

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8803220466 DOC. DATE: 88/03/14 NOTARIZED: NO DOCKET #
 FACIL: 50-269 Oconee Nuclear Station, Unit 1, Duke Power Co. 05000269
 AUTH. NAME AUTHOR AFFILIATION
 NORTH, P.J. Duke Power Co.
 TUCKER, H.B. Duke Power Co.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-003-00: on 880211, violation of Tech Specs occurred due to mgt deficiency in control of offsite dose calculations. W/8 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 10
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: AEOD/Ornstein:1cy.

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LICENSEE EVENT REPORT (LER)

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TITLE (4) VIOLATION OF TECHNICAL SPECIFICATIONS DUE TO MANAGEMENT DEFICIENCY IN THE CONTROL OF OFFSITE DOSE CALCULATIONS WHEN BURNING CONTAMINATED OIL

| 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 0 3 | 0 | 0 3 | 1 4 | 8 8 | Oconee Unit 2 | | 0 5 0 0 0 2 7 0 |
| | | | | | | | | | Oconee Unit 3 | | 0 5 0 0 0 2 8 7 |

OPERATING MODE (9) N

POWER LEVEL (10) 1 0 0

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

| | | | |
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| <input type="checkbox"/> 20.402(b) | <input type="checkbox"/> 20.406(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(a)(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(a)(2) | <input type="checkbox"/> 50.73(a)(2)(vi) | OTHER (Specify in Abstract below and in Text, NRC Form 388A) |
| <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 PHILIP J. NORTH - LICENSING

TELEPHONE NUMBER
 AREA CODE 7 0 4 3 7 3 - 7 4 5 6

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDOS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPDOS |
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SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (16)

| MONTH | DAY | YEAR |
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (18)

On November 2 through November 4, 1987, contaminated waste oil was burned in the Oconee Nuclear Station Auxiliary Boiler in excess of the offsite dose limits in Technical Specification 3.10.5. Previously, on January 1, 1987, the methodology for calculating the quantities of radionuclides released from the incineration of contaminated waste oil changed. However, ONS Radwaste Chemistry personnel were not aware of these changes. Consequently, the use of a superseded formula led to their underestimating the offsite dose for the oil incineration completed during November of 1987. On February 10, 1988, this error was discovered by GO Radwaste Engineering and reported to ONS Radwaste Chemistry personnel. Subsequently, the offsite dose was calculated using the revised methodology, and on February 12, 1987 it was determined that Technical Specification 3.10.5 had been violated.

The root cause of this incident was determined to be a management deficiency due to the failure of Oconee Nuclear Station management to properly monitor and disseminate changes in administrative guidelines governing the methodology of calculating offsite dose limits for the burning of waste oil.

The immediate corrective action was to stop the waste oil burn in progress and to assure that this burn was within Technical Specification limits.

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TEXT (if more space is required, use additional NRC Form 366A (11/77))

Background:

Oconee Nuclear Station generates waste oils as a result of routine maintenance of mechanical equipment. Some of this waste oil contains radioactive isotopes which requires the oil to be handled as a contaminated liquid. In an effort to meet state and federal requirements, a waste oil management program was initiated to control the collection, storage, and disposal of waste oil. Station Directive 4.3.3 states that the Radwaste Chemistry Subsection is responsible for administering the Waste Oil Management Program at Oconee Nuclear Station.

In addition to Station Directives, the Offsite Dose Calculation Manual (ODCM) provides direction concerning the methodology for calculating offsite doses prior to disposing of waste oil by incineration. The amount of oil which may be burned is limited by the projected dose rate to members of the general public. The ODCM provides parameters to be used in the calculation of offsite doses due to radioactive liquid and gaseous effluents to assure compliance with the dose limitations of Technical Specifications. Technical Specification 3.10.2.b.2 states that "the dose to a member of the public from radioiodines, tritium, and radioactive materials in particulate form with half-lives greater than eight days in gaseous effluents released from the site, shall be limited to less than or equal to 45 millirems per calendar year." In addition, Technical Specification 3.10.5 states that "used oil, contaminated by radioactivity, may be incinerated in the Station auxiliary boiler provided releases do not exceed one-tenth of one percent (0.1%) of the limits in Technical Specification 3.10.2.b.2."

Contaminated oil is burned in the Auxiliary Boiler which is considered to be a separate release point from the Radwaste Facility because it has its own exhaust. The contaminated oil is filtered, mixed, and sampled to determine the total activity to be released and the allowable release (burn) rate. Doses from incineration of contaminated oil are calculated for all organs and all pathways. In addition, these doses are calculated monthly at a minimum, by General Office Radwaste Engineering. All the activity in the contaminated oil is assumed to be released during incineration and the total is added to the station's quarterly and annual release records.

A computer program called GASPAR is used for calculating offsite doses due to gaseous effluents. However, the ODCM contains an alternate method for the calculation of offsite doses through the use of a simplified formula. This formula makes certain basic conservative assumptions which simplifies it in relation to the longer GASPAR calculation. The ONS Radwaste Chemistry Group adopted the simplified formula for use in a Chemistry procedure to perform their own offsite dose calculations.

The ODCM is controlled by the General Office Radwaste Engineering Group. Any revisions made to this manual are reviewed by this group and approved by the Station Manager and the System Radwaste Engineer prior to implementation.

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

Sequence of Events:

- December 23, 1986
 - The ODCM was changed to incorporate the new simplified formula.
- January 1, 1987
 - The new calculation method became effective.
- November 3 through 4,
 - Waste oil was burned at Oconee Nuclear Station.
 - Technical Specification 3.10.5 was violated.
- December 15 (approximately)
 - Raw data for the composition of the oil burned in November was given to Health Physics.
- January 4, 1988
 - The radionuclide composition of the oil burned in November was received by General Office (GO) Radwaste Engineering.
- February 8
 - GO Radwaste Engineering identified a possible offsite dose calculation problem with the oil burned in November 1987.
- February 10
 - GO Radwaste Engineering contacted the Oconee Nuclear Station (ONS) Radwaste Chemistry Subsection to discuss the problem with the oil burned in November 1987.
 - ONS Radwaste Chemistry initiated their first waste oil burn for 1988.
- February 11
 - ONS Radwaste Chemistry stopped oil burning that had been started on February 10.
- February 12
 - Upon verification of calculation results, ONS Radwaste Chemistry notified Compliance that Technical Specifications 3.10.5 had been violated because of the oil burned in November 1987.

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TEXT (if more space is required, use additional NRC Form 368A's) (17)

February 16

The offsite dose was calculated for the oil burned on February 10, 1988 and it was determined to be within allowable limits.

Description of Occurrence:

Prior to 1987, the Auxiliary Boiler exhaust was considered to be a "semi-elevated" release point and the offsite dose from the incineration of contaminated oil was calculated accordingly. A Chemistry procedure had been developed to give guidance for incinerating waste oil using the Auxiliary Boiler. Since this procedure was first initiated, several changes have been made to incorporate new criteria for burning waste oil. Information concerning these changes was communicated to ONS Radwaste Chemistry by GO Radwaste Engineering. Even though ONS Chemistry Management was aware that the ODCM contained information concerning the incineration of waste oil, they did not have a copy of the manual in the Radwaste Chemistry Subsection. Since ONS Radwaste Chemistry did not have a copy of the ODCM, verbal communication with GO Radwaste Engineering was the usual method they had for determining if they needed to make changes to the simplified formula in their waste oil burning procedure.

Subsequently, during the licensing negotiation with the NRC concerning the new Radwaste Facility at ONS, the calculation of offsite dose due to the incineration of oil was changed to a ground level release methodology. This change resulted from an evaluation of offsite dose which would be generated by the commercial operation of the new Radwaste Facility. By adding gaseous releases from the new Radwaste Facility to the releases made by burning oil in the Auxiliary Boiler, the estimated annual amount of gaseous effluents released from ONS significantly increased. This projected increase in gaseous effluents required a revision to the offsite dose calculation methodology specified in the ODCM. This was necessary in order to more accurately model the impact of all ground level releases at ONS on the health and safety of the public.

In order to adhere to the new regulatory requirements concerning ground level releases, GO Radwaste Engineering initiated changes to the ODCM that would reflect the new regulatory requirements. These changes included a new simplified formula for calculating the offsite dose prior to burning waste oil in the Auxiliary Boiler. The revised formula was more conservative than the formula previously used.

While changes to the ODCM were issued to holders of this manual in the Health Physics Section, the Environmental Chemistry Subsection, and Operations, no documented information concerning the subject changes was issued to the ONS Radwaste Chemistry Subsection. This was due to the fact that they did not have a copy of the ODCM and therefore, were not issued a copy of the changes to this manual. In addition, even though Environmental Chemistry and Radwaste Chemistry are subsections of the Chemistry Group, no communication took place between these subsections concerning changes in offsite dose calculation methodology.

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TEXT (If more space is required, use additional NRC Form 366A (11/77))

Therefore, since ONS Radwaste Chemistry was not cognizant of the change made to the formula in the ODCM, they did not make appropriate changes to their waste oil burning procedure.

On November 2 through 4, 1987, waste oil was burned in the Auxiliary Boiler at ONS. Prior to the incineration of this oil, ONS Radwaste Chemistry calculated the offsite dose using data obtained from samples of the oil to be burned. Including the oil incineration completed in November, the total calculated annual dose using the simplified formula was .0179 millirems for the year which was below the .045 millirem limit specified in Technical Specification 3.10.5. This calculation was done using the outdated formula. Consequently, due to the results of this calculated offsite dose, ONS Radwaste Chemistry had no reason to suspect that burning the oil would violate Technical Specification limits.

Subsequently, ONS Radwaste Chemistry sent the raw data obtained from the waste oil sample to the ONS Health Physics Section for processing. This processing involved an activity calculation as well as a monthly report of the activity of all gaseous effluents for that month. Normally, the raw data would be entered into the VAX Computer System by Health Physics personnel where it would be available to GO Radwaste Engineering. If data for oil incineration is to be entered on the VAX System by Health Physics personnel, this data must be entered during the month it was burned. However, since the oil burn took place in November and the raw data was not processed by Health Physics until December, the data had to be transmitted to GO Radwaste Engineering through the mail in order for the data to be entered into the VAX System. This was necessary only because of the VAX System characteristics and not because of administrative controls.

A GO Radwaste Engineering Associate Health Physicist received this data on January 4, 1988. During the development of a required semi-annual Radioactive Effluent Release Report, the Associate Health Physicist identified a problem with the data for the waste oil incineration completed in November of 1987. He performed an offsite dose calculation using the data transmitted to him by Health Physics and found the offsite dose estimate to be .153 millirems which was above the limits specified in ONS Technical Specifications. This estimate was calculated using an annually updated computer program called GASPARE. Thus, a problem with the program was initially suspected as being the cause of the discrepancy. The GASPARE program is more accurate than the simplified formula included in the ODCM, because it includes less assumptions. However, the assumptions included in the simplified formula make it more conservative than the offsite dose calculations performed using GASPARE. This conservatism makes the simplified formula an acceptable means of estimating offsite doses without exceeding regulatory limits. Duke will review the use of simplified formulas and supplement this report if necessary.

After identifying the potential violation of Technical Specification 3.10.5, the Associate Health Physicist notified the System Radwaste Engineer of the problem. On February 10, 1988, the System Radwaste Engineer then contacted an ONS Chemistry Section Head and an ONS Support Supervisor and made them aware of the problem. This discussion identified that ONS Radwaste Chemistry had been using the wrong simplified formula for calculating the offsite dose. While the

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calculation made by ONS Radwaste Chemistry estimated an offsite dose of .0179 for the year, a calculation using the revised simplified formula estimated that an offsite dose commitment of .1797 millirems was incurred. This calculation is in agreement with the .153 millirem dose calculated by GASPARG even though these numbers do not match. As stated previously, the calculation performed using the simplified formula should be more conservative than the calculation performed using GASPARG. On February 12, 1988, ONS Radwaste Chemistry confirmed the results of the calculations and notified ONS Compliance that Technical Specification 3.10.5 had been violated because of the waste oil incineration that took place in November of 1987.

Prior to the discovery of the Technical Specification violation, ONS Radwaste Chemistry had started their first oil incineration for 1988 on February 10. Upon notification of the Technical Specification violation, the waste oil incineration in progress was terminated on February 11, 1988. At the time this oil incineration was stopped, 800 gallons of waste oil had been burned. Using the raw data from the composition of this waste oil, a new offsite dose calculation was performed using GASPARG to determine if the limits specified in Technical Specification 3.10.5 had been violated a second time. The results of the offsite dose calculated using GASPARG proved that Technical Specification limits had not been exceeded as a result of the waste oil burned on February 10 and 11.

Cause of Occurrence:

It is concluded that the root cause of this incident was a management deficiency due to the failure of management to properly monitor and disseminate changes in administrative guidelines governing the methodology of calculating offsite doses for burning waste oil. In addition, another factor that contributed to this incident was less than adequate communication between General Office Radwaste Engineering and the ONS Radwaste Chemistry Subsection.

Since ONS Radwaste Chemistry did not have a copy of the ODCM, they were not aware of the change made to the methodology for calculating off site doses due to the incineration of waste oil. ONS Radwaste Chemistry Management was aware that information defining the proper method for calculating offsite doses was included in the ODCM. Therefore, ONS Radwaste Chemistry Management should have insured the individuals responsible for the procedure used to incinerate waste oil had a copy of the ODCM. Had ONS Radwaste Chemistry personnel been on the distribution list for the ODCM, they would have reviewed the change to the manual when it was issued. At that time, they would have recognized the change to the offsite dose calculation methodology and changed their procedure accordingly. However, since ONS Radwaste Chemistry was not aware of this change, they did not make changes to their waste oil burning procedure. Consequently, they performed offsite dose calculations using a deficient procedure.

While ONS Radwaste Chemistry did not have a copy of the ODCM, they did have access to this manual. There are several manuals issued throughout the plant. One of these manuals was issued to ONS Environmental Chemistry which is a subsection of

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Chemistry as is ONS Radwaste Chemistry. Normally, ONS Radwaste Chemistry identified changes in offsite dose calculation methodology through communication with GO Radwaste Engineering. Therefore, they did not make it a standard practice to periodically review the ODCM for changes that could affect their procedures.

It is the responsibility of GO Radwaste Engineering to disseminate information concerning the handling of radwaste to all three Duke Power Nuclear Stations. The Associate Health Physicist was not aware that ONS Radwaste Chemistry was responsible for the procedure used for calculating off site dose due to the incineration of waste oil. He assumed that this procedure was controlled by the ONS Health Physics Section. However, ONS Radwaste Chemistry personnel, felt that GO Radwaste Engineering was aware that ONS Radwaste Chemistry controlled this procedure based on prior communication in which GO Radwaste Engineering supplied information concerning changes to the offsite dose calculation procedure. Therefore, ONS Radwaste Chemistry felt that GO Radwaste Engineering should have notified them that a change was going to be made to the offsite dose calculation methodology regardless of the fact that they did not have a copy of the ODCM.

It could be surmised, that if GO Radwaste Engineering had formally notified ONS Radwaste Chemistry of the change to the offsite dose calculation methodology, that ONS Radwaste Chemistry would have revised their procedures to reflect this change. Therefore, it is concluded, that a less than adequate communication system between GO Radwaste Engineering and ONS Radwaste Chemistry was a contributing cause to this incident.

As stated in this report, the computer program GASPAR is more accurate in determining the offsite dose released due to gaseous effluents than the simplified formula used by ONS Radwaste Chemistry. While the simplified formula will calculate a conservative offsite dose for burning waste oil, it requires time consuming hand calculations. In addition, this formula is revised periodically to incorporate different variables used in calculations. These revisions require changes to be made to station procedures as well. Therefore, it would be more cost effective as well as more efficient for ONS Radwaste Chemistry to have GO Radwaste Engineering perform the offsite dose calculations using GASPAR. This would eliminate some of the human error factor by deleting the need to perform some of the hand calculations.

Since the ODCM contains important information concerning the offsite dose calculations due to the release of gaseous and liquid effluents, this manual should be issued to all groups responsible in this area. Also, it would be desirable for the ONS Compliance Section to maintain a copy of the ODCM in order to insure that groups affected by proposed changes are notified. A preliminary copy of proposed changes to this document should be formally issued to ONS Compliance and all other Station groups that have this manual. The affected groups in turn would provide feedback to ONS Compliance which would process comments back to GO Radwaste Engineering before changes are implemented. This would also give responsible groups time to make appropriate changes to their procedures. By allowing Compliance to serve as a mediator for processing

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TEXT (If more space is required, use additional NRC Form 368A-M (17))

feedback, conflicting and/or redundant information would not be transmitted back to GO Radwaste Engineering.

A review of past Licensee Event Reports for the past three years revealed no incident that involved a Technical Specification violation due to incorrect offsite dose calculations. Therefore, this incident is considered not to be recurring. In addition, this incident did not involve a component failure and is therefore, not NPRDS reportable.

There were no personnel injuries associated with this incident. However, there was a release of radioactive materials from the Auxiliary Boiler vent stack in the form of gaseous and particulate effluents. The impact on the health and safety of the public is discussed in the safety evaluation of this report.

Corrective Actions:

Upon identification of the potential Technical Specification violation due to the oil burned in November of 1987, the immediate corrective action was for ONS Radwaste Chemistry to stop the oil burn in progress. This oil burn was initiated on February 10, 1988 and stopped on February 11, 1988. Calculations were made using the computer program GASPAR, which proved the offsite dose due to this oil burn was within the limits of Technical Specification 3.10.5 and 3.10.2.b.2.

Subsequent corrective actions were for:

- o The ONS Radwaste Chemistry Group to revise the procedure used for the incineration of waste oil to incorporate a requirement for offsite dose calculations to be made by GO Radwaste Engineering using the computer program GASPAR. This calculation will be performed prior to the incineration of waste oil;
- o ONS Radwaste Chemistry Management to request Document Control to place them on the distribution list for the ODCM;
- o ONS Radwaste Chemistry Management to write a letter to GO Radwaste Engineering requesting the opportunity to review all future proposed changes to the ODCM.

Planned corrective actions are for:

- o ONS Radwaste Chemistry Management to insure that individuals responsible for the burning of waste oil and the procedure used for that process will have an ODCM assigned to them. These responsible individuals will also be required to review changes made to the ODCM to insure procedures used in the process of burning waste oil are in compliance with this manual;
- o Compliance to obtain a copy of the ODCM and maintain this manual in the Compliance Section;

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- o Compliance to insure that all Station Groups responsible in the area of offsite dose calculations have a copy of the ODCM;
- o The Compliance Section to receive copies of all proposed changes to the ODCM;
- o Comments from Station Groups concerning proposed changes to the Offsite Dose Calculation Manual (ODCM) to be reviewed by Compliance and transmitted to GO Radwaste Engineering;
- o GO Radwaste Engineering to issue ODCM proposed changes to ONS Compliance as well as all Station groups that have a copy of this manual;
- o GO Radwaste Engineering to perform offsite dose calculations upon request for waste oil incineration at ONS.

Analysis of Occurrence:

The safety concern of this incident involves the allowed offsite dose to any member of the public due to releases of gaseous effluents containing radioiodines, tritium, and radioactive materials in particulate form with half-lives greater than eight days. As a result of this incident, there were radioactive releases above the limits specified in Technical Specification 3.10.5. This specification allows an administrative limit of .045 millirems of offsite dose due to the incineration of oil in the Auxiliary Boiler. However, the total annual offsite dose from radioiodines, tritium, and radioactive materials in particulate form with half-lives greater than eight days in gaseous effluents allowed by Technical Specification 3.10.2.b.2 is less than or equal to 45 millirems to any organ during any calendar year. In addition, 10CFR50 Appendix I states:

"The calculated annual total quantity of all radioactive iodine and radioactive material in particulate form above background to be released from each light-water-cooled nuclear power reactor in effluents to the atmosphere will not result in an estimated annual dose or dose commitment from such radioactive iodine and radioactive material in particulate form for any individual in an unrestricted area from all pathways of exposure in excess of 15 millirems to any organ."

Since 10CFR50 Appendix I allows 15 millirems per unit, and ONS has three units, an allowed dose of 45 millirems is allowed by this code for ONS. This limit was not exceeded as a result of this incident. The total offsite dose for 1987, including the releases made as a result of this incident, was .235 millirems as calculated by the computer program GASPAR. Consequently, only the administrative offsite dose limit of .045 millirems allowed for the incineration of oil in the Auxiliary Boiler was exceeded. Therefore, it is concluded that the health and safety of the public were not significantly affected by the waste oil incineration completed in November of 1987 at ONS.

DUKE POWER COMPANY

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VICE PRESIDENT
NUCLEAR PRODUCTION

TELEPHONE
(704) 373-4531

March 14, 1988

U.S. Nuclear Regulatory Commission
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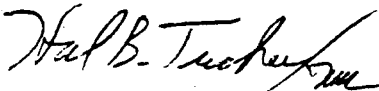
Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
LER 269/88-03

Gentlemen:

Pursuant to 10CFR 50.73 Sections (a) (1) and (d), attached is Licensee Event Report (LER) 269/88-03 concerning a violation of Technical Specifications due to management deficiency in the control of offsite dose calculations when burning contaminated oil.

This report is submitted in accordance with Part 50.73(a)(2)(1)(B). This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,



Hal B. Tucker

PJN/304/jgc

Attachment

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