Duke Power Company
Oconee Nuclear Station

Attachment 1

Proposed Technical Specification Revision

<u>Page</u>

3.10-3

3.10.8 The reactor building shall not be purged unless the following conditions are met:

a. Reactor building purge shall be through the high efficiency particulate filters and charcoal filters until the activity concentration is below the occupational limit inside the reactor building, at which time bypass may be initiated.

b. If reactor building is purged, the purge shall be through the high efficiency particulate filters whenever irradiated fuel is being handled or any objects are being handled over irradiated fuel in the reactor building.

3.10.9 Used oil, contaminated by radioactivity, may be incinerated in the Station auxiliary boiler provided it meets the limits in Section 3.10 of these specifications.

3.10.10 In addition to the above continuous sampling and monitoring requirements, gaseous radioactive waste sampling and activity analysis shall be performed in accordance with table 4.1-3. Records shall be maintained and reports of the sampling and analysis results shall be submitted in accordance with Section 6.6 of these specifications.

Bases

It is expected that the releases of radioactive materials and gaseous wastes will be kept within the design objective levels and will not exceed on an instantaneous basis the dose rate limits specified in 10CFR20.

These levels provide reasonable assurance that the resulting annual exposure from noble gases to the whole body or any organ of an individual will not exceed 10 mRem per year. At the same time, the licensee is permitted the flexibility of operation compatible with considerations of health and safety to assure that the public is provided a dependable source of power under unusual operating conditions which may temporarily result in releases higher than the design objective levels but still within the concentration limits specified in 10CFR20. It is expected that using this operational flexibility under unusual operating conditions, the licensee shall exert every effort to keep levels of radioactive materials and gaseous wastes as low as practicable and that annual releases will not exceed a small fraction of the annual average concentration limits specified in 10CFR20. These efforts shall include consideration of meteorological conditions during releases.

The anticipated annual releases from the three Oconee reactor units have been developed taking into account a combination of system variables including fuel failure, primary system leakage, and the performance of radio-isotope removal mechanisms. The values assumed for these variables include the following:

Attachment 2
Duke Power Company
Oconee Nuclear Station

Discussion of Proposed Technical Specification Revisions

Specification 3.10.9

By letters dated May 19, 1980 and December 17, 1980, Duke Power Company submitted a request to dispose of radioactively contaminated waste oil by incineration in the auxiliary boiler at Oconee Nuclear Station. The request was granted and the present Technical Specifications were established on March 31, 1981. Since that time there have been no environmental problems associated with the oil incineration, but several factors have come to our attention that need to be resolved to eliminate the inventory of oil at Oconee in a reasonable time frame. In a letter dated February 3, 1982, we requested a Technical Specification revision to eliminate the six hours per quarter burn limit and described some of the practical limitations within the incineration process that have prevented us from burning a significant volume of oil. In a subsequent conference call with the Staff on May 4, 1982 we provided further information describing the status of our waste oil program and details of the incineration process. As a result of the conference call, this submittal is designed to further document the details of the oil incineration program and request removal of unnecessary restrictions from the Technical Specifications.

During the past year, Oconee has successfully incinerated a portion of the inventory of waste oil under the present amendment to our Technical Specifications. A great deal of effort has gone into developing a responsible waste oil program at Oconee to control and minimize the waste oil inventory. As a result of this program, we have documented the following inventory of contaminated oil stored in 55 gallon drums and 300 cubic foot carbon steel containers.

As of June 16, 1982:

1. 6636 gallons of contaminated oil containing 1723 μCi of mostly Cs and Co isotopes

2. 1763 gallons of oily water and sludge containing 1099 μCi of mostly Cs isotopes that will require significant processing before any incinerable oil is extracted.

The present Oconee Technical Specifications allow approximately 1.1 Ci of airborne radioactivity to be released in the form of particulates per year. In 1981 Oconee released 2.44 percent of this limit, of which only 0.0043 percent came from oil incineration. If Oconee were to release the entire inventory of 1723 μCi of contaminated oil via incineration in one year it would only amount to 0.157 percent of the annual limit.

A significant instantaneous release through incineration is physically impossible due to the nature of the incineration process. The oil feed is regulated by a feedback from the auxiliary header steam load. A decrease in steam load requires a decrease in oil feed. Since this is load following boiler, we have no means of increasing our feed rate while maintaining a proper ratio of waste oil to No. 2 fuel oil in the feed. The maximum feed rate possible for contaminated oil is approximately 6 gpm due to pump discharge head, but the actual feed rate in practice is often less than 2 gpm.

Based on our present incineration Technical Specification limits on time and radioactivity concentrations, it will take 5.75 years to dispose of the oil presently onsite. This does not take into account any new contaminated oil which will be generated in the future despite our efforts to minimize this generation. Although elimination of the 6 hour limit as requested in February would improve this significantly, the limit on concentrations in the oil feed and in the stack will require dilution of the oil by increasing the volume 5.84 times. This means that the 6636 gallons of oil will be diluted with the equivalent of 32,118 gallons of non-contaminated oil. This is a significant cost penalty that has little or no justification.

The Technical Specification limit for the release rate of I-131 and particulate radionuclides with half-lives greater than eight days from the unit vent is

$$\Sigma \frac{Qi}{(MPC)i} \leq 117 \text{ m}^3/\text{sec}$$

where, Qi is the annual controlled release rate and MPC is the permissible concentration for unrestricted areas in units of Ci/m^3 for any radionuclide as found in Column 1 Table II of Appendix B to 10 CFR 20.

Using this limit and the concentrations of radioactivity in the most highly contaminated oil in storage, the following table has been formulated to summarize the radiological impact. This limit ensures that concentrations at the exclusion boundary will be less than 0.01 MPC as listed in 10 CFR 20.

From the tabulated results, it is seen that by changing the Technical Specification limits for incinerating oil to those governing all airborne particulate releases, the required dilution of the most highly contaminated oil would be only a factor 2.13 volume increase as compared to the factor of 5.84 increase with the present incineration limits.

In making this change, there would be no significant radiological impact since the total quantity of radioactivity is less than 0.5 percent of the annual limit, and the limitations on feed rate to the boiler ensure that the predetermined release rate will not surpass the Technical Specification limit at the exclusion boundary.

I	II	III	*IV	**V	VI	VII
Radionuclides Found in Most Highly Contaminated Oil	Ki Concentration of Activity in Worst Case Oil (μCi/ml)	MPC Values Column 1 Table II 10CFR20 (μCi/ml)	Qi $Qi = K_i \times 3.785E-4$ (Ci/sec)	Qi/MPCi (m^3/sec)	DKi = Ki/2.13 Concentration in oil after Dilution to meet Instantaneous Limit (μCi/ml)	SKi Stack Concen. based on Dki and 50,000 lbs./hr. i.e. Dilution Flow of 9.87E+6ml/sec
Cs-134	9.8E-5	4E-10	3.7E-8	92.50	4.6E-5	1.8E-9
Cs-137	2.0E-4	5E-10	7.6E-8	152.00	9.4E-5	3.6E-9
Co-60	3.4E-6	3E-10	1.3E-9	4.33	1.6E-6	6.1E-11
Mn-54	3.1E-7	1E-9	1.2E-10	0.12	1.45E-7	5.6E-12

$$*Q = K_i \frac{\mu Ci}{ml} \times (3785 \text{ ml/gal}) \times (6.0 \text{ gal/min}) \times \frac{(10^{-6} \text{ Ci})}{\mu Ci} \times (1 \text{ min}/60 \text{ sec})$$

$$Q = K_i \times 3.785 \times 10^{-4} \text{ Ci/sec}$$

$$**\Sigma \frac{Qi}{MPCi} = \leq 117 \text{ m}^3\text{/sec}$$

$$\Sigma \frac{Qi}{MPCi} = 92.50 + 152.00 + 4.33 + 0.12 = 248.95 > 117$$

$$\frac{248.95}{117} = 2.13$$

Thus the oil must be diluted by a factor of 2.13 (See Column VI).

This dilution results in the airborne concentrations shown in Column VII.