

FEB 27 1985

Docket Nos: 50-390
and 50-391

Mr. H. G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

Subject: Comments on the Proposed Offsite Dose Calculation Manual (ODCM) -
Watts Bar Units 1 and 2

DISTRIBUTION:

Docket File 50-390/391
NRC PDR
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The NRC staff has completed its review of the Watts Bar ODCM (Revision 1) enclosed with your letter dated October 16, 1984. Our specific comments are enclosed. These comments were discussed with your staff on February 20, 1985. Your staff has agreed to provide by March 8, 1985, a revised ODCM that will resolve our comment regarding the methodology for determining radiological release setpoints. We request your responses to the remaining comments as soon as possible.

If you have any questions concerning this matter, please contact the project manager, T. J. Kenyon at FTS 492-7266.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P.L. 96-511.

Sincerely,

\$

Elinor G. Adensam, Chief
Licensing Branch No. 4
Division of Licensing

Enclosure:
As stated

cc: See next page

DESIGNATED ORIGINAL

Certified

Angela Hatten

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WATTS BAR

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COMMENTS ON THE PROPOSED OFFSITE DOSE
CALCULATION MANUAL FOR WATTS BAR, UNITS 1 & 2
(REV. 1, 10/16/84)

<u>Page No(s)/Section</u>	<u>Subject</u>	<u>Comments</u>
2, 5, 16, 17, 19/1.1, 1.2, 1.4	Table 1.4, Points of Interest and Meteorological data	The reference for the land-use census which the applicant provided in the October 16, 1984 response is more than seven (7) years old. Update or confirm the information on the land-use census to assure that the controlling receptor locations listed in Table 1.4 are still valid. The ODCM does not contain references for the land-use census and meteorological data listed in Table 1.4. The appropriate references should be incorporated into the next revision of the ODCM.

Page No(s)/Section

Subject

Comments

The applicant's response dated October 16, 1984 to NRC staff's Question 3e dated May 15, 1984 related to the use of a straight-line trajectory dispersion model at Watts Bar is not satisfactory. The X/Q and D/Q values provided in Table 1.4 of the ODCM differ by up to a factor of 4 from the values calculated by the staff (See Attachment #1).

The differences are attributable to the staff's adjustment of the results of the straight-line trajectory model for consideration of spatial and temporal variations in air-flow using the default factors contained in NUREG/CR-2919.

These default factors have been used because the applicant has not presented site-specific adjustment factors to be considered as alternatives to the default factors. Therefore, the applicant should either

Page No(s)/Section

Subject

Comments

adopt the staff's calculations (provided in the attached table) or provide a quantitative assessment of adjustments to the straight-line trajectory model. Other applicants and licensees have developed site-specific adjustment factors in the following manner. The annual average X/Q values are calculated using an appropriate variable-trajectory model with hourly meteorological data for a representative 1-year period, and compared with those calculated using the straight-line model using the same data base. The results of the straight-line model (X/Q and D/Q) are adjusted using a multi-year data base

<u>Page No(s)/Section</u>	<u>Subject</u>	<u>Comments</u>
		and the ratios generated by the comparison of the variable-trajectory and straight-line models. Other comparisons have indicated very small (about 10%) differences between the models in flat, open terrain to significant (about a factor of 4) differences between the models in complex terrain or complex meteorological regimes.
11, 11a/1.1	Gaseous Effluents, Alarm/Trip Setpoints	The Watts Bar Nuclear Plant Technical Specifications will require, for specified radioactive liquid and gaseous effluent monitoring instrumentation channels, that alarm/trip setpoints be determined and adjusted in accordance with methodology
22, 23/2.2	Liquid Effluents, Instrument Setpoints	

Page No(s)/Section

Subject

Comments

and parameters in the ODCM. It is not acceptable merely to state in the ODCM that the setpoints will be established using plant instructions and that the monitor identification is contained in plant documentation. The parameters and methodology for determining and adjusting the specified monitor setpoints, based on the release rate limits, should be provided in the ODCM. If the ODCM is to rely on other documentation, the specific documents or portions of documents should be provided in the ODCM.

<u>Page No(s)/Section</u>	<u>Subject</u>	<u>Comments</u>
Figure 1.3/1.5	Gaseous Radwaste Treatment System	It was previously commented by the NRC that figures should be provided that show the entire liquid and gaseous radwaste treatment systems.
Figure 2.1/2.4	Liquid Radwaste Treatment System	The figures should locate and identify all monitors addressed in the technical specifications and all pathways to the final release points, including all dilution flows for liquid effluents. The Watts Bar Nuclear Plant response did not provide the information requested.

Page No(s)/Section

Subject

Comments

Provide flow diagrams for the liquid and gaseous rad-waste treatment systems. These should be simple block diagrams with as little extraneous detail as possible. The diagrams should locate and identify all effluent monitors addressed by the technical specifications. Release pathways and points should be shown for gaseous effluents from the service building, auxiliary building and shield building ventilation systems and from condenser vacuum exhausts, the containment purge system and the waste gas holdup system. Release pathways and points

Page No(s)/Section

Subject

Comments

should be shown for liquid effluents from the waste disposal system, steam generator blowdown, condensate demineralizer regenerant, essential raw cooling water, turbine building sump, and plant liquid discharge.

25, 26, 27/2.3.2.1
through 2.3.2.3

Liquid pathway dose.
Fraction of river flow
available for dilution
"d" in equations 2.12,
2.14 and 2.16

Provide a reference for the
value of 0.06 used for the
fraction "d" in equations
2.12, 2.14 and 2.16 in the
next revision of the ODCM.

30/2.3.3.1

Fish ingestion pathway
dose. Fraction of
river flow available
for dilution "d" in
equation 2.23.

The values of 1 and 1/5
used in equation 2.23 for
fraction "d" appear to be
inconsistent with the value
of 0.06 used in equation 2.14.
Check this value and correct,
if necessary.

<u>Page No(s)/Section</u>	<u>Subject</u>	<u>Comments</u>
1-19/1.0 22-32/2.0	Figure showing the site and unrestricted area boundaries for gaseous effluents, and liquid effluents.	Provide a numbered and captioned figure showing the site boundary and the unrestricted area boundary for gaseous effluents and another figure for liquid effluents. The ODCM should be a self-contained document and should contain the figure which clearly depicts the site and unrestricted area boundaries for easy reference.
33/3.0	Radiological Environmental Monitoring	Figure 3.2 for the TLD locations is illegible. Provide a legible copy (perhaps a large size figure) with well defined letters and numbers in the next revision of the ODCM. The revised figure should have a legible and clearly described figure caption, a map scale, and the 16 compass sectors.

<u>Page No(s)/Section</u>	<u>Subject</u>	<u>Comments</u>
Table 3.1, pp. 1 of 5 through 4 of 5/3.0	Table 3.1, Radiological Environmental Monitoring Program	The fish sample locations listed in Table 3.1 are not at the discharge point. Fish samples should be sampled in the vicinity of the discharge point, or a basis for not sampling at the discharge point should be provided for staff review. In addition, TVA should provide the basis for not collecting invertebrate samples.
Table 3.1, p. 2 of 5/3.0	Table 3.1, Radiological Environmental Monitoring Program	Sample location TRM 517.9 listed in item 3 is not found in Figure 3.4. Revise Figure 3.4 to include TRM 517.9. Also indicate in item 3 as to which of the locations are upstream or downstream.

USNRC COMPUTER CODE - XOQDOQ, VERSION 2.0

RUN DATE: WEDNESDAY

NOVEMBER 28, 1984

WATTS BAR 1-75...12-78 10 METER DATA

GROUND LEVEL RELEASE
CORRECTED USING STANDARD OPEN TERRAIN FACTORS
SPECIFIC POINTS OF INTEREST

RELEASE ID	-TYPE OF LOCATION	DIRECTION FROM SITE	DISTANCE (MILES)	DISTANCE (METERS)	X/Q NO DECAY (SEC/CUB.METER)	X/Q 2.260 DAY DECAY (SEC/CUB.METER)	X/Q 8.000 DAY DECAY (SEC/CUB.METER)	D/Q (PER SQ.METER)
A	SITE BNDRY	S	0.68	1100.	UNDEPLETED	UNDEPLETED	DEPLETED	
A	SITE BNDRY	SSW	0.68	1100.	1.2E-05	1.2E-05	1.1E-05	3.4E-08
A	SITE BNDRY	SW	0.68	1100.	1.2E-05	1.2E-05	1.1E-05	3.7E-08
A	SITE BNDRY	WSW	0.68	1100.	1.2E-05	1.2E-05	1.1E-05	2.8E-08
A	SITE BNDRY	W	0.68	1100.	1.8E-05	1.7E-05	1.6E-05	3.0E-08
A	SITE BNDRY	WNW	0.68	1100.	1.2E-05	1.2E-05	1.1E-05	2.1E-08
A	SITE BNDRY	NW	0.68	1100.	3.5E-06	3.5E-06	3.1E-06	5.5E-09
A	SITE BNDRY	NNW	0.68	1100.	6.1E-06	6.1E-06	5.5E-06	9.6E-09
A	SITE BNDRY	N	0.68	1100.	9.5E-06	9.4E-06	8.5E-06	1.8E-08
A	SITE BNDRY	NNE	0.68	1100.	1.4E-05	1.3E-05	1.2E-05	3.3E-08
A	SITE BNDRY	NE	0.68	1100.	1.9E-05	1.9E-05	1.7E-05	7.3E-08
A	SITE BNDRY	ENE	0.68	1100.	1.3E-05	1.3E-05	1.2E-05	3.1E-08
A	SITE BNDRY	E	0.68	1100.	1.5E-05	1.5E-05	1.3E-05	2.3E-08
A	SITE BNDRY	ESE	0.68	1100.	1.9E-05	1.9E-05	1.7E-05	3.1E-08
A	SITE BNDRY	SE	0.68	1100.	1.7E-05	1.7E-05	1.5E-05	2.7E-08
A	SITE BNDRY	SSE	0.68	1100.	2.4E-05	2.3E-05	2.1E-05	3.7E-08
A	RESID	S	1.04	1676.	1.7E-05	1.7E-05	1.5E-05	3.1E-08
A	RESID	SSW	1.38	2225.	5.0E-06	5.0E-06	4.3E-06	1.3E-08
A	RESID	SW	1.31	2103.	2.5E-06	2.5E-06	2.1E-06	6.6E-09
A	RESID	WSW	1.67	2682.	2.9E-06	2.8E-06	2.5E-06	5.8E-09
A	RESID	W	1.10	1768.	2.5E-06	2.5E-06	2.1E-06	3.3E-09
A	RESID	WNW	0.98	1585.	4.1E-06	4.1E-06	3.6E-06	6.6E-09
A	RESID	NW	1.09	1753.	1.6E-06	1.5E-06	1.4E-06	2.3E-09
A	RESID	NNW	3.26	5243.	2.2E-06	2.2E-06	1.9E-06	3.1E-09
A	RESID	N	4.09	6584.	3.5E-07	3.4E-07	2.8E-07	4.0E-10
A	RESID	NNE	2.05	3292.	3.2E-07	3.1E-07	2.5E-07	4.5E-10
A	RESID	NE	1.51	2438.	1.7E-06	1.7E-06	1.4E-06	5.0E-09
A	RESID	ENE	1.44	2316.	2.4E-06	2.3E-06	2.0E-06	4.5E-09
A	RESID	E	1.25	2012.	2.9E-06	2.9E-06	2.5E-06	3.7E-09
A	RESID	ESE	1.16	1859.	5.2E-06	5.1E-06	4.5E-06	7.0E-09
A	RESID	SE	0.91	1463.	5.4E-06	5.4E-06	4.7E-06	7.5E-09
A	RESID	SSE	0.98	1585.	1.3E-05	1.3E-05	1.1E-05	1.9E-08
A	MILK GOAT	NE	2.06	3322.	7.7E-06	7.6E-06	6.7E-06	1.3E-08
A	MILK COW	NE	3.86	6218.	1.2E-06	1.2E-06	1.0E-06	2.1E-09
A	MILK COW	E	3.01	4846.	3.7E-07	3.6E-07	2.8E-07	4.9E-10
A	MILK COW	ESE	3.54	5700.	8.7E-07	8.5E-07	6.9E-07	8.4E-10
A	MILK COW	ESE	3.71	5974.	5.7E-07	5.5E-07	4.4E-07	5.1E-10
A	MILK COW	SE	3.47	5578.	5.2E-07	5.0E-07	4.0E-07	4.6E-10
A	MILK COW	S	1.55	2499.	8.3E-07	8.0E-07	6.4E-07	7.4E-10
A	MILK COW	S	2.95	4755.	2.1E-06	2.0E-06	1.7E-06	4.6E-09
A	MILK COW	S	3.26	5243.	5.6E-07	5.4E-07	4.4E-07	9.9E-10
A	MILK COW	SSW	1.59	2560.	4.6E-07	4.5E-07	3.6E-07	7.9E-10
A	MILK COW	SW	1.50	2408.	1.9E-06	1.8E-06	1.6E-06	4.7E-09
A	MILK COW	SW	1.59	2560.	2.1E-06	2.1E-06	1.8E-06	4.2E-09
A	MILK COW	WSW	5.23	8412.	1.9E-06	1.8E-06	1.6E-06	3.6E-09
A	MILK COW	WNW	3.41	5486.	3.0E-07	2.8E-07	2.2E-07	2.4E-10
A	MILK COW	WNW	4.58	7376.	1.2E-07	1.2E-07	9.3E-08	1.1E-10
A	MILK COW	WNW	4.68	7529.	7.0E-08	6.7E-08	5.2E-08	5.9E-11
					6.8E-08	6.4E-08	5.0E-08	5.7E-11

Attachment 1, p.1.

ATTACHMENT 1, p. 2.

A	MILK COW	NW	4.73	7620.	1.2E-07	1.1E-07	8.9E-08	9.6E-11
A	MILK COW	NW	4.68	7529.	1.2E-07	1.2E-07	9.1E-08	9.9E-11
A	MILK COW	NW	4.73	7620.	1.2E-07	1.1E-07	8.9E-08	9.6E-11
A	MILK COW	SSW	1.38	2225.	2.5E-06	2.5E-06	2.1E-06	6.6E-09

VENT AND BUILDING PARAMETERS:

RELEASE HEIGHT	(METERS)	10.00
DIAMETER	(METERS)	0.00
EXIT VELOCITY	(METERS)	0.00

REP. WIND HEIGHT	(METERS)	10.0
BUILDING HEIGHT	(METERS)	46.0
BLDG. MIN. CRS. SEC. AREA	(SQ. METERS)	1600.0
HEAT EMISSION RATE	(CAL/SEC)	0.0

ALL GROUND LEVEL RELEASES.