

ENCLOSURE 2

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH PLANT (SQN)  
UNITS 1 AND 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE  
MARKED PAGES

---

I. AFFECTED PAGE LIST

Unit 2

3/4 4-24  
3/4 4-26  
3/4 4-27a (new page)  
B 3/4 4-4  
B 3/4 4-5

II. MARKED PAGES

See attached.

9906140160 990607  
PDR ADOCK 05000328  
P PDR

REACTOR COOLANT SYSTEM

3/4.4.8 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the primary coolant shall be limited to:

- a. Less than or equal to 0.35\*\* microcurie per gram DOSE EQUIVALENT I-131, and |R227
- b. Less than or equal to 100/E microcuries per gram.

APPLICABILITY: MODES 1, 2, 3, 4 and 5

ACTION:

MODES 1, 2 and 3\*:

- a. With the specific activity of the primary coolant greater than 0.35\*\* microcurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1\* be in at least HOT STANDBY with  $T_{avg}$  less than 500°F within 6 hours. |R107 |R227
- b. With the specific activity of the primary coolant greater than 100/E microcurie per gram, be in at least HOT STANDBY with  $T_{avg}$  less than 500°F within 6 hours. |R107

MODES 1, 2, 3, 4 and 5:

- a. With the specific activity of the primary coolant greater than .35\*\* microcurie per gram DOSE EQUIVALENT I-131 or greater than 100/E microcuries per gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits. |R227

|R107

INSERT

\*With  $T_{avg}$  greater than or equal to 500°F.

\*\* For Unit 2 Cycle 10 operation, a DOSE EQUIVALENT I-131 less than or equal to 1.0 microcurie per gram shall be maintained.

\* For Unit 2 Cycle 10 operation, refer to Figure 3.4-1a.

TABLE 4.4-4  
PRIMARY COOLANT SPECIFIC ACTIVITY SAMPLE  
AND ANALYSIS PROGRAM

TYPE OF MEASUREMENT AND ANALYSIS	SAMPLE AND ANALYSIS FREQUENCY	MODES IN WHICH SAMPLE AND ANALYSIS REQUIRED
1. Gross Activity Determination	At least once per 72 hours	1, 2, 3, 4
2. Isotopic Analysis for DOSE EQUIVA- LENT I-131 Concentration	1 per 14 days	1
3. Radiochemical for E Determination	1 per 6 months*	1
4. Isotopic Analysis for Iodine Including I-131, I-133, and I-135	a) Once per 4 hours, whenever the specific activity exceeds 0.35** mCi/gram DOSE EQUIVALENT I-131 or 100/E mCi/gram, and b) One sample between 2 and 6 hours following a THERMAL POWER change exceeding 15 percent of the RATED THERMAL POWER within a one hour period.	1, 2, 3, 4, 5 <sup>#</sup>

|R227

INSERT

<sup>#</sup> Until the specific activity of the primary coolant system is restored within its limits.

\* Sample to be taken after a minimum of 2 EFPD and 20 days of POWER OPERATION have elapsed since the reactor was last subcritical for 48 hours or longer.

\*\* For Unit 2 Cycle 10 operation, a DOSE EQUIVALENT I-131 less than or equal to 1.0 microcurie per gram shall be maintained.

Insert  
(Figure 3.4-1a)

### 3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

#### 3/4.4.6.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the Reactor Coolant Pressure Boundary. These detection systems are consistent with the recommendations of Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973.

#### 3/4.4.6.2 OPERATIONAL LEAKAGE

Industry experience has shown that while a limited amount of leakage is expected from the RCS, the unidentified portion of this leakage can be reduced to a threshold value of less than 1 GPM. This threshold value is sufficiently low to ensure early detection of additional leakage.

The surveillance requirements for RCS Pressure Isolation Valves provide added assurances of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

The 10 GPM IDENTIFIED LEAKAGE limitation provides allowance for a limited amount of leakage from known sources whose presence will not interfere with the detection of UNIDENTIFIED LEAKAGE by the leakage detection systems.

The CONTROLLED LEAKAGE limitation restricts operation when the total flow supplied to the reactor coolant pump seals exceeds 40 GPM with the modulating valve in the supply line fully open at a nominal RCS pressure of 2235 psig. This limitation ensures that in the event of a LOCA, the safety injection flow will not be less than assumed in the accident analyses.

The total steam generator tube leakage limit of 600 gallons per day for all steam generators and 150 gallons per day for any one steam generator will minimize the potential for a significant leakage event during steam line break. Based on the NDE uncertainties, bobbin coil voltage distribution and crack growth rate from the previous inspection, the expected leak rate following a steam line rupture is limited to below 8.21\*\* gpm at atmospheric conditions and 70 °F in the faulted loop, which will limit the calculated offsite doses to within 10 percent of the 10 CFR 100 guidelines. If the projected and cycle distribution of crack indications results in primary-to-secondary leakage greater than 8.21\*\* gpm in the faulted loop during a postulated steam line break event, additional tubes must be removed from service in order to reduce the postulated primary-to-secondary steam line break leakage to below 8.21\*\* gpm.

The 150-gallons per day limit incorporated into SR 4.4.6 is more restrictive than the standard operating leakage limit and is intended to provide an additional margin to accommodate a crack which might grow at a greater than expected rate or unexpectedly extend outside the thickness of the tube support plate. Hence, the reduced leakage limit, when combined with an effective leak rate monitoring program, provides additional assurance that, should a significant leak be experienced, it will be detected, and the plant shut down in a timely manner.

PRESSURE BOUNDARY LEAKAGE of any magnitude is unacceptable since it may be indicative of an impending gross failure of the pressure boundary. Therefore, the presence of any PRESSURE BOUNDARY LEAKAGE requires the unit to be promptly placed in COLD SHUTDOWN.

INSERT

R213

R227

R227

R213

\*\* For Unit 2 Cycle 10 operation, the limiting leakage in the faulted loop following a main steam line break is 2.7 gpm.

## REACTOR COOLANT SYSTEM

### BASES

#### 3/4.4.7 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

#### 3/4.4.8 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the resulting 2-hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. The values for the limits on specific activity represent limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters of the Sequoyah site, such as site boundary location and meteorological conditions, were not considered in this evaluation.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 0.35\*\* microcuries/gram DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4-1\* accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER. Operation with specific activity levels exceeding 0.35\*\* microcuries/gram DOSE EQUIVALENT I-131 but within the limits shown on Figure 3.4-1\* should be limited to no more than 200 hours per year since the activity levels allowed by Figure 3.4-1\* increase the 2-hour thyroid dose at the site boundary by a factor of up to 20 following a postulated steam generator tube rupture.

\*\* For Unit 2 Cycle 10 operation, a DOSE EQUIVALENT I-131 less than or equal to 1.0 microcurie per gram shall be maintained.

\* For Unit 2 Cycle 10 operation, refer to Figure 3.4-1a.

INSERT

R227

R227

R107

ENCLOSURE 3

TENNESSEE VALLEY AUTHORITY  
SEQUOYAH NUCLEAR PLANT (SQN)  
UNITS 1 AND 2

PROPOSED TECHNICAL SPECIFICATION (TS) CHANGE  
REVISED PAGES

---

I. AFFECTED PAGE LIST

Unit 2

3/4 4-24  
3/4 4-26  
3/4 4-27a  
B 3/4 4-4  
B 3/4 4-5

II. REVISED PAGES

See attached.

## REACTOR COOLANT SYSTEM

### 3/4.4.8 SPECIFIC ACTIVITY

#### LIMITING CONDITION FOR OPERATION

3.4.8 The specific activity of the primary coolant shall be limited to:

- a. Less than or equal to 0.35\*\* microcurie per gram DOSE EQUIVALENT I-131, and
- b. Less than or equal to  $100/\bar{E}$  microcuries per gram.

APPLICABILITY: MODES 1, 2, 3, 4 and 5

ACTION:

MODES 1, 2 and 3\*:

- a. With the specific activity of the primary coolant greater than 0.35\*\* microcurie per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or exceeding the limit line shown on Figure 3.4-1', be in at least HOT STANDBY with  $T_{avg}$  less than 500°F within 6 hours. | R107
- b. With the specific activity of the primary coolant greater than  $100/\bar{E}$  microcurie per gram, be in at least HOT STANDBY with  $T_{avg}$  less than 500°F within 6 hours. | R107

MODES 1, 2, 3, 4 and 5:

- a. With the specific activity of the primary coolant greater than 35\*\* microcurie per gram DOSE EQUIVALENT I-131 or greater than  $100/\bar{E}$  microcuries per gram, perform the sampling and analysis requirements of item 4a of Table 4.4-4 until the specific activity of the primary coolant is restored to within its limits. | R107

\*With  $T_{avg}$  greater than or equal to 500°F.

\*\* For Unit 2 Cycle 10 operation, a DOSE EQUIVALENT I-131 less than or equal to 1.0 microcurie per gram shall be maintained.

\* For Unit 2 Cycle 10 operation, refer to Figure 3.4-1a.



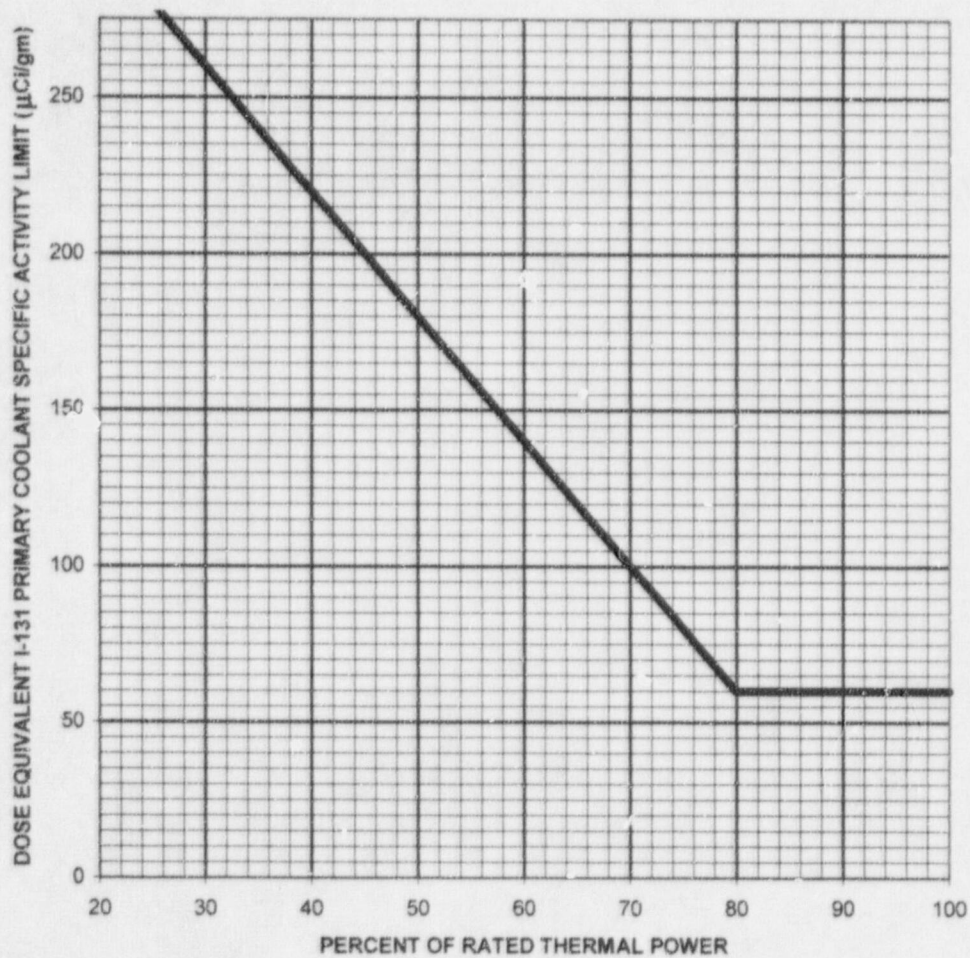


FIGURE 3.4-1 a  
DOSE EQUIVALENT I-131 Primary Coolant Specific Activity Limit Versus  
Percent of RATED THERMAL POWER with the Primary Coolant Specific  
Activity > 1.0  $\mu\text{Ci/gram}$  Dose Equivalent I-131 for Cycle 10 Operation

## REACTOR COOLANT SYSTEM

### BASES

#### 3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE

##### 3/4.4.6.1 LEAKAGE DETECTION SYSTEMS

The RCS leakage detection systems required by this specification are provided to monitor and detect leakage from the Reactor Coolant Pressure Boundary. These detection systems are consistent with the recommendations of Regulatory Guide 1.45, "Reactor Coolant Pressure Boundary Leakage Detection Systems," May 1973.

##### 3/4.4.6.2 OPERATIONAL LEAKAGE

Industry experience has shown that while a limited amount of leakage is expected from the RCS, the unidentified portion of this leakage can be reduced to a threshold value of less than 1 GPM. This threshold value is sufficiently low to ensure early detection of additional leakage.

The surveillance requirements for RCS Pressure Isolation Valves provide added assurances of valve integrity thereby reducing the probability of gross valve failure and consequent intersystem LOCA. Leakage from the RCS isolation valves is IDENTIFIED LEAKAGE and will be considered as a portion of the allowed limit.

The 10 GPM IDENTIFIED LEAKAGE limitation provides allowance for a limited amount of leakage from known sources whose presence will not interfere with the detection of UNIDENTIFIED LEAKAGE by the leakage detection systems.

The CONTROLLED LEAKAGE limitation restricts operation when the total flow supplied to the reactor coolant pump seals exceeds 40 GPM with the modulating valve in the supply line fully open at a nominal RCS pressure of 2235 psig. This limitation ensures that in the event of a LOCA, the safety injection flow will not be less than assumed in the accident analyses.

The total steam generator tube leakage limit of 600 gallons per day for all steam generators and 150 gallons per day for any one steam generator will minimize the potential for a significant leakage event during steam line break. Based on the NDE uncertainties, bobbin coil voltage distribution and crack growth rate from the previous inspection, the expected leak rate following a steam line rupture is limited to below 8.21\*\* gpm at atmospheric conditions and 70 °F in the faulted loop, which will limit the calculated offsite doses to within 10 percent of the 10 CFR 100 guidelines. If the projected and cycle distribution of crack indications results in primary-to-secondary leakage greater than 8.21\*\* gpm in the faulted loop during a postulated steam line break event, additional tubes must be removed from service in order to reduce the postulated primary-to-secondary steam line break leakage to below 8.21\*\* gpm.

R213

R227

R227

The 150-gallons per day limit incorporated into SR 4.4.6 is more restrictive than the standard operating leakage limit and is intended to provide an additional margin to accommodate a crack which might grow at a greater than expected rate or unexpectedly extend outside the thickness of the tube support plate. Hence, the reduced leakage limit, when combined with an effective leak rate monitoring program, provides additional assurance that, should a significant leak be experienced, it will be detected, and the plant shut down in a timely manner.

R227

PRESSURE BOUNDARY LEAKAGE of any magnitude is unacceptable since it may be indicative of an impending gross failure of the pressure boundary. Therefore, the presence of any PRESSURE BOUNDARY LEAKAGE requires the unit to be promptly placed in COLD SHUTDOWN.

R213

\*\* For Unit 2 Cycle 10 operation, the limiting leakage in the faulted loop following a main steam line break is 2.7 gpm.

## REACTOR COOLANT SYSTEM

### BASES

#### 3/4.4.7 CHEMISTRY

The limitations on Reactor Coolant System chemistry ensure that corrosion of the Reactor Coolant System is minimized and reduces the potential for Reactor Coolant System leakage or failure due to stress corrosion. Maintaining the chemistry within the Steady State Limits provides adequate corrosion protection to ensure the structural integrity of the Reactor Coolant System over the life of the plant. The associated effects of exceeding the oxygen, chloride and fluoride limits are time and temperature dependent. Corrosion studies show that operation may be continued with contaminant concentration levels in excess of the Steady State Limits, up to the Transient Limits, for the specified limited time intervals without having a significant effect on the structural integrity of the Reactor Coolant System. The time interval permitting continued operation within the restrictions of the Transient Limits provides time for taking corrective actions to restore the contaminant concentrations to within the Steady State Limits.

The surveillance requirements provide adequate assurance that concentrations in excess of the limits will be detected in sufficient time to take corrective action.

#### 3/4.4.8 SPECIFIC ACTIVITY

The limitations on the specific activity of the primary coolant ensure that the resulting 2-hour doses at the site boundary will not exceed an appropriately small fraction of Part 100 limits following a steam generator tube rupture accident in conjunction with an assumed steady state primary-to-secondary steam generator leakage rate of 1.0 GPM. The values for the limits on specific activity represent limits based upon a parametric evaluation by the NRC of typical site locations. These values are conservative in that specific site parameters of the Sequoyah site, such as site boundary location and meteorological conditions, were not considered in this evaluation.

The ACTION statement permitting POWER OPERATION to continue for limited time periods with the primary coolant's specific activity greater than 0.35\*\* microcuries/gram DOSE EQUIVALENT I-131, but within the allowable limit shown on Figure 3.4-1', accommodates possible iodine spiking phenomenon which may occur following changes in THERMAL POWER. Operation with specific activity levels exceeding 0.35\*\* microcuries/gram DOSE EQUIVALENT I-131 but within the limits shown on Figure 3.4-1' should be limited to no more than 800 hours per year since the activity levels allowed by Figure 3.4-1' increase the 2-hour thyroid dose at the site boundary by a factor of up to 20 following a postulated steam generator tube rupture.

R227

R107

\*\* For Unit 2 Cycle 10 operation, a DOSE EQUIVALENT I-131 less than or equal to 1.0 microcurie per gram shall be maintained.

\* For Unit 2 Cycle 10 operation, refer to Figure 3.4-1a.