

ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8903230197 DOC. DATE: 89/03/15 NOTARIZED: NO DOCKET #
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH. NAME AUTHOR AFFILIATION
 SORENSEN, G.C. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Forwards supplemental info re Amend 6 to offsite dose calculation manual.

DISTRIBUTION CODE: A009D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: OR/Licensing Submittal: Appendix I

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD5 LA	1 0	PD5 PD	5 5
	SAMWORTH, R	1 1		
INTERNAL:	ACRS	3 3	ARM/DAF/LFMB	1 0
	NRR/DREP DIR10E	1 0	NRR/DREP/RPB 10	2 2
	NRR/PMAS/PMSB12	1 1	<u>NUDOCS-ABSTRACT</u>	1 1
	OGC/HDS2	1 0	<u>REG FILE</u> 01	1 1
	RGN5 DRSS/RPB	2 2		
EXTERNAL:	EG&G SIMPSON, F	2 2	LPDR	1 1
	NRC PDR	1 1		

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 24 ENCL 20

R
I
D
S
/
A
D
D
S

R
I
D
S
/
A
D
D
S

m/A 48

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

March 15, 1989
G02-89-040

Docket No. 50-397

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Gentlemen:

Subject: NUCLEAR PLANT NO. 2
AMENDMENT NO. 6 TO THE OFFSITE DOSE
CALCULATION MANUAL - SUPPLEMENTAL INFORMATION

Reference: Letter, G02-89-021, CM Powers (SS) to NRC,
"Semi-Annual Effluent Report July 1, 1988 -
December 31, 1988 and Amendment No. 6 to the
Offsite Dose Calculation Manual", dated 2/15/89

The NRC has recently pointed out that the referenced transmittal did not respond to the three items specified in WNP-2 Technical Specification 6.14.2.a

Therefore, attached is a "stand alone discussion" supporting the rationale for changes in Amendment No. 6 to the Offsite Dose Calculation manual. Changes made do not reduce the accuracy or reliability of dose calculations or setpoint determinations.

The pages comprising Amendment No. 6 were approved as an agenda item at POC meeting 88-46 on November 16, 1988.

Should you have any questions, please contact Mr. R. G. Graybeal, Manager, WNP-2 Health Physics/Chemistry.

Very truly yours,


G. C. Sorensen, Manager
Regulatory Programs

SIS/bk

cc: JB Martin - NRC RV
NS Reynolds - BCP&R
RB Samworth - NRC
DL Williams - BPA/399
NRC Site Inspector - 901A

A009
11

8903230197 890315
PDR ADDCK 05000397
PDC

Stand Alone Discussion As Per Tech Spec 6.14.

This stand alone discussion is included to provide a short explanation for the changes made to the WNP-2 Offsite Dose Calculation Manual (ODCM) in proposed amendment No. 6.

1. Section 2.1 is changed to remove the third sentence, "Based on the radionuclides mixture obtained from the WNP-2 GALE liquid computer run and Columbia River dilution flow, a theoretical, continuous concentration of radionuclides at 10CFR 20 limits at the point of discharge to the Columbia River will result in compliance with 10CFR 50 Appendix I limits in the unrestricted areas." This statement could be misleading. It was a point raised from the Technical Evaluation Report (TER). Removal of the sentence does not change the technical intent of section 2.1.
2. Section 2.1 has had statements added to identify figures 2.1 and 2.2 which provide simplified block diagrams for the liquid waste and solid waste systems. The TER noted that simplified flow diagrams must be included.
3. Section 2.4; equation 5 has been rewritten with each of the terms identified the same as is in NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants. The definitions of some of the terms used were items of concern in the TER. The TER reviewed the ODCM through Amendment No. 4. The "applicable factor" value in the F_d term was changed in Amendment No. 5 from 100 to 500, based on actual operating data. The F_d term was an item raised in the TER.

The Richland potable water intake is considered the nearest public intake and it is clarified on page 8. Bioaccumulation factors and dose conversion factors are also included in NUREG/CR-4013, "LADTAP II - Technical Reference and User Guide," April 1986. This is also clarified on page 8 for terms used in equation 7.

4. Page 8, Dw value: the original Dw value was derived prior to operation. Radiological Programs Calculation Log 88-3 has been completed to provide input parameters for the LADTAP II computer program based on operating data. The Calculation Log 88-3 can be used as the applicable reference for the river dilution factors. Table 2-2, which provides Ingestion Dose Factors (A_{ij}) reflects the Dw value change to 100.
5. Page 15, parameter "P", the reference is Table E-15 and not Table E-1.
6. Section 2.7.2 Plant Parameters (pg. 17) have some changes that are based upon operating data and have been included in the Calculation Log 88-3. The Richland drinking water dilution factor was determined to be 50,000 by using the average river flow from July 1986 through June 1987 as 103,810 cfs and the average total blowdown flow of 1.8 cfs. Therefore, $103,810 \text{ cfs} \div 1.8 \text{ cfs} = 57,672$. This value is rounded down to 50,000. Page 18, the transit time to Richland was changed from 4.5 hours to 4.0 hours. River speed is about 2.9 mph at a flow of 120,000 cfs. Assuming the same speed for 103,810 cfs, and it is about 12 miles to Richland, then the transit time would 4.1 hours; rounded to 4.0 hours. The 75,000

number was not the total population affected from liquid effluents. It is the approximate population consuming drinking water downstream from the plant and was therefore deleted from the sentence. Reference Table 5.2.6 of WNP-2 Environmental Report, Operating License Stage.

Calculation Log 83-1 has been revised with Calculation Log 88-3.

7. Table 2-1; pages 26 and 27; the adult ingestion dose conversion factors for Zn-69m and Nb-97 did not agree with the values listed in NUREG/CR-4013 and required changing.
8. Table 2-2; pages 29, 30 and 31 required revising due to the change in the Dw value (dilution factor from near field area to the nearest portable water intake). The Dw value was lowered to 100 from 120, therefore, the Aij values for Table 2-2 had to be evaluated.
9. Table 2-3 provides inputs for calculating doses to the maximum individual from liquid effluents. Several parameters have been compared to values given in NRC Regulatory Guide 1.109, NUREG/CR-4013, WNP-2 Environmental Report-Operating License Stage; Liquid Effluent Reports; Columbia River Flow Reports and WNP-2 50 Mile Land Use Census. The Radiological Programs Calculation Log 88-3 is the reference for obtaining these values for Table 2-3, and is based on the most current data at this time.
10. The TER recommends that simplified block diagrams be included in the ODCM. Figure 2-1 is included as a simplified block diagram of the Liquid Waste System and Figure 2-2 is a simplified block diagram of the Solid Waste System.
11. The change to Section 3.1 provides an explanation for the appropriate figures describing simplified block diagrams for the Gaseous Radwaste System and the Off-Gas Treatment System.
12. Section 3.2 (pages 34, 35 and 36) was changed to include both the low range and intermediate range beta scintillators used for effluent monitoring for the reactor building, turbine building and radwaste building.
13. Equations 1, 2, and 3 in Sections 3.3.1 and 3.3.2 to remove the "m" over the Σ (large sigma). The "m" is also used in the equations to indicate mixed mode releases and some confusion could occur with it in two locations with different meanings.
14. Section 3.4.2; page 44 is changed to include Tritium as a radioactive dose contributor. This was an item listed in the TER. The equations for determining the dose contribution from Tritium are currently in the ODCM.
15. Section 3.4.2.1; equation 14, page 47; the parameter k^1 is supposed to read K prime with the symbol K' .
16. Page 48 has been changed to include NUREG/CR-4013 as a reference source for obtaining dose conversion factors as the NUREG is a more up-to-date source for obtaining this data. Exposure time was changed to 20 years in order to coincide with NUREG/CR-4013.



1990

17. Page 50, equation 16 is used to obtain the R^C_i (Grass-Cow/Goat-Milk Factor). The note has been added because the deposition should be computed only for that fraction of the radioiodines in the effluent that is estimated to be elemental iodine. Measurements at operating facilities indicated that about one half the radioiodine emissions may be considered non-elemental. NUREG/CR-4013 is included as a reference for obtaining dose factors.
18. Pages 52 and 53, the notes pertaining to the radioiodines are entered for the same reason as explained in item 17.
19. Section 3.6.2; page 55 was changed to remove the monthly interval from analysis of radioiodines and radionuclides in particulate form, to sampling and analysis being performed as is required by technical specifications. This was a noted item in the TER.
20. Section 3.6.2.1; equation 22, pages 55 and 56; the parameters C_{ij} and C_{tj} have been changed to M_{ij} and M_{tj} respectively. They were interchangeably defined in equations 22, 24 and 25. This change to equation 22 should separate the measured parameters from the calculated parameters for radionuclide concentrations. This change was recommended in the TER.
21. Page 57, the parameter C_{ia} should read C_{ij} due to a typographical error.
22. Tables 3-2, 3-3 and 3-16; pages 61, 62 and 88; the direction used for the Taylor Flats location should be ESE instead of SE. This correction was noted by the Supply System Environmental Sampling Group.
23. Table 3-4, page 63 has been changed to include additional radionuclides which were requested by WNP-2, Radiochemistry.
24. Tables 3-5a through 3-5d; pages 64-67; the reviewer in the TER said they were unable to reproduce the dose parameters for milk (cow), milk (goat), vegetable, and meat pathways. The TER covered the review of the WNP-2 ODCM through Amendment No. 4. These tables were changed in Amendment No. 5 and were produced using the subroutine PARTS Calculation of GASPAR II as described in NUREG/CR-4653, "GASPAR II-Technical Reference and User Guide", dated March 1987. There have been some radionuclides added to the tables and these are included in this amendment.
25. Table 3-9, page 71 has been changed to coincide with the more current 50 mile population by direction and radii intervals. The milk, meat and vegetable production for 50 miles were obtained using data available from a 50 mile land use census which was conducted in 1986 by the Supply Systems Environmental Programs Group.
26. Table 3-14, page 86 required changes be made to update the references which were used for those changes made to table 3-9.
27. Figures 3-2 and 3-3 provide simplified block diagrams of the gaseous waste system and the off-gas treatment system respectively. The TER, item 13 requested that simplified flow diagrams be included in the ODCM.



1990

28. Page 106, "Radiological Environmental Monitoring Samples Locations Inside of 10 Mile Radius" is changed to a larger type which should be easier to read.
29. The TER listed a discrepancy in the distance from WNP-2 to some monitoring locations in support of the Radiological Environmental Monitoring Program. This is listed as item 17 in the TER conclusion section. The Supply System will submit a Technical Specification change by May 15, 1989 requesting Table 3.12-1 have an additional footnote added.
30. The TER made mention of a simplified method for determining the total activity in an outside temporary storage tank, should such be used in support of WNP-2. The method mentioned was to analyze the tank's radioactivity concentration and multiply it by the volume in the tank and compare the resultant activity to the 10 curie limit. The ODCM's present methodology is an acceptable means for determining the curie limit allowed in an outside temporary storage tank. In the event these type of tanks are put into use, then the surveillance requirement (procedure) would be established and the more simplified method mentioned could be used once the curie limit is determined based on radionuclides present in that particular temporary storage tank.



10-10-10

10-10-10

10-10-10

10-10-10

10-10-10

10-10-10