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CHAPTER 16.9-11	NA	---- 08/15/01																	
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Duke Power
Catawba Nuclear Station
4800 Concord Road
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September 25, 2001

RE: Catawba Nuclear Station
Selected Licensee Commitments Manual
Revision Dates 08/15/01 & 09/13/01

Attached are revisions to the Catawba Nuclear Station Selected Licensee Commitments Manual. Please remove and replace the following pages:

REMOVE	INSERT
LIST OF EFFECTIVE PAGES	
Pages 2, 5, 6 & 7	Pages 2, 5, 6 & 7
TAB 16.7	
Chapter 16.7-10, pages 1-7 dated 11/30/00	Chapter 16.7-10, pages 1-8 dated 09/13/01
TAB 16.9	
Chapter 16.9-11, pages 1-4 dated 05/15/01	Chapter 16.9-11, pages 1-4 dated 08/15/01
Chapter 16.9-12, pages 1-4 dated 05/15/01	Chapter 16.9-12, pages 1-4 dated 08/15/01
TAB 16.11	
Chapter 16.11-2, pages 1-2 dated 01/16/99	Chapter 16.11-2, pages 1-2 dated 09/13/01
Chapter 16.11-2, pages 3-6 dated 09/20/99	Chapter 16.11-2, pages 3-6 dated 09/13/01
Chapter 16.11-7, pages 1-6 dated 07/22/00	Chapter 16.11-7, pages 1-6 dated 09/13/01
Chapter 16.11-7, page 7 dated 07/30/01	Chapter 16.11-7, page 7 dated 09/13/01
Chapter 16.11-7, pages 8-10 dated 07/22/00	Chapter 16.11-7, pages 8-11 dated 09/13/01

If you have any questions concerning the contents of this package update, contact Toni Pasour at (803) 831-3566.

Gary D. Gilbert
Regulatory Compliance Manager

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16.7 INSTRUMENTATION

16.7-10 RADIATION MONITORING FOR PLANT OPERATIONS

COMMITMENT:

The radiation monitoring instrumentation channels for plant operations shown in Table 16.7-10A shall be OPERABLE with their Alarm/Trip Setpoints within the specified limits.

APPLICABILITY:

As shown in Table 16.7-10A

REMEDIAL ACTION:

a. With a radiation monitoring channel Alarm/Trip Setpoint for plant operations exceeding the value shown in table 16.7-10A, adjust the Setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels for plant operations inoperable, take the REMEDIAL ACTION shown in Table 16.7-10A.

TESTING REQUIREMENTS:

Each radiation monitoring instrumentation channel for plant operations shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL OPERATIONAL TEST operations for the MODES and at the frequencies shown in Table 16.7-10B.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

BASES:

The OPERABILITY of the radiation monitoring instrumentation for plant operations ensures that: (1) the associated action will be initiated when the radiation level monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic is maintained, and (3) sufficient redundancy is maintained to permit a channel to be out-of-service for testing or maintenance. The radiation monitors for plant

BASES (con't)

operations senses radiation levels in selected plant systems and locations and determines whether or not predetermined limits are being exceeded. The radiation monitors send actuation signals to initiate alarms or automatic isolation action and actuation of emergency exhaust or ventilation systems. Some of the final actuations are dependent on plant condition in addition to the actuation signals from the radiation monitors.

Operation of the Component Cooling Water System (KC) Train A with the Train A Radiation Monitoring System (EMF) monitor inoperable and relying on the Train B EMF monitor for detection of radioactivity is not permissible. Likewise, operation of the KC Train B with the Train B EMF monitor inoperable and relying on the Train A EMF monitor for detection of radioactivity is not permissible. This is due to the interlock between the EMF monitor low-flow alarm and the operation of the KC pump motors on the same train. The EMF monitor in the operating KC pump train must be OPERABLE, or the compensatory measures taken as specified on Table 16.7-10A, Remedial Action H.

TABLE 16.7-10A
RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

FUNCTIONAL UNIT	CHANNELS TO TRIP/ALARM	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	REMEDIAL ACTION
1. Containment Atmosphere – High Gaseous Radioactivity (Low Range – EMF-39)	1	1	At all times	***	C
2. Fuel Storage Pool Areas					
a. High Gaseous Radioactivity (Low Range – EMF-42)	1	1	**	$\leq 1.7 \times 10^{-4}$ µCi/ml	F
b. Criticality-Radiation Level (Fuel Bridge – Low Range – 1EMF-15, 2EMF-4)	1	1	*	≤ 15 mR/h	E
3. Control Room Air Intake-Radiation Level – High Gaseous Radioactivity (Low Range – EMF-43 A & B)	1/intake	2 (1/intake)	At all times	$\leq 1.7 \times 10^{-4}$ µCi/ml	D
4. Auxiliary Building Ventilation High Gaseous Radioactivity (Low Range – EMF-41)	1	1	1, 2, 3, 4	$\leq 1.7 \times 10^{-4}$ µCi/ml	G

TABLE 16.7-10A

FUNCTIONAL UNIT	CHANNELS TO TRIP/ALARM	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	REMEDIAL ACTION
5. Component Cooling Water System (EMF-46 A & B)	1****	1****	At all times	$\leq 1 \times 10^{-3}$ µCi/ml	H
6. N-16 Leakage Monitor (EMF-71, 72, 73, & 74)	1	4	1 (40-100% Reactor Power)	5 gpd#	I

TABLE 16.7-10A

TABLE NOTATIONS

* With fuel in the fuel storage pool areas.

** With irradiated fuel in the fuel storage pool areas.

*** When venting or purging from containment to the atmosphere, the trip setpoint shall not exceed the equivalent limits of SLC 16.11-6 in accordance with the methodology and parameters in the ODCM. When not venting or purging in Modes 5 or 6, the alarm setpoint concentration (μCi/ml) shall be such that the actual submersion dose rate would not exceed 5mR/hr without alarm. When not venting or purging in Modes 1 through 4 the alarm setpoint shall be no more than 3 times the containment atmosphere activity as indicated by the radiation monitor.

**** For EMF-46A and -46B: The EMF monitor associated with the operating Component Cooling Water System Train shall be OPERABLE. This requirement is based on the existence of an interlock which blocks the EMF loss of flow alarm from being received in the Control Room when the associated train pump motor(s) are not running.

\# The 5 gallon per day (gpd) setpoint is the primary-to-secondary leakage flow that, if exceeded, requires increased primary-to-secondary leakage monitoring.

REMEDIAL ACTION STATEMENTS

ACTION C - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the Containment Purge and Exhaust Valves (VP) are maintained closed.

ACTION D - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour initiate and maintain operation of one train of the Control Room Area Ventilation System (CRAVS) with flow through the HEPA filters and activated carbon adsorbers.

ACTION E - With less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided an appropriate portable continuous monitor with the same Alarm Setpoint is provided in the fuel storage pool area. Restore the inoperable monitors to OPERABLE status within 30 days or suspend all operations involving fuel movement in the fuel building.

ACTION F - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided

TABLE 16.7-10A

REMEDIAL ACTION STATEMENTS (con't)

one train of the Fuel Handling Ventilation Exhaust System (FHVES) is OPERABLE and in operation discharging through the HEPA filters and activated carbon adsorbers. Otherwise, suspend all operations involving fuel movement in the fuel building.

ACTION G - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue provided one train of the Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) is OPERABLE and in operation discharging through the HEPA filter and activated carbon adsorbers.

ACTION H - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, operation may continue for up to 30 days provided that, at least once per 12 hours, grab samples are collected and analyzed for principal gamma emitters (listed in Table 16.11-1, Table Notation (3)) at a lower limit of detection of no more than $5x10^{-7}$ μCi/ml.

ACTION I - With the number of OPERABLE channels less than the Minimum Channels OPERABLE requirement, ensure that:

(a) the Condenser Evacuation System Noble Gas Activity Monitor (Low Range – EMF-33) is OPERABLE and in operation, or

(b) REMEDIAL ACTIONS are in place per SLC 16.11-7, Table 16.11-5, Item 2, ACTION H.

TABLE 16.7-10B
RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS TESTING REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL OPERATIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
1. Containment Atmosphere – High Gaseous Radioactivity (Low Range – EMF-39)	12 hours	18 months	92 days	1, 2, 3, 4, 5, 6; During movement of irradiated fuel assemblies in containment; During CORE ALTERATIONS
2. Fuel Storage Pool Areas				
a. High Gaseous Radioactivity (Low Range – EMF-42)	12 hours	18 months	92 days	**
b. Criticality-Radiation Level (Fuel Bridge – Low Range – 1EMF-15, 2EMF-4)	12 hours	18 months	92 days	*
3. Control Room Air Intake Radiation Level – High Gaseous Radioactivity – (Low Range – EMF-43 A & B)	12 hours	18 months	92 days	At all times
4. Auxiliary Building Ventilation High Gaseous Radioactivity (Low Range – EMF-41)	12 hours	18 months	92 days	1, 2, 3, 4
5. Component Cooling Water System (EMF-46 A & B)	12 hours	18 months	92 days	At all times

TABLE 16.7-10B

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL OPERATIONAL TEST	MODES FOR WHICH SURVEILLANCE IS REQUIRED
6. N-16 Leakage Monitor (EMF-71, 72, 73, & 74)	12 hours	18 months	92 days	1 (40-100% Reactor Power)

TABLE 16.7-10B

TABLE NOTATIONS

* With fuel in the fuel storage pool area.
** With Irradiated fuel in the fuel storage pool areas.

16.9 AUXILIARY SYSTEMS

16.9-11 BORATION SYSTEMS BORATED WATER SOURCE – SHUTDOWN

COMMITMENT:

As a minimum, one of the following borated water sources shall be OPERABLE:

a. A Boric Acid Storage System with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 70°F.

APPLICABILITY:

MODE 4 with any RCS cold leg temperature ≤ 285°F,
MODES 5 and 6.

REMEDIAL ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

TESTING REQUIREMENTS:

The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

TESTING REQUIREMENTS (con't)

1) Verifying the boron concentration of the water,

2) Verifying the contained borated water volume, and

3) Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the refueling water storage tank temperature when it is the source of borated water and the outside air temperature is less than 70°F.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.
2. Core Operating Limits Report (COLR), Latest Release.

BASES:

The Boration System Borated Water Sources ensures that negative reactivity control is available during each mode of facility operation.

In MODE 4 with any RCS cold leg temperature ≤ 285°F, and in MODES 5 and 6, one Borated Water Source is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single Borated Water Source becomes inoperable. The boration capability of one borated water source, in association with a flow path and charging pump, is sufficient to provide a SHUTDOWN MARGIN (SDM) of 1% $\Delta k/k$ after xenon decay and cooldown from 200°F to 68°F. This temperature range envelops temperatures in MODES 5 and 6. To maintain SDM for this condition a minimum water volume at a minimum boron concentration, as presented in the CORE OPERATING LIMITS REPORT, is required from the boric acid storage tanks or the refueling water storage tank.

A minimum contained water volume and boron concentration, as presented in the CORE OPERATING LIMITS REPORT (COLR), is required to be available from the borated water sources in MODES 5 and 6. This volume is based on the required volume for maintaining SDM, unusable volume (to allow for a full suction pipe), instrument error, and additional margin for conservatism as follows:

BASES (con't)

Boric Acid Tank

Required Volume for Maintaining SDM	presented in the COLR
Unusable Volume, Vortexing, Inst. Error	10,846 gallons
Additional margin	569 gallons

Refueling Water Storage Tank

Required Volume for Maintaining SDM	presented in the COLR
Water Below the Nozzle	13,442 gallons
Instrument Inaccuracy	11,307 gallons
Vortexing	13,247 gallons
Additional Margin	3,504 gallons

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

There is no difference in the REMEDIAL ACTIONS specified for borated water source inoperability due to volume, boron concentration or temperature of the BAT or RWST not within specified limits, since the station is already at shutdown conditions. Suspending all operations involving core alterations or positive reactivity changes is an immediate action that precludes dependence on these borated water sources should they become inoperable for any reason.

The required minimum temperature of $\geq$ 65°F for the Boric Acid Storage System (BAT) ensures that the minimum solubility temperature for the specified boric acid concentration of the BAT is met, with margin.

The limits on boron concentration of the RWST also ensure that the water maintained in the RWST is compatible with MODE 5 shutdown concentration borated water in the refueling canal and does not represent a potential dilution source.

The required minimum temperature of $\geq$ 70°F for the RWST ensures that the contained water temperature will be consistent with the temperature range required for Low Temperature Overpressure Protection, and also with Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS), which becomes applicable in MODE

BASES (con't)

4. There is no required maximum temperature specified for use of the RWST as a borated water source because the LOCA analysis is not applicable in MODES 5 and 6, or in the lower end of MODE 4.

16.9 AUXILIARY SYSTEMS

16.9-12 BORATION SYSTEMS BORATED WATER SOURCES – OPERATING

COMMITMENT:

As a minimum, the following borated water source(s) shall be OPERABLE as required by SLC 16.9.8:

a. A Boric Acid Storage System with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT or Technical Specification Surveillance Requirement 3.5.4.2 whichever is larger,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT,

3) A minimum solution temperature of 70°F, and

4) A maximum solution temperature 100°F.

APPLICABILITY:

MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 285°F.

REMEDIAL ACTION:

a. With the Boric Acid Storage System inoperable and being used as one of the above required borated water sources, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% Δk/k

REMEDIAL ACTION (con't)

at 200°F; restore the Boric Acid Storage System to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable due to RWST boron concentration or temperature not within acceptable limits, restore the RWST to OPERABLE status within 8 hours in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION A, or proceed to shut down in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION C.

c. With the refueling water storage tank inoperable due to RWST minimum water volume not within acceptable limits, restore the RWST to OPERABLE status within 1 hour in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION B, or proceed to shut down in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION C.

TESTING REQUIREMENTS:

Each borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1) Verifying the boron concentration in the water,

2) Verifying the contained borated water volume of the water source, and

3) Verifying the Boric Acid Storage System solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the refueling water storage tank temperature when the outside air temperature is either less than 70°F or greater than 100°F.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.
2. Catawba Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS), through Amendments 187/180.
3. Core Operating Limits Report (COLR), Latest Release.
4. Safety Analysis Inputs Manual (SAIM), Latest Release.

BASES:

The Boration System Borated Water Sources ensures that negative reactivity control is available during each mode of facility operation.

In MODES 1, 2, and 3, and MODE 4 with RCS average temperature above 285°F., a minimum of two borated water sources are required to ensure single functional capability in the event an assumed failure renders one of the sources inoperable. The boration capability of either borated water source, in association with a flow path and charging pump, is sufficient to provide a SHUTDOWN MARGIN (SDM) from expected operating conditions of 1.3% $\Delta k/k$ after xenon decay and cooldown to 200°F. To maintain SDM for this condition a minimum water volume at a minimum boron concentration, as presented in the CORE OPERATING LIMITS REPORT, is required from the boric acid storage tanks or the refueling water storage tank.

A minimum contained water volume and boron concentration, as presented in the CORE OPERATING LIMITS REPORT (COLR), is required to be available from the borated water sources in MODES 1, 2, 3, and 4. This volume is based on the required volume for maintaining SDM, unusable volume (to allow for a full suction pipe), instrument error, and additional margin for conservatism as follows:

Boric Acid Tank

Required Volume for Maintaining SDM	presented in the COLR
Additional Margin	854 gallons
Unusable Volume (to maintain full suction pipe) 14" of water equivalent	7,230 gallons
Vortexing (4" of water above top of suction pipe)	2,066 gallons
Instrumentation Error (Based on Total Loop Acc. for 1 & 2 NV5740 loops) – 2" of water equivalent	1,550 gallons

Refueling Water Storage Tank

Required Volume for Maintaining SDM	presented in the COLR
Unusable Volume (below nozzle)	13,442 gallons
Instrument Inaccuracy	11,307 gallons

BASES (con't)

Vortexing	13,247 gallons
Additional Margin	3,504 gallons

The contained water volume limits include allowance for water not available because of discharge line location and other physical characteristics.

As documented in the Bases for Technical Specification 3.5.4, REQUIRED ACTION A.1, with RWST boron concentration or borated water temperature not within limits, they must be returned to within limits within 8 hours. Under these conditions, neither the boron injection subsystem, nor the ECCS or containment spray systems can perform their design function. Therefore, prompt operator action must be taken to restore the tank to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection.

As documented in the Bases for Technical Specification 3.5.4, REQUIRED ACTION B.1, with RWST inoperable for water volume not within limits, it must be restored to OPERABLE status within 1 hour. In this condition, neither the boron injection subsystem, nor the ECCS or containment spray systems can perform their design function. Therefore, prompt operator action must be taken to restore the tank to OPERABLE condition or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains.

The required minimum temperature of $\geq$ 65°F for the Boric Acid Storage System (BAT) ensures that the minimum solubility temperature for the specified boric acid concentration of the BAT is met, with margin.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value within an acceptable range for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The required temperature range for the RWST ensures that the contained water temperature will be consistent with the temperature range required for Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS). This range of $\geq$ 70°F and $\leq$ 100°F is compatible with the minimum and maximum values assumed in the safety analyses.

16.11 RADIOLOGICAL EFFLUENTS CONTROLS

16.11-2 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

COMMITMENT:

The radioactive liquid effluent monitoring instrumentation channels shown in Table 16.11-2 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of SLC 16.11-1 are not exceeded. The Alarm/Trip Setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY:

At all times.

REMEDIAL ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel Alarm/Trip Setpoint less conservative than required by the above specification, immediately suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 16.11-2. Restore the inoperable instrumentation to OPERABLE status within the time specified in the ACTION, or explain in the next Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3 why this inoperability was not corrected within the time specified.

TESTING REQUIREMENTS:

Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL OPERATIONAL TEST operations at the frequencies shown in Table 16.11-3.

REFERENCES:

1. Catawba Offsite Dose Calculation Manual

2. 10 CFR Part 20

3. 10 CFR Part 50, Appendix A

BASES:

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases of liquid effluents. The Alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the Alarm/Trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50.

TABLE 16.11-2 (Page 1 of 2)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Radioactivity Monitors Providing Alarm And Automatic Termination of Release		
a. Waste Liquid Discharge Monitor (Low Range – EMF-49)	1 per station	C
b. Turbine Building Sump Monitor (Low Range – EMF-31)	1	E
c. Deleted		
d. Monitor Tank Building Liquid Discharge Monitor (EMF-57)	1 per station	C
2. Continuous Composite Samplers And Sampler Flow Monitor		
a. Conventional Waste Water Treatment Line (no alarm/trip function)	1 per station	E
3. Flow Rate Measurement Devices		
a. Waste Liquid Effluent Line (no alarm/trip function)	1 per station	D
b. Conventional Waste Water Treatment Line (no alarm/trip function)	1 per station	D
c. Low Pressure Service Water Minimum Flow Interlock	1 per station	D
d. Monitor Tank Building Waste Liquid Effluent Line (no alarm/trip function)	1 per station	D

TABLE 16.11-2 (Page 2 of 2)

REMEDIAL ACTION STATEMENTS

ACTION C - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 14 days provided that prior to initiating a release:

a. At least two independent samples are analyzed in accordance with SLC 16.11-1; and

b. At least two technically qualified members of the facility staff independently verify:

1) The discharge line valving; and,

2) The manual portion of the computer input for the release rate calculations performed on the computer, or the entire release rate calculations if such calculations are performed manually.

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION D - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 4 hours during actual releases. Pump performance curves generated in place may be used to estimate flow.

ACTION E - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are analyzed for radioactivity at a lower limit of detection of no more than 10^{-7} microCurie/ml:

a. At least once per 12 hours when the specific activity of the secondary coolant is greater than 0.01 microCurie/gram DOSE EQUIVALENT I-131, or

b. At least once per 24 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microCurie/gram DOSE EQUIVALENT I-131.

TABLE 16.11-3 (Page 1 of 2)

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

	INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL OPERATIONAL TEST
1.	Radioactivity Monitors Providing Alarm and Automatic Termination of Release				
	a. Waste Liquid Discharge Monitor (Low Range – EMF-49)	D	P	R(2)	Q(1)
	b. Turbine Building Sump Monitor (Low Range – EMF-31)	D	M	R(2)	Q(1)
	c. Deleted				
	d. Monitor Tank Building Liquid Discharge Monitor (EMF-57)	D	P	R(2)	Q(1)
2.	Continuous Composite Samplers and Sampler Flow Monitor				
	a. Conventional Waste Water Treatment Line (no alarm/trip function)	D(3)	N.A.	R	N.A.
3.	Flow Rate Measurement Devices				
	a. Waste Liquid Effluent Line (no alarm/trip function)	D(3)	N.A.	R	N.A.
	b. Conventional Waste Water Treatment Line (no alarm/trip function)	D(3)	N.A.	R	N.A.
	c. Low Pressure Service Water Minimum Flow Interlock	D(3)	N.A.	R	Q
	d. Monitor Tank Building Waste Liquid Effluent Line (no alarm/trip function)	D(3)	N.A.	R	N.A.

TABLE 16.11-3 (Page 2 of 2)

TABLE NOTATIONS

(1) The CHANNEL OPERATIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation* occur if any of the following conditions exists:

a. Instrument indicates measured levels above the Alarm/Trip Setpoint; or,

b. Circuit failure/Instrument downscale failure (alarm only)

(2) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRAITON, sources that have been related to the initial calibration shall be used.

(3) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made.

* For EMF-57, the alarm annunciation is in the Monitor Tank Building Control Room and on the MTB Control Panel Remote Annunciator panel.

16.11 RADIOLOGICAL EFFLUENTS CONTROLS

16.11-7 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

COMMITMENT

The radioactive gaseous effluent monitoring instrumentation channels shown in Table 16.11-5 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of SLC 16.11-6 are not exceeded. The Alarm/Trip Setpoints of these channels meeting SLC 16.11-6 shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY:

As shown in Table 16.11-5.

REMEDIAL ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel Alarm/Trip Setpoint less conservative than required by the above specification, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 16.11-5. Restore the inoperable instrumentation to OPERABLE status within the time specified in the ACTION, or explain in the next Radioactive Effluent Release Report pursuant to Technical Specification 5.6.3 why this inoperability was not corrected within the time specified.

TESTING REQUIREMENTS:

Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION, and CHANNEL OPERATIONAL TEST operations at the frequencies shown in Table 16.11-6.

REFERENCES:

1. Catawba Offsite Dose Calculation Manual

2. 10 CFR Part 20

BASES:

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The Alarm/Trip Setpoints for these instruments shall be calculated and adjusted in accordance with the methodology and parameters in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63, and 64 of Appendix A to 10 CFR Part 50. The sensitivity of any noble gas activity monitor used to show compliance with the gaseous effluent release requirements of SLC 16.11-8 shall be such that concentrations as low as 1 x 10-6 ❍Ci/cc are measurable.

TABLE 16.11-5 (Page 1 of 5)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

	Instrument	Minimum Channels Operable	Applicability	Action
1.	Waste Gas Holdup System			
	a. Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (Low Range – EMF-50)	1 per station	*	C
	b. Effluent System Flow Rate Measuring Device	1 per station	*	D
2.	Condenser Evacuation System Noble Gas Activity Monitor (Low Range – EMF-33)	1	1,2,3,4,#	H
3.	Vent System			
	a. Noble Gas Activity Monitor (Low Range – EMF-36)	1	**	E
	b. Iodine Sampler (EMF-37)	1	**	G
	c. Particulate Sampler (EMF-35)	1	**	G
	d. Unit Vent Stack Flow Rate Meter (no alarm/trip function)	1	**	D
	e. Unit Vent Radiation Monitor Flow Meter	1	**	G

TABLE 16.11-5 (Page 2 of 5)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

	Instrument	Minimum Channels Operable	Applicability	Action
4.	Containment Purge System			
	Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (Low Range – EMF-39)	1	At all times outside of modes 1,2,3,4	F
5.	Containment Air Release and Addition System			
	Noble Gas Activity Monitor – Providing Alarm (Low Range – EMF-39)	1	1, 2, 3, 4, 5, 6	I
6.	Monitor Tank Building HVAC			
a.	Noble Gas Activity Monitor – Providing Alarm (EMF-58)	1 per station	**	E
b.	Monitor Tank Building Effluent Flow Rate Measuring Device	1 per station	**	D

TABLE 16.11-5 (Page 3 of 5)

TABLE NOTATIONS

* At all times except when the isolation valve is closed and locked.

** At all times.

\# Apply Action Hb in Modes 5 and 6

ACTION STATEMENTS

ACTION C - With the number of channels OPERABLE less than required the Minimum Channels OPERABLE requirement, the contents of the tank(s) may be released to the environment for up to 14 days provided that prior to initiating the release either:

a. Vent system noble gas activity monitor providing alarm and automatic termination of release (Low Range – EMF-36) has at least one channel OPERABLE; or,

b. At least two independent samples of the tank's contents are analyzed, and at least two technically qualified members of the facility staff independently verify:

1. The discharge valve lineup; and

2. The manual portion of the computer input for the release rate calculations performed on the computer, or the entire release rate calculations if such calculations are performed manually.

Otherwise, suspend release of radioactive effluents via this pathway.

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

ACTION E - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples

TABLE NOTATIONS

are taken at least once per 12 hours and these samples are analyzed for radioactivity within 24 hours.

ACTION F - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, immediately suspend PURGING of radioactive effluents via this pathway.

ACTION G - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue for up to 30 days provided samples are continuously collected with auxiliary sampling equipment as required in Table 16.11-4.

ACTION H - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement:

a. Effluent release via the CSAE System (ZJ) may continue for up to 30 days provided grab samples are taken at least once per 12 hours and these samples are analyzed for radioactivity within 24 hours, and

b. Gaseous effluent releases via the BB system atmospheric vent valve (BB27) in the off normal mode may continue for up to 30 days provided grab samples of steam generator water are analyzed for radioactivity at a lower limit of detection of no more than 1E-7 microCurie/ml:

1. At least once per 12 hours when the specific activity of the secondary coolant is greater than 0.01: microCurie/gram DOSE EQUIVALENT I-131, or

2. At least once per 24 hours when the specific activity of the secondary coolant is less than or equal to 0.01 microCurie/gram DOSE EQUIVALENT I-131.

TABLE 16.11-5 (Page 5 of 5)

TABLE NOTATIONS

ACTION I - With the number of channels OPERABLE less than the Minimum Channels OPERABLE requirement, containment releases to the environment through this pathway may continue provided that prior to initiating the release:

a. Vent system noble gas activity monitor providing alarm and automatic termination of release (Low Range – EMF-36) has at least one channel OPERABLE; or,

b. At least two independent samples of the containment atmosphere are analyzed, and at least two technically qualified members of the facility independently verify:

1. The discharge valve lineup; and

2. The manual portion of the computer input for the release rate calculations performed on the computer, or the entire release rate calculations if such calculations are performed manually.

Restore the inoperable instrumentation to OPERABLE status within 30 days, or explain in the next Radioactive Effluent Release Report, pursuant to Technical Specification 5.6.3, why this inoperability was not corrected within the time specified.

If the instrumentation remains, or is anticipated to remain, inoperable for 90 days or longer, re-evaluate the configuration of the affected unit in accordance with the applicable portions of 10CFR50.59 and 10CFR50.65(a)(4), prior to expiration of the 90 days.

TABLE 16.11-6 (Page 1 of 4)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Channel Check	Source Check	Channel Calibration	Channel Operational Test	Modes For Which Surveillance Is Required
1. Waste Gas Holdup System					
a. Noble Gas Activity Monitor – Providing Alarm and Automatic Termination of Release (Low Range – EMF-50)	P	P(4)	R(3)	Q(1)	*
b. Effluent System Flow Rate Measuring Device	P	N.A.	R	N.A.	*
2. Condenser Evacuation System					
Noble Gas Activity Monitor (Low Range – EMF-33) (BB27 is only isolation function required)	D	M(4)	R(3)	Q(1)	1,2,3,4
3. Vent System					
a. Noble Gas Activity Monitor (Low Range – EMF-36)	D	M(4)	R(3)	Q(2)	**
b. Iodine Sampler (EMF-37)	W	N.A.	N.A.	N.A.	**
c. Particulate Sampler (EMF-35)	W	N.A.	N.A.	N.A.	**

TABLE 16.11-6 (Page 2 of 4)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Channel Check	Source Check	Channel Calibration	Channel Operational Test	Modes For Which Surveillance Is Required
d. Unit Vent Stack Flow Rate Meter (no alarm/trip function)	D	N.A.	R	N.A.	**
e. Unit Vent Radiation Monitor Flow Meter	D	N.A.	R	N.A.	**
4. Containment Purge System					
Noble Gas activity Monitor – Providing Alarm and Automatic Termination of Release (Low Range – EMF-39)	S	P(4)	R(3)	R(1)	During movement of irradiated fuel assemblies in containment; During CORE ALTERATIONS
5. Containment Air Release and Addition System					
Noble Gas Activity Monitor – Providing Alarm (Low Range – EMF-39)	S	P(4)	R(3)	Q(1)	1, 2, 3, 4, 5, 6

TABLE 16.11-6 (Page 3 of 4)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Instrument	Channel Check	Source Check	Channel Calibration	Channel Operational Test	Modes For Which Surveillance Is Required
6. Monitor Tank Building HVAC					
a. Noble Gas Activity Monitor – Providing Alarm (EMF-58)	D	M	R(3)	Q(2)	**
b. Discharge Flow Instrumentation	D	N.A.	R	N.A.	**

TABLE 16.11-6 (Page 4 of 4)

TABLE NOTATIONS

* At all times except when the isolation valve is closed and locked.
** At all times.

1. For noble gas activity monitors providing automatic termination of release, the CHANNEL OPERATIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occur if any of the following conditions exists:

   a. Instrument indicates measured levels above the Alarm/Trip Setpoint; or,

   b. Circuit failure/Instrument downscale failure (Alarm only)

2. The CHANNEL OPERATIONAL TEST shall also demonstrate that control room alarm annunciation[#] occurs if any of the following conditions exists:

   a. Instrument indicates measured levels above the Alarm Setpoint; or,

   b. Circuit failure/Instrument downscale failure

3. The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards (NBS) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration shall be used.

4. A source check for these channels shall be the qualitative assessment of channel response when the channel sensor is exposed to a light emitting diode.

[#] For EMF-58, the alarm annunciation is in the Monitor Tank Building Control Room and on the MTB Control Panel Remote Annunciator Panel.