

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Catawba Nuclear Station, Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 4 1 3 1 OF 0 6				PAGE (3) 1 OF 0 6		
TITLE (4) Unmonitored Release Of Liquid Radwaste Due To Personnel Error																
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)			
0 2	1 1	8 8	8 8	0 1 0	0 0	0 3	1 1	8 8	Catawba, Unit 2				0 5 0 0 0 4 1 4			
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) 1 0 0			20.402(b)				20.405(e)				50.73(a)(2)(i)-(v)				73.71(b)	
			20.405(a)(1)(i)				50.36(e)(1)				50.73(a)(2)(iv)				73.71(e)	
			20.405(a)(1)(ii)				50.36(e)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)	
			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)(ix)					
LICENSEE CONTACT FOR THIS LER (12)																
NAME Julio G. Torre, Associate Engineer - Licensing										TELEPHONE NUMBER 710 4 317 13 1-18 1 0 1 2 1 9						
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 11, 1988, at 2055 hours, an unmonitored release of Waste Monitor Tank (WMT) B to the environment occurred. The Process Radiation Monitor (EMF) for the release flow path was isolated at the time due to improper verification of the monitor's operability status. The tank had been sampled before the discharge and was within administrative limits for release. When the tank was near the 50% level, the alignment error was discovered and the release was immediately terminated. The proper notifications were made and further sampling was conducted. The sample results determined that no administrative limits for the discharge were exceeded. Unit 1 was in Mode 1, Power Operation, and Unit 2 was in Mode 5, Cold Shutdown, during this incident.

This incident has been attributed to a personnel error. The Assistant Nuclear Chemistry Technician who performed the valve alignment did not adequately review the information in the Liquid Waste Release package before he started the release, and assumed the EMF was not operable. Additionally, the Lead person allowed a Technician in training to independently verify the final release valve alignment which was not in accordance with the Supervisor's instructions. The incident has been discussed with the involved personnel with emphasis on attention to detail and the proper use of independent verification. No administrative limits were exceeded. The health and safety of the public were unaffected by this event.

8803210131 880311
PDR ADOCK 05000413
S DCDIE22
11

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 1	0 5 0 0 0 4 1 3 8 8	—	0 1 0	—	0 0 0 2	OF	0 6

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

BACKGROUND:

Potentially radioactive liquid wastes from sumps, samples, laundry, showers and drains in the Auxiliary Building are routed to the Floor Drain Tank (EIIS:TK) via filters (EIIS:FLT) and separation tanks. Liquid waste from the Floor Drain Tank is further processed through strainers (EIIS:STR), demineralizers (EIIS:FDM), and filters and routed to either Waste Monitor Tank (WMT) A or B. When approaching full capacity, these tanks are isolated and sampled to determine radioactivity and chemical content. If the tank contents meet previously established guidelines, the tank is pumped at the proper flow rate for dilution into the Low Pressure Service Water System for release into the lake.

A portion of the flow from this tank is routed through Process Radiation Monitor (EIIS:MON) 1EMF-49 during the discharge. 1EMF-49 is a dual range process radiation monitor designed to detect and count gamma radiation. It is interlocked to terminate flow in the liquid waste release process line if a radioactivity level higher than the pre-established trip setpoint is detected. The trip setpoint is established based on the radioactivity levels detected in the isotopic analysis of the samples. 1WL-124, Liquid Waste Release Isolation Valve (EIIS:V), is automatically closed in this event, stopping the release. 1WL-124 may also be closed manually from the Control Room.

If 1EMF-49 is not operable, a release of liquid waste is still possible by performing a second sample analysis and comparing it with the first. If the samples' total activities do not agree within 20%, a third sample is to be taken. From the three samples, the highest activity values of each identified isotope is chosen. These values are summed for a maximum total activity. These values are also compared individually to each specific isotope's limits for release. If these criterion are met, the release may proceed.

Monitoring of off-site liquid waste releases is required by Technical Specification 3/4.11.1. If 1EMF-49 is not operable, the Technical Specification allows the use of the additional sampling and analysis procedure previously described to perform a liquid waste release.

DESCRIPTION OF INCIDENT:

On February 8, 1988, the Liquid Waste Release Process Radiation Monitor (EMF) 1EMF-49 was declared inoperable and a work request written to repair its local Loss of Sample Flow indication. At approximately 1900 hours, during shift turnover, Nuclear Chemistry Technician (NCT) A and Assistant Nuclear Chemistry Technician (ANCT) B were informed that 1EMF-49 was inoperable.

On February 11, 1988, Duke Power Instrumentation and Electrical (IAE) personnel repaired the low flow indication on 1EMF-49 by replacing a light bulb. The EMF was declared operable at 1255 hours.

At approximately 1500 hours, day shift Chemistry personnel started preparation for the release of Waste Monitor Tank (WMT) B under Liquid Waste Release (LWR) package 117. The tank was at 94% level. While utilizing OP/O/B/6500/15,

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

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

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

Radwaste Chemistry Procedure For Discharging A Monitor Tank To The Environment, a Chemistry Technician recirculated the tank, verified the operability of 1EMF-49, and took a sample of the tank for isotopic and chemical analysis. At this time, the main body of the procedure and the attached enclosures to the procedure were separated. The main body of the procedure went with the samples, while the enclosures went to a tray in the Radwaste Chemistry office.

Later that evening, at 1845 hours, NCT A arrived for shift turnover. The Technician was informed that 1EMF-49 was again operable. Other topics of discussion were the status of the Boron Recycle System (EIIS:CA) (NB) Evaporator (EIIS:EVP) (which would require samples very soon) and the status of Floor Drain Tank to Waste Monitor Tank A processing (which required monitoring).

Approximately halfway through turnover, ANCT B arrived. This Technician was not present when the operability of 1EMF-49 was discussed and did not read the turnover sheets.

Immediately following the turnover, NCT A requested that ANCT B start sampling the Evaporator and monitor the processing of the Floor Drain Tank. NCT A's goal was to finish a lot of work early because another Technician from Secondary Chemistry would be arriving for cross-training.

At 1915 hours, the HP Supervisor informed NCT A that LWR 117 was being sent to Operations for signoff and that the liquid waste release would occur in the near future.

At 1945 hours, NCT C from Secondary Chemistry arrived at the Radwaste office for cross-training. He was familiarized by NCT A with certain aspects of the Waste Gas Storage System, then they both returned to the Radwaste office.

An Operator brought LWR 117 to the Radwaste office at 2015 hours. Also at this time, the Chemistry Supervisor came to the Radwaste office. NCT A asked the Supervisor if NCT C was qualified to independently verify (IV) the WMT release procedure. The Chemistry supervisor stated that NCT C was qualified to IV the valve positions on the pre-release valve line-up. A few minutes later ANCT B returned to the Radwaste office and was instructed to perform the pre-release valve line-up with NCT C. ANCT B asked NCT C if he was qualified to do the IV. NCT C informed him that he was. ANCT B believed the NCT C was qualified to IV all procedure steps. NCT A did not mention to ANCT B that NCT C (who was being trained) could not IV the final release line-up and did not tell him to hold the procedure after completion of the pre-release line-up. ANCT B picked up the previously separated enclosure and performed the alignment to support a release if 1EMF-49 was inoperable. Since ANCT B had not read the shift turnover sheets, he still believed that 1EMF-49 was not operable, as it had been inoperable during the previous night. Because of this, he verified 1WL-366, 1WL-931, and 1WL-932, the EMF isolation valves, closed as directed by the procedure when the EMF is inoperable.

While the valve alignment was in progress, NCT A entered the data from the isotopic analysis into the Chemplot Computer program. This data was part of the

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 1	0500041388	01	0	0	0	4	OF 06

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

LWR package. Also contained in the LWR package was the information about the operability of 1EMF-49.

At 2040 hours, ANCT E and NCT C returned to the Radwaste office after completion of the pre-release valve alignments. ANCT B verified the LWR package was completed appropriately up to that point. Had the ANCT carefully reviewed the LWR, he would have noticed that 1EMF-49 had been declared operable in the LWR Rate of Release Determination Form and in the main body of the procedure. Also during this review, the ANCT verified that the sample analysis was complete. During this review, the ANCT did not recognize that only one sample was present, yet when the EMF is not operable, two samples are required.

When the verifications were completed, NCT A instructed ANCT B and NCT C to continue the release. NCT A then returned to the Evaporator to take samples. NCT C was not qualified to perform IV of the final steps of the procedure prior to and during the release, but this IV was performed by him at this time. It was intended by the Chemistry Supervisor that NCT A perform this IV.

After the release started, ANCT B signed that the Loss of Sample Flow light for 1EMF-49 went out which would have indicated flow was going through the EMF. The light did not go out. He later reported that he remembered the step as requiring a signature whether or not the light went out. He informed NCT C that the low flow light would not go out because they had the EMF isolated and expressed his concern that the step should be N/A'ed instead of signed. NCT C accepted this explanation and verified the step.

The Technicians performing the release returned to the Radwaste office to verify flow was registering on the Control Room instrumentation. After a short delay to start the NB Evaporator pump out, this was completed. The Technicians returned to monitor the NB Evaporator pump out process.

At approximately 2115 hours, all three Technicians returned to the Radwaste office. Shortly thereafter, NCT A was informed by the Control Room Operator (CRO) that the Control Room 1EMF-49 Low Sample Flow light was illuminated. NCT A attempted to clear the alarm by further throttling 1WL-893, Waste Monitor Tank Radiation Monitor Bypass valve, to direct more flow through the EMF. The Technician called the CRO back to learn the status of the alarm light. It was still in the alarm state and the EMF had a lower count rate than expected. NCT A returned to the EMF and found it to be isolated. The Technician decided to terminate the release by opening the local tank recirculation valve and closing the local discharge isolation valve. ANCT B and NCT C, who arrived after NCT A, placed the tank back in recirculation and isolated the release path locally. The CRO had already terminated the release from the Control Room at 2118 hours. At 2119 hours, the tank was back in recirc at 49% level.

NCT A telephoned the Chemistry Supervisor and informed her of the unmonitored release. The Chemistry Supervisor discussed the proper course of action with the HP Supervisor and the Operations Shift Supervisor. They decided to resample the contents of WMT B and perform the analyses and comparisons which would have been conducted if the EMF had been known to be inoperable.

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 1	0500041388	—	010	—	000	5	OF 06

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

The second sample results showed the isotopic activity level in the tank decreased to 78% of its previous value. The samples did not agree within 20%, so a third sample was taken after recirculation of the tank.

While the sampling was in progress, the Operations Shift Supervisor determined that the release required notification of the NRC within four hours. He made these notifications as well as informing the Compliance Duty Engineer. At approximately 0300 hours, the results of the third sample were determined and the total activity of the sample had dropped to 57% of the original value. Per the Health Physics (HP) Procedure for LWR Requirements with the EMF inoperable, a comparison of isotopic activities from each sample was conducted.

The sum of these highest values was then used to determine a theoretical maximum activity sample. The sample still met all criterion for release.

CONCLUSION:

This incident is attributed to a personnel error. The information that 1EMF-49 was operable never reached ANCT B and resulted in the misalignment of the EMF isolation valves. However, the information was available in several locations. The logbooks and turnover sheets, which the ANCT did not have much time to review at turnover, contained the information. The LWR package, which the Technician did review and verify to be correct, contained several steps concerning operability of the EMF, its alarm setpoints, verification that the EMF was operable, verification that the low flow alarm worked, and only one set of sample data. Had the ANCT paid more attention to detail and verified the operability of 1EMF-49, it is extremely unlikely that the incident would have occurred. The Technician was fully qualified to perform the procedure.

Additionally, the alignment error would very likely have been detected had NCT A independently verified all of the procedural steps involved, instead of partial verification by NCT A and partial verification by NCT C, who was not qualified on the procedure. NCT A was informed by the Chemistry Supervisor that NCT C was only qualified to IV the valve positions in the pre-release steps of the procedure. NCT A allowed NCT C to IV the final steps of the procedure.

There have been several occurrences of Technical Specification violations due to lack of attention to detail. Therefore, this type of event is considered to be recurring. However, there have been no previous occurrences of Technical Specification violations due to unauthorized personnel performing a function.

CORRECTIVE ACTIONS:

IMMEDIATE

Operations and Chemistry personnel terminated the release of WMT B.

SUBSEQUENT

- (1) Chemistry and HP personnel conducted further sampling/analysis to verify that discharge limits were not exceeded.

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 1	0 5 0 0 0 4 1 3 8 8	—	0 1 0	—	0 0 0	6 OF 0 6

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

- (2) Chemistry personnel realigned the EMF isolation valves and verified the EMF to be aligned for service.
- (3) The incident was discussed with the involved personnel with emphasis on paying attention to detail, proper verification of equipment status, proper turnover techniques, the priority of waste releases over other plant processes, and the allowable uses of independent verification by Technicians in cross-training.

SAFETY ANALYSIS:

The liquid contents of Waste Monitor Tank B which were not monitored during the release had been sampled before the discharge occurred. The isotopic activity was low enough to allow the release at 100 gpm (the maximum flowrate) into 4920 gpm Low Pressure Service (RL) water flow, to comply with maximum permissible concentration (MPC) guidelines. The RL flow throughout the incident was 45,000 gpm. This provided approximately nine times the required dilution. Interlocks on the release were set so that if RL flow ever decreased to 20,000 gpm, the release would stop. No decrease in RL flow occurred.

The first sample taken after the release had been terminated showed total activity levels of 78% the original value. The second sample after termination of the release showed total activity levels of 57% the original value.

Monitoring of the tank levels while the tank was isolated, before and after the release, showed no level changes. This indicated that there were no additions to the tank contents during the release.

A theoretical sample was created from the maximum isotopic activities from each of the three samples. These maximums were then entered into the same calculations for Rate of Release determination as the original sample.

The results of the calculation showed that a 100 gpm discharge rate into a minimum 5500 gpm RL flow would be required for the proper MPC dilution. Based on the existing 45,000 gpm RL flow, approximately 8 times the required dilution flow was present.

From this data, no administrative limits were exceeded. This incident is reportable under 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 11, 1988

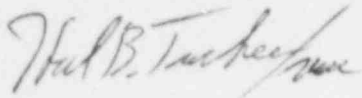
Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
LER 413/88-10

Gentlemen:

Pursuant to 10 CFR 50.73 Section (a) (1) and (d), attached is Licensee Event Report 413/88-10 concerning an unmonitored release of liquid radwaste due to personnel errors. 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/10001/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