

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 3	PAGE (3) 1 OF 015
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TITLE (4)  
Both Trains Control Room Ventilation Inoperable Due to Loss of Chilled Water Makeup

EVENT DATE (5)			LER NUMBER (6)		REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)	
01	17	86	005	00	02	14	86	N/A		0 5 0 0 0	
											0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11):

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.408(e)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.408(a)(1)(i)	<input type="checkbox"/> 50.38(e)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(e)
<input type="checkbox"/> 20.408(a)(1)(ii)	<input type="checkbox"/> 50.38(e)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
<input type="checkbox"/> 20.408(a)(1)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	
<input type="checkbox"/> 20.408(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)	
<input type="checkbox"/> 20.408(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Roger W. Ouellette, Associate Engineer - Licensing	TELEPHONE NUMBER AREA CODE: 71014, NUMBER: 317131-17151310
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
X	KIM	IPIDIS	X191919	No					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15): MONTH: , DAY: , YEAR:

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

On January 17, 1986, both trains of Control Room Ventilation/Chilled Water (VC/YC) System were inoperable from 0755 hours to 0806 hours, and from 1610 hours to 1700 hours. At the time of the incidents, the unit was at 100% power.

Train B of VC/YC had been declared inoperable on January 15, 1986, due to Train B of the Nuclear Service Water System being out of service for pump maintenance. Train A of VC/YC was inoperable on two occasions on January 17, 1986. YC Chiller A tripped once on low chilled water flow, and later on high motor bearing temperature. Operations recovered from both incidents by venting the system and re-establishing YC flow.

This incident is assigned Cause Code X, Other. The reference leg of the level transmitter for the Demineralized Water Storage Tank (YMST) had drained creating a false high level signal which prevented the YMST Supply Pumps from starting on low level. The root cause of the draining could not be determined. The YMST is the makeup source to the YC System.

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

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

BACKGROUND

The Control Room Area Ventilation (VC) System (EIIS:VI) and its associated Chilled Water (YC) System (EIIS:KM) combine to form one functional system (VC/YC) that provides normal and emergency air filtration and cooling to the following areas: Control room, Cable Room, Switchgear Rooms, Motor Control Center Rooms, and elevation 594 Electrical Penetration Room. These systems operate prior to, during, and after a LOCA, and are Nuclear Safety Related. The limiting conditions for operation of Technical Specification (Tech Spec) Section 3.7.6 state that one train of VC/YC can be inoperable in Modes 1, 2, 3 and 4 up to seven days without commencing plant shutdown. If this limiting condition for operation cannot be met, as in the case with both trains of VC/YC inoperable simultaneously in Modes 1, 2, 3 or 4, the provisions of Tech Spec 3.0.3 apply. This section states that action shall be initiated within one hour to place the unit in a mode in which the specification does not apply.

The Nuclear Service Water (RN) System (EIIS:BJ) is used as the source of coolant for the condensers on both trains of YC Chillers. If one train of RN becomes inoperable, the YC Chiller supplied by that train becomes technically inoperable.

The VC System obtains makeup from the Demineralized Water Storage Tank (YMST). Level in the YMST is monitored by a Barton Model 273A Differential Pressure (DP) Transmitter, OYMLT5260. An impulse line with a reservoir mounted at a level above the top of the tank is connected from the upper tap to the high pressure connection of the transmitter. This line is filled with water to establish a fixed (reference) pressure. The low pressure connection of the transmitter is connected to the lower connection of the tank. (See Enclosure 1.) When the YMST is empty, DP is maximum and pneumatic output is minimum. As the level DP across the transmitter decreases, pneumatic output increases as level increases. This makes OYMLT5260 a reverse acting transmitter. OYMLT5260 provides signals to several pressure switches and a level indicator in the Control Room, OYMPS5260. Pressure switch OYMPS5261 provides an alarm to the Control Room on low-low level of approximately 35%. OYMPS5262 stops both YMST supply pumps on high level of approximately 59% after a 15 second time delay and provides the permissive signal for pressurization of the tank with no time delay. OYMPS5260 monitors tank pressure and energizes the nitrogen supply valve, OYMSV2300, when pressure drops below 50 psig and the permissive signal from OYMPS5262 exists. Pressure switch OYMPS5263 starts the YMST supply pumps on low tank level of approximately 41%.

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

DESCRIPTION OF INCIDENT

On January 15, 1986, at 0515 hours, Operations removed Train B of the RN System from service so that the strainers on RN Pump B could be cleaned. Upon doing this, Train B of VC/YC was also declared inoperable due to the loss of RN cooling flow to the YC Chiller Condenser. The Action Statement of Tech Spec 3.7.6 was entered which required VC/YC Train B to be operable within seven days. On January 16, 1986, problems were encountered on A Train VC/YC when a temperature sensing module failed causing YC Chiller A to trip and Tech Spec Section 3.0.3 to be entered. The problems were corrected on the same day and A Train VC/YC was returned to service (see LER 413/86-03). On January 17, 1986, at approximately 0740 hours, a Nuclear Control Operator (NCO) noticed that OYMP5260 indicated an unusually high level of approximately 80% in the YMST. A Nuclear Equipment Operator (NEO) was immediately dispatched to investigate. At 0741:22 hours, YC Chiller A tripped. The NEO opened the drain valve on the YMST and found the tank empty of water and only nitrogen to be blowing out. At 0755 hours, Train A of VC/YC was declared inoperable due to low chilled water flow. Operations entered Tech Spec Section 3.0.3 due to both trains of VC/YC being inoperable.

Operations began venting the tank, and instrumentation personnel arrived to repair the level instrumentation. Due to the level instrumentation blocking manual operation of the YMST supply pumps on a high level signal, personnel simulated a low signal on OYMLT5260 to start the pumps. YMST level was soon restored, and at 0801:06 hours, Operations returned YC Chiller A to service. At 0806 hours, Train A of VC/YC was declared operable and Operations exited from Tech Spec 3.0.3. Meanwhile it was found that the reference leg of OYMLT5260 was drained, causing the false indication that the tank was full when it was actually empty. The reference leg was refilled, and all the YMST level instrumentation was recalibrated. Throughout the day, Operations continued to vent the YM System, YC System, and other YM supplied chilled water systems in order to remove the Nitrogen that had entered the lines.

At 1605:05 hours, YC Chiller A tripped again. Investigation revealed that the cause was high motor bearing temperature. At 1610 hours, Train A of VC/YC was declared inoperable, and once again Tech Spec 3.0.3 was entered. Operations discovered that the YC Chiller motor oil cooler line contained nitrogen, causing coolant flow to be lost. The throttle valve to the cooler was opened fully, flow was re-established, and the line was vented. Subsequently, motor temperature began to decrease, and at 1639:16 hours, YC Chiller A was returned to service. At 1700 hours, Train



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A of VC/YC was declared operable, and Operations exited from the Tech Spec Section 3.0.3 before unit shutdown was initiated. Repairs were completed on RN Pump B strainers at 0230 hours, on January 18, 1986, and Train B of VC/YC was declared operable.

CONCLUSION

This incident is assigned Cause Code X, Other, due to the inexplicable draining of the reference leg on OYMLT5260. When actual level decreased in the YMST, the DP across OYMLT5260 also decreased because the reference pressure had been lost. Due to OYMLT5260 being reverse acting, the pneumatic output increased, creating a false high level signal. This prevented OYMPS5263 from actuating the YMST Supply Pumps to provide makeup when the actual level in the tank dropped below the setpoint. Also, the false high signal to OYMPS5262 prevented the pumps from being started manually after the problem was discovered and satisfied the permissive for OYMSV2300 to supply nitrogen to the tank. The loss of makeup to YC Chiller A was the cause of the first trip. The second trip at 1605:50 hours, occurred because nitrogen, that had been collected in YC Chiller A's motor oil cooler and caused motor overheating.

A review of the Work Request history for OYMLT5260 showed that the reference leg had been refilled on 22 different occasions. The exact cause of the draining of the reference leg is unknown. No leakage has been observed at the transmitter impulse line connection. A similar incident occurred on April 12, 1985, causing both trains of VC/YC to be inoperable (see LER 413/85-24). The planned corrective action for that incident was to initiate a Station Problem Report to replace OYMLT5260 with a displacement type level transmitter that does not utilize a reference leg. Also, an option allowing manual control over the YMST supply pumps was to be installed. The SPR was initiated and a Nuclear Station Modification (NSM) had been initiated, however, the NSM had not been implemented at the time this incident occurred.

CORRECTIVE ACTION

1st Incident

- 1.1) The YMST was vented and makeup to the YMST was restored.
- 1.2) Flow was re-established to the YC System and YC Chiller A was returned to service.
- 1.3) The reference leg of OYMLT5260 was refilled.

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- 1.4) All level instrumentation for the YMST was recalibrated.
- 1.5) All chilled water systems supplied by the YMST were vented of nitrogen.

2nd Incident

- 2.1) Operations conducted an investigation to determine the cause of YC Chiller A trip and found nitrogen in the motor oil cooler line.
- 2.2) Nitrogen was vented from YC Chiller A motor oil cooler line and YC flow was re-established.
- 2.3) YC Chiller A was returned to service.

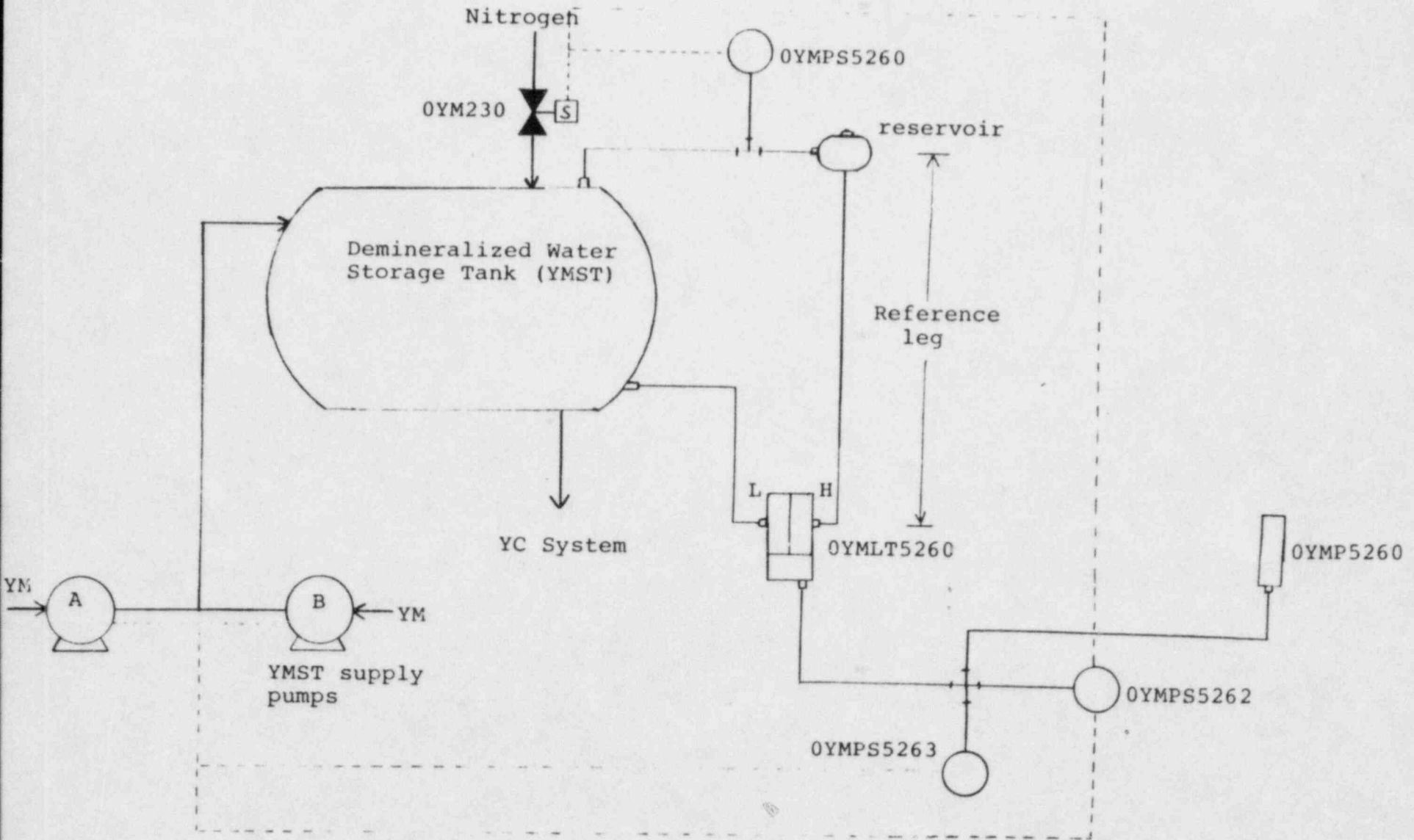
Both Incidents

- 3.1) A Temporary Station Modification was issued to install a pressure switch on the pneumatic line to OYMP5260. The output of the pressure switch was wired to an annunciator in the Control Room to indicate YMST Hi Level.
- 3.2) The YMST Hi Level annunciator was added to annunciator response procedure, OP/1/B/6100/10Y.

SAFETY ANALYSIS

During the two incidents, simultaneous inoperability of both VC/YC trains lasted less than one hour. There were no reports of erroneous Control Room Instrumentation readings caused by the loss of VC/YC during either incident. Because of Operations' prompt action, initiation of a plant shutdown was not required. If the 1 hour time limit had been exceeded, Operations would have begun placing the unit in a mode in which the applicable Tech Spec did not apply.

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



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February 14, 1986

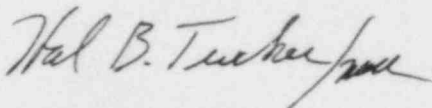
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U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Unit 1  
Docket No. 50-413

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 413/86-05 concerning both trains of Control Room Area Ventilation simultaneously inoperable due to a loss of makeup on the Chilled Water System. 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

RWO:slb

Attachment

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Document Control Desk  
February 14, 1986  
Page Two

cc: Dr. J. Nelson Grace, Regional Administrator  
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