test, NC System pressure is increased to 2350 psig while the PZR PORVs are isolated. A visual inspection of the NC System is then conducted while the pressure is stable

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (4)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Catawba Nuclear Station, Unit 2	0 5 0 0 0 4 1 4 8 8	—	0 0 8	—	0 0	0 3 OF 0 5

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

at 2350 psig. The Limits and Precautions of the procedure do not allow NC pressure to exceed 2350 psig in order to prevent seepage past the Pzr Safety Relief valves. During the test, one Control Room Operator (CRO) is assigned exclusively to monitor and control NC pressure until the test is terminated.

DESCRIPTION OF INCIDENT:

On February 19, 1988, at 2315 hours, the Acoustic Monitoring instrumentation for the Pzr Safety Relief valves was declared inoperable for its 18 month calibration. At the time, the Unit was in Mode 4, Hot Shutdown, and the instrumentation was not required to be operable. The Unit entered Mode 3, Hot Standby, on February 21, 1988, at 2359 hours. At this time, a 48 hour action statement began to restore the instrumentation to operability or begin a return to Mode 4. As the 48 hour time limit approached on February 23, 1988, the work was not completed on the instrumentation. Instrumentation and Electrical (IAE) personnel were experiencing problems replacing a defective charge converter (EIIIS:CNV) in the instrumentation. The Operations Shift Supervisor consulted with Compliance personnel at home, then established a compensatory action at approximately 2345 hours in order to allow continued operation in Mode 3. The compensatory action required the Balance of Plant Operator to monitor the Pzr Safety Relief valve discharge temperature instrumentation to determine if the valves lifted during any unusual transients. The monitoring was to begin when any signal or parameter indicated a significant off-normal condition. At the time, the Shift Supervisor was not aware that the RTDs associated with this instrumentation were not qualified for use in a post accident Containment environment. At 2359 hours, the action statement time limit expired with the inadequate compensatory action in place.

On February 24, 1988, the CROs began performing PT/2/A/4150/01A in order to demonstrate the integrity of the NC System pressure boundary following the refueling outage. The Pzr PORV Isolation valves were closed at approximately 0034 hours. NC System pressure was increased from 2235 psig to approximately 2350 psig and held while the system was visually inspected for leakage. At 0539 hours, the violation of Technical Specifications began due to the Unit remaining in Mode 3 for more than six hours after the action statement time limit had expired. The NC System leak test was completed at approximately 0710 hours when the Pzr PORV Isolation valves were reopened. At this time, NC pressure had been restored to approximately 2235 psig where it remained for the rest of the day.

At approximately 0930 hours, the Compliance Engineer determined that the compensatory action was inadequate due to the RTDs not being environmentally qualified for post accident use. Operations personnel were notified and it was determined that a shutdown to Mode 4 was required by 1530 hours. However, before any reduction in NC temperature occurred, the Acoustic Monitoring instrumentation was returned to operability at 1130 hours, ending the violation.

CONCLUSION:

This incident has been attributed to a management deficiency. The compensatory action established and documented by the Shift Supervisor was inadequate because

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Catawba Nuclear Station, Unit 2	0 5 0 0 0 4 1 4 8 8	—	0 0 8	— 0 0	0 4	OF 0 5

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

the instrumentation it relied upon is not qualified for use in a post accident Containment environment. Since the compensatory action was intended to maintain compliance with the Accident Monitoring Instrumentation Technical Specification, any substitute instrumentation it relied upon should have been qualified for post accident use. The temperature monitoring instrumentation is not required to be qualified for post accident use because it is non-safety related and is not required by any Technical Specifications. The Shift Supervisor originally intended to write the compensatory action for CROs to establish safety valve position by using safety related Pzr level and pressure instrumentation in combination with the Reactor Vessel Level Instrumentation System (RVLIS). The CROs have received Simulator training on identifying leaks in the pressurizer or its relief valves using these parameters. However, he decided that the compensatory action documentation could be made less complicated by taking credit for the temperature instrumentation on the safety valves. At the time, he was under the impression that the temperature indication was Technical Specification related and an acceptable substitute for the Acoustic Monitors. The Pzr Safety Relief valve downstream RTDs perform the same function of detecting an open relief valve as do the Acoustic Monitors. When he consulted with Compliance personnel at home, they said they did not have enough information available, and they believed that the Shift Supervisor should make the decision on the compensatory action.

The ambiguity of Technical Specification 3.3.3.6 contributed to this incident. The specification does not clearly define which instrumentation is required for position indication. While the information is available elsewhere, a Technical Specification Interpretation will be issued to clarify the matter and make the required information easily accessible.

There have been four previous Incidents involving Technical Specification violations due to lack of or inadequate management policies or directives in the past three years (see LER 413/87-23, LER 413/85-66 LER 413/85-15, and LER 413/86-41). Therefore, this type of incident is considered to be recurring. However, none of these events concerned compensatory action policies and therefore could not have prevented this incident.

CORRECTIVE ACTION:

SUBSEQUENT

The Acoustic Monitoring instrumentation was returned to operability.

PLANNED

- (1) This incident will be discussed at a Shift Supervisor's meeting with emphasis on proper use of substitute instrumentation in compensatory actions.
- (2) A Technical Specification Interpretation will be issued to clarify that the "Position Indication" requirement for the Pzr Safety Relief valves

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Catawba Nuclear Station, Unit 2	0500041488	—	008	—	00	05	OF 05

TEXT (If more space is required, use additional NRC Form 365A's) (17)

can only be met using the acoustic monitoring instrumentation. This interpretation should also include clarification of the PORV position indication requirements.

SAFETY ANALYSIS:

The Unit remained in Mode 3, Hot Standby, for 5 1/2 hours longer than allowed by Technical Specifications with the Acoustic Monitoring instrumentation inoperable and inadequate compensatory measures in place. During part of this time, NC System pressure was elevated above normal, and the Pzr PORVs were isolated from the system for performance of the NC System Leak Test.

During the test, NC system pressure was monitored constantly by a CRO and did not exceed approximately 2350 psig. This is approximately 110 psig below the setpoint of the Pzr Safety Relief valves (allowing for uncertainty in the setpoint). If one of the safeties had lifted prematurely and stuck open, several indications would have alerted the CROs to the problem. Decreasing Pzr pressure accompanied by increasing Pzr level are the most recognizable initial symptoms of a leaking safety or PORV. CROs receive extensive Simulator training on recognizing these symptoms as indicators of a leak in the Pzr or its relief valves. The CROs would have used this experience to diagnose the leaking safety in addition to the compensatory action monitoring. In addition, AP/2/A/5500/11, Inadvertent NC System Depressurization, directs the CROs to check PRT parameters and Pzr Safety Relief valve discharge temperature as well as the Acoustic Monitor instrumentation to establish safety valve position. Since there are no block valves for the safeties and the valves are spring actuated, no operator actions could be taken to isolate this type of leak from the Control Room. At 1955 psig, automatic Safety Injection would be actuated. The consequences of this transient have been analyzed and are presented in Section 15.6.1 of the Catawba FSAR. Since the FSAR analysis was performed from nominal full power conditions, it is still bounding for this incident. The analysis takes no credit for operator actions which would require knowledge of the Pzr Safety Relief valve position.

Following the test, NC pressure remained stable at the nominal value of approximately 2235 psig, and the PORV Isolation valves were open. It is very unlikely that a NC System pressure transient severe enough to overwhelm the PORVs and challenge the safeties could have occurred with the Unit in Mode 3.

This incident is reportable pursuant to 10 CFR 50.73, Section (a)(2)(i)(B).

The health and safety of the public were not affected by this incident.

DUKE POWER COMPANY

P.O. BOX 33189
CHARLOTTE, N.C. 28242

HAL B. TUCKER
VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

March 25, 1988

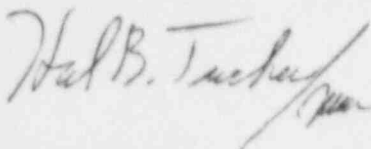
Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Unit 2
Docket No. 50-414
LER 414/88-08

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 414/88-08 concerning a Technical Specification violation involving compensatory measures to monitor the Pressurizer Safety Relief Valves position during abnormal conditions. This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

JGT/10012/sbn

Attachment

xc: Dr. J. Nelson Grace
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

M&M Nuclear Consultants
1221 Avenue of the Americas
New York, New York 10020

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange, Suite 245
270 Farmington Avenue
Farmington, CT 06032

Mr. P. K. Van Doorn
NRC Resident Inspector
Catawba Nuclear Station

IE22
11