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APR 17 1985

Duke Power Company  
ATTN: Mr. H. B. Tucker, Vice President  
Nuclear Production Department  
422 South Church Street  
Charlotte, NC 28242

Gentlemen:

SUBJECT: REPORT NOS. 50-269/84-33, 50-270/84-30 AND 50-287/84-34

Thank you for your response of February 22, 1985, to our Notice of Violation issued on January 23, 1985, concerning activities conducted at your Oconee facility.

We have given careful consideration to the basis for your denial of violations 1 and 2. We recognize that they did not represent significant health and safety concerns. Accordingly, the violations were placed at Severity Levels IV and V. However, for the reasons presented in the Enclosure to this letter, we have concluded that the actions were contrary to the regulations as stated in the Notice of Violation. Therefore, in accordance with 10 CFR 2.201(a), please submit to this office within 30 days of the date of this letter a written statement describing steps which have been taken to correct violations 1 and 2 and the results achieved, corrective actions which will be taken to avoid further violations, and the date when full compliance will be achieved. Your supplemental response to violation 1 should include your corrective actions related to the radioactive material which was disposed of, without authorization, in the ash at the Lee Steam Station.

The responses directed by this letter are not subject to the clearance procedure of the Office of Management and Budget issued under the Paperwork Reduction Act, PL 96-511.

Sincerely,

J. Nelson Grace  
Regional Administrator

Enclosure:  
Staff Assessment of Licensee Response

cc w/encl:  
M. S. Tuckman, Station Manager

bcc w/encl: (See page 2)

8507230267 850417  
PDR ADOCK 05000269  
G PDR

*IEO1*

bcc w/encl:  
NRC Resident Inspector  
NRR Project Manager, NRR  
D. S. Price, RII  
Document Control Desk  
State of South Carolina

RII  
*RM*  
RHA1bright:jw  
4/3/85

RII  
*LRJ*  
GRJenkins  
4/3/85

RII  
*DMC*  
DMCollins  
4/3/85

RII  
*DMC*  
for DMC  
DMontgomery  
4/3/85

RII  
*B*  
JMPuckett  
4/6/85

RII  
*BJ*  
BJones  
4/10/85

RII  
*CB*  
CBurger  
4/10/85

RII  
*HD*  
HDance  
4/10/85

RII  
*B*  
VBrownlee  
4/10/85

RII  
*R.W.*  
RWalker  
4/12/85

RII  
*JL*  
JLShinski  
4/16/85

RII  
*RT*  
RTrojanowski  
4/9/85

RII  
*JP*  
JPStohr  
4/16/85

IE  
*LRJ* (per telecons on 3/20 + 4/2/85)  
for LJCunningham  
4/3/85

ENCLOSURE

STAFF ASSESSMENT OF LICENSEE RESPONSE

1. Violation 1 concerned the violation of 10 CFR 20.301 for the unauthorized disposal of 18,635 gallons of slightly contaminated waste oil during the period September 1981 to June 1984.

Licensee Comment:

Oil from the secondary system which would not normally be considered contaminated, was surveyed and, if less than exempt quantities (10 CFR 30.18) were measured, the oil was shipped to Lee Steam Station, a fossil fuel steam plant for disposal by burning. The oil was not burned at Lee without additional regulatory approval. Duke Power Company submitted to the South Carolina Department of Health and Environmental Control (DHEC) a "Spent Oil Management Program for Duke's South Carolina Facilities" which describes the burning of oil containing exempt quantities of radioactivity at Lee. This Program was approved originally in 1980 by the State of South Carolina in a letter dated October 20, 1980, and has been reviewed annually since then. South Carolina DHEC is the agency responsible for implementing 10 CFR 20 in South Carolina under the agreement states program (10 CFR 150). Duke Power Company did not violate 10 CFR 20.301, 10 CFR 20.302, and 10 CFR 20.303 by burning oil at Lee.

NRC Response:

10 CFR 20.301 prohibits disposal of licensed material as waste except as specified in that paragraph. The NRC has consistently regulated the disposal of radioactive material in accordance with 10 CFR 20.301 without regard to the disposed quantity. The requirements for the disposal of radioactive material were restated in a letter dated March 20, 1984, from A. F. Gibson of NRC Region II to Duke Power Company. The intended use of 10 CFR 30.18 was to accommodate the occasional transfers between laboratories of small quantities of byproduct material in samples, standards, etc.

While we recognize that burning the oil from the secondary system did not present a radiological health problem (the concentrations were less than those that would have been authorized for burning at the Oconee Station), the transfer of the oil containing low-level radioactivity for disposal was neither permitted by 10 CFR 20.301 nor 10 CFR 30.18.

In order for Oconee to transfer contaminated waste oil to the Lee Steam Station for disposal purposes, Lee Steam Station would have to apply for and receive a specific license from the State of South Carolina. The "Spent Oil Management Program for Duke's South Carolina Facilities" states, "The spent oil that is shipped to Lee will be monitored, as required by the Nuclear Regulatory Commission, to ensure that this oil contains only quantities of radioactivity that are exempt from NRC regulation (i.e., Exempt Quantities)." As explained above, there are no exempt quantities of radioactivity for disposal purposes. Therefore, the State of South

Carolina's approval of the Spent Oil Management Program did not constitute regulatory approval for disposal of radioactively contaminated oil.

2. Violation 2 concerned the failure to post an airborne radioactivity area for noble gases exceeding maximum permissible concentration (MPC) levels as required by 10 CFR 20.103.

Licensee Comment:

It is Duke Power's interpretation that the regulatory philosophy for airborne noble gases and radionuclides with half-lives less than 2 hours allows exposure to these radioisotopes to be treated as external doses. 10 CFR 20.103, footnote 2, states:

"... For radioactive materials designated "Sub" in the "Isotope" column of the table, the concentration value specified is based upon exposure to the material as an external radiation source. Individual exposures to these materials may be accounted for as part of the limitation on individual dose in 20.101. These nuclides shall be subject to the precautionary procedures required by 20.103(b)(1)."

NRC Response:

The intent of 10 CFR 20.103, footnote 2, is that dose to personnel due to exposure to airborne noble gases may be accounted for as an external exposure which would be included in external dose totals subject to the 10 CFR 20.101 dose limitations. This note does not exempt the posting of noble gas airborne radioactivity areas as an "airborne radioactivity area."

Licensee Comment:

Noble gases are listed in 10 CFR 20, Appendix B as "Sub" materials. Further, shortlived isotopes ( $T_{1/2} \leq 2$  hrs., notably Rb-88) are not listed specifically to Appendix B; a generic MPC value is listed as a "submersion" dose MPC. International Commission on Radiation Protection (ICRP) Publication 30 supports this approach as technically sound. ICRP 30, part 1, paragraph 8.2.3 states:

"Therefore, when applying the system of dose limitation described in Chapter 2, it is clear that, for exposure by submersion in radioisotopes of the noble gases, external irradiation will be of such overriding importance that it alone need be considered. Thus, in this report dose equivalents from absorbed gas and gas contained in the lung have been disregarded."

Further, paragraph 8.2.3.1 states:

"If the daughter radionuclide is not an inert radioactive gas, it can be shown that in practice dose equivalents from daughters produced from their parent absorbed in body tissues will usually be small compared with the external dose from parent and daughter outside the body. In

this report dose equivalents from the daughters produced from their parent in body tissues have been disregarded."

NRC Response:

The above excerpts from ICRP Publication 30 are similar to the reasons that 10 CFR 20 allows the submersion dose from designated radionuclides in 10 CFR 20, Appendix B, to be accounted for as external dose. However, the requirements enforced by the NRC are contained in Title 10, Code of Federal Regulations; the license; and licensee commitments. Other documents, such as ICRP publications, do not determine the regulatory requirements.

Licensee Comment:

The doses associated with these materials are subject to the controls in 10 CFR 20, paragraph 20.101. Additionally, these nuclides are subject to the precautionary (ALARA) procedures of paragraph 20.103(b)(1):

"(b)(1) The licensee shall, as a precautionary procedure, use process or other engineering controls, to the extent practicable, to limit concentrations of radioactive materials in air to levels below those which delimit an airborne radioactivity area as defined in 20.203(d)(1)(ii)."

The definition referred to here (20.203(d)(1)(ii)) is:

"(ii) any room, enclosure, or operating area in which airborne radioactive material composed wholly or partly of licensed material exists in concentrations which, averaged over the number of hours in any week during which individuals are in the area, exceed 25 percent of the amounts specified in Appendix B Table I, Column 1 of this part."

The external dose associated with these isotopes should be measured and controlled like all other external hazards, and the concentration of these isotopes should be reduced to an as low as reasonably achievable (ALARA) value (<25% MPC). For submersion MPC values, this 0.25 MPC corresponds to roughly 300 mrem per quarter below which no personnel monitoring requirements exist.

NRC Response:

10 CFR 20.103(b)(1) is applied to all airborne radioactive materials including those which are treated as external hazards as stated in 10 CFR 20.103(a)(1), note 2. Exposure to noble gases can be controlled as external dose or by using the MPC-hrs control concept. 10 CFR 20.202(a)(1) requires that personnel who enter a restricted area under such circumstances that they are likely to receive in excess of 25 percent of the applicable limit in 10 CFR 20.101(a) must be provided personnel monitoring equipment. If personnel enter the restricted area and personal monitoring devices are not issued by reason of 10 CFR 20.202(a)(1), the licensee must be able to substantiate the evaluation. The determination not to issue an individual

personal monitoring device does not affect the requirements to post airborne radioactivity areas or radiation areas. Posting requirements for radiological areas are contained in 10 CFR 20.203. The methods allowed by 10 CFR 20.103, note 2, for accounting for exposure to noble gases do not affect or exempt the licensee from the posting requirements in 10 CFR 20.203(d).

Licensee Comment:

Normal respiratory protective measures are not effective in reducing doses from this material. Posting an area where this material is present as an Airborne Radioactive Material Area would imply that the area be controlled as such by MPC-hour limitations, respiratory protective equipment use and bioassay confirmatory measurements. These controls are not effective in light of the far greater hazard posed by external exposure to these nuclides. Without the need for effective internal dose control, a significant increase in protection offered to the worker is not realized by merely posting these areas as airborne areas.

NRC Response:

The Region II staff agrees that normal respiratory protective measures are not applicable to the hazard posed by noble gases. Posting "airborne radioactivity areas" due to noble gases is of use in that the posting notifies workers that an off normal condition is present. While 10 CFR 20.103, note 2, allows the hazard posed by noble gases to be controlled by MPC-hrs or by inclusion in external dose totals, an exception to the airborne radioactivity area posting is not contained in 10 CFR 20. The NRC acknowledged that the failure to post airborne noble gas areas was of minor safety significance and appropriately established the severity level of the violation as a Severity Level V.