Idaho National Engineering Laboratory

April 9, 1991

Mr. T. H. Essig
Radiation Protection Branch
Mail Stop 10D4
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

FINAL LETTER REVIEW OF WNP-2 ODCM REVISION 8 - TEY-11-91

Dear Mr. Essig:

Attachment 1 is a Letter Review of the complete Washington Public Power Supply System Nuclear Project, Unit-2 (WNP-2) ODCM, updated through Revision 8 (Amendment 8 in the licensee's terminology), submitted by Washington Public Power Supply System (WPPSS), the licensee for WNP-2. Revision 8 was transmitted to the NRC with a letter from J. W. Baker (WPPSS) to Document Control Desk (NRC), dated February 22, 1991. A complete ODCM was submitted. Revisions 7 and 8 were submitted after a review of Revision 6, which is documented in a letter from D. W. Akers (EGG) to W. Meinke (NRC), dated May 26, 1989. Changes in Revisions 7 and 8 were mainly of the following four types:

(1) editorial additions to clarify meaning and/or to make the wording in the ODCM exactly the same as in the technical specifications,
(2) additions of data for dose calculations,
(3) corrections or updates of numerical values,
(4) changes or explanations in response to a letter from R. B. Samworth (NRC) to G. C. Sorensen (WPPSS), dated September 12, 1989, concerning unresolved items in the review of ODCM Revision 6.

Attachment 2 is included for convenient reference. It includes previous correspondence concerning the items discussed in the review of Revision 6. This correspondence includes: (a) the initial description of the deficiency from the review of Revision 4 in EGG-PHY-8032, dated March 1988; (b) applicable rationales furnished by WPPSS to justify changes made by Revisions 5 and 6; (c) the discussion of the status of the deficiency in the

EG&G Idaho, Inc. P.O. Box 1625 Idaho Falls, ID 83415

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EG&G Letter Report dated May 26, 1989; and (d) applicable rationales furnished by the licensee to justify changes made by Revision 7. It also includes Section 7.0 of the WNP-2 Semi-annual Effluent Report for Jul-Dec 1990, which describes and gives the reasons for all changes made in the ODCM by Revision 8.

The most significant deficiency in the WNP-2 ODCM, updated through Revision 8, appears to be due to an oversight in the correlation of parameters in the WNP-2 calculations. The "river dilution" of 2000 given in Table 2-3 for use in LADTAP II is inconsistent with the near-field liquid dilution factor of 500 used in Section 2.4, and results in calculation of doses due to fish consumption that are a factor of 4 too low.

The licensee should be aware that the ODCM methodology to calculate the maximum organ dose to an individual due to releases of radioactive material in gaseous effluents gives conservative (large) doses. This is because the doses are calculated for a "pseudo-organ" for which the dose commitment due to each pathway and radionuclide is equal to the highest dose commitment to any real organ for that pathway and radionuclide.

Sincerely yours,

T. E. Young

T. E. Young
Radiological Physics

Attachments: As stated

cc: J. J. Hayes, Jr., NRC-HQ, MS 10D4

LETTER REVIEW OF WNP-2 ODCM, REVISION 8

In a letter from R. B. Samworth (NRC) to G. C. Sorensen (WPPSS), dated September 12, 1989, the NRC requested that WPPSS consider comments in the review of the WNP-2 ODCM Revision 6, documented in a Letter Review by EG&G Idaho dated May 26, 1989. Subsequently, the licensee submitted ODCM Revision 7 with a letter from C. M. Powers (WPPSS) to Document Control Desk (NRC), dated February 26, 1990; and Revision 8, with a letter from J. W. Baker (WPPSS) to Document Control Desk (NRC), dated February 22, 1991. Complete ODCMs were submitted with these revisions. Changes from Revision 6 were mainly of the following four types:

(1) editorial additions to clarify the meaning and/or to make the wording of the ODCM consistent with that of the WNP-2 Technical Specifications,
(2) additional data for dose calculations,
(3) corrections or updates of numerical values, and
(4) changes or explanations in response to the letter from R. B. Samworth (NRC) to G. C. Sorensen (WPPSS), dated September 12, 1989, concerning items discussed in the EG&G Letter Review of ODCM Revision 6.

In addition to the identification of typographical errors introduced by Revisions 7 and 8 and the evaluations of responses to previous reviews, the following information is furnished for the licensee: The ODCM methodology to calculate the maximum organ dose to an individual due to releases of radioactive material in gaseous effluents gives conservative (large) doses. This is because the doses are calculated for a "pseudo-organ" for which the dose commitment due to each pathway and radionuclide is equal to the highest dose commitment to any real organ for that pathway and radionuclide.

A summary of evaluations of the status of the licensee's ODCM Revision 8 with respect to the items discussed in the Letter Review of Revision 6 is given in Section 1 below, followed by more detailed evaluations in Section 2. Section 3 identifies errors introduced by Revisions 7 and 8 The only change required in the ODCM, updated through Revision 8, other than the correction of typographical errors is the correction of the dilution factor in Table 2-3 from 2000 to 500, so it agrees with the value in Section 2-4.

1. Summary of the Status of Items Discussed in the Review of ODCM Revision 6.

Item 2. Acceptable in principal, but input for LADTAP II is inconsistent with other parameters and results in calculation of doses due to fish consumption that are a factor of 4 too low. An additional improvement in the calculation of doses due to fish consumption is recommended.

Item 4. Four items concerning dose parameters in Tables 3-5a through 3.5d.
(1) Acceptable; accounts for bremstrahlung from Y-90.
(2) Acceptable; consistent with GASPAR II methodology.
(3) Acceptable; corrected in Amendment 6.
(4) Acceptable.

Item 9. Acceptable.

Item 11. Acceptable; methodology is more conservative than required.

Item 17. Acceptable; but Table 3-8 should be made consistent with Table 3-9.

2. Evaluations of the Status of Items Discussed in the Review of Revision 6.

Evaluation of Responses to Item 2. Input for LADTAP II needs corrected. Also the methodology for liquid dose calculations in Section 2.4 should be improved.

Acceptable in principal. The only essential change associated with Item 2 is the correction of the value of "River Dilution" for "Boating and Aquatic Food" in Table 2-3. It should be changed from 2000 to 500, so it agrees with the value of 500 specified for the "applicable factor" in Section 2.4.

Note: The reviewer performed an independent calculation of the dose commitments due to liquid effluents via the fish consumption and potable water pathways for releases during the third and fourth calender quarters of 1989. The doses calculated were approximately 1, 2, 4, and 8 times the values

reported in Table 6-1 of the WNP-2 semiannual effluent report for the second six months of 1989. Inductive reasoning leads to the conclusion that the discrepancies are due to the following reasons: (a) the licensee's calculations were performed using a "river dilution" of 2000, as given in ODCM Table 2-3, and (b) for some releases, the licensee performed dose calculations using blowdown flows that were approximately twice as large as the average blowdown flow during the third quarter.

The following recommendation should also be considered. The definition of F_1 in ODCM Section 2.4 identifies the dilution flow as "the product of the average flow from the site discharge structure to unrestricted receiving waters times 500," where 500 is the "applicable factor" defined in Section 4.3 of NUREG-0133. The licensee's bases for the applicable factor of 500 are the average blowdown flow for the 7/1/86 - 6/30/87 period (i.e., 1.8 cfs), and the guidance of Section 4.3 of NUREG-0133. Section 4.3 of NUREG-0133 requires that the product of the blowdown flow and the "applicable factor" shall be 1000 cfs or less. It was noted in the Letter Review of Revision 6 that the average blowdown flow sometimes exceeds 2 cfs for a calendar quarter or calendar year. Therefore, to ensure that the guidance of NUREG-0133 is followed, the quantity "ft x 500" in Equation 6 of Section 2.4 should be limited to $\leq$ 1000 cfs.

Evaluation of Responses to Item 4. The four parts of this item are discussed below.

(1) Acceptable. The licensee's use of the Y-90 ground plane dose factor for Sr-90 accounts for the bremstrahlung from the beta decay of Y-90.

(2) Acceptable. The ground plane dose parameters in ODCM Tables 3-5a through 3-5b are consistent with the methodology of GASPAR II. This is considered an acceptable reference, although there are inconsistencies with the guidance of NUREG-0133 and Regulatory Guide 1.109, Rev. 1.

(3) Acceptable. The inhalation dose parameters are correct in ODCM Revision 8, Tables 3-5a through 3-5d.

(4) Acceptable. An independent calculation of the vegetable dose parameters (R_i^V) in ODCM Tables 3-5a through 3-5d, using the methodology of GASPAR II, gives good agreement with the values in Revision 8 of the ODCM.

This agreement was obtained by using 0.42 = "Fraction of year leafy vegetables are grown" from Table 3-9. This value is inconsistent with the f_L = 1.0 in Table 3-8. The ODCM should clarify the relation between the two values by stating that the 0.42 in Table 3-9 is for use to calculate doses on an annual basis. For consistency, the value of f_L in Table 3-8 should be changed to 0.42.

Evaluation of Responses to Item 9. Acceptable.

In principal, the blowdown flow used in the calculations should be limited so the total dilution cannot exceed the river flow. However, with dilution of the maximum possible blowdown flow (16.7 cfs) in the average river flow (>100,000 cfs) the calculated dose due to potable water consumption is only about 1% of the dose due to fish consumption. Therefore, the releases are controlled by the dose due to fish consumption and the slight error in the dose due to potable water consumption is negligible.

Evaluation of Responses to Item 11. Acceptable.

There is no problem associated with this item. The licensee does not use temporary liquid storage tanks. In the event that such tanks are used in the future, the methodology in the ODCM to limit their contents is more conservative than required.

Evaluation of Responses to Item 17. Acceptable.

This item noted that some environmental monitoring locations are very slightly (approximately 4%) farther from the site than specified in Technical Specification Table 3.12-1.1. The licensee states that the distances given in the ODCM were obtained by measurements on a map, which are not highly accurate. Even if the distances were exact, the locations should be considered to meet the intent of NUREG-0473 and the licensee's technical specifications.

3. Review of Additional Changes Made to the ODCM in Revisions 7 and 8.

The licensee gives the rationale for twenty-four changes made in Revision 7 and eight changes made in Revision 8. Most of the changes clarify the meaning of the ODCM text or change the wording to make the ODCM agree exactly with wording in the technical specifications. Other changes update information in the ODCM. The changes generally improve the ODCM. Revision 7 introduced inconsistencies between Table 3-3 and Tables 3-10 through 3-12. These inconsistencies were removed by Revision 8.

The following typographical errors were noted during the review of Revisions 7 and 8:

(1) Δt in the last line on page 6 should not be a subscript.
(2) The mu in the definition of K_o on page 8 is misplaced.
(3) A division sign is omitted from the definition of K_o on page 8.
(4) The last part of the sentence above For Tritium on page 50 should apparently read "and the R_i^C values are tabulated in Table 3-5."
(5) The following inconsistencies exist between Table 5-1 and Table 5-2:
    a. Location 29 is shown for surface water in Table 5-1, but not in Table 5-2.
    b. Location 27 is shown for drinking water in Table 5-1, but not in Table 5-2.
    c. Location 9B is shown for milk in Table 5-1, but 9C is shown in Table 5-2.
    d. Locations 9C and 37 are shown for garden produce in Table 5-1, but locations 9B, 37A, and 37B are shown in Table 5-2.
    e. Location 9A is shown for soil in Table 5-1, but 9C is shown in Table 5-2.

DISCUSSION OF DEFICIENCY 2 IN THE ODCM UPDATED THROUGH AMENDMENT 4

DEFICIENCY IDENTIFIED IN EGG-PHY-8032, DATED MARCH 1988:

- In Section 2.4, the definition of the parameter, F_1, in Equation 5 includes a factor of 100 times the average flow from the site structure. According to NUREG-0133 the product of the average blowdown flow to the receiving water body and an applicable factor can be 1000 cfs or less.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 5, DATED APRIL 1, 1988:

ATTACHMENT 3

AMENDMENT NO. 5 TO THE
OFFSITE DOSE CALCULATION MANUAL

Amendment No. 5 consisted of major changes incorporated to include a change in the near field dilution factor to relate to actual operating data, the addition of several radionuclides to various tables, a reference to the latest NUREG covering computer code LADTAP II, and the addition of a method of projecting 31 day doses due to gaseous effluent releases.

1. Refer to IOM from G.V. Oldfied to V.E. Shockley, subject "Applicable Factor for Use in Calculating Near Field Average Dilution Factor," which is attached.

(The Licensee's internal memorandum related to this change is duplicated on the following two pages.)

DISCUSSION OF DEFICIENCY 2 IN THE ODCM UPDATED THROUGH AMENDMENT 4 (CONT.)

SUPPLY SYSTEM

INTEROFFICE MEMORANDUM

GVO-87-011

DISTRIBUTION: MAIL DROP:

- ☐ WNP-1 FILE
- ☐ WNP-2 FILE
- ☐ WNP-3 FILE
- ☐ WNP-4 FILE
- ☐ WNP-5 FILE
- ☐ HGP FILE
- ☐ PKWD FILE
- ☐ LEGAL FILE
- ☐ ADMIN FILE

DATE: August 31, 1987

TO: V. E. Shockley, Supervisor, Health Physics Support (927S)

FROM: G. V. Oldfield, Supervisor, Rad Assessment (1020)

SUBJECT: APPLICABLE FACTOR FOR USE IN CALCULATING NEAR FIELD AVERAGE DILUTION FACTOR

REFERENCE:

TE Chapman (1020)
AI Davis (927S)
RG Graybeal (927S
DE Larson (1020)
File 962.2.3
GVO/LB

The "applicable factor" currently specified in the Offsite Dose Calculation Manual (ODCM) was calculated prior to licensing using NUREG-0133 methodology and assumed average blowdown flow of 6 cfs. NRUEG-0133 states that "For plants with cooling towers, onsite ponds or lagoons, the factor shall be a number such that the product of the average blowdown flow to the receiving water body, in cfs and the applicable factor, is 1000 cfs or less."

Using this method of calculation, the factor was calculated to be 1000 cfs/6 cfs = 167. It was apparently reduced to 100 for conservatism. The factor can be recalculated using actual average blowdown flow. The attached table shows blowdown flow for the previous four calendar quarters. Using that data, the factor is calculated to be 555. We are initiating an ODCM revision to change the factor to 500.

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Attachment

DISCUSSION OF DEFICIENCY 2 IN THE ODCM UPDATED THROUGH AMENDMENT 4 (CONT.)

ATTACHMENT A

WNP-2 Blowdown Flow
7/1/86 - 6/30/87

Time Period	Total Blowdown Volume (ℓ)	Avg. Blowdown Flow (cfs)
7/1/86 - 9/30/86	7.6E8	3.4
10/1/86 - 12/31/86	4.0E8	1.8
1/1/87 - 3/31/87	2.5E8	1.1
4/1/87 - 6/30/87	2.0E8	0.9
Total for 4 Quarters	1.6E9ℓ	---
Average	4.0E8ℓ/qtr.	1.8 cfs

Applicable Factor = 1000/avg. blowdown flow (cfs)
Applicable Factor = 555

DISCUSSION OF DEFICIENCY 2 IN THE ODCM UPDATED THROUGH AMENDMENT 4 (CONT.)

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 26, 1989:

Item 2. This item questioned the use of the "applicable factor" value of 100 for the near field dilution factor in Eq. 6 of the ODCM (in the definition of F_1 for Eq. 5). In Revisions 5 and 6 this factor is changed to 500.

The Licensee's rationale for changing the near field dilution factor from 100 to 500 assumes an average total blowdown flow of 1.8 cfs. Since 500 X 1.8 cfs = 900 cfs, this results in the denominator of Eq. 5 being less than the assumed flow of 1000 cfs permitted by Section 4.3.1 of NUREG-0133 for plants with cooling towers, etc. This limit is appropriate for WNP-2, which uses mechanical draft cooling towers. However, the use of 1.8 cfs as the average blowdown flow is questionable, since this value was exceeded in 6 of the 16 calendar quarters and 2 of the 4 calendar years since WNP-2 began commercial operation in December 1984. In five of the calendar quarters and one of the calendar years this assumption could have resulted in calculated doses within the limits of Technical Specification 3.11.1.2 for reporting periods (calendar quarters or calendar years) during which a calculation using the permitted maximum assumed blowdown flow of 1000 cfs would have given calculated doses exceeding these limits. Therefore, the denominator of ODCM Equation 6 should be restricted to an average dilution flow of less than or equal to 1000 cfs for each reporting period.

Note also that the use of 1.8 cfs as the average total blowdown flow conflicts with the value of 2690 gpm (=5.99 cfs) given in ODCM Section 2.2. These two values should be consistent.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 7, DATED DECEMBER 1989:

7.0 REVISIONS TO THE ODCM

During this reporting period, Amendment No. 7 was made to the Offsite Dose Calculation Manual (ODCM).

7.1 This rationale is intended to provide a concise explanation of the changes made to the WNP-2 Offsite Dose Calculation Manual (ODCM) for Amendment Number 7.

3. Page 3; changed the average release rate from 2690 gpm (6.0 cFs) to 808 gpm (1.8 cFs) to correspond to actual operating average and to clarify the concern in Item 2 of the Technical Evaluation Report by the NRC review. This is consistent with the 1.8 cFs value used to obtain the "applicable factor" used in the F_2 factor for equation five (5) on page six (6).

DISCUSSION OF DEFICIENCY 4 IN THE ODCM UPDATED THROUGH AMENDMENT 4.

DEFICIENCY IDENTIFIED IN EGG-PHY-8032, DATED MARCH 1988:

- Tables 3-5a through 3-5d contain dose parameters for all age groups and all pathways for the maximum organ. The reviewer was unable to reproduce the dose parameters for the milk (cow), milk (goat), vegetable, and meat pathways.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 6, DATED NOVEMBER 1988:

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.

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.

DISCUSSION OF DEFICIENCY 4 IN THE ODCM UPDATED THROUGH AMENDMENT 4 (CONT.)

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 6, DATED NOVEMBER 1988:

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.

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_ℓ term was changed in Amendment No. 5 from 100 to 500, based on actual operating data. The F_ℓ term was an item raised in the TER.

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 26, 1989

Item 4. The Licensee recalculated dose parameters R_i in Tables 3-5a through 3-5d. The parameters in these tables in Revision 6 are generally between 85% and 110% of the values calculated by the reviewer with the following exceptions, which should be checked and corrected where necessary:

- The ground plane parameters for Sr-90 should be zero, since this radionuclide emits only beta particles.
- The ground plane parameters for I-131 and I-133 should be a factor of 2 larger than reported in the tables, since the factor of 0.5 to account for the elemental iodine fraction (allowed by Regulatory Guide 1.109) applies only to food pathways.
- Inhalation dose parameters for Zr-95 and Nb-95 for the child age group appear to be about 1/3 and 1/5, respectively, of the correct values.
- Vegetable dose parameters are less than 85% of the reviewer's values for Fe-59, Zr-97, Mo-99, Te-127, Te-131m, I-133, and La-140 for one or more age groups. Similarly, vegetable dose parameters are greater than 110% of the reviewer's values for Cr-51, Co-58, Zn-65, Sr-89, Zr-95, Nb-95, I-131, Cs-136, Ba-140, and Ce-141 for one or more age groups. (Several of the differences between the WNP-2 values and the reviewer's values may be due to the use of different delay times in the vegetable dose pathway).

DISCUSSION OF DEFICIENCY 9 IN THE ODCM UPDATED THROUGH AMENDMENT 4.

DEFICIENCY IDENTIFIED IN EGG-PHY-8032, DATED MARCH 1988:

- In Section 2.4 of the ODCM, the dilution factor, D_W, used in Equation 7 is defined as the dilution factor from the near field area to the nearest potable water intake and is given as 200. A reference must be included to support or justify the value.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 5, DATED APRIL 1, 1988:
ATTACHMENT 3

AMENDMENT NO. 5 TO THE
OFFSITE DOSE CALCULATION MANUAL

Amendment No. 5 consisted of major changes incorporated to include a change in the near field dilution factor to relate to actual operating data, the addition of several radionuclides to various tables, a reference to the latest NUREG covering computer code LADTAP II, and the addition of a method of projecting 31 day doses due to gaseous effluent releases.

3. The change on page 8 for Dw value is to be changed from 200 to 120. If the 20,000 dilution factor obtained by dividing 6 cfs into 120,000 cfs (average river flow) and the average blowdown flow is 1.8 cfs, then the river dilution becomes 66,666 (use 60,000). The Dw "dilution factor from near field area to the nearest potable water intake" was obtained by dividing 20,000 by 100. If we now use 500 as the applicable factor for calculating the Near Field Dilution Factor, then Dw would become 500 divided into 60,000, which is equal to 120.

   As the Dw factor is used in the equation (7) for determining Aij value in Table 2-2, these values were changed as required.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 6, DATED NOVEMBER 1988:
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.

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 (Aij) reflects the Dw value change to 100.

DISCUSSION OF DEFICIENCY 9 IN THE ODCM UPDATED THROUGH AMENDMENT 4 (CONT.)

LICENSEE'S RATIONALES FOR CHANGES MADE BY AMENDMENT 6, DATED NOVEMBER 1988:

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 cfs ÷ 1.8 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.

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.

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 1989:

Item 9. In Revision 5 the dilution factor for potable water, D_W, in Eq. 7 was reduced from 200 to 120. Then, in Revision 6 the value was further reduced to 100, based on a dilution factor of 50,000 (100 times the "applicable factor" discussed in Item 2 above) from blowdown to the Richland drinking water supply. This factor was obtained by using an average river flow of 103,810 cfs and an average blowdown flow of 1.8 cfs, plus a conservative factor of 0.87. As noted in the discussion of Item 2 above, the 1.8 cfs average blowdown flow has been exceeded during both quarterly and annual reporting periods during commercial operation of WNP-2. For those periods, reported calculated doses due to potable water consumption could have been too low if the methodology in ODCM Revision 6 had been used for the calculations. Also, the assumed dilution factor is based on the average river flow. Therefore, the calculated dose could have been too low for any reporting period when the river flow was less than the assumed average value.

   To eliminate the reporting of doses that are too low, the methodology should use actual average blowdown and river flows for the reporting periods, maximum permitted blowdown flow and minimum river flow, or some combination of these values.

DISCUSSION OF DEFICIENCY 9 IN THE ODCM UPDATED THROUGH AMENDMENT 4.

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 1989 (CONT.)

The Licensee's rationale for the change made by Revision 6 includes a reference to "Radiological Programs Calculation Log 88-3." Log 88-3 should be referenced in the ODCM to comply with the intent of the last paragraph of NUREG-0133 Section 4.3.1.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDMENT 7, DATED DECEMBER 1989:

7.0 REVISIONS TO THE ODCM

During this reporting period, Amendment No. 7 was made to the Offsite Dose Calculation Manual (ODCM).

5. Page 9; the reference to Radiological Programs Calculation Log 88-3 is made to comply with the intent of NUREG-0133, Section 4.3.1 as recommended by the NRC Reviewer in Item 9 of the Technical Evaluation Report.

DISCUSSION OF DEFICIENCY 11 IN THE ODCM UPDATED THROUGH AMENDMENT 4.

DEFICIENCY IDENTIFIED IN EGG-PHY-8032, DATED MARCH 1988

- In Section 2.8 of the ODCM, it is not clear why the Licensee recalculates the total allowed activity limit for an outside temporary tank containing liquid radwaste to ensure that in the event of the tank rupture the concentration limits will not be exceeded at the WNP-1 well. It appears a simple demonstration of compliance to Technical Specification 3.11.1.4 could be made by multiplying the radioactivity concentration of the liquid in the tank by the volume of liquid in the tank and comparing the resultant activity to the 10 curie limit identified in the ODCM.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDEMENT 6, DATED NOVEMBER 1988:

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.

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.

DISCUSSION OF DEFICIENCY 11 IN THE ODCM UPDATED THROUGH AMENDMENT 4.

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 26, 1989:

Item 11. In response to the suggestion that a simplified method be used to determine compliance with the limits of Technical Specification 3.11.1.4, the Licensee stated that in the event this type of tank is put into use a simplified method could be used once the curie limit is determined. Technical Specification 3.11.1.4 limits the contents of radioactive material in any outside temporary tank to an amount such that a complete release would not result in a concentration at the nearest offsite water supply in excess of the 10 CFR 20 limits. The ODCM imposes a 10 Ci limit in addition to the technical specification limit. The current ODCM methodology requires compliance with both limits, which is more restrictive than compliance with either limit alone.

DISCUSSION OF DEFICIENCY 17 IN THE ODCM THROUGH AMENDMENT 4.

DEFICIENCY IDENTIFIED IN EGG-PHY-8032, DATED MARCH 1988:

- In the radiological environmental monitoring program plan there are no direct radiation monitoring locations found in the 6 - 9 km (3.73 - 5.59 mi) range in the NE and SE sectors nor in the 9 - 12 km (5.59 - 7.46 mi) range in the S sector as required by Technical Specification Table 3.12-1.1.

LICENSEE'S RATIONALE FOR A CHANGE MADE BY AMENDEMENT 6, DATED NOVEMBER 1988:

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.

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.

EVALUATION FROM THE EG&G LETTER REVIEW OF AMENDMENT 6, DATED MAY 26, 1989:

Item 17. In Revision 6 of the WNP-2 ODCM there are TLDs located in all the required sectors, but a few are slightly (up to 4%) farther from the reactor than specified by Technical Specification Table 2.12.1.1. If four TLDs were 4% closer to the reactor the requirements of the technical specification would be satisfied exactly. The Licensee's response states, "The Supply System will submit a Technical Specification change by May 15, 1989 requesting Table 3.12-1 have an additional footnote added." (Presumably such a footnote would permit minor deviations in location to facilitate access etc., or recognize the uncertainty in distance determination.)

(The next three pages consist of a letter from the WPPSS to the NRC giving the rationale for retaining direct radiation monitoring locations at the present locations.)