

DUKE POWER COMPANY

P.O. BOX 33189  
CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

May 20, 1986

✓ Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Mr. B.J. Youngblood, Director  
PWR Project Directorate No. 4

Subject: McGuire Nuclear Station  
Docket Nos. 50-369 and 50-370  
Release of Radioactivity from the Conventional  
Wastewater Treatment System

Dear Mr. Denton:

Attached are proposed License Amendments to McGuire Nuclear Station Facility Operating License NPF-9 (Unit 1) and NPF-17 (Unit 2). It is requested that these amendments be approved on an emergency basis. On March 19, 1986, Duke Power submitted a proposed License Amendment (Attachment I) to allow the discharge of slightly radioactive water through the Conventional Wastewater (WC) system into the Catawba River. A situation has arisen at McGuire in which a small amount of Tritium has entered the Conventional Wastewater Collection Basin (see Figure 5.1-4 of Attachment I). Without the attached Technical Specification change, Duke is prohibited from discharging any concentration of radioactive material through this release point. Therefore, Technical Specification amendment is hereby requested, to be approved on an emergency basis, to allow a one-time release of the current contents of the Conventional Wastewater Basin. An analysis of the environmental impact of this action is presented as Attachment II. The assessment concludes that no significant impact will result from this action, because of the extremely low concentration of Tritium (the only radioisotope present) relative to 10CFR20 Appendix B limits.

The justification for pursuit of this change as an emergency request is presented as Attachment III. Please note that the March 19, 1986 submittal is still desired, and is not superseded by this request. Rather, this supplement narrowly defines a need and justification for a particular situation which has suddenly arisen, i.e., low (currently diluted below Lower Limits of Detection) levels of a single isotope (Tritium) for re-release. The safety analysis and No Significant Hazards determination presented in Attachment I remain valid.

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Add: NRR PWR-B ADTS

4/ Encl

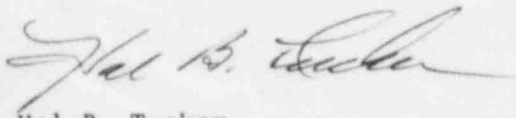
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Mr. Harold R. Denton, Director  
May 20, 1986  
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- Due to the limited and temporary scope of this change, Figure 5.1-4 of Attachment I is reproduced as Attachment IV with an appropriate caveat identifying the applicability of the change.

This submittal requests emergency review of an existing submittal and as such requires no additional application fees.

Very truly yours,



Hal B. Tucker

SAG/jgm

Attachments

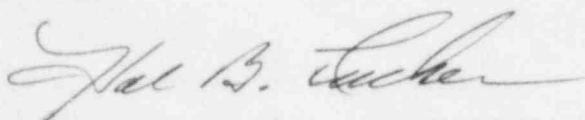
xc: Dr. J. Nelson Grace, Regional Administrator  
U.S. Nuclear Regulatory Commission - Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30323

Mr. W.T. Orders  
Senior Resident Inspector  
McGuire Nuclear Station

Mr. Dayne Brown, Chief  
Radiation Protection Branch  
Division of Facility Services  
Department of Human Resources  
P.O. Box 12200  
Raleigh, NC 27605

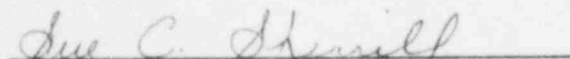
Mr. Harold R. Denton, Director  
May 20, 1986  
Page 3

HAL B. TUCKER, being duly sworn, states that he is Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this revision to the McGuire Nuclear Station License Nos. NPF-9 and NPF-17 and that all statements and matters set forth therein are true and correct to the best of his knowledge.



Hal B. Tucker, Vice President

Subscribed and sworn to before me this 20th day of May, 1986.

  
Sue C. Merrill  
Notary Public

My Commission Expires:

Sept. 20, 1989

Mr. Harold R. Denton, Director  
May 20, 1986  
Page 4

bxc: M.L. Birch  
E.O. McCraw  
R.L. Gill  
R.T. Simril  
MC-813.20

ATTACHMENT II

ENVIRONMENTAL IMPACT OF TRITIUM RELEASE

The Conventional Wastewater Collection Basin contains approximately  $4 \times 10^6$  gallons of water containing (only) Tritium, at an initial concentration of  $1.4 \times 10^{-5}$  microcuries per milliliter (MCI/ML). The following presents dose rates using methodology contained in Duke Power Company's Offsite Dose Calculation Manual (ODCM).

Radiological Data and Dilution Factor Information:

- 1) Tritium Activity at Pond =  $1.4 \times 10^{-5}$  MCI/ML
- 2) Pumpout Flow Rate = 500 gpm
- 3) Tritium Activity at Release Point =  $7.0 \times 10^{-6}$  MCI/ML
- 4) Minimum Dilution Flow Rate at Cowans Ford Dam = 35,900 gpm

$$D_a = (A_{ait})(\Delta T)(CI)(FI)$$

Where:

$D_a$  = Dose to Individual in Age Group a.

$A_{ait}$  = Site-related ingestion dose commitment factor for an individual of age group a, to the total body or any organ 't', for each identified principal gamma or beta emitter, in MREM/HR per MCI/ML

$\Delta T$  = Length of release period

$CI$  = Average concentration of tritium in undiluted liquid during time period  $\Delta T$

$FI$  = Near Field Dilution Factor for  $CI$  during release

Defining terms:

$$A_{ait} = 1.14 \times 10^5 (U_{aw}/D_w + U_{af} BF) DF_{at}$$

Where:

$$1.14 \times 10^5 = 10^6 \text{ pCi/mCi} \times 10^3 \text{ ML/KG} \div 8760 \text{ HR/YR}$$

$U_{aw}$  = Water Consumption by age group, l/YR,  
 = Infant - 330, Adult - 730

$D_w$  = Dilution Factor  
 = 1 (no dilution)

$U_{af}$  = Fish Consumption by age group, KG/YR,  
 = Infant - 0, Adult - 21

Bf = Bioaccumulation Factor in fish, pCi/KG  
= 9.0E-1

DFat = Dose Conversion Factor, by age group, total body in  
MREM/pCi (from ODCM Tables 3.1-2 and 3.1-5)  
= Infant - 3.08E-7, Adult - 1.05E-7

Delta T = 133 hours

Cl = 7.0E-6

Fl = Fr/F+f

Where:

f = Liquid radwaste flow, gpm

F = Dilution flow, gpm

r = Recirculation factor,

= 1 (no recirculation)

= 1.37E-2

Therefore,

A (Adult, Total Body) =  $1.14E-5(730/1 + 21(9.0E-1)(1.05E-7))$   
= 8.96 MREM/HR per mCi/ML

A (Infant, Total Body) =  $1.14E-5(330/1)(3.08E-7)$   
= 11.59 MREM/HR per mCi/ML

AND

D (Adult, Total Body) =  $8.96(133)(7.0E-6)(1.37E-2)$   
= 1.14E-04 MREM/YR

D (Infant, Total Body) =  $11.59(133)(7.0E-6)(1.37E-2)$   
= 1.48E-4 MREM/YR

Thus, it can be seen that no significant adverse environmental impact will result from this release.

This change does not affect any existing limits or procedures regarding the processing of conventional (i.e., non-radioactive) contaminants, so no additional or unanalyzed impact on the environment will result from non-radioactive effluents as a result of this change.

### ATTACHMENT III

Following is an identification of the 7 criteria required for the processing of a Technical Specification on an emergency basis, in accordance with NRC Staff procedure.

1. A safety evaluation with a No Significant Hazards Determination.

See Attachment I.

2. Revised Technical Specification page(s).

See Attachment IV.

3. A discussion of proposed interim compensatory measures to be imposed.

The Conventional Wastewater Basin has been diluted to concentrations below the Lower Limit of Detectability.

4. A discussion of the circumstances involved and a determination of why the need for prompt action could not be avoided.

A potential for a situation of this nature was foreseen, hence the March 19, 1985 submittal. However, an unexpected release of Tritium into the Conventional Wastewater Basin has accelerated the need for approval of this change. Prompt action is necessary, for two reasons, both stemming from this fact that the Basin is nearly full. First, excessive rainfall could result in an overflow of the Basin, resulting in an uncontrolled release. Second, lack of available volume in the Basin will impair the station's ability to process conventional (non-radioactive) liquid waste as required by its State permit. This could result in an extended plant outage, if processing of existing wastes was interrupted. The time available before the Basin fills is expected to be much less than the 15-day criterion associated with Emergency Technical Specification authorization.

5. The scheduled date for returning inoperable components to an operable condition, or for accomplishing required surveillance.

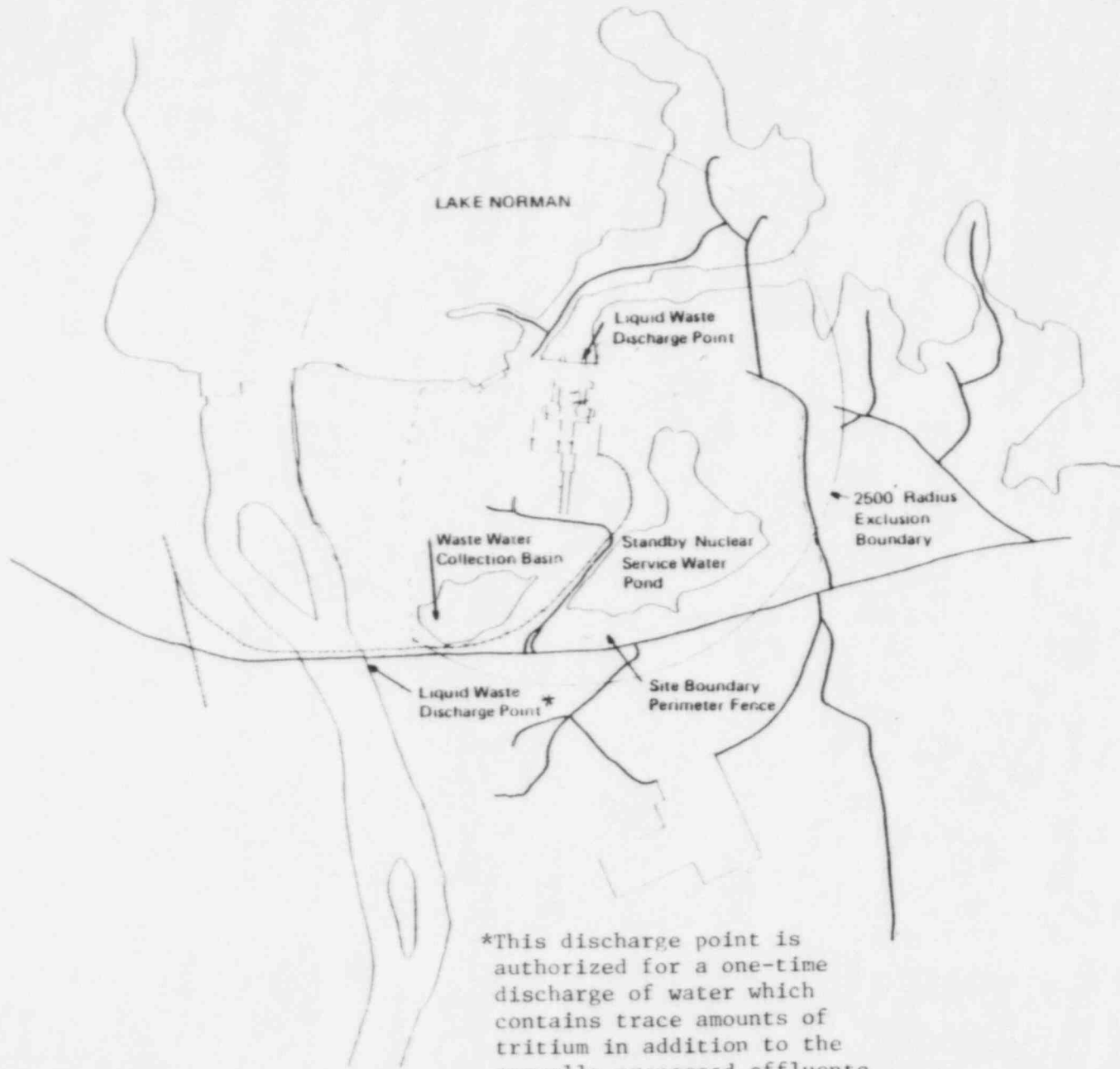
Other than the as-yet-undetermined source of the tritium, there are no inoperable components or required surveillances.

6. A statement that a best effort has been made to notify State personnel.

The State has been notified and has granted verbal approval to deviate from the National Pollutant Discharge Elimination System (NPDES) permit.

7. Information for the NRC to prepare an Environmental Assessment.

See Attachment II.



ATTACHMENT IV

\*This discharge point is authorized for a one-time discharge of water which contains trace amounts of tritium in addition to the normally processed effluents of the Waste Water Collection Basin, effective \_\_\_\_\_



# ATTACHMENT I

## DUKE POWER COMPANY

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CHARLOTTE, N.C. 28242

HAL B. TUCKER  
VICE PRESIDENT  
NUCLEAR PRODUCTION

TELEPHONE  
(704) 373-4531

March 19, 1986

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Mr. B.J. Youngblood, Director  
PWR Project Directorate No. 4

Subject: McGuire Nuclear Station  
Docket Nos. 50-369 and 50-370  
Technical Specification Amendment  
Release of Radioactivity from the Conventional  
Wastewater Treatment System

Dear Mr. Denton:

Attached are proposed license amendments to Facility Operating Licenses NPF-9 and NPF-17 for McGuire Nuclear Station Units 1 and 2, respectively.

The proposed change to the Technical Specification is concerned with Section 5.0, Design Features. The proposed change to this section would show a second potential radioactive liquid effluent release point on Figure 5.1-4.

It may be necessary during primary to secondary steam generator leaks to continue to release the contaminated turbine building sumps through the conventional wastewater treatment system (WC) in lieu of routing them to the present liquid effluent discharge line and release into the condenser circulating water. Turbine building sumps are a large volume, low activity waste stream which compete with normal radioactive liquid effluents for release time.

Attachment I contains the proposed changes to the Design Features Section. Attachment II contains a Justification and Safety Analysis in support of the proposed changes, and Attachment III is an analysis performed in accordance with the Standards contained in 10CFR50.92 as required by 10CFR50.91. These analyses conclude that no Significant Hazards Considerations are involved.

This request involves one application for amendment to McGuire's Technical Specifications. Accordingly, pursuant to 10CFR170.21 a check for \$150.00 is enclosed.

~~8604070201~~

ATTACHMENT I

Harold R. Denton  
March 19, 1986  
Page 2

Please feel free to contact us if you require any additional information.

Sincerely,

s/Hal B. Tucker  
Hal B. Tucker

SAG/jgm

Attachment

xc: Dr. J. Nelson Grace, Regional Administrator  
U.S. Nuclear Regulatory Commission - Region II  
101 Marietta Street, Suite 2900  
Atlanta, Georgia 30323

Mr. W.T. Orders  
Senior Resident Inspector  
McGuire Nuclear Station

Mr. Dayne Brown, Chief  
Radiation Protection Branch  
Division of Facility Services  
Department of Human Resources  
P.O. Box 12200  
Raleigh, NC 27605

ATTACHMENT I

Mr. Harold R. Denton, Director  
March 19, 1986  
Page 3

HAL B. TUCKER, being duly sworn, states that he is Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this revision to the McGuire nuclear Station License Nos. NPF-9 and NPF-17 and that all statements and matters set forth therein are true and correct to the best of his knowledge.

s/Hal B. Tucker

\_\_\_\_\_  
Hal B. Tucker, Vice President

Subscribed and sworn to before me this 19th day of March, 1986.

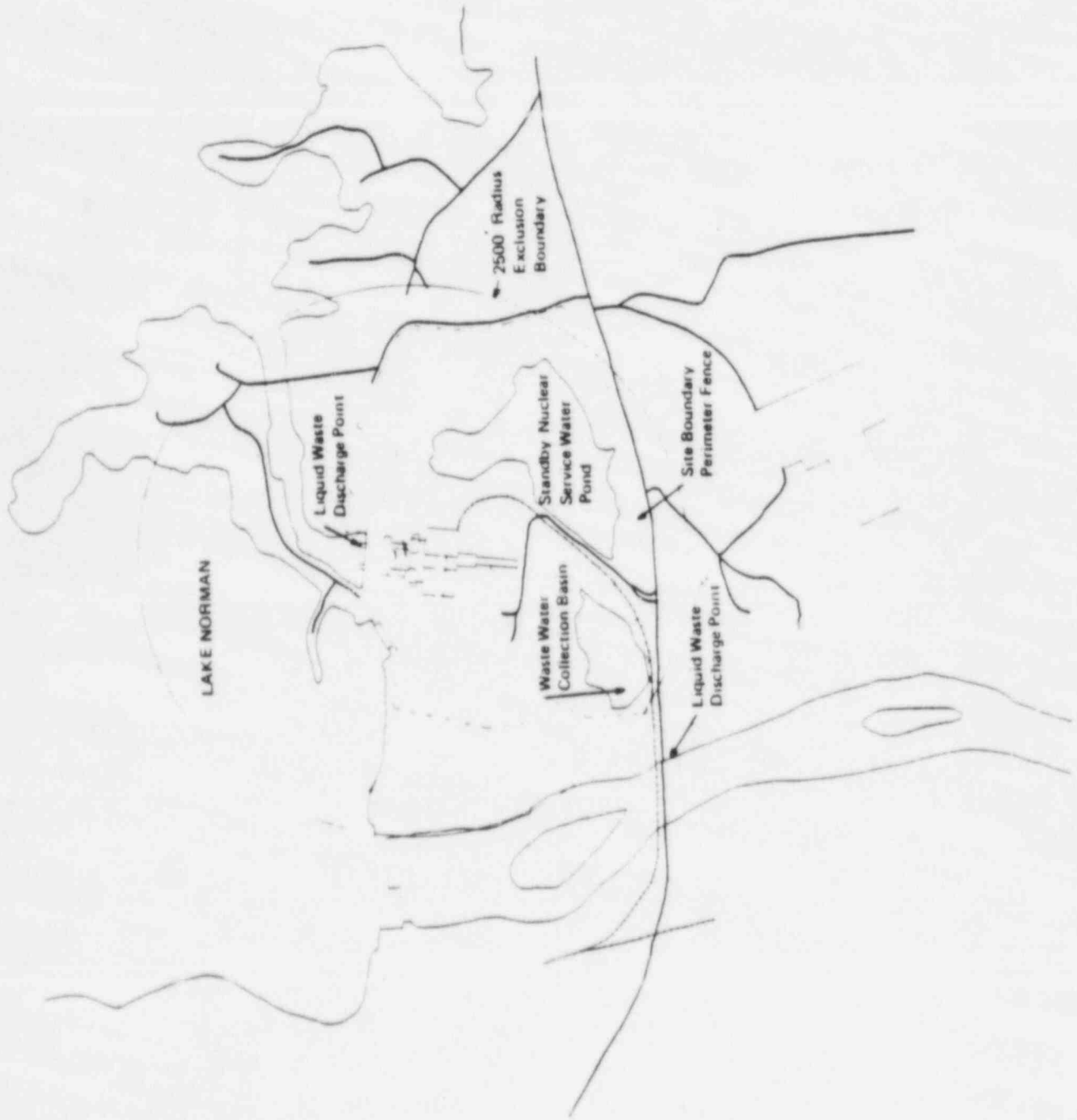
s/Sue C. Sherrill

\_\_\_\_\_  
Notary Public

My Commission Expires:

\_\_\_\_\_  
September 20, 1989

ATTACHMENT I



# ATTACHMENT I

## ATTACHMENT II

### Justification and Safety Analysis

The proposed change to the McGuire Technical Specifications, Section 5.0, Design Features, incorporates a second potential radioactive liquid effluent release point on Figure 5.1-4.

Normally the turbine building sumps are discharged to the conventional wastewater treatment system (WC) for treatment of chemical wastes and removal of oils through a system of basins with chemical addition and aeration; the treated wastes are discharged to the Catawba River in compliance with NPDES permit requirements. During primary to secondary leaks in steam generators, the turbine building sumps will become contaminated; depending on the magnitude of the leak and the level of contamination, the turbine building sumps may continue to be released to the WC system or may be routed to the normal liquid effluent discharge line for release to the condenser circulating water or to the waste collection tanks for processing prior to release.

The decision of which alternative should be used would depend on the level of activity, anticipated volumes of sump effluent, anticipated volumes of liquid waste requiring processing, potential for an oil spill, and on the need to process chemical wastes. There is a finite volume of effluent which can be processed by the liquid radwaste system, 27,500 gallons per day; the system normally processes 12,200 gallons per day. Depending on the type of primary to secondary leak, a weeper for example, a long run time with the leak could be anticipated; the turbine building sumps add 120,000 gallons per day which would exceed the system capacity.

All releases will be made in accordance with present effluent release technical specifications and, therefore, will not result in unacceptably higher concentrations of radioactive effluents released offsite. Each effluent release path is currently monitored to ensure that instantaneous radioactive release rates remain within 10 CFR 20 Appendix B limits. No radioactive effluent monitors are affected by this change, either by physical modification or by setpoint change, so that assurance will be maintained that instantaneous release rates remain within 10 CFR 20 limits. Technical Specification 3.3.3.8 (Table 3.3-12) lists operability requirements for radioactive liquid effluent monitoring instrumentation. Table 3.3-12 lists the following instrumentation which is provided in the conventional wastewater treatment line:

<u>Item</u>	<u>Description</u>
2	EMF-31 (Radioactivity Monitor)
3.b	Continuous Composite Sampler and Sampler Flow Meter
4.d	Flow Rate Measurement Device

The table also requires compensatory action in the event any of these instruments are inoperable.

# ATTACHMENT I

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This instrumentation, together with concentration and dose limits for liquid effluent releases (Tech Spec 3.11.1.1 and 3.11.1.2) will assure that the addition of a second release pathway will not result in increased risk to public health and safety. As noted in Specification 4.11.1.1.2 and 4.11.1.2.2, the methodology and parameters for use in determining the impact of effluent releases are contained in Duke Power's Offsite Dose Calculation Manual (ODCM), which will be revised to include the second release point. Site-specific characteristics make groundwater monitoring unnecessary. Groundwater recharge is supplied from lake Norman and local precipitation. The groundwater gradient flows directly to the Catawba River; therefore, contamination of groundwater from liquid effluents is highly improbable.

The laboratory performing the radiological environmental analyses shall participate in an interlaboratory comparison program which has been approved by the NRC. This program is the Environmental Protection Agency's (EPA's) Environmental Radioactivity Laboratory Intercomparison Studies (Crosscheck) Program.

In summary, the revisions to the Technical Specifications change only the physical descriptions of the station to reflect a second release point and do not affect either the instantaneous liquid effluent release rates or the annual dose resulting from all liquid effluent releases. Also unaffected is the existing radiological environmental monitoring program (Tech. Spec. 3/4.12-1, Table 3.12-1).

# ATTACHMENT I

## ATTACHMENT III

### Analysis of Significant Hazards Consideration

The following evaluation, required by 10 CFR 50.91, concludes that the proposed changes do not involve a significant hazards consideration, as determined by the criteria presented in 10 CFR 50.92.

The proposed revision consists only of a figure change to show an additional potential radioactive effluent release point, to more accurately reflect station design and practice when operating with a primary to secondary steam generator leak.

The proposed changes will not alter existing procedures or equipment; therefore, no impact on the probability or consequences of any accident whether previously analyzed in the Final Safety Analysis Report or not, is possible.

The proposed amendment will also not involve a significant reduction in a margin of safety because no setpoints of effluent monitors are affected, and limits on the release of radioactive effluents are not changed.

Based upon the above, Duke Power Company concludes that the proposed amendments do not involve a significant hazards consideration.