

LICENSEE EVENT REPORT (LER)

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TITLE (4)
CONTAINMENT ATMOSPHERE CONTROL (CAC) SYSTEM BYPASS LEAKAGE NOT IN COMPLIANCE WITH THE TECHNICAL SPECIFICATIONS DUE TO LESS THAN ADEQUATE PROCEDURES/CORRECTIVE ACTION FOLLOWUP

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 NUMBERS(S)																
0	3	3	1	9	3	9	3	--	0	1	6	--	0	0	0	4	3	0	9	3		0	5	0	0	0	

OPERATING MODE (9) 1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											
POWER LEVEL (10) 0 9 7	20.402(b)			20.405(C)			50.73(a)(2)(iv)			77.71(b)		
	20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.73(c)		
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
	20.405(a)(1)(iii)			X 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)						

LICENSEE CONTACT FOR THIS LER (12)									
NAME J. D. Arbuckle, Licensing Engineer							TELEPHONE NUMBER		
							AREA CODE 5 0 9 3 7 7 - 4 6 0 1		

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

ABSTRACT (16)

On March 31, 1993, at 0115 hours, during the performance of Plant Procedure (PPM) 7.4.6.6.1.3C, "Hydrogen Recombiner 1A Flow Instrumentation," a plant control room operator noticed that Containment Atmosphere Control (CAC) System primary containment isolation valves CAC-V-4 and CAC-V-6 were open. This condition opened a path between the drywell and the wetwell through the CAC "A" hydrogen recombiner skid and, as a result, the containment drywell-to-suppression chamber bypass leakage limits were exceeded. During the course of the surveillance, a jumper was installed (as directed by procedure) which allowed for the energization of relays associated with containment isolation valve control power, causing the valves to open automatically.

As an immediate corrective action, at 0134 hours the valves were closed by removing the jumper and the shift manager directed that the surveillance be suspended. In addition, at approximately 1500 hours on March 31, 1993, the Plant Operating Committee (POC) directed that the shift manager suspend all activities pertaining to the CAC System and an Incident Review Board (IRB) was convened.

The causes of this event are: 1) less than adequate procedures, 2) less than adequate corrective action followup for a related problem, and 3) technical inaccuracies in the Scheduled Maintenance System (SMS). Further corrective actions include: 1) reviewing maintenance surveillance procedures associated with the CAC System, 2) providing counselling on corrective action closeout, and 3) modifying the SMS process to provide for a consistent method for designating plant conditions.

This event did not affect the health and safety of either the public or plant personnel.

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Plant Conditions

Power Level - 97.7%

Plant Mode - 1 (Power Operation)

Event Description

On March 31, 1993, at 0115 hours, during the performance of Plant Procedure (PPM) 7.4.6.6.1.3C, "Hydrogen Recombiner 1A Flow Instrumentation", a plant control room operator noticed that Containment Atmosphere Control (CAC) System primary containment isolation valves CAC-V-4 and CAC-V-6 were open. The procedure identified those annunciators and indications that would be received in the control room, however, the containment isolation valves were not identified as being affected by the procedure. Accordingly, the shift manager entered the Limiting Conditions for Operation (LCOs) pertaining to Primary Containment, Primary Containment Isolation Valves and CAC Operability. In addition, following discussions with the system engineer, the shift manager also entered the LCO for Bypass Leakage.

The control room staff also reviewed CAC drawings and the procedure and determined that the reason the containment isolation valves were open was due to a jumper that had been installed as part of the surveillance.

During the performance of the surveillance, plant Instrument and Control (I&C) technicians install a jumper in a portion of the system circuitry to simulate "preheat complete" and to allow for positioning of valves CAC-V-2A, CAC-FCV-5A and CAC-FCV-6A. However, unknown to the I&C technicians and the control room operators, the installed jumper also allowed for the energization of relays associated with containment isolation valve control power. Therefore, when the jumper was installed as directed by the procedure, primary containment isolation valves CAC-V-4 and CAC-V-6 automatically opened. This condition opened a path between the drywell and the wetwell through the CAC "A" hydrogen recombiner skid and, as a result, the containment drywell-to-suppression chamber bypass leakage limits were exceeded.

Accordingly, at 0134 hours, the valves were closed by removing the jumper and the shift manager directed that the surveillance be suspended.

Immediate Corrective Action

On March 31, 1993, at 0134 hours, primary containment isolation valves CAC-V-4 and CAC-V-6 were closed and the shift manager directed that the surveillance be suspended. At approximately 1500 hours on March 31, 1993, the Plant Operating Committee (POC) directed that the shift manager suspend all activities pertaining to the CAC System and an Incident Review Board (IRB) was convened to determine actions for further investigation of the event.

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Further Evaluation, Root Cause and Corrective Action

A. Further Evaluation

1. This event is reportable pursuant to the requirements of 10CFR50.73(a)(2)(i)(B) as a condition prohibited by the Technical Specifications. The LCO for the allowed bypass leakage requirement in Technical Specification Section 3.6.2.1, "Suppression Chamber," could not be satisfied when the CAC System inlet and outlet lines were opened creating a suppression pool bypass path. The action statement for this LCO states, "With the drywell-to-suppression chamber bypass leakage in excess of the limit, restore the bypass leakage to within the limit prior to increasing reactor coolant temperature above 200 degrees F." This action statement cannot be satisfied during power operation. It should be noted that the entering of Technical Specification 3.0.3 was not logged during the time the bypass path was open due to an oversight on the part of the control room staff.
2. During a followup review by the system engineer, another procedural deficiency was identified. During performance of PPM 7.4.6.6.1.3C, Service Water (SW) System supply valve CAC-FCV-5A is tested and stroked without isolating service water or opening a drain path. As a result, this deficiency has the potential for flooding the CAC skid and making the system inoperable. A followup review by Nondestructive Examination (NDE) personnel determined that, as a result of the surveillance, the water level in the CAC drain line was more than eight feet below the bottom of the skid. Accordingly, it was concluded that system integrity was not compromised during performance of the surveillance, however, the potential still had existed for flooding of the skid.
3. There were several instances of missed opportunities to identify the problem and prevent this event from occurring. These are described as follows:
 - In response to a Notice of Violation (NOV) contained in NRC Inspection Report 91-44, a CAC System review was conducted during the first quarter of 1992. Several tests and some physical modifications were performed to assure operability of the system. In addition, an internal Safety System Functional Inspection (SSFI) was performed to identify problems in the CAC System. As part of the SSFI, the instrument surveillance procedures were verified as correct for the Operational Mode in which the procedures were intended to be performed. However, due to the scope of the review, the potential of the procedure to bypass containment was not identified at that time.

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- In March of 1992, an engineer identified a problem with a CAC System push button which, if it failed, could create a short that would cause the opening of the CAC containment isolation valves and bypass the pressure suppression function. This switch was designed to jumper the same points in the circuit as the jumper described in this event. A review was performed which determined that it was an original design deficiency, however, the review was not expanded to investigate other potential means of causing the problem as described in this event.
- In an attempt to prove operability of the CAC System, Plant Procedure (PPM) 8.3.230TP was written to verify system function. However, after the procedure had been reviewed and approved, it was discovered that any subsequent performance of the procedure would have resulted in CAC bypassing the containment pressure suppression function when in the normal lineup. An NOV was issued for this deficiency and is described in NRC Inspection Report 92-03. Although the NOV response and the associated Nonconformance Report (NCR) dealt primarily with the 10CFR50.59 review process, there were inconsistencies between the NCR and NOV corrective actions pertaining to procedure reviews.

The NOV corrective action was to review all system operating procedures (which was completed) and the NCR corrective action was, in part, to incorporate caution statements or other actions into all applicable procedures to ensure that activities which might compromise Technical Specification 3.6.2.1 are not performed. However, the NCR corrective action was inadvertently and incorrectly closed out based on the completion of the NOV corrective action which only looked at system operating procedures. As a result, this represents a condition of inadequate and incomplete corrective action followup which could have been prevented if the NCR corrective action would have been implemented.

4. A review of the Scheduled Maintenance System (SMS) was performed and it was determined that an incorrect designation of plant conditions on the SMS card allowed performance of the surveillance in an inappropriate Operational Mode (Mode 1). The SMS cards are used, in part, to determine in which Operational Mode surveillances can be performed. In this particular situation, the SMS card should have restricted performance of the surveillance to Operational Modes 4 and 5 (Cold Shutdown and Refueling).

It was also determined from the SMS review that, for designation of plant conditions, the process is inconsistent. The differences in the method of entry into this field designation and the interpretation of the content is diverse among individuals who depend on the SMS process.

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B. Root Cause

The root causes of this event were: 1) Less Than Adequate Procedures in that the initial and periodic revisions of the applicable procedure did not include information that the CAC System containment isolation valves would open during the course of the surveillance, 2) Less Than Adequate Corrective Action Followup For A Related Problem in that corrective actions prescribed in the NCR for NOV 92-03 were not implemented, and 3) Technical Inaccuracies In The Scheduled Maintenance System (SMS) in that an incorrect designation of plant conditions on the SMS card allowed performance of the surveillance in an inappropriate Operational Mode (Mode 1).

C. Further Corrective Action

1. A position paper was prepared by Plant Licensing to reinforce appropriate operator response when Action Statement 3.6.2.1 cannot be satisfied. It should also be noted that there are no documented instances of operators failing to appropriately enter Technical Specification 3.0.3 during the last three years and the observed performance of the operators during requalification training and execution of shift duties in this area appear to be satisfactory.
2. An Incident Review Board (IRB) and formal Root Cause Analysis (RCA) were commissioned to determine the cause(s) and initiate supplemental corrective actions. As a result of the IRB, the following actions were taken:
 - A CAC System operability assessment, including physical examination, was performed to assure that the system would adequately perform its safety function.
 - Instructions were added to the control room night orders to suspend CAC System surveillance and testing activities until applicable procedures were reviewed and verified.
 - All surveillance procedures, with greater than a six-month performance frequency and a scheduled due date prior to the R-8 (Spring 1993) refueling outage, were reviewed to assure that they were appropriate for performance during Operational Modes 1, 2 and 3.
3. Plant Procedures (PPMs) 7.4.6.6.1.3C and 7.4.6.6.1.3D will be revised to ensure that, if the surveillance is performed during power operation, containment isolation valves CAC-V-4 and CAC-V-6 remain in the closed position. This action will be completed prior to the next performance of the procedures (but no later than August 31, 1993).

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4. Plant Procedures (PPMs) 7.4.6.6.1.3C and 7.4.6.6.1.3D will be revised to correct the deficiency pertaining to the potential for flooding of the CAC skid through Service Water System supply valve CAC-FCV-5A. This action will be completed prior to the next performance of the procedures (but no later than August 31, 1993).
5. Applicable CAC maintenance surveillance procedures will be reviewed and revised as necessary to ensure that either the containment isolation valves remain closed during testing or require that testing only be performed during outages. This action will be completed by August 31, 1993.
6. All remaining applicable maintenance surveillance procedures will be reviewed and revised as necessary to ensure that the drywell-to-wetwell Technical Specification bypass leakage limits are not challenged. This action will be completed by August 31, 1993.
7. Counselling will be provided to those personnel involved in the corrective action followup aspects of this event to reinforce expectations pertaining to corrective action identification and closeout. This action will be completed by May 31, 1993.
8. The Scheduled Maintenance System (SMS) will be modified to provide a consistent method for designating procedure performance plant conditions. Specifically, applicable operating modes in which a surveillance is required to be current will be verified in SMS. In addition, a review will be conducted to confirm correct designation of allowable surveillance procedure performance during power operation. These tasks will be completed prior to startup from the upcoming maintenance and refueling outage (currently scheduled for June 15, 1993). The ongoing Technical Specification Surveillance Improvement Program (TSSIP), as referenced in LER 93-010, will result in confirmation of allowable operating modes in which surveillances may be performed.

Safety Significance

There is no safety significance associated with this event. The plant is analyzed for leakage through the CAC System. This event was limited to a Technical Specification compliance issue because the Technical Specification limits are a factor of 10 below the analyzed limit, which cannot be met during power operation. Accordingly, this event did not affect the health and safety of either the public or plant personnel.

Similar Events

There have been several LERs pertaining to the Containment Atmosphere Control System, however, none with the same root cause pertaining to bypass leakage issues.

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EIIS Information

Text Reference

Containment Atmosphere Control (CAC) System
CAC-V-2A
CAC-V-4
CAC-FCV-5A
CAC-FCV-6A
CAC-V-6
Service Water (SW) System

EIIS Reference

<u>System</u>	<u>Component</u>
BB	---
BB	V
BB	ISV
BB	FCV
BB	FCV
BB	ISV
BI	---