



Arkansas Power & Light Company
425 West Capitol
P. O. Box 551
Little Rock, AR 72203
Tel 501 377 4000

January 18, 1990

1CANØ19Ø11

U. S. Nuclear Regulatory Commission
Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

SUBJECT: Arkansas Nuclear One - Unit 1
Docket No. 50-313
License No. DPR-51
Licensee Event Report No. 50-313/89-047-00

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B), attached is the subject report concerning the Reactor Coolant System temperature being increased above 250 degrees with oxygen concentration greater than allowed by Technical Specifications due to inadequate procedural guidance.

Very truly yours,

E. C. Ewing
General Manager,
Technical Support
and Assessment

ECE/RHS/sgw
Attachment

cc: Regional Administrator
Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

INPO Records Center
1500 Circle 75 Parkway
Atlanta, GA 30339-3064

9002050168 900118
PDR ADOCK 05000313
S FDC

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Arkansas Nuclear One, Unit One	051010313	89	047	0	012 OF 013

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

A. Plant Status

At the time of this event, Arkansas Nuclear One, Unit 1 (ANO-1) was shutdown in the heatup mode with Reactor Coolant Pumps (RCP) P-32C and P-32D in operation. Reactor Coolant System (RCS) [AB] temperature was 250 degrees.

B. Event Description

On December 19, 1989, at approximately 0240, during plant heatup in preparation for reactor startup, RCS temperature was increased above 250 degrees with oxygen concentration greater than allowed by the plant's Technical Specifications.

Technical Specification 3.1.5.1 specifies that oxygen concentration shall not exceed 0.1 parts per million (PPM) whenever RCS temperature is above 250 degrees. Additionally, Technical Specification 3.1.5.2 states that during operation above 250 degrees, if any of the specifications in 3.1.5.1 are exceeded, corrective actions shall be initiated within 8 hours to restore the normal operating limits. If the concentration limit is not restored within 24 hours after initiation of corrective actions, the reactor shall be placed in a cold shutdown condition using normal procedures.

At 0039 on December 19, 1989, with RCS temperature at approximately 176 degrees, plant heatup was initiated by starting RCPs P-32C and P-32D. At 0240, RCS temperature increased above 250 degrees. At 0810 on December 19, a chemistry analysis determined that RCS oxygen concentration was 2.0 ppm. The applicable Limiting Condition for Operation was entered and preparations were made to add hydrazine to the RCS to bring oxygen concentration within the Technical Specification limit of 0.1 ppm. At 0925, addition of hydrazine was initiated and at 1430 on December 19, chemical analysis verified oxygen concentration to be within Technical Specifications limits at 40 parts per billion.

C. Safety Significance

The Bases for the ANO-1 Technical Specifications state that the limits specified for oxygen, chlorides and fluorides are at least an order of magnitude below those concentrations which could result in damage to materials found in the RCS, even if maintained for an extended period of time. Oxygen concentration was out of specification for approximately 12 hours, which is less than the time allowed by Technical Specification 3.1.5.2 for recovery. During this time, RCS temperature was not increased above 308 degrees and chlorides and fluorides were within specifications. Considering the above, and the time dependent nature of any adverse effects arising from oxygen or halogen concentrations in excess of the limits, the safety significance of this condition is considered minimal.

D. Root Cause

The ANO-1 "Plant Startup" procedure requires that, before increasing RCS temperature above 200 degrees, RCS chemistry be established in accordance with Technical Specification 3.1.5 or verification that it has been previously performed. At this point in the procedure, the operators verified that RCS chemistry was within specifications by reviewing the most recent chemistry analysis, which showed RCS oxygen concentration to be less than 5 parts per billion. However, this sample had been taken at 1530 on December 18, while the Decay Heat Removal System was in service, and was not representative of the overall system oxygen concentration. This was due to the higher oxygen concentration in the stagnant RCS loops. When the RCPs were started to initiate heatup, the coolant was homogeneously mixed. The next sample, which was taken at 0810 on December 19, was representative of RCS oxygen concentration. Although this condition has not occurred previously, it was determined that the guidance provided by the 'Plant Startup' procedure with respect to the establishment of RCS chemistry was not sufficiently specific. Therefore, the root cause of this event is considered to be inadequate procedural guidance.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		Year	Sequential Number	Revision Number	
Arkansas Nuclear One, Unit One		89	047	0	030F03

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

E. Basis for Reportability

Since RCS temperature was increased above 250 degrees with oxygen concentration greater than the limit specified in Technical Specification 3.1.5.1, this condition is considered reportable in accordance with 10CFR50.73(a)(2)(i)(B) as operation in a condition prohibited by the plant's Technical Specifications.

F. Corrective Actions

At 0925, addition of hydrazine was initiated and at 1430 on December 19, chemical analysis verified oxygen concentration to be within Technical Specifications limits.

The 'Plant Startup' procedure will be revised by February 15, 1990, to require a signoff by Plant Chemistry verifying the RCS oxygen concentration is less than 0.1 ppm after starting the RCPs and prior to increasing RCS temperature above 250 degrees. This procedure change should prevent the occurrence of similar events. There are no ANO-1 shutdowns anticipated prior to this date.

The ANO-2 'Plant Startup' procedure presently requires a Chemistry Department signoff verifying that oxygen concentration is less than 0.1 ppm after the RCPs are running and prior to heatup above 250 degrees.

G. Additional Information

There have been no previous similar events reported regarding plant heatup with RCS chemistry greater than Technical Specifications limits. Energy Industry Identification System codes are indicated in the text as [XX].