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the southern electric system

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Senior Vice President
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HL-892
0501V

December 22, 1989

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

PLANT HATCH - UNIT 1
NRC DOCKET 50-321
OPERATING LICENSE DPR-57
LICENSEE EVENT REPORT
PERSONNEL ERROR RESULTS IN INCORRECT LIQUID
RADWASTE DISCHARGE MONITOR SETPOINT

Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(i), Georgia Power Company is submitting the enclosed Licensee Event Report (LER) concerning a condition which existed that was prohibited by the plant Technical Specifications. This event occurred at Plant Hatch - Units 1 and 2.

Sincerely,

W. G. Hairston, III

SWR/ct

Enclosure: LER 50-321/1989-017

c: (See next page.)

IE22
1/1

c: Georgia Power Company
Mr. H. C. Nix, General Manager - Nuclear Plant
Mr. J. D. Heiat, Manager Engineering and Licensing - Hatch
GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Mr. S. D. Ebneter, Regional Administrator
Mr. J. E. Menning, Senior Resident Inspector - Hatch

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

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TITLE (4)
PERSONNEL ERROR RESULTS IN INCORRECT LIQUID RADWASTE DISCHARGE MONITOR SETPOINT

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)
1 1	2 8	8 9	8 9	0 1 7	0 0	1 2	2 8	8 9	PLANT HATCH UNIT 2	0 5 0 0 0 3 6 6
										0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
1	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 1 0 0	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
Steven B. Tipps, Manager Nuclear Safety and Compliance, Hatch	9 1 2 3 6 7 - 7 8 5 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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

On 11/28/89 at approximately 1600 CST, Unit 1 was in the Run mode at an approximate power level of 2436 MWt (approximately 100 percent of rated thermal power) and Unit 2 was in cold shutdown at an approximate power level of 0 MWt. At that time, plant chemistry personnel, while determining efficiency factors for newly installed liquid radwaste (LRW) discharge radiation monitors (EIIS Code MON), found that the efficiency factors which had been used for the old monitors were incorrect. This discrepancy was found to apply to both units and resulted in the isolation setpoint of the LRW discharge monitoring instrumentation, which is a backup to isotopic analysis of the discharge tank, being less conservative than is required by Unit 1 Technical Specifications section 3.14.1 and Unit 2 Technical Specifications section 3.3.6.9.

The root cause of this event is cognitive personnel error by personnel who were responsible for the implementation of a new LRW discharge monitor computer in 1985. Specifically, an updated efficiency factor was not incorporated; this resulted in calculation of nonconservative setpoints for the LRW discharge monitors.

Corrective actions for this event included: 1) installing updated efficiency factors into system software, 2) examining ten percent of past LRW discharge permits which demonstrated a high probability that no Technical Specifications instantaneous discharge rate limits had been exceeded and 3) revising procedures 62CI-CAL-001-0S, Liquid Radwaste Monitor, 64CH-ADM-001-0S, Chemistry Program, and 64CH-ADM-002-0S, Chemistry Forms, to be completed by 1/31/90, and 4) counseling involved personnel.

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

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor
Energy Industry Identification System codes are identified in the text as (EIIS Code XX).

SUMMARY OF EVENT

On 11/28/89 at approximately 1600 CST, Unit 1 was in the Run mode at an approximate power level of 2436 MWt (approximately 100 percent of rated thermal power) and Unit 2 was in cold shutdown at an approximate power level of 0 MWt. At that time, plant chemistry personnel, while determining efficiency factors for newly installed liquid radwaste (LRW) discharge radiation monitors (EIIS Code MON), found that the efficiency factors which had been used for the old monitors were incorrect. This discrepancy was found to apply to both units and resulted in the isolation setpoint of the LRW discharge monitoring instrumentation, which is a backup to isotopic analysis of the discharge tank, being less conservative than is required by Unit 1 Technical Specifications section 3.14.1 and Unit 2 Technical Specifications section 3.3.6.9.

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DESCRIPTION OF EVENT

On 11/28/89, plant chemistry personnel completed installation and calibration of new monitors in the LRW discharge monitoring instrumentation channels. During the calibration process a determination is made whether the monitor efficiency factor needs to be modified. During a follow up review of the calibration by chemistry personnel it was discovered that the incorrect efficiency factor had been in use since 1985. This resulted in the setpoints for the LRW discharge monitors being set such that they might not initiate an isolation of the discharge line prior to the potential exceedance of Technical Specifications instantaneous limits as specified in 10 CFR 20, Appendix B, Table II (column 2). This isolation function is required by sections 3.14.1 and 3.3.6.9 of the Units 1 and 2 Technical Specifications, respectively.

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

Prior to any discharge of liquid radwaste, an isotopic analysis of the radionuclide content of the discharge tank is performed to provide the primary assurance that release of the tank contents will not exceed the previously referenced Technical Specifications limits. This analysis is performed by the LRW discharge monitor computer and is independent of the discharge monitor efficiency factor. As a backup, and independent of the isotopic analysis, a separate calculation which uses the previously referenced efficiency factor, is performed by the LRW computer to determine the appropriate setpoint for the LRW discharge monitors. The efficiency factor is based on the specific characteristics of the LRW discharge monitors. The setpoint calculation thus considers both the monitor characteristics and the specific contents of the discharge tank (i.e., each time a LRW discharge is made the monitor is set to a unique setpoint).

Plant chemistry personnel determined that the current, correct efficiency factor had been calculated originally in June, 1985. The efficiency factor had been calculated at that point to reflect a new method of determining the LRW discharge monitor's efficiency using a liquid Cesium 137 standard source. This efficiency factor was documented on a data sheet to be referenced in subsequent calibrations of the LRW discharge monitor and was input into the Hewlett Packard Model 9845 computer, on 6/28 and 6/29/85 respectively for Units 1 and 2, which at that time was the LRW discharge monitor computer.

However, at the same time, a new computer system (manufactured by Nuclear Data Corporation and referred to herein as the ND system) was being prepared to replace the HP system. The ND system was required to accomodate the NRC required implementation of the new Radiological Effluent Technical Specifications (RETS). In order to support performance testing of the ND system, an efficiency factor based on actual radwaste tank content (efficiency factor calculation method prior to method using a standard Cesium 137 source) had been input to the ND computer on 4/30/84.

On 6/28/85, plant chemistry personnel received notification from the NRC which implemented RETS. Such implementation had to be accomplished prior to the start of a new quarter due to the reporting constraints of RETS. Therefore, plant personnel proceeded to implement the new ND system on an accelerated basis. ND system experts performed functional tests between 6/28 and 6/30/85 which accomplished their function of assuring the adequacy of the software and hardware. However, the ND system experts failed to input the correct efficiency factor, just calculated based on the Cesium 137 source. Therefore, the ND system was implemented on 7/01/85 but the efficiency factor input on 4/30/84 was not corrected.

Differences in output between the ND and HP systems did not alert personnel to the use of the incorrect efficiency factor and could not have been expected to. The differences seen, which were less than an order of magnitude, were expected due to the differences in setpoint calculation methods employed. The monthly calibrations of the monitor instrumentation require confirmation that the efficiency factor does not need to be changed; however, this factor is rarely expected to change since the characteristics of the monitoring instrumentation are generally stable (replacement of the detector portion of the instrumentation on 11/28/89 was the first instrumentation change since 1985 expected to have some

*U.S. GPO: 1988-520-589/00070

impact on the factor). Such confirmations of the efficiency factor during calibrations were correctly performed against the correct 1985 data sheet resulting from use of the Cesium 137 source without knowledge that this data had not been input into the ND system.

Upon discovery of the incorrect efficiency factors in the ND system, the correct efficiency factors for Units 1 and 2 were installed into the system software.

CAUSE OF THE EVENT

The root cause of this event is cognitive personnel error by the personnel who were responsible for implementation of the ND system in June, 1985. These individuals failed to assure that the current efficiency factors for Units 1 and 2 had been correctly input into the ND system prior to implementation. This is concluded to be an isolated event due to the unique and technically complex function of the LRW discharge monitor computer and the accelerated implementation schedule required due to the timing of the RETS implementation. A final contributing factor was the change in the method of determining the efficiency factor which, due to unrelated circumstances, occurred in parallel with the implementation of RETS.

REPORTABILITY ANALYSIS AND SAFETY ASSESSMENT

This report is required per 10 CFR 50.73(a)(2)(i) because a condition existed that was prohibited by the plant's Technical Specifications. Specifically, the inadvertent use of an incorrect efficiency factor resulted in the setpoints for the LRW discharge monitor being set such that the requirements of Units 1 and 2 Technical Specifications sections 3.14.1 and 3.3.6.9, respectively, were not met. The setpoints might not properly initiate an isolation of the discharge line prior to the potential exceedance of Technical Specifications instantaneous limits as specified in 10 CFR 20, Appendix B, Table II (column 2).

The function of the LRW discharge monitor instrumentation is to provide an isolation signal in the event an unexpectedly high concentration of radioactive material is detected in the discharge piping. This is an unlikely event due to the batch process nature of LRW discharges. Isotopic analyses are used to determine the radionuclide content of a LRW discharge tank prior to its release to assure compliance with the previously referenced Technical Specifications limits. The LRW discharge monitor provides a backup to this analysis to ensure that radionuclide content of the effluent does not differ greatly from that of the isotopic analysis. The monitor is located on the LRW discharge piping upstream of the dilution influent piping and is designed to initiate a trip of isolation valves should the radiation count rate exceed a predetermined level. The LRW discharge monitor thereby serves to ensure instantaneous discharge rates do not exceed Technical Specifications limits.

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

Reviews have been conducted on a sample of radiological discharge data dating back to July, 1985. The highest release concentration averaged over any three-month period since July, 1985 was less than seven percent of that permitted by 10 CFR 20, Appendix B. Also, approximately ten percent of recorded instantaneous count rates for post-1985 releases (600 out of approximately 6000 releases), as seen by the subject LRW discharge monitors, have been reviewed against a recalculated isolation setpoint based on corrected monitor efficiency factors. This ten percent sample consisted of a review of all discharges made during the previously referenced three-month period with the highest average release concentration and selected other discharges with potential for exceeding Technical Specifications limits. No event was found wherein instantaneous release rates exceeded the Technical Specifications limits. Based on this sample size, there is a greater than 98% confidence level that greater than 99% of the releases were within the permissible radionuclide release limits prescribed in 10 CFR 20.

Based on the above analysis, it is concluded that this event had no adverse impact on nuclear safety. Since the power level of the units would not have changed the nature of the event, it is concluded that the event would not have been more severe under other operating conditions.

CORRECTIVE ACTIONS

Corrective actions for this event included:

1) installing a corrected efficiency factor into ND system software. This action has been completed.

2) examining ten percent of LRW discharge permits since July 1985 (600 out of approximately 6,000 releases) to determine whether any had exceeded Technical Specifications instantaneous discharge rate limits. None were found to have exceeded applicable limits.

3) Revising 62CI-CAL-001-0S, Liquid Radwaste Monitor, 62CH-ADM-001-0S, Chemistry Program, and 64CH-ADM-002-0S, Chemistry Forms, to require periodic comparison of current efficiency factors with those actually in the LRW discharge monitor computer software. This action will be completed by 1/31/90.

4) Personnel involved in this event who are still employed at Plant Hatch have been counseled as to the consequences of their actions.

ADDITIONAL INFORMATION

No plant equipment other than the LRW discharge monitors was affected by this event.

No previous similar events were identified.