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Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-14-148

August 21, 2014

10 CFR § 20.1301
10 CFR § 50.36(a)

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2
NRC Docket No. 50-391

Subject: **Watts Bar Nuclear Plant Unit 2 – Response to Request for Additional Information Draft Two-Unit Offsite Dose Calculation Manual, Revision B**

Reference:
1. Electronic Mail from Siva Lingam (NRC) to Gordon Arent (TVA), "TVA Letter to NRC 05-15-2014, Revised Draft WBN Two-Unit Developmental ODCM," dated June 16, 2014

2. TVA Letter to NRC, "Watts Bar Nuclear Plant (WBN) – Revised Draft Two-Unit Offsite Dose Calculation Manual (ODCM) Incorporating 'Informal' Request for Additional Information (RAI) Responses," dated May 15, 2014

The Tennessee Valley Authority (TVA) submitted Draft Watts Bar Nuclear Plant (WBN) Two-Unit Offsite Dose Calculation Manual (ODCM), Revision B to the Nuclear Regulatory Commission (NRC) by Reference 2. The NRC requested additional information (RAI) to facilitate their review of the draft ODCM in Reference 1. The purpose of this letter is to provide a response to the NRC RAIs.

Enclosure 1 provides TVA's response to the RAIs associated with the Draft Two-Unit ODCM, Revision B. If applicable for a specific RAI response, Draft Two-Unit ODCM, Revision B marked-up text is provided to show changes that will be incorporated into future Draft Two-Unit ODCM, Revision C.

There are no new regulatory commitments contained in this letter. The issued version of this draft document will be provided as previously agreed approximately six months prior to fuel load. If you have any questions, please contact Gordon Arent at (423) 365-2004.

A009
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 21st day of August 2014.

Respectfully,

J. W. Shea
Vice President, Nuclear Licensing

Enclosure: Response to NRC Request for Additional Information - Draft Two-Unit Offsite Dose Calculation Manual, Revision B

cc (Enclosure):

NRC Regional Administrator – Region II
NRC Senior Resident Inspector – Watts Bar Nuclear Plant, Unit 2
NRC Project Manager – Watts Bar Nuclear Plant, Unit 2

ENCLOSURE 1

TENNESSEE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNIT 1 & UNIT 2

Response to NRC Request for Additional Information - Draft Two-Unit Offsite Dose Calculation Manual, Revision B

NRC RAI Number: 1

NRC RAI:

(Question 2) The proposed wording in section 2.0.2 needs clarification. How would this work with as Action statement that has a frequency of less than 24 hours?

TVA Response:

Tennessee Valley Authority revised Surveillance Requirement (SR) 2.0.2 to match the wording in NUREG-1301 as requested by the NRC in Reference 1.

Surveillance Requirements 2.0.1, 2.0.2, and 2.0.3 must be considered together in evaluating this question. The text for each of the subject SRs follows below (emphasis added to address new RAI as appropriate).

Surveillance Requirement 2.0.1 establishes the SR frequency requirements including the failure to perform an SR.

Surveillance Requirement 2.0.2 provides a time interval for performing the SR.

Surveillance Requirement 2.0.3 specifies a delay period of *up to 24 hours or up to the limit of the specified frequency, whichever is less.* Therefore, for a frequency of less than 24 hours, SR 2.0.3 establishes that the limit of the specified frequency is utilized.

SURVEILLANCE REQUIREMENTS

2.0.1 Surveillance Requirements (SR) shall be met during MODES or other conditions in the Applicability for individual Controls, unless otherwise stated in the SR. Failure to meet the Control occurs when a surveillance is failed or when conditions occur between surveillances that would result in a failed surveillance if testing was performed. ***Failure to perform a surveillance within the specified frequency shall be failure to meet the Control except as provided in SR 2.0.3.*** The time limits of the ACTION statements are applicable at the time it is identified that a Surveillance Requirement has not been performed. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

2.0.2 The specified frequency for each SR is met if the surveillance is performed within 1.25 times the interval specified in the frequency, as measured from the previous performance or as measured from a time a specified condition of the frequency is met.

For frequencies specified as "once," the above interval extension does not apply. If an Action requires periodic performance on a "once per..." basis, the above frequency extension applies to each performance after the initial performance.

Exceptions to this SR control section are stated in the individual SRs.

NRC RAI Number: 1 (continued)

2.0.3 If it is discovered that a surveillance was not performed within its specified frequency, then compliance with the requirement to declare the Control not met may be delayed, from the time of discovery, up to 24 hours or ***up to the limit of the specified frequency, whichever is less***. This delay period is permitted to allow performance of the surveillance.

If the surveillance is not performed within the delay period, the Control must immediately be declared not met, and the applicable Action(s) must be entered. The Action(s) begin immediately upon expiration of the delay period.

When the surveillance is performed within the delay period and the surveillance is not met, the Control must immediately be entered. The Action(s) begin immediately upon failure to meet the surveillance.

The allowance for a frequency delay of 24 hours or less to complete the surveillance provided in NUREG-1301 SR 4.0.3 is currently specified in draft ODCM SR 2.0.3. Therefore, no revision to the ODCM is needed to allow a delay of 24 hours or less from the time of discovery in order to allow performance of the surveillance.

Based on discussion during the June 23, 2014 telephone call, TVA considers this issue to be closed.

Reference:
NUREG-1301, Surveillance Requirement 4.0.3

Associated Revision to the Watts Bar Unit 2 ODCM:
Surveillance Requirement 2.0.1, 2.0.2 & 2.0.3

Associated Revision to the Watts Bar Unit 2 FSAR:
None

NRC RAI Number: 2

NRC RAI:

(Question 3) The basis for the 3Q (three quarters) frequency for Channel Operational Tests in Tables 2.1-1 and 2.1-2 is still not clear. What statistical test will be used to ensure a 95%-95% confidence in the instruments alarm capability? Include this description in the ODCM Appendix B. Provide the analysis that demonstrated this for these Unit 1 effluent monitors.

TVA Response:

In Reference 2, TVA stated that there were seven new monitors needed for two unit operation. The seven monitors consist of 5 effluent monitors and 2 confirmatory monitors required for WBN Unit 2 operation that were not required for WBN Unit 1 operation. The new monitors are as follows:

Effluent

1. Condenser Vacuum Exhaust System: 2-RE-90-119
2. Containment Purge and Exhaust System: 2-RE-90-130
3. Containment Purge and Exhaust System: 2-RE-90-131
4. Steam Generator Blowdown Effluent Line: 2-RE-90-120
5. Steam Generator Blowdown Effluent Line: 2-RE-90-121

Confirmatory

6. Containment Building Lower Compartment Atmosphere: 2-RE-90-106
7. Containment Building Upper Compartment Atmosphere: 2-RE-90-112

Monitors 1, 2, and 3 are listed in Table 2.1-2. Monitors 4 and 5 are listed in Table 2.1-1. Monitors 6 and 7 are discussed in notes 3, 7, and 10 to Table 2.2-2. They support the sampling program for the containment.

In Reference 2, TVA stated that the Channel Operability Test (COT) frequency for the new WBN Unit 2 monitors would be set at the frequency specified in NUREG-1301, until such time as a basis could be established for changing the COT frequency. Table 2.1-2 for item 2.a, the new WBN Unit 2 monitor 2-RE-90-119 was revised to indicate that the COT frequency for the subject monitor is performed on a quarterly basis. Revised Table 2.1-2 is shown at the end of the response to RAI 2.

Other WBN Unit 2 identified monitors listed in Tables 2.1-1 and 2.1-2 were required to support WBN Unit 1 operation and have been in service since Unit 1 was licensed. Accordingly, these WBN Unit 2 designated monitors are tested in accordance with the existing WBN Unit 1 COT frequency.

The acceptability of the WBN Unit 1 effluent monitoring program was established by initial and subsequent NRC reviews documented in Supplemental Safety Evaluation Reports (SSER). The change to the COT frequency for the WBN Unit 1 monitors was properly established and documented in the TVA COT frequency calculation (i.e., TVA Calculation: WBN-EBB-EDQ-1090-99005, Revision 3, "Extending Channel Operational Test Frequency for Radiation Monitors").

NRC RAI Number: 2 (continued)

Appendix B of the ODCM has been revised to add item 19 as follows: "NUREG-1301 provides guidance for CHANNEL OPERATIONAL TEST (COT) frequency. TVA has extended the COT frequency guidance of NUREG-1301 based on the results of TVA calculation WBN-EBB-EDQ-1090-99005, "Extending Channel Operational Test Frequency for Radiation Monitors." The COT frequency was evaluated utilizing the binomial density function referenced in NUREG-1475 to analyze the work orders against 95/95 criteria. The radiation monitoring loops (and subsequent work orders) were divided into four categories due to differing radiation monitoring equipment function, and calibration frequency. Each category was analyzed separately to the 95/95 probability and confidence that the attribute of interest is indicative of the population. The attribute of interest for this statistical test is the "as-left" band."

Reference:
NUREG-1301, Tables 4.3-8 and 4.3-9

Associated Revision to the Watts Bar Unit 2 ODCM:
Table 2.1-2

Associated Revision to the Watts Bar Unit 2 FSAR:
None

NRC RAI Number: 2 (continued)

Proposed Revision to ODCM Table 2.1-2

Table 2.1-2 - RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION - SURVEILLANCE REQUIREMENTS*

(Page 1 of 2)

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL OPERATIONAL TEST
1. WASTE GAS DISPOSAL SYSTEM				
a. Noble Gas Activity Monitor (0-RE-90-118)	P	P	R(3)	3Q(1)
b. Pressure Measuring Device WGDT A 0-PIS-77-115 WGDT B 0-PIS-77-114 WGDT C 0-PIS-77-113 WGDT D 0-PIS-77-100 WGDT E 0-PIS-77-101 WGDT F 0-PIS-77-102 WGDT G 0-PIS-77-145 WGDT H 0-PIS-77-146 WGDT J 0-PIS-77-147	P	N/A	R	N/A
2. CONDENSER VACUUM EXHAUST SYSTEM				
a. Noble Gas Activity Monitor (1,2-RE-90-119)	D	M	R(3)	3Q(2,4)
b. Deleted in Revision 5				
c. Effluent Flow Rate Measuring Device (1,2-FE-2-256)	D	N/A	R	N/A
d. Deleted in Revision 5				
e. Iodine/Particulate Sample Line Heat Trace [SOURCE NOTE 13]	N/A	N/A	N/A	Q
3. SHIELD BUILDING EXHAUST SYSTEM				
a. Noble Gas Low Range Activity Monitor (1,2-RE-90-400A)	D	M	R(3)	3Q(2)
b. Iodine and Particulate Sampler (1,2-RE-90-402)	N/A	N/A	N/A	N/A
c. Effluent Flow Rate Measuring Device (1,2-FI-90-400)	D	N/A	R	Q
d. Sampler Flow Rate Measuring Device (1,2-RE-90-400 - Monitor Item 028)	D	N/A	R	Q
e. Iodine/Particulate Sample Line Heat Trace [SOURCE NOTE 13]	N/A	N/A	N/A	Q
f. Tritium Flow Rate Measuring Device (1,2-FIQ-90-801)	D	N/A	Y	N/A
4. AUXILIARY BUILDING VENTILATION AND FUEL HANDLING AREA VENTILATION SYSTEM				
a. Noble Gas Activity Monitor (0-RE-90-101B)	D	M	R(3)	3Q(2)
b. Iodine and Particulate Sampler (0-RE-90-101)	N/A	N/A	N/A	N/A
c. Effluent Flow Rate Measuring Device (0-FI-90-300/1B)	D	N/A	R	Q
d. Sampler Flow Rate Measuring Device (0-FIS-90-101C)	D	N/A	R	Q
e. Tritium Flow Rate Measuring Device (FIQ-90-800)	D	N/A	Y	N/A
5. SERVICE BUILDING VENTILATION SYSTEM				
a. Noble Gas Activity Monitor (0-RE-90-132)	D	M	R(3)	3Q(2)
b. Effluent Flow Rate Measuring System (0-FI-90-320/1B)	D	N/A	R	Q
6. CONTAINMENT PURGE AND EXHAUST SYSTEM				
a. Noble Gas Activity Monitors (1,2-RE-90-130, 1,2-RE-90-131)	***	P	***(3)	***

* See Table 3.1 (FREQUENCY NOTATION) for the surveillance frequency definitions.

*** See WBN TS 3.3.6.1, 3.3.6.7, and 3.3.6.4 for these requirements.

NRC RAI Number: 2 (continued)

Proposed Revision to ODCM Table 2.1-2

Table 2.1-2 - RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS*

(Page 2 of 2)

TABLE NOTATION

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

1. Instrument indicates measured levels above the alarm/trip setpoint, or
2. Indication of downscale failure, or
3. Instrumentation controls not set in operate mode.

(2) The CHANNEL OPERATIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exists:

1. Instrument indicates measured levels above the alarm setpoint, or
2. Indication of downscale failure, or
3. Instrumentation controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Institute of Standards and Technology (NIST) or using standards that have been obtained from suppliers that are traceable via 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, NIST traceable standards or sources that have been related to the initial calibration (transfer calibration sources) shall be used.

(4) The CHANNEL OPERATIONAL TEST for Unit 2 monitors will be on a Quarterly (Q) basis.

NRC RAI Number: 2 (continued)

APPENDIX B - Deviations in the WBN ODCM Controls/Surveillance Requirements from Those Given in NUREG-1301

(Page 4 of 4)

17. The Operational Modes Table (Table 3.2) is consistent with the WBN TS.

18. NUREG-1301 provides guidance for sampling and/or monitoring of specific media, which includes invertebrates. TVA has determined that within the vicinity of WBN, there are no invertebrates that are harvested for commercial or recreational consumption. Therefore, TVA has deleted all requirements regarding invertebrate sampling and/or monitoring for WBN.

19. NUREG-1301 provides guidance for CHANNEL OPERATIONAL TEST (COT) frequency. TVA has extended the COT frequency guidance of NUREG-1301 based on the results of TVA calculation WBN-EBB-EDQ-1090-99005, "Extending Channel Operational Test Frequency for Radiation Monitors." The COT frequency was evaluated utilizing the binomial density function referenced in NUREG-1475 to analyze the work orders against 95/95 criteria. The radiation monitoring loops (and subsequent work orders) were divided into four categories due to differing radiation monitoring equipment function, and calibration frequency. Each category was analyzed separately to the 95/95 probability and confidence that the attribute of interest is indicative of the population. The attribute of interest for this statistical test is the "as-left" band.

NRC RAI Number: 3

NRC RAI:

(Question 12) The ODCM still refers to an inter-laboratory comparison program "approved by the NRC." What is the mechanism for obtaining NRC approval of a program and how is it documented? How was the program currently used for Unit 1 operations approved by the NRC?

TVA Response:

The WBN ODCM including the inter-laboratory comparison program was reviewed by the NRC staff prior to WBN Unit 1 receiving an operating license. The NRC issued their acceptance of the WBN ODCM which was documented in a Safety Evaluation by the Office of Nuclear Reactor Regulation (i.e., NRC letter to TVA, "Watts Bar Nuclear Plant – Acceptance of Revision 3 of the Offsite Dose Calculation Manual (TAC Nos. M77553 and M88410), dated July 26, 1994).

Tennessee Valley Authority has revised ODCM Section 9.4 to delete the statement "approved by the NRC" and added a reference to a program that is in accordance with Regulatory Guide 4.15 as shown on the next page.

Currently, WBN has implemented the utilization of a third-party laboratory to address the inter-laboratory comparison program. Discussion of the WBN inter-laboratory comparison program is provided annually in the WBN Annual Radiological Environmental Operating Report.

Reference:
NUREG-1301, paragraph 4.12.3.

Associated Revision to the Watts Bar Unit 2 ODCM:
Section 9.4

Associated Revision to the Watts Bar Unit 2 FSAR:
None

NRC RAI Number: 3 (continued)

Proposed Revision to ODCM Section 9.4

9.0 - RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

9.4 INTERLABORATORY COMPARISON PROGRAM

Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program which ***is in accordance with RG 4.15~~has been approved by the NRC~~***. A summary of the results obtained in the intercomparison shall be included in the Annual Radiological Environmental Operating Report ***~~(or the EPA program code designation may be provided)~~***.

If analyses are not performed as required, corrective actions taken to prevent a recurrence shall be reported in the Annual Radiological Environmental Operating Report.

NRC RAI Number: 4

NRC RAI:

(Question 16) I need some clarification between the text response to this question and the ODCM markup. In addition, the revised draft ODCM does not include invertebrate aquatic species sampling. The last version of the ODCM approved by the staff included a sampling schedule and location for Asiatic Clams. Provide a basis for not sampling invertebrate species IAW NUREG 1301.

TVA Response:

NUREG-1301 requires sampling of invertebrates as part of determining potential human ingestion of radionuclides. There is no commercial or recreational harvest of invertebrates for human consumption in the vicinity of WBN. Thus, there is no requirement to sample invertebrates and on that basis such sampling was removed from the program.

Tennessee Valley Authority has added a discussion to Appendix B of the draft ODCM explaining that invertebrate sampling is not required for WBN. In addition, a note was also added to Appendix B that states that all future changes to the ODCM with regard to NUREG-1301 guidance deviations would be documented in the ODCM revision log.

Reference:
NUREG-1301, paragraph 4.12.3.

Associated Revision to the Watts Bar Unit 2 ODCM:
None

Associated Revision to the Watts Bar Unit 2 FSAR:
None

NRC RAI Number: 4 (continued)

Proposed Revision to ODCM Appendix B

APPENDIX B - Deviations in the WBN ODCM Controls/Surveillance Requirements from Those Given in NUREG-1301
(Page 4 of 4)

17. The Operational Modes Table (Table 3.2) is consistent with the WBN TS.

18. NUREG-1301 provides guidance for sampling and/or monitoring of specific media, which includes invertebrates. TVA has determined that within the vicinity of WBN, there are no invertebrates that are harvested for commercial or recreational consumption. Therefore, TVA has deleted all requirements regarding invertebrate sampling and/or monitoring for WBN.

APPENDIX B - Deviations in the WBN ODCM Controls/Surveillance Requirements from Those Given in NUREG-1301
(Page 1 of 4)

NOTE: All future deviations to the guidance provided in NUREG-1301 will be documented in the ODCM revision log.

1. Controls 1.0.1 and 1.0.2 and Surveillance Requirements 2.0.1-2.0.4 have been replaced by the most recent WBN LCOs 3.0.1 and 3.0.2 and SRs 3.0.1-3.0.4. This has been done to ensure consistency between the WBN TS and the WBN ODCM.

NRC RAI Number: 5

NRC RAI:

(Question 18) The revised footnote to Table 9.1 concerning the location for sampling Food Products needs additional clarification. A reference to the current Land Use Survey and the ODCM Surveillance Requirements 1.3.2. should be added.

TVA Response:

Footnote 1 to Table 9.1 has been revised as follows:

> [1] Sample locations, except for Food Products, are listed in Table 9.2 and 9.3, and shown in Figures 9.1, 9.2, and 9.3. The sample locations for Food Products are provided in the Annual Radiological Environmental Operating Report and are based on the current Land Use Survey as addressed in ODCM Surveillance Requirements 2.3.2.

The proposed revision of Footnote 1 to Table 9.1 follows on the next page.

Reference:
NUREG-1301, Table 9.1.

Associated Revision to the Watts Bar Unit 2 ODCM:
Footnote 1 to Table 9.1.

Associated Revision to the Watts Bar Unit 2 FSAR:
None

NRC RAI Number: 5 (continued)

Proposed Revision to Table 9.1, Footnote 1

Table 9.1 - REMP - MONITORING, SAMPLING, AND ANALYSIS
(Page 5 of 5)

Exposure Pathway and/or Sample	Sample Locations [1]	Sampling and Collection Frequency	Type and Frequency of Analysis
Vegetation [4]	Samples from farms producing milk but not providing a milk sample	At least once per 31 days	I-131 and gamma scan at least once per 31 days.

[1] Sample locations, except for Food Products, are listed in Table 9.2 and 9.3, and shown in Figures 9.1, 9.2, and 9.3. The sample locations for Food Products are provided in the Annual Radiological Environmental Operating Report ***and are based on the current Land Use Survey as addressed in ODCM Surveillance Requirements 2.3.2.*** ~~***Sample locations are listed in Table 9.2 and 9.3 and shown on Figure 9.1, 9.2 and 9.3.***~~