50-369/370

PRIORITY **Normal**

DISPOSITION OF THE ORIGINAL DOCUMENT WILL BE TO THE TRANSMITTAL SIGNATURE UNLESS RECIPIENT IS OTHERWISE IDENTIFIED BELOW

1) 01623 C A DRYE MG01IE
2) 02049 NGO PRA MANAGER EC08I
3) 02188 NPA MANAGER EC05N
4) 02467 ELECT. LICENSING LIBRARY EC050
5) 02532 MCG NRC INSP MG01A
6) 02546 R L MORGAN MG01WC
7) 03044 MCG DOC CNTRL MISC MAN MGO1DM
8) 03102 H L MASSEY OPS PROC GP MG03OT
9) 03379 D E CALDWELL MG01MM
10) 03447 HARRY J SLOAN MG01RP
11) 03614 MCG OPS PROCEDURE GP MG01OP
12) 03744 OPS TRNG MGR. MG03OT
13) 03759 U S NUCLEAR REG WASH, DC
14) 04809 MCG PLANT ENG. LIBR. MG05SE
15) 05160 P T VU MG01RC

Duke Power Company
DOCUMENT TRANSMITTAL FORM

REFERENCE

MCGUIRE NUCLEAR STATION

SELECTED LICENSEE COMMITMENTS

MANUAL

Date: **03/14/01**

Document Transmittal #: **DUK010730004**

QA CONDITION ☐ Yes ■ No

OTHER ACKNOWLEDGEMENT REQUIRED ■ Yes

IF QA OR OTHER ACKNOWLEDGEMENT REQUIRED, PLEASE ACKNOWLEDGE RECEIPT BY RETURNING THIS FORM TO:

Duke Power Company
P.O. Box 12700
Document Management MG01 MOD
Hagers Ferry Road
Huntersville, N.C. 28078

Rec'd By ____________________

Date ____________________

A001

DOCUMENT NO	QA COND	REV #/ DATE	DISTR CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
LOEP	NA	010 02/26/01	MADM-03A	V1	V1	V1	V1	V1	V1	V1	V1	V1	V1	V1	V2	V8	V2	V1	53
SLC 16.9.9	NA	013 02/26/01																	
SLC 16.9.10	NA	013 02/26/01																	
SLC 16.9.11	NA	013 02/26/01																	
SLC 16.9.12	NA	013 02/26/01																	
SLC 16.9.13	NA	013 02/26/01																	
SLC 16.9.14	NA	013 02/26/01																	
SLC 16.11.1	NA	009 02/26/01																	
SLC 16.11.2	NA	009 02/26/01																	

EB

REMARKS: PLEASE UPDATE YOUR MANUAL ACCORDINGLY

H B BARRON
VICE PRESIDENT
MCGUIRE NUCLEAR STATION

BY:
B C BEAVER MG01RC BCB/CMK

February 27, 2001

MEMORANDUM

To: All McGuire Nuclear Station Selected Licensee Commitments (SLC) Manual Holders

Subject: McGuire SLC Manual Update

Please revise your copy of the manual as follows:

REMOVE	INSERT
List of Affected Sections Revision 9	List of Affected Sections Revision 10
SLC 16.9.9 Revision 0	SLC 16.9.9 Revision 13
SLC 16.9.10 Revision 0	SLC 16.9.10 Revision 13
SLC 16.9.11 Revision 0	SLC 16.9.11 Revision 13
SLC 16.9.12 Revision 0	SLC 16.9.12 Revision 13
SLC 16.9.13 Revision 0	SLC 16.9.13 Revision 13
SLC 16.9.14 Revision 0	SLC 16.9.14 Revision 13
SLC 16.11.1 Revision 0	SLC 16.11.1 Revision 9
SLC 16.11.2 Revision 0	SLC 16.11.2 Revision 9

Revision numbers may skip numbers due to Regulatory Compliance Filing System.

Please call me if you have questions

Bonnie Beaver
Regulatory Compliance
875-4180

SLC LIST OF AFFECTED SECTIONS

SECTION	REVISION NUMBER	DATE
16.1	REVISION 0	12/14/99
16.2	REVISION 0	12/14/99
16.3	REVISION 0	12/14/99
16.4	Not Issued	
16.5.1	REVISION 0	12/14/99
16.5.2	REVISION 0	12/14/99
16.5.3	REVISION 0	12/14/99
16.5.4	REVISION 7	09/14/00
16.5.5	REVISION 0	12/14/99
16.5.6	REVISION 0	12/14/99
16.5.7	REVISION 0	12/14/99
16.5.8	REVISION 0	12/14/99
16.5.9	REVISION 0	12/14/99
16.5.10	REVISION 0	12/14/99
16.6.1	REVISION 0	12/14/99
16.6.2	REVISION 0	12/14/99
16.6.3	REVISION 0	12/14/99
16.7.1	REVISION 0	12/14/99
16.7.2	REVISION 0	12/14/99
16.7.3	REVISION 0	12/14/99
16.7.4	REVISION 1	4/11/00
16.7.5	REVISION 0	12/14/99
16.7.6	REVISION 0	12/14/99
16.7.7	REVISION 0	12/14/99
16.7.8	REVISION 0	12/14/99
16.7.9	REVISION 0	12/14/99
16.7.10	REVISION 0	12/14/99
16.8.1	REVISION 2	4/11/00
16.8.2	REVISION 0	12/14/99
16.8.3	REVISION 2	4/11/00
16.9.1	REVISION 10	1/29/01
16.9.2	REVISION 5	5/24/00
16.9.3	REVISION 0	12/14/99
16.9.4	REVISION 1	03/02/00
16.9.5	REVISION 0	12/14/99
16.9.6	REVISION 0	12/14/99
16.9.7	REVISION 11	1/29/01
16.9.8	REVISION 0	12/14/99
16.9.9	REVISION 13	2/26/01
16.9.10	REVISION 13	2/26/01
16.9.11	REVISION 13	2/26/01
16.9.12	REVISION 13	2/26/01
16.9.13	REVISION 13	2/26/01
16.9.14	REVISION 13	2/26/01
16.9.15	REVISION 4	6/20/00
16.9.16	REVISION 0	12/14/99
16.9.17	REVISION 0	12/14/99

SLC LIST OF AFFECTED SECTIONS

SECTION	REVISION NUMBER	DATE
16.9.18	REVISION 0	12/14/99
16.9.19	REVISION 0	12/14/99
16.9.20	REVISION 8	11/30/00
16.9.21	REVISION 0	12/14/99
16.9.22	REVISION 0	12/14/99
16.9.23	Not Issued	
16.9.24	REVISION 0	12/18/00
16.10.1	REVISION 0	12/14/99
16.11.1	REVISION 9	2/1/01
16.11.2	REVISION 9	2/1/01
16.11.3	REVISION 0	12/14/99
16.11.4	REVISION 0	12/14/99
16.11.5	REVISION 0	12/14/99
16.11.6	REVISION 0	12/14/99
16.11.7	REVISION 0	12/14/99
16.11.8	REVISION 0	12/14/99
16.11.9	REVISION 0	12/14/99
16.11.10	REVISION 0	12/14/99
16.11.11	REVISION 0	12/14/99
16.11.12	REVISION 0	12/14/99
16.11.13	REVISION 0	12/14/99
16.11.14	REVISION 0	12/14/99
16.11.15	REVISION 0	12/14/99
16.11.16	REVISION 1	4/11/00
16.11.17	REVISION 1	4/11/00
16.11.18	REVISION 0	12/14/99
16.11.19	REVISION 0	12/14/99
16.11.20	REVISION 0	12/14/99
16.12.1	REVISION 0	12/14/99
16.12.2	REVISION 0	12/14/99
16.13.1	REVISION 0	12/14/99
16.13.2	REVISION 0	12/14/99
16.13.3	REVISION 0	12/14/99
16.14.1	REVISION 0	12/14/99

16.9 AUXILIARY SYSTEMS

16.9.9 Boration Systems – Flow Path (Operating)

COMMITMENT

Two of the following three boron injection flow paths shall be OPERABLE:

a. The flow path from a boric acid tank via a boric acid transfer pump and a charging pump to the reactor coolant system, and

b. Two flow paths from the refueling water storage tank via charging pumps to the reactor coolant system.

Note: An OPERABLE charging pump used to satisfy OPERABILITY requirements of one boration flow path may not be used to satisfy OPERABILITY requirements for a second boration flow path.

APPLICABILITY

MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 300°F.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required boron injection flow path inoperable.	A.1 Restore the required boron injection flow path to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Borate to the SDM requirements of Tech Spec 3.1.1.	6 hours
	AND	
	B.3 Restore the required boron injection flow path to OPERABLE status.	7 days

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 4 with any RCS cold leg temperature $\leq$ 300°F.	30 hours

TESTING REQUIREMENTS

TEST		FREQUENCY
TR 16.9.9.1	Verify the temperature of the heat traced portion of the flow path from the boric acid storage tanks is $\geq$ 65°F when it is a required water source	7 days
TR 16.9.9.2	Verify that each manual, power operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
TR 16.9.9.3	Verify that each automatic valve in the flow path actuates to its correct position on a safety injection test signal.	18 months
TR 16.9.9.4	Verify that each charging pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
TR 16.9.9.5	Verify that the flow path from the boric acid tanks via a boric acid transfer pump and a charging pump delivers $\geq$ 30 gpm to the reactor coolant system.	18 months

BASES

The Boron Injection System ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include: (1) borated water sources, (2) charging pumps, (3) separate flow paths, (4) boric acid transfer pumps, (5) associated Heat Tracing Systems, and (6) an emergency power supply from OPERABLE diesel generators.

With the RCS temperature above 300°F, a minimum of two boron injection flow paths are required to ensure single functional capability in the event an assumed failure renders one

BASES (continued)

of the flow paths inoperable. The boration capability of either flow path is sufficient to provide a SHUTDOWN MARGIN from expected operating conditions of 1.3% delta k/k after xenon decay and cooldown to 200°F. The maximum expected boration capability requirement occurs at EOL from full power equilibrium xenon conditions. Further discussion is provided in Bases for Shutdown Margin Requirements (Tech Spec 3.1.1 and 3.1.2).

REFERENCES

None

16.9 AUXILIARY SYSTEMS

16.9.10 Boration Systems – Charging Pumps (Operating)

(DELETED - COMBINED WITH 16.9.9)

16.9 AUXILIARY SYSTEMS

16.9.11 Borated Water Sources (Operating)

COMMITMENT

As a minimum, the following borated water source(s) shall be OPERABLE as required by SLC 16.9.9:

a. A Boric Acid Storage System (BAT) and at least one associated Heat Tracing System, and

b. The refueling water storage tank.

APPLICABILITY

MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 300°F.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required boric acid storage system inoperable.	A.1 Restore the required boric acid storage system to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Borate to the SDM requirements of TS 3.1.1 AND B.3 Restore the required boric acid storage system to OPERABLE status.	6 hours 6 hours 7 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Be in MODE 4 with any RCS cold leg temperature ≤ 300°F.	30 hours

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Refueling water storage tank inoperable.	D.1 Enter the applicable Conditions and Required Actions of LCO 3.5.4, "Refueling Water Storage Tank."	Immediately

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.9.11.1 Verify the refueling water storage tank solution temperature is ≥ 70°F and ≤ 100°F when the outside air temperature is < 70°F or > 100°F.	24 hours
TR 16.9.11.2 Verify the boron concentration of the required borated water source is within the limits specified in the COLR.	7 days
TR 16.9.11.3 Verify the borated water volume of the required borated water source is within the limits specified in the COLR.	7 days
TR 16.9.11.4 Verify the boric acid storage tank solution temperature is ≥ 65°F when the boric acid storage tank is a required source.	7 days

BASES

The Boron Injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include: (1) borated water sources, (2) charging pumps, (3) separate flow paths, (4) boric acid transfer pumps, (5) associated Heat Tracing Systems, and (6) an emergency power supply from OPERABLE diesel generators.

The minimum borated water volumes and concentrations required to maintain shutdown margin for the Boric Acid Storage System and the Refueling water Storage Tank are presented in the Core Operating Limits Report.

BASES (continued)

The SLC commitment value for the Boric Acid Storage Tank and the Refueling Water Storage Tank minimum contained water volume during Modes 1-4 is based on the required volume to maintain shutdown margin, an allowance for unusable volume and additional margin as follows.

Boric Acid Storage Tank Requirements for Maintaining SDM – Modes 1-4

Required volume for maintaining SDM	Presented in the COLR
Unusable volume (to maintain full suction pipe)	4,199 gallons
Additional margin	6,470 gallons

Refueling Water Storage Tank Requirements for Maintaining SDM – Modes 1-4

Required volume for maintaining SDM	Presented in the COLR
Unusable volume (to maintain full suction pipe)	16,000 gallons
Additional margin	23,500 gallons

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

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.5 and 9.5 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.

REFERENCES

None

16.9 AUXILIARY SYSTEMS

16.9.12 Boration Systems – Flow Path (Shutdown)

COMMITMENT

As a minimum, one of the following boron injection flow paths shall be OPERABLE and capable of being powered by an emergency power source:

a. a flow path from a boric acid tank via a boric acid transfer pump and a charging pump to the reactor coolant system if the boric acid storage tank in SLC 16.9.14 is OPERABLE, or

b. the flow path from the refueling water storage tank via a charging pump to the reactor coolant system if the refueling water storage tank in SLC 16.9.14 is OPERABLE.

Note: An OPERABLE safety injection pump (and associated suction from RWST and discharge flowpath to cold legs) may be used in lieu of the charging pump in (b.) during Modes 5 and 6 when seal injection is not needed.

APPLICABILITY

MODE 4 with any RCS cold leg temperature ≤ 300°F,
MODES 5 and 6.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required boron injection flow path inoperable. OR Required boron injection flow path not capable of being powered from an emergency power source.	A.1 Suspend CORE ALTERATIONS. AND A.2 Suspend positive reactivity additions.	Immediately Immediately

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.9.12.1 Verify the temperature of the heat traced portion of the flow path is ≥ 65°F when a flow path from the boric acid storage tank is used.	7 days
TR 16.9.12.2 Verify that the charging pump's or safety injection pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
TR 16.9.12.3 Verify that each manual, power operated, or automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days

BASES

The Boron Injection System ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include: (1) borated water source, (2) charging pump, (3) separate flow path, (4) boric acid transfer pump, (5) associated Heat Tracing Systems, and (6) an emergency power supply from OPERABLE diesel generator. A safety injection pump with suction flow path from RWST and discharge flow path to RCS cold legs may also be used to perform boron injection functions during Modes 5 and 6.

With the RCS temperature below 300°F, one Boron Injection System 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 Boron Injection System becomes inoperable. Further discussion is provided in Bases for Shutdown Margin Requirements (Tech Spec 3.1.1 and 3.1.2). The Mode 4 shutdown margin requirements are mandated by Tech Spec Section 3.1.1.

The capability was added to utilize a boration flow path from the RWST to the RCS cold legs via safety injection pump during Modes 5 and 6 as sufficient head is developed to borate the RCS at the LTOP actuation setpoint and below the applicable pressure limits of Tech Spec 3.4.2 (RCS P-T Limits).

For automatic valves and power operated valves which are OPERABLE and have an OPERABLE emergency power source, these valves may be repositioned as required to support other plant operations if the valves will move to their proper position on demand to establish the Boration Flow Path.

The REMEDIAL ACTION statement requires suspension of all operations 'involving CORE ALTERATIONS or positive reactivity changes.' The intent is that specific evolutions or operations that involve positive reactivity changes (fuel movement, dilutions, control rod movements or sustained NC temperature changes adding positive reactivity) are

BASES (continued)

discontinued if the conditions described above do not exist. There are operations (e.g., swapping ND trains, swapping KC trains, some testing) that can result in temperature oscillations that have insignificant effects on shutdown margin and can continue.

Operational or testing activities that result in NC temperature swings of 20 degrees F about an initial value have been judged not to constitute positive reactivity changes as described in this SLC when in MODE 5. There must be at least 500 ppm boron beyond the required Shutdown Boron Concentration for this interpretation to remain valid. This interpretation should not be used to establish sustained NC system heatups or cooldowns that result in sustained positive reactivity additions.

REFERENCES

NSD-403: NGD Shutdown Risk Management

MSD-403: McGuire Shutdown Risk Management

Nuclear/Reactor Engineering Memo to File R.F.4.0.i, August 23, 1994 'NC Temperature Swings affect on Shutdown Margin'

PIP M97-0601, PIP M98-4643

16.9 AUXILIARY SYSTEMS

16.9.13 Boration Systems – Charging Pumps (Shutdown)

(DELETED-COMBINED WITH 16.9.12)

16.9 AUXILIARY SYSTEMS

16.9.14 Borated Water Sources (Shutdown)

COMMITMENT One of the following borated water sources shall be OPERABLE:

a. A Boric Acid Storage System (BAT) and at least one associated Heat Tracing System, or

b. The refueling water storage tank.

APPLICABILITY MODE 4 with any RCS cold leg temperature ≤ 300°F, MODES 5 and 6.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required borated water source inoperable.	A.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2 Suspend positive reactivity additions.	Immediately

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.9.14.1 Verify the refueling water storage tank solution temperature is ≥ 70°F when the outside air temperature is < 70°F.	24 hours
TR 16.9.14.2 Verify the boron concentration of the required borated water source is within the limits specified in the COLR.	7 days

(continued)

TESTING REQUIREMENTS (continued)

TEST	FREQUENCY
TR 16.9.14.3 Verify the borated water volume of the required borated water source is within the limits specified in the COLR.	7 days
TR 16.9.14.4 Verify the boric acid storage tank solution temperature is ≥ 65°F when the boric acid storage tank is a required source.	7 days

BASES

The Boron Injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include: (1) borated water source, (2) charging pump, (3) separate flow path, (4) boric acid transfer pump, (5) associated Heat Tracing Systems, and (6) an emergency power supply from OPERABLE diesel generator.

The limits for boron in MODE 4 below 300°F are the same as those above 300°F and are specified in the COLR and discussed in the Bases for SLC 16.9.11. The boron capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1% delta k/k after xenon decay and cooldown from 200 °F to 140 °F. The minimum borated water volumes and concentrations required to maintain shutdown margin for the Boric Acid Storage system and the Refueling Water Storage Tank are presented in the Core Operating Limits Report.

The SLC commitment value for the Boric Acid Storage Tank and the Refueling Water Storage Tank minimum contained water volume during Modes 5 and 6 is based on the required volume to maintain shutdown margin, an allowance for unusable volume and additional margin as follows:

<u>Boric Acid Storage Tank Requirements for Maintaining SDM – Modes 5 & 6</u>

Required volume for maintaining SDM	Presented in the COLR
Unusable volume (to maintain full suction pipe)	4,199 gallons
Additional margin	4,100 gallons

<u>Refueling Water Storage Tank Requirements for Maintaining SDM – Modes 5 & 6</u>

Required volume for maintaining SDM	Presented in the COLR
Unusable volume (to maintain full suction pipe)	16,000 gallons
Additional margin	23,500 gallons

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

BASES (continued)

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.5 and 9.5 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.

REFERENCES

None

16.11 RADIOLOGICAL EFFLUENT CONTROLS

16.11.1 Liquid Effluents – Concentration

COMMITMENT The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure 16.11.1-1) shall be limited:

a. For radionuclides other than dissolved or entrained noble gases, 10 times the effluent concentrations specified in 10 CFR Part 20, Appendix B, Table 2, Column 2, and

b. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} microCurie/ml total activity.

APPLICABILITY At all times.

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS not within limits.	A.1 Restore the concentration to within limits.	Immediately

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.11.1.1 --------------------------------NOTE-------------------------------- The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits. -- Sample and analyze radioactive liquid wastes according to Table 16.11.1-1.	According to Table 16.11.1-1

TABLE 16.11.1-1
(Page 1 of 3)

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

LIQUID RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) microCi/ml [(1)]
1. Batch Waste Release Tanks (WMT and RMT)[(4)]	P Each Batch	P Each Batch	Principal Gamma Emitters[(6)]	$5x10^{-7}$
			I-131	$1x10^{-6}$
	P One Batch/M	M	Dissolved and Entrained Gases (Gamma emitters)[(7)]	$1x10^{-5}$
	P Each Batch	M Composite[(2)]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	P Each Batch	Q Composite[(2)]	Sr-89, Sr-90	$5x10^{-8}$
2. Continuous Releases (VUCDT discharge, CWWTS outlet and Turbine Building Sump to RC)[(5)]	Continuous[(3)]	W Composite[(3)]	Principal Gamma Emitters [(6)]	$5x10^{-7}$
			I-131	$1x10^{-6}$
	M Grab Sample	M	Dissolved and Entrained Gases (Gamma emitters)[(7)]	$1x10^{-5}$
	Continuous[(3)]	M Composite[(3)]	H-3	$1x10^{-5}$
			Gross Alpha	$1x10^{-7}$
	Continuous[(3)]	Q Composite[(3)]	Sr-89, Sr-90	$5x10^{-8}$

TABLE 16.11.1-1
(Page 2 of 3)

NOTES:

(1) The LLD is defined, for purposes of these commitments, as the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\, s_b}{E \cdot V \cdot 2.22\, x\, 10^6 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

Where:

LLD is the "a priori" lower limit of detection as defined above (as microCurie per unit mass or volume),

S_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency (as counts per disintegration),

V is the sample size (in units of mass or volume),

2.22×10^6 is the number of disintegrations per minute per microCurie,

Y is the fractional radiochemical yield (when applicable),

λ is the radioactive decay constant for the particular radionuclide, and

Δt is the elapsed time between midpoint of sample collection and time of counting (for plant effluents, not environmental samples).

Typical values of E, V, Y and Δt shall be used in the calculation.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

(2) A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.

TABLE 16.11.1-1
(Page 3 of 3)

(3) To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously or intermittently in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

(4) A batch release is the discharge of liquid wastes of a discrete volume. Prior to sampling for analyses, each batch shall be isolated and thoroughly mixed to assure representative sampling.

(5) A continuous release is the discharge of liquid wastes of a nondiscrete volume; e.g., from a volume of system that has an input flow during the continuous release.

(6) The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. The LLD for Ce-144 is $5x10^{-6}$ microCi/ml. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall be identified and reported in the Annual Radioactive Effluent Release Report.

(7) The principal gas gamma emitters for which the LLD specification applies are Xe-133 and Xe-135. These are the reference nuclides in Regulatory Guide 1.21.

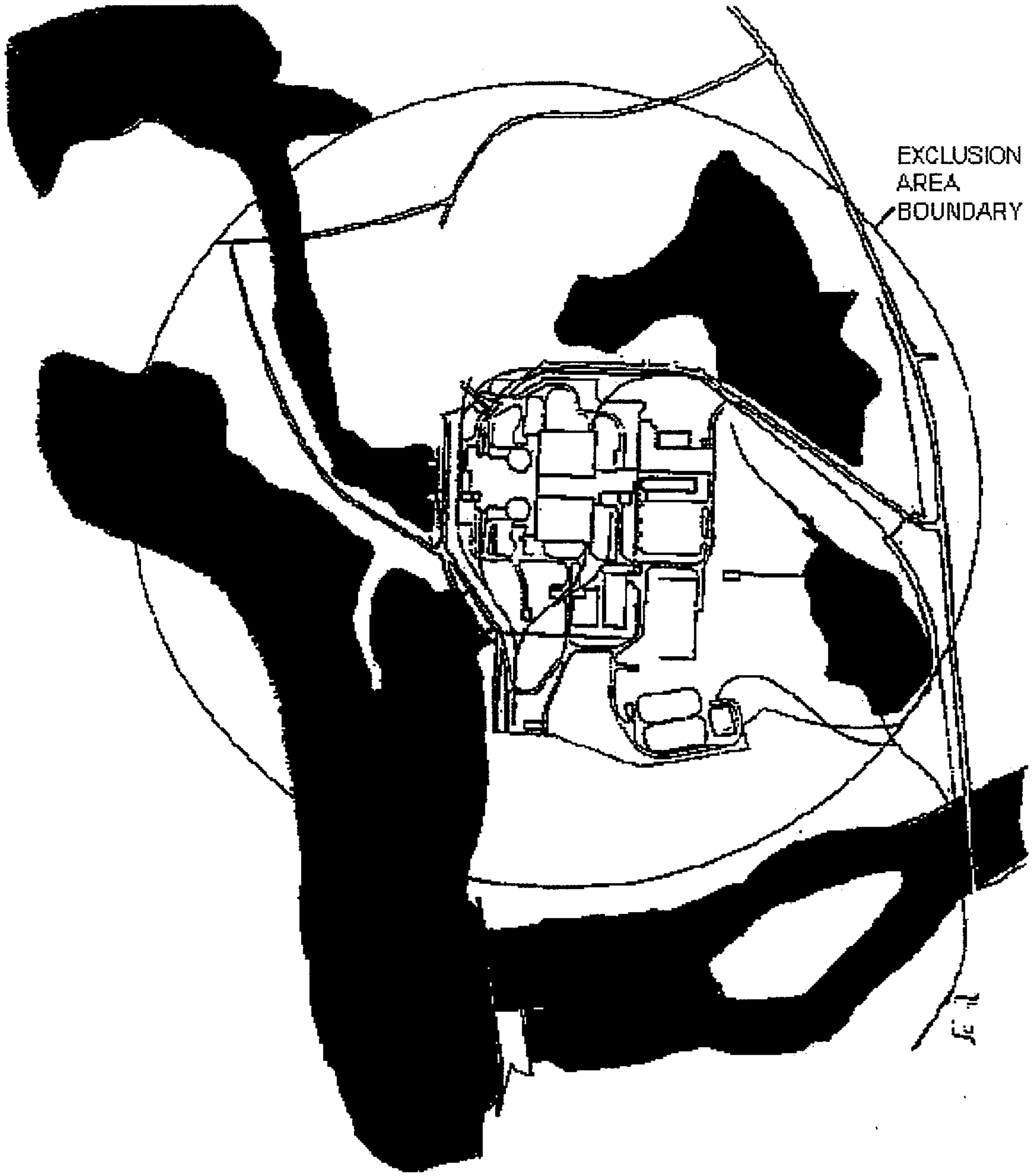

FIGURE 16.11.1-1 SITE BOUNDARY

BASES

This commitment is provided to ensure that the concentration of radioactive materials released in liquid waste effluents to UNRESTRICTED AREAS will be less than 10 times the effluent concentration levels specified in 10 CFR Part 20, Appendix B, Table 2, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water in UNRESTRICTED AREAS will result in exposures within: (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to a MEMBER OF THE PUBLIC, and (2) the limits of 10 CFR Part 20.1301 to the population. The concentration limit for dissolved or entrained noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its EC in air (submersion) was converted to an equivalent concentration in water using the methods described in International Commission on Radiological Protection (ICRP) Publication 2. This commitment applies to the release of liquid effluents from all reactors at the site.

The basic requirements for the Selected Licensee Commitments concerning effluents from nuclear power reactors are stated in 10CFR50.36a. These requirements indicate that compliance with effluent Selected Licensee Commitments will keep average annual releases of radioactive material in effluents to small percentages of the limits specified in the old 10CFR20.106 (new 10CFR20.1301). These requirements further indicate that operational flexibility is allowed, compatible with considerations of health and safety, which may temporarily result in releases higher than such small percentages, but still within the limits specified in the old 10CFR20.106 which references Appendix B, Table II concentrations (MPCs). These referenced concentrations are specific values which relate to an annual dose of 500 mrem. It is further indicated in 10CFR50.36a that when using operational flexibility, best efforts shall be exerted to keep levels of radioactive materials in effluents as low as is reasonably achievable (ALARA) as set forth in 10CFR50, Appendix I.

As stated in the Introduction to Appendix B of the new 10CFR20, the effluent concentration (EC) limits given in Appendix B, Table 2, Column 2, are based on an annual dose of 50 mrem. Since a release concentration corresponding to a limiting dose rate of 500 mrem/year has been acceptable as a SLC limit for liquid effluents, which applies at all times as an assurance that the limits of 10CFR50, Appendix I are not likely to be exceeded, it should not be necessary to reduce this limit by a factor of 10.

Operational history at Catawba/McGuire/Oconee has demonstrated that the use of the concentration values associated with the old 10CFR20.106 as SLC limits has resulted in calculated maximum individual doses to members of the public that are small percentages of the limits of 10CFR50, Appendix I. Therefore, the use of concentration values which correspond to an annual dose of 500 mrem should not have a negative impact on the ability to continue to operate within the limits of 10CFR50 Appendix I and 40CFR190.

Having sufficient operational flexibility is especially important in establishing a basis for effluent monitor setpoint calculations. As discussed above, the concentrations stated in the new 10CFR20, Appendix B, Table 2, Column 2, relate to a dose of 50 mrem in a year. When applied on an instantaneous basis, this corresponds to a dose rate of 50 mrem/year. This low value is impractical upon which to base effluent monitor setpoint calculations for many liquid effluent release situations when monitor background, monitor sensitivity, and monitor performance must be taken into account.

BASES (continued)

Therefore, to accommodate operational flexibility needed for effluent releases, the limits associated with SLC 16.11.1 are based on ten times the concentrations stated in the new 10CFR20, Appendix B, Table 2, Column 2 to apply at all times. The multiplier of ten is proposed because the annual dose of 500 mrem, upon which the concentrations in the old 10CFR20, Appendix B, Table II, Column 2 are based, is a factor of ten higher than the annual dose of 50 mrem, upon which the concentrations in the new 10CFR20, Appendix B, Table 2, Column 2, are based. Compliance with the limits of the new 10CFR20.1301 will be demonstrated by operating within the limits of 10CFR50, Appendix I and 40CFR190.

The required detection capabilities for radioactive materials in liquid waste samples are tabulated in terms of the lower limits of detection (LLDs). Detailed discussion of the LLD, and other detection limits can be found in HASL Procedures Manual, HASL-300 (revised annually), Currie, L. A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry," Anal. Chem. 40, 586-93 (1968), and Hartwell, J. K., "Detection Limits for Radioanalytical Counting Techniques," Atlantic Richfield Hanford Company Report ARH-SA-215 (June 1975).

REFERENCES

1. McGuire Nuclear Station Offsite Dose Calculation Manual (ODCM)

2. International Commission on Radiological Protection (ICRP) Publication 2

16.11 RADIOLOGICAL EFFLUENT CONTROLS

16.11.2 Radioactive Liquid Effluent Monitoring Instrumentation

COMMITMENT The radioactive liquid effluent monitoring instrumentation channels shown in Table 16.11.2-1 shall be OPERABLE with their Alarm/Trip Setpoints set to ensure that the limits of SLC 16.11.1 are not exceeded.

AND

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 ACTIONS

--NOTE--

Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more radioactive liquid effluent monitoring channels Alarm/Trip setpoint less conservative than required.	A.1 Suspend the release of radioactive liquid effluents monitored by the affected channel.	Immediately
	OR	
	A.2 Declare the channel inoperable.	Immediately
B. One or more radioactive liquid effluent monitoring instrument channels inoperable.	B.1 Enter the Remedial Action specified in Table 16.11.2-1 for the channel(s).	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One channel inoperable.	C.1.1 Analyze two independent samples per TR 16.11.1.1.	Prior to initiating a release
	AND	
	C.1.2 Perform independent verification of the discharge line valving.	Prior to initiating a release
	AND	
	C.1.3.1 Perform independent verification of manual portion of the computer input for the release rate calculations performed by computer.	Prior to initiating a release
	OR	
	C.1.3.2 Perform independent verification of entire release rate calculations for calculations performed manually.	Prior to initiating a release
	AND	
	C.1.4 Restore channel to OPERABLE status.	14 days
	OR	
	C.2 Suspend the release of radioactive effluents via this pathway.	Immediately

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One channel inoperable.	D.1 Perform an analysis of grab samples for radioactivity at a lower limit of detection of 10^{-7} μCi/ml.	Once per 12 hours during releases when secondary specific activity is > 0.01 μCi/gm DOSE EQUIVALENT I-131 AND Once per 24 hours during releases when secondary specific activity is ≤ 0.01 μCi/gm DOSE EQUIVALENT I-131
	AND	
	D.2 Restore the channel to OPERABLE status.	30 days
E. One or more channels inoperable.	E.1 Perform an analysis of grab samples for radioactivity at a lower limit of detection of 10^{-7} μCi/ml.	Once per 12 hours during releases
	AND	
	E.2 Restore the channel to OPERABLE status.	30 days

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
F. One or more flow rate measurement channels inoperable.	F.1 -------------NOTE--------------- Pump performance curves generated in place may be used to estimate flow. ----------------------------------- Estimate the flow rate of the release.	Once per 4 hours during releases
	AND	
	F.2 Restore the channel to OPERABLE status.	30 days
G. Discharge canal minimum flow interlock channel inoperable.	G.1 Verify that the number of pumps providing dilution is greater than or equal to the number of pumps required.	Once per 4 hours during releases
	AND	
	G.2 Restore the channel to OPERABLE status.	30 days
H. Required Action and associated Completion Time of Condition C, D, E, F, or G not met.	H.1 Explain why the inoperability was not corrected within the specified Completion Time in the Annual Radioactive Effluent Release Report.	In the next scheduled Annual Radioactive Effluent Release Report

TESTING REQUIREMENTS

------------------------------------NOTE------------------------------------

Refer to Table 16.11.2-1 to determine which TRs apply for each Radioactive Liquid Effluent Monitoring channel.

TEST		FREQUENCY
TR 16.11.2.1	Perform CHANNEL CHECK.	24 hours
TR 16.11.2.2	---------------NOTE--------------- The CHANNEL CHECK shall consist of verifying indication of flow. ---------------------------------- Perform CHANNEL CHECK.	Every 24 hours during periods of release
TR 16.11.2.3	Perform SOURCE CHECK.	Prior to each release
TR 16.11.2.4	Perform SOURCE CHECK.	31 days
TR 16.11.2.5	---------------NOTES--------------- 1. For Instrument 1, the COT shall also demonstrate that automatic isolation of the pathway occurs if the instrument indicates measured levels above the Alarm/Trip Setpoint. 2. For Instruments 1 and 2, the COT shall also demonstrate that control room alarm annunciation occurs if the instrument indicates measured levels above the Alarm/Trip Setpoint; circuit failure and, a downscale failure. ---------------------------------- Perform CHANNEL OPERATIONAL TEST.	92 days
TR 16.11.2.6	Perform a CHANNEL CALIBRATION.	18 months

(continued)

TESTING REQUIREMENTS (continued)

TEST		FREQUENCY
TR 16.11.2.7	---NOTE--- The initial CHANNEL CALIBRATION shall be performed using standards certified by the National Institute of Standards and Technology (NIST) or using standards obtained from suppliers that participate in measurement assurance activities with NIST. 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. ---	
	Perform a CHANNEL CALIBRATION.	24 months

TABLE 16.11.2-1

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	REMEDIAL ACTION	TESTING REQUIREMENTS
1. Radioactivity Monitors Providing Alarm And Automatic Termination of Release			
a. Waste Liquid Effluent Line (EMF-49)	1 per station	A, C, H	TR 16.11.2.1 TR 16.11.2.3 TR 16.11.2.5 TR 16.11.2.7
b. Containment Ventilation Unit Condensate Line (EMF-44)	1	A, E, H	TR 16.11.2.1 TR 16.11.2.4 TR 16.11.2.5 TR 16.11.2.7
2. Radioactivity Monitors Providing Alarm But Not Automatic Termination of Release			
Conventional Waste Water Treatment Line or Turbine Building Sump to RC (EMF-31)	1	A, D, H	TR 16.11.2.1 TR 16.11.2.4 TR 16.11.2.5 TR 16.11.2.7
3. Continuous Composite Samplers and Sampler Flow Monitor			
a. Containment Ventilation Unit Condensate Line	1	E, H	TR 16.11.2.2 TR 16.11.2.5 TR 16.11.2.6
b. Containment Waste Water Treatment Line	1 per station	E, H	TR 16.11.2.2 TR 16.11.2.5 TR 16.11.2.6
c. Turbine Building Sump to RC	1	E, H	TR 16.11.2.2 TR 16.11.2.6
4. Flow Rate Measurement Devices			
a. Waste Liquid Effluent Line	1 per station	F, H	TR 16.11.2.2 TR 16.11.2.5 TR 16.11.2.6
b. Containment Ventilation Unit Condensate Line	1	F, H	TR 16.11.2.2 TR 16.11.2.5 TR 16.11.2.6
c. Conventional Waste Water Treatment Line	1 per station	F, H	TR 16.11.2.2 TR 16.11.2.5 TR 16.11.2.6
d. Turbine Building Sump to RC	1	F, H	TR 16.11.2.2 TR 16.11.2.6
5. Discharge Canal Minimum Flow Interlock (1)	1 per station	G, H	TR 16.11.2.5

NOTES:
1. Minimum flow dilution is assured by an interlock which terminates waste liquid release if the number of RC pumps running falls below the number of pumps required for dilution. The required number of RC pumps for dilution is determined per station procedures.

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 of 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 stated in SLC 16.11.1. 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 Turbine Building Sump to RC Discharge Flow Measurement and Sampler Devices are for monitoring only and do not alarm or have any controls that require a quarterly COT.

REFERENCES

1. McGuire Nuclear Station Offsite Dose Calculation Manual (ODCM)

2. 10 CFR Part 50, Appendix A