ATTACHMENT 1

PROPOSED TECHNICAL SPECIFICATIONS CHANGE

TABLE 3.3-14 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
3. CONDENSER AIR EJECTOR SYSTEM			
a. Gross Activity Monitor	1	*	31A
b. Flow Rate Monitor	1	*	30
4. VENTILATION VENT SYSTEM (Shared with Unit 2)			
a. Noble Gas Activity Monitor	1a	*	31
b. Iodine Sampler	1a	*	31
c. Particulate Sampler	1a	*	31
d. Flow Rate Monitor	1a	*	30
e. Sampler Flow Rate Monitor	1a	*	30

a One per vent stack.

TABLE 3.3-14 (Continued)

TABLE NOTATION

* At all times

** During process vent system operation (treatment for primary system offgases).

ACTION 30 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 31 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity or gamma isotopic activity within 24 hours.

ACTION 31A - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided the frequency of the grab samples required by Specification 4.4.6.3b is increased to at least once per 4 hours and these samples are analyzed for gross activity or gamma isotopic activity within 8 hours.

ACTION 32 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, operation of this system may continue for up to 14 days provided grab samples are taken and analyzed daily. With this channel inoperable, operation may continue provided grab samples are taken and analyzed: (1) every 4 hours during degassing operations and (2) daily during other operations.

ACTION 33 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the Waste Gas Decay Tanks may be released to the environment provided that prior to initiating the release:

a. At least two independent samples of the tank's contents are analyzed, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup;

Otherwise, suspend release of Waste Gas Decay Tank effluents.

ACTION 34 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases from the Waste Gas Decay Tanks may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System Leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators not isolated from the Reactor Coolant System and 500 gallons per day through any one steam generator not isolated from the Reactor Coolant System,*

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 30 GPM CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. Leakage for the Reactor Coolant System Pressure Isolation Valves specified in Table 3.4.1.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from the Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the above limit, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*When in Mode 1 above 50% power, provisions of Specification 3.4.6.3 apply.

REACTOR COOLANT SYSTEM

PRIMARY TO SECONDARY LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.3 Primary to secondary leakage shall be limited to:

a. Total leakage from all steam generators of 300 gpd,

b. Leakage from an individual steam generator of 100 gpd,

c. Total leakage increase of 60 gpd between surveillance intervals, and

d. An increasing trend based on the latest surveillance that indicates 100 gpd would not be exceeded on an individual steam generator within 90 minutes.

APPLICABILITY: MODE 1 above 50% power.*

ACTION:

a. If the total leakage limit from all steam generators or the leakage limit from any individual steam generator is exceeded, be in HOT STANDBY within the next 6 hours and cold shutdown within the following 30 hours.

b. If the increase in total leakage from all steam generators exceeds 60 gpd between surveillance intervals, reduce power below 50% rated thermal power within 90 minutes.

c. If an increasing trend indicates that the limit of 100 gpd per steam generator is going to be exceeded within 90 minutes, reduce power to below 50% rated thermal power within 90 minutes, be in HOT STANDBY within the next 6 hours and cold shutdown within the following 30 hours.

*Once the limiting condition for operation has been exceeded, the corresponding action must be followed to completion.

SURVEILLANCE REQUIREMENTS

4.4.6.3 Primary to secondary leakage shall be demonstrated to be within each of the above limits by:

a. Primary to secondary leakage will be recorded and trended at least every 4 hours from each OPERABLE N-16 continuous readout and alarm radiation monitoring system and the condenser air ejector exhaust continuous readout and alarm radiation monitor.

b. Primary to secondary leakage will be determined from a condenser air ejector grab sample at least every 24 hours.

c. Primary to secondary leakage will be determined from steam generator and reactor coolant liquid samples at least every 72 hours.

d. If the above surveillance operations cannot be performed as specified, the limiting conditions for operation and associated action statements of Specification 3.4.6.4 shall apply.

REACTOR COOLANT SYSTEM

PRIMARY TO SECONDARY LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.6.4 The following primary to secondary leakage detection systems shall be OPERABLE:

a. One of the two N-16 radiation monitoring systems (either the N-16 continuous readout and alarm radiation monitors on each steam line, or the N-16 continuous readout and alarm radiation monitor on the main steam header),

b. The condenser air ejector exhaust continuous readout and alarm radiation monitor,

c. The capability to obtain and analyze a condenser air ejector exhaust grab sample, and

d. The capability to obtain and analyze a liquid sample from each steam generator and from the RCS.

APPLICABILITY: MODE 1 above 50% power.

ACTION:

a. If both the N-16 radiation monitoring system on each steam line and the N-16 radiation monitoring system on the main steam header are INOPERABLE, increase the frequency of the condenser air ejector grab sample required by Specification 4.4.6.3b to at least once every 4 hours and return at least one of the systems to operation within seven days or reduce power to less than 50% within the next four hours.

b. If the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE, provided at least one of the N-16 monitoring systems is OPERABLE, increase the frequency of the condenser air ejector grab sample required by Specification 4.4.6.3b to at least once every 4 hours and return the system to operation within seven days or reduce power to less than 50% within the next four hours.

c. If the capability to obtain and analyze a condenser air ejector grab sample is lost, provided at least one of the N-16 monitoring systems is OPERABLE and the condenser air ejector exhaust continuous readout and alarm radiation monitor is OPERABLE, restore the capability within seven days or reduce power to less than 50% within four hours.

LIMITING CONDITION FOR OPERATION

d. If both N-16 monitoring systems are INOPERABLE and either the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE or the capability to obtain and analyze a condenser air ejector exhaust grab sample is lost, reduce power to less than 50% within the next 90 minutes.

e. If the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE and the capability to obtain and analyze a condenser air ejector exhaust grab sample is lost, reduce power to less than 50% within the next 90 minutes.

f. If the capability to obtain and analyze a liquid sample from each steam generator and the RCS is lost, increase the frequency of performance of the RCS water inventory balance in T.S. 4.4.6.2.1d to once every 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.4 The N-16 monitors and air ejector exhaust radiation monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Tables 4.4-2a and 4.3-14 respectively.

TABLE 4.4-2a

PRIMARY TO SECONDARY LEAKAGE DETECTION SYSTEMS SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. N-16 Radiation Monitors				
a. MS Header	S	R	M	1 (>50% Power)
b. MS Lines	S	R	M	1 (>50% Power)

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is evidence of mechanical damage or progressive degradation due to design, manufacturing errors, or inservice conditions that lead to corrosion. Inservice inspection of steam generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

The plant is expected to be operated in a manner such that the secondary coolant will be maintained within those parameter limits found to result in negligible corrosion of the steam generator tubes. If the secondary coolant chemistry is not maintained within these parameter limits, localized corrosion may likely result in stress corrosion cracking. The extent of cracking during plant operation would be limited by the limitation of steam generator tube leakage between the primary coolant system and the secondary coolant system (primary-to-secondary leakage = 500 gallons per day per steam generator). Cracks having a primary-to-secondary leakage less than this limit during operation will have an adequate margin of safety to withstand the loads imposed during normal operation and by postulated accidents. Operating plants have demonstrated that primary-to-secondary leakage of 500 gallons per day per steam generator can readily be detected by radiation monitors of steam generator blowdown.

It has been determined, however, that certain conditions within the steam generator may produce limited displacement fluidelastic instability in the tube bundle that may result in fatigue failure of a tube. Modifications have been accomplished in all steam generators consisting of installation of downcomer resistance plates and preventive plugging of potentially susceptible tubes. Even though these measures are considered to have been very conservative and highly effective in reducing the probability of fatigue induced tube rupture, enhanced leakage monitoring and more stringent leak rate limits have been established. Leakage is now limited to 100 gpd (rather than 500 gpd) per steam generator when operating at greater than 50% power. Cyclic life analysis of fatigue induced tube cracks has shown that, assuming a post-modification maximum stress amplitude of 7 ksi, a leak rate of up to 500 gpd would be reached some 90 minutes prior to tube rupture. Therefore, the 100 gpd leak rate limit is bounding since

a. the 100 gpd limit would be detected well in advance of reaching 500 gpd,

b. the time required for leak rate detection and power reduction to less than 50% is expected to be less than 90 minutes, and

c. the maximum stress amplitude is anticipated to lie in the 5 ksi range which would allow for much earlier leak before break warning than would occur in the assumed 7 ksi case.

These assumptions also include an appropriate allowance for measurement uncertainty. (References: Virginia Electric and Power Co., "North Anna Unit 1 July 15, 1987 Steam Generator Tube Rupture Event Report, Revision 1, September 15, 1987, and Westinghouse WCAP-11601 "North Anna Unit 1 Steam Generator Tube Rupture and Remedial Actions Technical Evaluation, September 1987").

This limit, along with the enhanced monitoring system, should provide sufficient notification to permit orderly shutdown prior to a potential tube rupture event. Leakage in excess of any of these limits will require plant shutdown and an unscheduled inspection, during which the leaking tubes will be located and plugged.

Wastage-type defects are unlikely with the all volatile treatment (AVT) of secondary coolant. However, even if a defect of similar type should develop in service, it will be found during scheduled inservice steam generator tube examinations. Plugging will be required of all tubes with imperfections exceeding the plugging limit which, by the definition of Specification 4.4.5.4.a is 40% of the tube nominal wall thickness. Steam generator tube inspections of operating plants have demonstrated the capability to reliably detect degradation that has penetrated 20% of the original tube wall thickness.

Whenever the results of any steam generator tubing inservice inspection fall into Category C-3, these results will be promptly reported to the Commission pursuant to Section 50.72 to 10 CFR Part 50 with a follow up report pursuant to Section 50.73 to 10 CFR Part 50. Such cases will be considered by the Commission on a case-by-case basis and may result in a requirement for analysis, laboratory examinations, tests, additional eddy-current inspection, and revision of the Technical Specifications, if necessary.

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 generally 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 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 30 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 1 GPM for all steam generators not isolated from the RCS ensures that the dosage contribution from the tube leakage will be limited to a small fraction of Part 100 limits in the event of either a steam generator tube rupture or steam line break. The 1 GPM limit is consistent with the assumptions used in the analysis of these accidents. In general, for plant operation at or below 50% power, the 500 gpd leakage limit per steam generator ensures that steam generator tube integrity is maintained in the event of a main steam line rupture or under LOCA conditions.

When operating at greater than 50% power, more stringent primary to secondary leakage limits of 300 gallons per day (GPD) total from all three steam generators and 100 gpd from an individual steam generator have been imposed. These limits ensure that in the event that a fatigue induced crack were to occur in one or more generators, the resulting leak would be detected in sufficient time to conduct an orderly shutdown prior to catastrophic tube failure. The limits on an increase in leakage of 60 gpd between surveillance intervals and for an increasing trend indicating that 100 gpd would be exceeded within 90 minutes ensure that, in the event of fatigue crack initiation, power can be reduced to a level below which propagation will not occur. In the latter case, the limit also provides for orderly shutdown since the 100 gpd limit is being approached. These leakage rates are conservative with regard to dosage contribution in that they are less than the previously analyzed total amount of 1 GPM and 500 GPD for any single steam generator.

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.

TABLE 3.3-13 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
3. CONDENSER AIR EJECTOR SYSTEM			
a. Gross Activity Monitor	1	*	31A
b. Flow Rate Monitor	1	*	30
4. VENTILATION VENT SYSTEM (Shared with Unit 2)			
a. Noble Gas Activity Monitor	1a	*	31
b. Iodine Sampler	1a	*	31
c. Particulate Sampler	1a	*	31
d. Flow Rate Monitor	1a	*	30
e. Sampler Flow Rate Monitor	1a	*	30

a One per vent stack.

TABLE 3.3-13 (Continued)

TABLE NOTATION

* At all times

** During process vent system operation (treatment for primary system offgases).

ACTION 30 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours.

ACTION 31 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 12 hours and these samples are analyzed for gross activity or gamma isotopic activity within 24 hours.

ACTION 31A - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, effluent releases via this pathway may continue provided the frequency of the grab samples required by Specification 4.4.6.3b is increased to at least once per 4 hours and these samples are analyzed for gross activity or gamma isotopic activity within 8 hours.

ACTION 32 - With the number of channels OPERABLE less than required by the minimum channels OPERABLE requirement, operation of this system may continue for up to 14 days provided grab samples are taken and analyzed daily. With this channel inoperable, operation may continue provided grab samples are taken and analyzed: (1) every 4 hours during degassing operations and (2) daily during other operations.

ACTION 33 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the Waste Gas Decay Tanks may be released to the environment provided that prior to initiating the release:

a. At least two independent samples of the tank's contents are analyzed, and

b. At least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup;

Otherwise, suspend release of Waste Gas Decay Tank effluents.

ACTION 34 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases from the Waste Gas Decay Tanks may continue provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

REACTOR COOLANT SYSTEM

OPERATIONAL LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.2 Reactor Coolant System Leakage shall be limited to:

a. No PRESSURE BOUNDARY LEAKAGE,

b. 1 GPM UNIDENTIFIED LEAKAGE,

c. 1 GPM total primary-to-secondary leakage through all steam generators not isolated from the Reactor Coolant System and 500 gallons per day through any one steam generator not isolated from the Reactor Coolant System,**

d. 10 GPM IDENTIFIED LEAKAGE from the Reactor Coolant System,

e. 30 GPM CONTROLLED LEAKAGE at a Reactor Coolant System pressure of 2235 ± 20 psig, and

f. Leakage for the Reactor Coolant System Pressure Isolation Valves specified in Table 3.4.1.*

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With any PRESSURE BOUNDARY LEAKAGE, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With any Reactor Coolant System leakage greater than any one of the above limits, excluding PRESSURE BOUNDARY LEAKAGE and leakage from the Reactor Coolant System Pressure Isolation Valves, reduce the leakage rate to within limits within 4 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With any Reactor Coolant System Pressure Isolation Valve leakage greater than the above limit, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

*The leakage limit for any RHR system isolation valve shown in Table 3.4-1 shall be 5 GPM.

**When in Mode 1 above 50% power, provisions of Specification 3.4.6.3 apply.

PRIMARY TO SECONDARY LEAKAGE

LIMITING CONDITION FOR OPERATION

3.4.6.3 Primary to secondary leakage shall be limited to:

a. Total leakage from all steam generators of 300 gpd,

b. Leakage from an individual steam generator of 100 gpd,

c. Total leakage increase of 60 gpd between surveillance intervals, and

d. An increasing trend based on the latest surveillance that indicates 100 gpd would not be exceeded on an individual steam generator within 90 minutes.

APPLICABILITY: MODE 1 above 50% power.*

ACTION:

a. If the total leakage limit from all steam generators or the leakage limit from any individual steam generator is exceeded, be in HOT STANDBY within the next 6 hours and cold shutdown within the following 30 hours.

b. If the increase in total leakage from all steam generators exceeds 60 gpd between surveillance intervals, reduce power below 50% rated thermal power within 90 minutes.

c. If an increasing trend indicates that the limit of 100 gpd per steam generator is going to be exceeded within 90 minutes, reduce power to below 50% rated thermal power within 90 minutes, be in HOT STANDBY within the next 6 hours and cold shutdown within the following 30 hours.

*Once the limiting condition for operation has been exceeded, the corresponding action must be followed to completion.

SURVEILLANCE REQUIREMENTS

4.4.6.3 Primary to secondary leakage shall be demonstrated to be within each of the above limits by:

a. Primary to secondary leakage will be recorded and trended at least every 4 hours from each OPERABLE N-16 continuous readout and alarm radiation monitoring system and the condenser air ejector exhaust continuous readout and alarm radiation monitor.

b. Primary to secondary leakage will be determined from a condenser air ejector grab sample at least every 24 hours.

c. Primary to secondary leakage will be determined from steam generator and reactor coolant liquid samples at least every 72 hours.

d. If the above surveillance operations cannot be performed as specified, the limiting conditions for operation and associated action statements of Specification 3.4.6.4 shall apply.

REACTOR COOLANT SYSTEM

PRIMARY TO SECONDARY LEAKAGE DETECTION SYSTEMS

LIMITING CONDITION FOR OPERATION

3.4.6.4 The following primary to secondary leakage detection systems shall be OPERABLE:

a. One of the two N-16 radiation monitoring systems (either the N-16 continuous readout and alarm radiation monitors on each steam line, or the N-16 continuous readout and alarm radiation monitor on the main steam header),

b. The condenser air ejector exhaust continuous readout and alarm radiation monitor,

c. The capability to obtain and analyze a condenser air ejector exhaust grab sample, and

d. The capability to obtain and analyze a liquid sample from each steam generator and from the RCS.

APPLICABILITY: MODE 1 above 50% power.

ACTION:

a. If both the N-16 radiation monitoring system on each steam line and the N-16 radiation monitoring system on the main steam header are INOPERABLE, increase the frequency of the condenser air ejector grab sample required by Specification 4.4.6.3b to at least once every 4 hours and return at least one of the systems to operation within seven days or reduce power to less than 50% within the next four hours.

b. If the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE, provided at least one of the N-16 monitoring systems is OPERABLE, increase the frequency of the condenser air ejector grab sample required by Specification 4.4.6.3b to at least once every 4 hours and return the system to operation within seven days or reduce power to less than 50% within the next four hours.

c. If the capability to obtain and analyze a condenser air ejector grab sample is lost, provided at least one of the N-16 monitoring systems is OPERABLE and the condenser air ejector exhaust continuous readout and alarm radiation monitor is OPERABLE, restore the capability within seven days or reduce power to less than 50% within four hours.

LIMITING CONDITION FOR OPERATION

d. If both N-16 monitoring systems are INOPERABLE and either the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE or the capability to obtain and analyze a condenser air ejector exhaust grab sample is lost, reduce power to less than 50% within the next 90 minutes.

e. If the condenser air ejector exhaust continuous readout and alarm radiation monitor is INOPERABLE and the capability to obtain and analyze a condenser air ejector exhaust grab sample is lost, reduce power to less than 50% within the next 90 minutes.

f. If the capability to obtain and analyze a liquid sample from each steam generator and the RCS is lost, increase the frequency of performance of the RCS water inventory balance in T.S. 4.4.6.2.1d to once every 24 hours.

SURVEILLANCE REQUIREMENTS

4.4.6.4 The N-16 monitors and air ejector exhaust radiation monitoring instrumentation channels shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST during the MODES and at the frequencies shown in Tables 4.4-2a and 4.3-13 respectively.

TABLE 4.4-2a

PRIMARY TO SECONDARY LEAKAGE DETECTION SYSTEMS SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. N-16 Radiation Monitors				
a. MS Header	S	R	M	1 (>50% Power)
b. MS Lines	S	R	M	1 (>50% Power)

3/4.4.5 STEAM GENERATORS

The Surveillance Requirements for inspection of the steam generator tubes ensure that the structural integrity of this portion of the RCS will be maintained. The program for inservice inspection of steam generator tubes is based on a modification of Regulatory Guide 1.83, Revision 1. Inservice inspection of steam generator tubing is essential in order to maintain surveillance of the conditions of the tubes in the event that there is evidence of mechanical damage or progressive degradation due to design, manufacturing errors, or inservice conditions that lead to corrosion. Inservice inspection of steam generator tubing also provides a means of characterizing the nature and cause of any tube degradation so that corrective measures can be taken.

The plant is expected to be operated in a manner such that the secondary coolant will be maintained within those parameter limits found to result in negligible corrosion of the steam generator tubes. If the secondary coolant chemistry is not maintained within these parameter limits, localized corrosion may likely result in stress corrosion cracking. The extent of cracking during plant operation would be limited by the limitation of steam generator tube leakage between the primary coolant system and the secondary coolant system (primary-to-secondary leakage = 500 gallons per day per steam generator). Cracks having a primary-to-secondary leakage less than this limit during operation will have an adequate margin of safety to withstand the loads imposed during normal operation and by postulated accidents. Operating plants have demonstrated that primary-to-secondary leakage of 500 gallons per day per steam generator can readily be detected by radiation monitors of steam generator blowdown.

It has been determined, however, that certain conditions within the steam generator may produce limited displacement fluidelastic instability in the tube bundle that may result in fatigue failure of a tube. Modifications have been accomplished in all steam generators consisting of installation of downcomer resistance plates and preventive plugging of potentially susceptible tubes. Even though these measures are considered to have been very conservative and highly effective in reducing the probability of fatigue induced tube rupture, enhanced leakage monitoring and more stringent leak rate limits have been established. Leakage is now limited to 100 gpd (rather than 500 gpd) per steam generator when operating at greater than 50% power. Cyclic life analysis of fatigue induced tube cracks has shown that, assuming a post-modification maximum stress amplitude of 7 ksi, a leak rate of up to 500 gpd would be reached some 90 minutes prior to tube rupture. Therefore, the 100 gpd leak rate limit is bounding since

a. the 100 gpd limit would be detected well in advance of reaching 500 gpd,

b. the time required for leak rate detection and power reduction to less than 50% is expected to be less than 90 minutes, and

c. the maximum stress amplitude is anticipated to lie in the 5 ksi range which would allow for much earlier leak before break warning than would occur in the assumed 7 ksi case.

These assumptions also include an appropriate allowance for measurement uncertainty. (References: Virginia Electric and Power Co., "North Anna Unit 1 July 15, 1987 Steam Generator Tube Rupture Event Report, Revision 1, September 15, 1987, and Westinghouse WCAP-11601 "North Anna Unit 1 Steam Generator Tube Rupture and Remedial Actions Technical Evaluation, September 1987").

This limit, along with the enhanced monitoring system, should provide sufficient notification to permit orderly shutdown prior to a potential tube rupture event. Leakage in excess of any of these limits will require plant shutdown and an unscheduled inspection, during which the leaking tubes will be located and plugged.

Wastage-type defects are unlikely with the all volatile treatment (AVT) of secondary coolant. However, even if a defect of similar type should develop in service, it will be found during scheduled inservice steam generator tube examinations. Plugging will be required of all tubes with imperfections exceeding the plugging limit which, by the definition of Specification 4.4.5.4.a is 40% of the tube nominal wall thickness. Steam generator tube inspections of operating plants have demonstrated the capability to reliably detect degradation that has penetrated 20% of the original tube wall thickness.

Whenever the results of any steam generator tubing inservice inspection fall into Category C-3, these results will be promptly reported to the Commission pursuant to Section 50.72 to 10 CFR Part 50 with a follow up report pursuant to Section 50.73 to 10 CFR Part 50. Such cases will be considered by the Commission on a case-by-case basis and may result in a requirement for analysis, laboratory examinations, tests, additional eddy-current inspection, and revision of the Technical Specifications, if necessary.

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

The CONTROLLED LEAKAGE limitation restricts operation when the total flow supplied to the reactor coolant pump seals exceeds 30 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 1 GPM for all steam generators not isolated from the RCS ensures that the dosage contribution from the tube leakage will be limited to a small fraction of Part 100 limits in the event of either a steam generator tube rupture or steam line break. The 1 GPM limit is consistent with the assumptions used in the analysis of these accidents. In general, for plant operation at or below 50% power, the 500 gpd leakage limit per steam generator ensures that steam generator tube integrity is maintained in the event of a main steam line rupture or under LOCA conditions.

When operating at greater than 50% power, more stringent primary to secondary leakage limits of 300 gallons per day (GPD) total from all three steam generators and 100 gpd from an individual steam generator have been imposed. These limits ensure that in the event that a fatigue induced crack were to occur in one or more generators, the resulting leak would be detected in sufficient time to conduct an orderly shutdown prior to catastrophic tube failure. The limits on an increase in leakage of 60 gpd between surveillance intervals and for an increasing trend indicating that 100 gpd would be exceeded within 90 minutes ensure that, in the event of fatigue crack initiation, power can be reduced to a level below which propagation will not occur. In the latter case, the limit also provides for orderly shutdown since the 100 gpd limit is being approached. These leakage rates are conservative with regard to dosage contribution in that they are less than the previously analyzed total amount of 1 GPM and 500 GPD for any single steam generator.

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.

ATTACHMENT 2

DISCUSSION OF PROPOSED TECHNICAL

SPECIFICATION CHANGE AND BASIS

FOR NO SIGNIFICANT HAZARDS DETERMINATION

DISCUSSION

The purpose of this change is to implement more stringent primary-to-secondary leakage limits and to establish surveillance requirements to assure operability of the existing and new instrumentation used to assure compliance with the revised leakage limits. The more stringent leakage limits and increased instrumentation requirements were put in place following the steam generator tube rupture event at North Anna Unit 1 on July 15, 1987. The failure mechanism was determined to be fatigue induced by limited displacement fluidelastic instability, and a number of corrective actions were taken in both units to minimize the probability of recurrence. These measures included installation of downcomer flow resistance plates to reduce the source of loads associated with the fatigue mechanism in the U-bend area and the preventive plugging of potentially susceptible tubes. Even though these measures are considered to be very conservative and highly effective in reducing the probability of fatigue-induced tube rupture, enhanced leakage monitoring and more conservative leakage limits were also established. In the low probability event that the downcomer modification and preventive plugging are unsuccessful in preventing occurrence of a similar fatigue failure, the enhanced monitoring system should provide sufficient notification to permit orderly shutdown prior to tube rupture. The specific changes are described below.

Specification 3.4.6.2

The LCO specifying primary-to-secondary steam generator leakage limits has been foot-noted to refer to Specification 3.4.6.3 when operating at greater than 50% power. The purpose of this change is to impose more stringent leakage limits when operating at greater than 50% power as explained in Basis 3/4.4.6.2 OPERATIONAL LEAKAGE.

Specification 3.4.6.3

A new LCO and ACTION is added which imposes more stringent leakage limits and trends when operating at greater than 50% power. The purpose of these more stringent limits is to provide sufficient notification of leakage to permit orderly shut down prior to potential tube rupture.

Specification 4.4.6.3

New surveillance requirements are added to assure that the more stringent leakage limits described above are properly monitored and trended.

Specification 3.4.6.4

A new LCO and ACTION is added which defines OPERABILITY of the primary to secondary leakage detection systems when operating at greater than 50% power. The purpose of this specification is to assure adequate capability for monitoring and trending of leakage in order to comply with the limits of Specification 3.4.6.3.

Specification 4.6.6.4

A new surveillance requirement is added to assure OPERABILITY of the detection systems addressed in Specification 3.4.6.4.

Table 4.3-2a

A new table has been added to specify surveillance requirements for the new N-16 monitors.

Table 3.3-14 (Unit 1) and Table 3.3-13 (Unit 2)

The ACTION when the condenser air ejector system gross activity monitoring system is inoperable is revised to require more frequent sampling of the air ejector exhaust (ie, every 4 hours instead of 12 hours).

BASES 3/4.4.5 and 3/4.4.6

The BASES are revised to include discussion of the bases for the new leakage limits.

BASIS FOR NO SIGNIFICANT HAZARDS DETERMINATION

We have reviewed the proposed changes and consider them to be similar to 48FR14870, "Examples of Amendments that are not likely to involve significant hazards considerations are listed below," Example (ii) "A change that

constitutes an additional limitation, restriction or control not presently included in the technical specifications: for example, a more stringent surveillance requirement."

This change imposes more stringent primary-to-secondary leakage limits and increased surveillance requirements.

This change will not:

(a) result in a significant increase in the probability or consequence of an accident previously evaluated, i.e., a steam generator tube rupture event, because more stringent primary-to-secondary leakage limits are being imposed and existing surveillance requirements are being increased,

(b) create the possibility of a new or different kind of accident because the change involves only minor changes to plant equipment and requires some procedural modifications. These changes result in a more conservative operational mode and do not introduce any new or unique accident precursors. The results of the accident analysis in the UFSAR (i.e., single tube rupture event) will continue to bound operation,

(c) result in a significant reduction in the margins of safety as defined in the bases for any technical specification. The proposed changes will require Virginia Power to more closely monitor steam generator tube integrity by implementing more restrictive leakage limits and surveillance requirements than previously existed.