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August 24, 1992

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

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/92-009

Gentlemen:

Attached is Licensee Event Report 413/92-009 concerning TECHNICAL SPECIFICATION VIOLATION DUE TO AN INOPERABLE TURBINE BUILDING SUMP RADIATION MONITOR.

This event was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

M. S. Tuckman

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NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station, Unit 1	0 5 0 0 0 4 1 3	1 OF 0 6

TITLE (4): Technical Specification Violation Due To An Inoperable Turbine Building Sump Radiation Monitor

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)
										N/A	0 5 0 0 0
0 7	2 5	9 2	9 2	-	0 0 9	- 0 0	0 8	2 4	9 2		0 5 0 0 0

OPERATING MODE (9)	6	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	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)	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	TELEPHONE NUMBER
	AREA CODE
R. C. Futrell, Compliance Manager	8 0 3 8 3 1 1 - 1 3 1 6 6 5

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)	X NO				

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

On July 22, 1992, at 1000 hours, Unit 1 was in Mode 6, Refueling, and Unit 2 was in Mode 1, Power Operation, when a Turbine Building Sump System (WP) pipe rupture occurred. To eliminate flow through the damaged pipe, the WP pumps were removed from service and temporary pumps were placed in the sump and began transferring the contents of the WP sump to the Service Building Sump (WB) through temporary fire hoses. The operability of the Turbine Building Sump Discharge Monitor, 1EMF-31, was questioned and was determined to be operable since it was still capable of sampling WP inventory, detecting, and alarming upon detection of activity levels above the high radiation trip setpoints. However, 1EMF-31 was not operable since the trip function would not have automatically terminated flow from the WP sump as designed. Technical Specifications require that with 1EMF-31 inoperable, grab samples must be taken every 24 hours in order to continue discharge from WP. On July 27, at 1100 hours, 1EMF-31 was declared inoperable and a grab sample was obtained. This event has been attributed to Inappropriate Action because the need to declare 1EMF-31 inoperable was not recognized. Corrective actions include declaring 1EMF-31 operable after returning Unit 1 WP Pump C to service, establishing standing compensatory actions for use of temporary sump pumps, adding instructions to WP tagouts addressing EMF-31 operability, and issuing an operator update on this event.

BACKGROUND

The Turbine Building sump receives water from the building floor drains, leakage from Condenser Cooling Water (CCW) pump [EIIS:P] structure overflow sleeves, drainage of CCW valve [EIIS:V] pit sump, un-watering of CCW piping, steam generator [EIIS:HX] blowdown, and floor drain sumps C and D which are monitored for radioactivity by the Clean Area Floor Drain Monitor, 1EMF-52.

The Turbine Building sump is provided with three sump pumps (A, B, and C) whose discharges are normally directed through a common header system to the initial holdup pond in the Conventional Waste Water Treatment System (WC) [EIIS:WH]. However, in the event that the sump contents become contaminated, the discharge may be directed to the Auxiliary Building floor drain tank or to the Steam Generator Drain Tank of the Liquid Radwaste System (WL) [EIIS:WD] via the Monitor Tank Building.

The CCW pump structure sump is provided with one sump pump which is used only for high level sump dewatering or during periods of Turbine Building sump contamination. Normally, the sump drains by gravity to the CCW valve pit sump and hence to the Turbine Building sump.

The Service Building Sump is located in the Water Treatment Room and receives inputs from the following sources: Service Building floor drains, Units 1 and 2 Diesel Generator [EIIS:GEN] Room sumps, Filtered Water System, (YF) [EIIS:KH] upflow filter flush and prerun and Low Pressure Service Water Valve pit sump, and Conventional Sampling System (CT) [EIIS:KN] Sample Sink.

The Service Building Sump System is routed to the Initial Holdup Pond through a 10 inch polybutylene line.

The LPSW valve pit sump and the Electric Room elevator sump are each provided with two sump pumps. The LPSW valve pit sump discharges directly to the Service Building Sump, and the Electric Room elevator sump discharges directly to the Service Building floor drains.

Permanently installed radiation monitors are placed in locations to provide information on the status of primary system integrity, primary to secondary system integrity, and secondary system to atmosphere. Monitors are also placed in potentially radioactive discharge paths to monitor releases from the station. The Radiation Monitoring System installed at Catawba is designed to detect the lowest practical level of radioactivity in addition to providing a range sufficient enough to cover any level of activity during normal plant operation, anticipated transients, and certain accident conditions. 1EMF-31 monitors the Unit 1 Turbine Building Sump by continuously drawing water from the sump through use of a pump and piping arrangement that

is independent of the Turbine Building Sump System. The water continuously flows through a sample chamber where the activity level can be measured and displayed on a readout module in the Control Room. The readout module also provides an output to the Operator Aid Computer (OAC) and associated chart recorders [EIIS:XI]. When the activity level of the sample from the sump exceeds the predetermined setpoint level, the readout module initiates a control function which stops all three Turbine Building Sump Pumps, and a Turbine Building Sump High Radiation annunciator [EIIS:ANN] will alarm in the Control Room. The lowest level of detection considered for determining the trip setpoint values of 1EMF-31 is 10^{-6} microCuries/ml.

Station Directive 3.1.14, Operability Determination, establishes the definition and the policy for determining the operability of systems, subsystems, trains, components, or devices. Operability is maintained when the subject is capable of performing its specified function, and operability of all necessary auxiliary equipment is maintained. A system, subsystem, train, component, or device shall be determined inoperable if it fails to meet the definition of Operable.

The Shift Supervisor is primarily responsible for operability determinations. Other qualified station personnel designated by station management shall support the shift supervisor in making specific operability determinations and are also charged with the responsibility of implementing the provisions of the Operability Determination directive.

Technical Specification (T/S) 3.3.3.10, Radioactive Liquid Effluent Monitoring Instrumentation, states that EMF-31, Turbine Building Sump Monitor shall be operable at all times. Table 3.3-12 lists EMF-31 under "Radioactivity Monitors Providing Alarm and Automatic Termination Release". The monitors must be capable of initiating the intended alarm and automatically terminating the release to be considered "Operable". When EMF-31 is inoperable, effluent releases from the Turbine Building Sump may continue for up to 30 days provided that grab samples are obtained every 24 hours, analyzed for radioactivity by instrumentation with a lower limit of detection of no more than 10^{-7} microCurie/ml.

EVENT DESCRIPTION

On July 22, at 1000 hours, the WP discharge line to the initial holdup pond was over pressurized resulting in a pipe rupture. Under direction of Operations personnel, temporary air driven sump pumps were placed in the sump by Mechanical Maintenance (M/M) personnel and temporary fire hoses were installed to direct flow to the Service Building Sump (WB) and the temporary pumps were turned on.

At 1810 hours, a grab sample was taken from the WB sump in order to analyze the release through the pipe break.

At 1830 hours, Unit 1 and 2 WP Sump Pumps A,B, and C were tagged out in order to isolate flow to the damaged area of the WP pipe.

At 1900 hours, Units 1 and 2 Turbine Building Sump Pumps A, B, and C Vent/Discharge Valves 1(2)WP-26, 1(2)WP-27, and 1(2)WP-28 were opened in order to connect the temporary fire hoses and direct the pump discharge to the WB System. M/M personnel were directed to connect additional fire hoses to the vent/drain connection of WP pumps A,B, and C.

At 2000 hours, OPS Shift Managers Group Engineer 'A' discussed the operability of 1EMF-31 with OPS Shift Supervisor 'A'. Operability of 1EMF-31 was maintained on the judgement that it was better for the monitor to remain operable with its ability to continuously monitor the sump discharge and initiate Control Room alarms, than to rely on the 24 hour grab sample. Shift Supervisor 'A' did not realize that automatic termination of the release was required to maintain operability of the monitor.

At 2125 hours, Unit 2 WP sump pump C was returned to service with the discharge directed to the WB sump through temporary fire hoses. Pumps A and B remained out of service.

On July 23, at 0100 hours, Unit 1 WP sump pump C was returned to service with the discharge directed to the WB sump through temporary fire hoses. Pumps A and B remained out of service.

At 1630 hours, Unit 1 Turbine Building Sump Pump Normal Discharge Valves, 1WP-8 and 1WP-10, were red tagged closed. The CPD Backwash Tank Pumps To WP Discharge Valve, 1CM-294, was red tagged closed.

At 2135 hours, Unit 2 Turbine Building Sump Pump Normal Discharge Valves, 2WP-8 and 2WP-10, were red tagged closed. The CPD Backwash Tank To WP Discharge Valve, 2CM-294, was red tagged closed.

On July 25, at 1640 hours, Unit 1 WP sump pump C was removed from service due to the presence of water during repairs on the damaged area of the pipe. The temporary sump pumps were used periodically to transfer the contents of WP to WB.

Shift Supervisor 'B' was aware of the automatic termination function of 1EMF-31, but did not realize that loss of this function would render the monitor inoperable.

On July 27, at 1100 hours, Systems Engineering Engineer 'A' determined that 1EMF-31 was inoperable with all three sump pumps out of service and WP being discharged to the WB sumps

through use of temporary pumps and fire hoses. Grab samples were obtained from the WP sump and were analyzed. The sample analysis results were normal.

On July 28, at 0300 hours, Unit 1 WP sump pump C was returned to service with the discharge flow being directed to the WB sump through temporary fire hose connected to the sump pump vent/drain line. 1EMF-31 was declared operable per a Technical Specification Operability Notification Sheet, Station Directive 3.1.15.

On July 29, between 1130 hours and 1155 hours, the WP Sump Pump Discharge Vent/Drain Valves were closed and the fire hoses were removed. Unit 1 and 2 WP pumps A and B were returned to service.

CONCLUSION

This incident is assigned a root cause of Inappropriate Action, the need was not recognized. 1EMF-31 should have been declared inoperable when the temporary sump pumps began discharging the contents of the Turbine Building sump to the Service Building Sump System. Temporary pumps installed in the Unit 2 WP sump were not used and fire hoses were not connected. It was recognized that the monitor was fully capable of sampling, detecting, and initiating alarms if activity levels exceeded the predetermined setpoints. It was also recognized that 1EMF-31 would not have been able to automatically stop the discharge from the Turbine Building Sump. Operators were stationed at the WP Sump to monitor the sump level during use of the temporary pumps, and would have been able to stop the discharge upon direction by the Control Room in the event that 1EMF-31 would have alarmed. However, this capability was not formally specified by an established compensatory action.

The normal response to a Turbine Building Sump High Radiation annunciator alarm would be to dispatch an operator to the sump to ensure that the sump pumps had stopped. All operators on the affected shifts were aware of the alignment through the temporary pumps and hoses and it was understood that termination of sump discharge would have occurred upon alarm of 1EMF-31. When 1WP 'C' Pump was removed from service on July 25, and the temporary pumps were used to transfer the contents of the sump, OPS Shift Supervisor 'B' considered 1EMF-31 operable on the same basis that the monitor was sampling the sump and was able to alarm upon exceeding the trip setpoint.

As per Station Directive 3.1.14, 1EMF-31 was inoperable because it was incapable of performing its specified function. Upon loss of the automatic function due to use of the temporary sump pumps, 1EMF-31 should have been declared inoperable and the grab samples should have been taken for laboratory analysis. The lowest level of detection considered for setpoint determination of 1EMF-31 is 10^{-6} microCuries/ml whereas the Technical Specification

requirement with 1EMF-31 inoperable is a 24 hour grab sample to be measured by equipment with a lowest level of detection of 10^{-7} microCuries/ml. The personnel involved with the initial determination of 1EMF-31 operability decided that the monitor should be considered operable because it was continuously sampling the sump which appeared to be more conservative than the 24 grab sample required by the Technical Specifications.

An all points data base history was retrieved to determine the activity levels recorded by 1EMF-31 during the period that the temporary sump pumps were used. The activity levels remained normal throughout the period with levels just above background radiation levels and never approached or exceeded the high radiation setpoint.

A review of the OEP data base revealed a similar incident, LER 413/92-002, where a T/S violation occurred when an action was not taken because the need was not recognized. Control Room Operators did not remove power to equipment in order to prevent alignment of an inoperable Control Room Ventilation Train upon receipt of a safety signal which would have rendered both trains of the ventilation system inoperable (T/S 3.0.3). However, this event is different because the Control Room Operators were aware that the power was supposed to be removed. Therefore, this incident is not considered to be a recurring event.

CORRECTIVE ACTION

IMMEDIATE

1) 1EMF-31 declared inoperable.

2) Grab sample obtained from WP sump and analyzed.

SUBSEQUENT

1) Flow from temporary pumps terminated.

2) WP Pump C returned to service.

3) 1EMF-31 returned to service.

4) The red tag computer program was enhanced so that a note will be printed on Turbine Building sump pump tagouts. The note requires evaluation of EMF-31 operability when sump pumps are removed from service.

5) An operator update will be issued to inform operators of this event and the actions necessary to maintain EMF-31 operability.

PLANNED

1) A standing compensatory action will be developed to detail the necessary steps to maintain EMF-31 operability with temporary pumps in the sump.

2) This event will be discussed during operator requalification training.

SAFETY ANALYSIS

The decision to keep 1EMF-31 operable while temporary pumps were being used in the Turbine Building Sump did not result in the discharge of effluent exceeding the high radiation setpoints of 1EMF-31. 1EMF-31 was fully capable of detecting radioactive levels within the Turbine Building Sump and would have initiated Control Room alarms if the levels would have exceeded the high radiation setpoints. Although 1EMF-31 would not have terminated the Turbine Building Sump discharge upon exceeding the high radiation setpoint, operators would have been dispatched to the sump to stop the discharge by disabling the temporary pumps.

Technical Specification 3.11.1.1 specifies that the concentration of radioactive material released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in 10CFR Part 20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. 1EMF-31 was conservatively set to alarm upon detection of radioactive levels as per procedure HF/0/B/1000/10, Determination of Radiation Monitor Setpoint.

Discharge from the Unit 1 Turbine Building Sump to the Service Building Sump, through temporary fire hoses off WP Pump C, had taken place prior to obtaining a grab sample from the WB sump. Analysis of that sample did not result in the detection of abnormal radioactive levels.

Following return to service of WP Pump C, a grab sample was taken from the WP sump. Analysis of that sample did not result in the detection of abnormal radioactive levels.

Therefore, since the actual abilities to monitor for and alarm upon detection of levels exceeding high radiation setpoints were not affected by the temporary sump pumps and the grab samples prior to and after this event did not show any significant radiation levels there is no evidence that the loss of the ability of 1EMF-31 to terminate discharge from the Turbine Building Sump

resulted in an uncontrolled radioactive release. Furthermore, the ability to promptly detect and respond to abnormal levels of radioactivity was maintained. In a worst case event where 1EMF-31 alarms due to high radiation levels in the sump and the manual termination of the release failed to occur, contaminated water would be transferred to the WC System where the WC Composite Sampler would have collected a sample that would accurately account for radioactivity released to Lake Wylie. The health and safety of the public were not affected by this incident.