

JUL 19 1973

Docket Nos. 50-269

50-270

and 50-287

Duke Power Company
ATTN: Mr. A. C. Thies
Senior Vice President
Production and Transmission
422 South Church Street
P. O. Box 2178
Charlotte, North Carolina 28201

Gentlemen:

Two incidents have occurred at two different nuclear power plants that indicate a deficiency in the design of refueling water storage systems that warrants a review of the monitoring and control systems to prevent overflow of these tanks and uncontrolled release of radioactive liquid to the environs. Both incidents involved the inadvertent overflow of the refueling water storage tanks into uncontrolled water pathways. In one case, failure of the water level indicator in the control room during a filling operation resulted in liquid overflow from the refueling water storage tank to the facade drain trough which drained to the facade sump and discharged to the sewage treatment plant and to the sewage retention pond. In the second case, operator error resulted in liquid overflow from the refueling water storage tank to the plant drainage system to the storm drainage system and subsequently to Black Creek. A copy of the licensees' reports on these two occurrences is enclosed for your information.

As a result of these occurrences, we request that you perform a review of the refueling water storage tank system design, and other liquid tanks which contain radioactivity, that overflow to other than a controlled water pathway to the environs. All modes of operation and failure must be considered. In the cases cited above, alarms for high level overflow or excessive leakage had not been included for the tanks and control of such overflow or leakage had not been adequately considered in the design of these systems.

Also, your procedures should be reviewed to ensure that they provide for operator surveillance and proper action concerning the liquid storage tanks which contain radioactivity, particularly when fluid is being transferred into the tanks.

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The results of your review and estimates of the schedule for design, fabrication, and installation of any modifications found to be necessary are requested within sixty days. This information should be provided with one signed original and thirty-nine additional copies.

Sincerely,

Original Signed by

D. Vessally
for

R. C. DeYoung, Assistant Director
for Pressurized Water Reactors
Directorate of Licensing

Enclosures:

1. Ltr fm Wisconsin Electric
dated 8/11/71
2. Ltr fm Carolina Power &
Light dated 5/1/73

cc: William L. Porter, Esquire
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28201

DISTRIBUTION:

Docket
AEC PDR
Local PDR
PWR-4 Reading
RCDeYoung
RKlecker
JHendrie
AKenneke
RO (3)
OGC
ACRS (16)
EIGoulbourne (2)
Project Manager

IDENTICAL LETTERS WENT TO THOSE ON ATTACHED LIST:

OFFICE	L: PWR-4	L: PWR-4	L: PWR-4	L: AD: PWRs		
CRESS Tape 1073-07						
SURNAME	EIGoulbourne:jk		ASchwencer	RCDeYoung		
DATE	7/18/73	7/1/73	7/19/73	7/19/73		

ADDRESSEE LIST

Docket No. 50-269/270/287
Duke Power Company
ATTN: Mr. A. C. Thies
Senior Vice President
Production and Transmission
422 South Church Street
P. O. Box 2178
Charlotte, North Carolina 28201

cc: William L. Porter, Esquire
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28201

Docket No. 50-289
Metropolitan Edison Company
ATTN: Mr. John G. Miller
Vice President
P. O. Box 542
Reading, Pennsylvania 19603

cc: Mr. Gerald Charnoff
Shaw, Pittman, Potts and
Trowbridge
910 17th Street, N.W.
Washington, D. C. 20006

Docket No. 50-312
Sacramento Municipal Utility District
ATTN: Mr. E. K. Davis, General
Manager
6201 S Street, P. O. Box 15830
Sacramento, California 95813

cc: David S. Kaplan, General Counsel
and Secretary
6201 S Street
Sacramento, California 95813

Docket No. 50-313
Arkansas Power and Light Company
ATTN: Mr. J. D. Phillips
Vice President & Chief
Engineer
Sixth and Pine Streets
Pine Bluff, Arkansas 71601

cc: Horace Jewell, Esquire
House, Holms & Jewell
1550 Tower Building
Little Rock, Arkansas 72201

Docket No. 50-302
Florida Power Corporation
ATTN: Mr. J. T. Rodgers
Assistant Vice President &
Nuclear Project Manager
P. O. Box 14042
St. Petersburg, Florida 33733

cc: Florida Power Corporation
Mr. S. A. Brandimore
Vice President & General
Counsel
P. O. Box 14042
St. Petersburg, Florida 33733



Wisconsin Electric POWER COMPANY
231 WEST MICHIGAN, MILWAUKEE, WISCONSIN 53201



August 11, 1971

Dr. Peter A. Morris, Director
Division of Reactor Licensing
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Dr. Morris:

ABNORMAL OCCURRENCE
FACILITY OPERATING LICENSE DPR-24
UNSCHEDULED RELEASE OF RADIOACTIVITY
POINT BEACH NUCLEAR PLANT
DOCKET NO. 50 - 265

This letter is to report the details of an abnormal occurrence at Point Beach Nuclear Plant which resulted in an unscheduled release of radioactivity from the plant on August 3, 1971. The release occurred when the Unit 2 refueling water storage tank overflowed to the Unit 2 facade sump during a filling operation, with subsequent release of radioactive liquid to the sewage retention pond. This occurrence was reported by telephone on August 3 to the Region III Compliance Office. No Limiting Conditions for operation were violated.

At 0900 on August 3, 1971, filling of the Unit 2 refueling water storage tank was commenced using the Unit 1 reactor makeup water tank as a water source. The initial refueling water storage tank level was 79% by control room indication. The refueling water storage tank had previously been bled from a boric acid tank which contained some recycled boric acid from Unit 1 operation. At 1130 it was noted that the refueling water storage tank level indication had stopped at 81%. The Auxiliary Operator who was sent to investigate found that the local indication was reading 100%, and the tank was overflowing to the Unit 2 facade drain trough. The Shift Supervisor was informed immediately and the filling was stopped.

The facade drain trough drains to the Unit 2 facade sump and, at the time of the occurrence, the sump pump discharge was lined up to the sewage treatment plant. Therefore, the overflow from the refueling water storage tank was ultimately released to the sewage retention pond.

August 11, 1971

By reading the flow totalizer which indicates the quantity of makeup water used to fill the refueling water storage tank and comparing the initial and final level indications of the refueling water storage tank, it was calculated that approximately 6000 gallons of water overflowed the refueling water storage tank. An analysis of the residual water in the facade sump was made, and the following radioactivity levels recorded:

H^3 - 1.91×10^{-3} $\mu\text{Ci/ml}$,
Gross $\beta\gamma$ - 3.56×10^{-6} $\mu\text{Ci/ml}$,
 I^{131} - 3.31×10^{-6} $\mu\text{Ci/ml}$, and
 Co^{58} - 2.54×10^{-7} $\mu\text{Ci/ml}$.

The sump radioactivity concentrations were below the maximum permissible concentration requirements for release to a restricted area as listed in 10CFR20, Appendix B, Table I. The sump is considered a restricted area. For purposes of measuring the radioactivity concentrations for a release to unrestricted areas, a point at the inlet of the retention pond was chosen for sampling. This location is conservative as the actual release to the unrestricted environment is at the discharge of the retention pond. The tritium sample at the pond inlet point was 1.46×10^{-4} $\mu\text{Ci/ml}$, which indicated a dilution factor of 13 because of normal sewage discharge and "clean" floor drain dilution. Using this dilution factor, the calculated Iodine 131 concentration at this point was about 2.7×10^{-7} $\mu\text{Ci/ml}$. The first actual I^{131} sample at this point was 2.34×10^{-7} $\mu\text{Ci/ml}$. The analysis confirms that none of the isotopes discharged to unrestricted areas exceeded maximum permissible concentration as listed in 10CFR20, Appendix B, Table II. To fully insure that these values were not exceeded, a daily sample was taken at the inlet to the retention pond. The daily samples indicated a gradually decreasing radioactivity concentration, and by August 6 the concentrations at the retention pond inlet had returned to background levels.

The indication in the control room for the Unit 2 refueling water storage tank was found to be improperly calibrated. The level instrument should have been calibrated in a range of 0 - 800 inches, but in actuality it was calibrated for a range of 0 - 1000 inches. The local indication was correctly calibrated to the 0 - 800 inch range. The control room level instrumentation has been recalibrated for the proper range.

The radioactive concentrations in the retention pond are continually being diluted by normal plant sewage water and by "clean" sump drainage. No radioactive release in excess of maximum permissible concentration has or will be made as a result of this occurrence.

Very truly yours,

[Signature]

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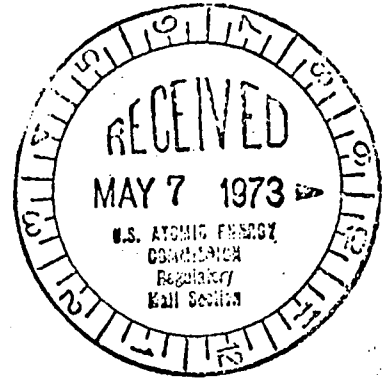
Carolina Power & Light Company

May 1, 1973

Mr. John F. O'Leary
Directorate of Reactor Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

50-261

Dear Mr. O'Leary:



H. B. ROBINSON UNIT NO. 2
LICENSE DPR-23
REFUELING WATER STORAGE TANK
SPILL TO THE PLANT DRAINAGE SYSTEM

In accordance with paragraph 6.6.2.D, Technical Specifications, it is reported that on April 23, 1973, with the reactor in a refueling shutdown condition, a spill of water from the Refueling Water Storage Tank (RWST) to the plant storm drainage system occurred.

Following core reload, the lower levels of the containment refueling cavity were being drained to the Reactor Coolant Drain Tank and then pumped to the RWST. At approximately 1530, the level in the RWST as indicated on the RTCB was 98%. The cavity was being drained at approximately 35 gpm. Draining continued until, at 2300, it was discovered that the RWST was overflowing to the plant drainage system. The cavity draining was immediately stopped, and transfer of the water from the RWST to the Spent Fuel Pit was begun. Overflow of the RWST immediately diminished, and by 0013, April 24, all flow to the storm drainage system had ceased.

It is estimated that the RWST filled to overflow level at 1845. Assuming that all water pumped from this time until the pump was stopped flowed to the drain, this would amount to approximately 8,925 gallons. The water which was released flowed to the storm drain and subsequently into Black Creek below the Robinson impoundment dam.

A sample was collected from the RWST and analyzed by gamma spectrometry for total activity and isotopic identification. Since the water was released from the RWST overflow line, the activity in this sample is identical to that which was released. Concentrations of specific radionuclides from this sample are shown in the attached table. Based on the total release of 8,925 gallons of water, 379.29 millicuries of radioactivity, excluding tritium, were released to the drainage ditch and subsequently to Black Creek. At the time of the release there was a flow

of 680 gpm in the drainage ditch and a flow of 260 CFS in Black Creek resulting in concentrations in these streams averaged over 24 hours as shown in the table.

This release resulted in a concentration, averaged over 24 hours, of 180% of MPC values shown in 10CFR20 in the drainage ditch and 1% of these values in Black Creek. Due to the dilution flow in Black Creek at the time of the release no adverse environmental effects would result. An automatic water sampler was in operation on Black Creek downstream of where the drainage ditch enters during the entire period of the release. Gross beta and gamma spectrum analyses of this sample showed no detectable radioactivity which verifies that no adverse environmental effects would result from the release.

Since Technical Specification limits for liquid discharge are based on equilibrium values of radionuclides which are released to the lake, a comparison of this release (to the stream below the impoundment) to those limits has no meaning. This release does represent, however, 77.5% of the total liquid activity released to the environment during 1973.

This incident is not reportable under 10CFR20 because the 24-hour average concentration in the drainage ditch did not exceed 10 times the MPC values and because the 8-hour average (reference Tech. Spec. Section 3.9.1.2) did not exceed 10 times the permitted values of Technical Specifications and Bases.

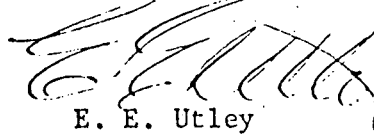
To prevent recurrence of this incident, the following corrective measures have been or will be initiated:

1. Plant management will review methods to prevent recurrence of these type incidents.
2. All operators have been cautioned to exercise extreme caution when transferring radioactive liquids.
3. Normal water level in the Refueling Water Storage Tank will be maintained at 92% instead of the previous level of 98%.
4. A high level alarm will be installed to annunciate on the RTGB should the refueling water storage tank level reach 95%.
5. A modification to route the overflow from the RWST to the plant liquid waste system has been under investigation and will be pursued further.

May 1, 1973

The Plant Nuclear Safety Committee reviewed this incident on April 24, 1973, and it was reported to Mr. Herb Whitener of DRO by telephone and to Mr. Norman C. Mosely of the same office by telegraph on the same date. The South Carolina State Board of Health has also been informed of the incident.

Very truly yours,

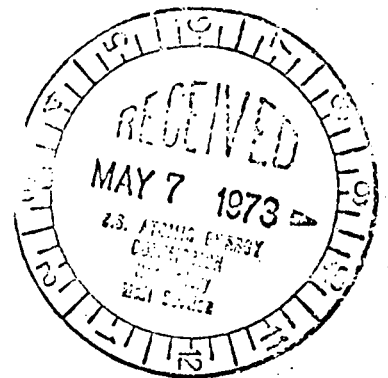


E. E. Utley
Vice-President
Bulk Power Supply

DBW/za

Attachment

cc: Mr. C. D. Barham
Mr. N. B. Bessac
Mr. B. J. Furr
Mr. D. V. Menscer



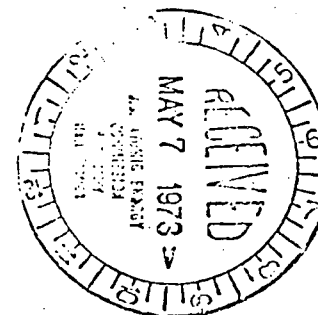
2865

ISOTOPE	RWST SAMPLE ANALYSIS	MPC 10 CFR 20	CONCENTRATION IN DRAINAGE DITCH (1)	MPCF	CONCENTRATION IN BLACK CREEK (2)	MPCF	MILLICURIES RELEASED (3)
Co-57	2.23×10^{-5}	4×10^{-4}	2.02×10^{-7}	0.0005	1.18×10^{-9}	.000003	0.75
Cr-51	1.37×10^{-3}	2×10^{-3}	1.25×10^{-5}	0.00625	7.28×10^{-8}	.000036	46.28
Co-58	6.69×10^{-3}	9×10^{-5}	6.09×10^{-5}	0.677	3.55×10^{-7}	.003944	255.99
Cs-134	2.98×10^{-4}	9×10^{-6}	2.71×10^{-6}	0.301	1.58×10^{-8}	.001756	10.07
Cs-137	3.53×10^{-4}	2×10^{-5}	3.21×10^{-6}	0.1605	1.87×10^{-8}	.000935	11.92
Nb-95	1.03×10^{-4}	1×10^{-4}	9.38×10^{-7}	0.0094	5.47×10^{-9}	.000055	3.48
Mn-54	3.82×10^{-4}	1×10^{-4}	3.48×10^{-6}	0.0348	2.03×10^{-8}	.000203	12.90
Co-60	2.01×10^{-3}	3×10^{-5}	1.83×10^{-5}	<u>0.610</u>	1.07×10^{-7}	<u>.00356</u>	<u>67.90</u>
TOTALS				1.804		.0105	379.29
H-3	9.89×10^{-3}	3×10^{-3}	9.0×10^{-4}	0.30	5×10^{-7}	.0002	334.0

(1) Based on a 24 hour average and a flow in the ditch of 680 gpm

(2) Based on a 24 hour average and a flow in Black Creek of 260 ft³/sec

(3) Based on a release of 8925 gallons.



2055

50-261