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AUG 15 1984

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Mr. A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Docket Nos.: 50-352  
50-353

SUBJECT: Limerick Generating Station, Units 1 and 2  
Request for Additional Information on  
Offsite Dose Calculation Manual (ODCM)

REFERENCE: Letter, A. Schwencer to E. G. Bauer, Jr.,  
dated 7/16/84

FILE: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

The reference letter provided comments and requested additional information regarding the Limerick ODCM. Philadelphia Electric Company's response to each item is provided in Attachment 1. As indicated in the responses, the ODCM has been revised and is included as Attachment 2.

Sincerely,

*Jw Gallagher*  
for  
*JS Kemper*

AJM/dg/08098404

Attachments

Copy to: (See Attached Service List)

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ATTACHMENT 1  
PECO RESPONSE TO NRC/FRC COMMENTS ON LGS ODCM

<u>SUBJECT</u>	<u>PAGE NO.</u>	<u>RESPONSE</u>
Liquid Setpoint	20	Units have been assigned for $C_t$ .
	21	A methodology to calculate setpoints for the service water monitor has been provided in the ODCM.
Liquid and Gaseous Setpoints	21	A methodology for adjusting the monitor setpoints if simultaneous releases have made from several streams has been provided in the ODCM for gaseous releases. For liquid releases, routine releases are expected only via the radwaste discharge line. A safety margin of 3 provides assurance that 10CFR20 limits will not be exceeded.
Gaseous Setpoints	24	Methodologies for adjusting the release point monitor setpoints have been provided in the ODCM. In addition, a methodology for the monitor used to evaluate containment purge has been provided in the ODCM.
	25	The values for the whole body dose factor ( $K_i$ ), the beta skin dose factor ( $L_i$ ), and the air dose factor ( $M_i$ ) have been provided in the ODCM as Table III.B.2.
	26	The values for the inhalation dose factor ( $P_i$ ) have been provided in the ODCM.
Liquid Concentration	1	The words "the dissolved or entrained noble gases" have been added to the ODCM.
	1	An MPC value of $1 \times 10^{-7}$ uCi/ml has been added for any unidentified radionuclides.
Gaseous Dose Rate	5	Kr-87 and Kr-88 are the most limiting isotopes for skin and total body dose respectively due to their half-lives relative to Kr-89. Due to Kr-89's short half-life, its

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RESPONSES (CONTINUED)

<u>SUBJECT</u>	<u>PAGE NO.</u>	<u>RESPONSE</u>
Gaseous Dose Rate (continued)		dose factor will be lower than that of Kr-87 and Kr-88 at the receptor site. A discussion of these considerations has been added to the ODCM Bases.
	7	An explanation of how inhalation dose factors $P_{I-131}$ and $P_{I-133}$ are calculated, has been added to the ODCM bases as Note 2.
	8	In accordance with Limerick FES response PECO-24, studies at Rancho Seco and Paradise plants have shown that cooling tower wake effects do not exist at low wind speeds and hyperbolic cooling towers do not produce sharp down-drafts at moderate to high wind speeds causing 100% ground level releases. Rather, enhanced turbulence results. Therefore, the calculated $(X/Q)_v$ of $6.29 \times 10^{-7}$ sec/m <sup>3</sup> is appropriate.
Liquid Dose	4	LGS Technical Specification Section 4.11.1.2 requires calculating total body and organ dose. The limiting organ dose from liquid effluents at LGS is the bone dose (Reference LGS EROL Section 5.2).
	27	The bioaccumulation factor ( $BF_i$ ) and the ingestion dose conversion factor ( $DF_i$ ) were used to develop the liquid effluent ingestion factor ( $A_i$ ) which is listed on Table II.A.1. All references for the specific values used are indicated. It is not necessary or proper to list all of the $BF_i$ and $DF_i$ values in the ODCM.
	27	Units have been assigned for the ingestion dose conversion factor ( $DF_i$ ).

RESPONSES (CONTINUED)

<u>SUBJECT</u>	<u>PAGE NO.</u>	<u>RESPONSE</u>
Gaseous Air Dose	9	The data for the beta radiation air dose factor ( $N_i$ ) has been provided in the ODCM as part of Table III.B.2.
Gaseous Dose for I-131 and I-133	27	The limiting location for LGS is a goat farm. The grass-cow milk pathway does not exist at the location. The grass-meat pathway and the vegetation pathway are not applicable since the limiting individual is an infant. The ground-plane pathway contributes less than 0.03% to the total dose and therefore is not significant (Reference LGS EROL Section 5.2).
	28	The ingestion dose factor ( $DFL_i$ ) for I-133 has been provided in the ODCM.
Liquid Dose Projection	3	A method to describe how oncoming situations could be foreseen to be able to predict radioactivity releases for the next month has been provided.
Gaseous Dose Projection	11	A method to describe how oncoming situations could be foreseen to be able to predict radioactivity releases for the next month has been provided.
Total Dose	12	The method provided in the second paragraph under Section IV.B is used only to evaluate the contribution from direct radiation dose. The direct radiation dose is then added to the dose or dose commitment determined in accordance with the first paragraph under Section IV.B to determine total dose from all pathways.
Radiological Environmental Monitoring Program	15	1. Table VI.A.1 has been revised to indicate control locations for all pathways.

RESPONSES (CONTINUED)

<u>SUBJECT</u>	<u>PAGE NO.</u>	<u>RESPONSE</u>
Radiological Environmental Monitoring Program (continued)	17, 18, 19	<ol style="list-style-type: none"><li>2. The locations of the farms are not listed due to longstanding agreement with the farmers involved. In return for being allowed to sample and analyze milk, PECO has agreed not to divulge the location of the farms.</li><li>3. Fish Sampling station 16C5 is downstream from LGS.</li></ol>
Liquid and Gaseous Effluent Flow Diagrams	31, 32	<p>The figures (IV.A.1, VI.A.2, and VI.A.3 have been modified to include a scale.</p> <ol style="list-style-type: none"><li>1. The diagrams have been modified to clearly show release points for liquid and gaseous effluents.</li><li>2. Radiation monitors are explained in the diagrams.</li><li>3. Dilution flow has been indicated on Figure IX.A.1 for liquid effluents.</li></ol>
Liquid and Gaseous Effluent Flow Diagrams		<ol style="list-style-type: none"><li>4. The north vent is shared by both units. The south vent has separate stacks for Unit 1 and Unit 2 which are monitored by separate equipment.</li><li>5. Vent/stack elevations of release points and mode of releases have been designated for gaseous effluents.</li><li>6. Figure IX.A.2 has been replaced with a simpler flow diagram.</li></ol>
Interlaboratory Comparison Program		LGS Technical Specifications do not require a description of the Interlaboratory Comparison Program in the ODCM.
Gaseous Pathway Dose Calculations	5/III	<ol style="list-style-type: none"><li>1. A numbered and captioned figure showing the site boundary and the unrestricted area boundary for gaseous and liquid effluents has been provided.</li></ol>

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RESPONSES (CONTINUED)

<u>SUBJECT</u>	<u>PAGE NO.</u>	<u>RESPONSE</u>
Gaseous Pathway Dose Calculations (continued)		2. The date of the land-use census that was used in identifying the controlling receptor location has been provided.  3. A reference to document the verification of computer codes has been provided in the ODCM.
Site Specific Data (Note 1: Second Paragraph)	27/VIII	The reference for the P-32 data has been revised to ICRP-30 and NUREG-1336.

JWB/dg/07268401