GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, P.O. BOX 460, PLEASANTON, CALIFORNIA 94566

NUCLEAR ENERGY

ENGINEERING

DIVISION

50-70

August 28, 1980

Mr. Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Addition of Iodine Isotopes to the Calculated 50 Year Organ Doses at the VNC Site Boundary From 100% Release of the Isotopes in GETR Pool, Canal, and Primary Water

Reference: Letter, R. W. Darmitzel to Robert A. Clark dated August 6, 1980

Dear Mr. Clark:

Iodine isotopes were not included in the isotope inventory used in the referenced submittal. Water sample analyses of the GETR primary and pool showing various concentrations of I-131 and I-135 during operations in mid-1977 were obtained after issuing the referenced letter. The highest reported concentrations of these isotopes were used to calculate I-131 and I-135 activities in the total 39,000 gallons of primary, pool, and canal waters. The iodine isotope activities are included in the attached, revised table of total curie levels in GETR waters during normal operation.

Calculations which include iodine isotopes and the revised organ doses are given in the attached Table 2. The 50 year organ doses remain within ICRP-9 dose limits to members of the public.

Very truly yours,

R. W. Darmitzel, Manager
Irradiation Processing Operation

OFFICIAL SEAL
VIRGINIA C. CASQUEIRO
NOTARY PUBLIC - CALIFORNIA
ALAMEDA COUNTY
My comm. expires MAR 3, 1981

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attachments

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AFFIRMATION

The General Electric Company hereby submits the information pertaining to the offsite dose resulting from the evaporation of the General Electric Test Reactor (GETR) water.

To the best of my knowledge and belief, the information contained herein is accurate.

OFFICIAL SEAL
VIRGINIA C. CASQUEIRO
NOTARY PUBLIC - CALIFORNIA
ALAMEDA COUNTY
My comm. expires MAR 8, 1981

R. W. Darmitzel, Manager
Irradiation Processing Operation

Submitted and sworn before me this 28th day of August, 1980.

Virginia C Casqueiro, Notary Public in and for the County of Alameda, State of California.

TABLE 1. TOTAL CURIE LEVELS IN GETR WATERS DURING NORMAL OPERATIONS

Nuclide	$T_{\frac{1}{2}}$, yrs.	Primary-Pool-Canal Curies
C-14	5.73E+3	1.318E-3
Cs-137	3E+1	8.78E-2
H-3	1.226E+1	1.743E0
Co-60	5.27E0	4.043E-1
Cs-134	2.10E0	7.33E-3
Mn-54	8.3E-1	4.20E-3
Ce-144	7.81E-1	3.20E-2
Zr-95	1.78E-1	3.30E-2
Sb-124	1.65E-1	4.05E-2
Ru-103	1.10E-1	7.00E-3
Nb-95	9.59E-2	4.61E-2
Ce-141	8.90E-2	4.20E-3
Cr-51	7.62E-2	2.68E-2
I-131	2.21E-2	5.07E-3
Sb-122	7.67E-3	1.41E-2
W-187	2.74E-3	3.54E-2
Na-24	1.71E-3	9.26E-1
Xe-135	1.05E-3	4.12E-3
I-135	7.65E-4	4.69E-2
Sr-92	3.08E-4	2.72E-2
Mn-56	2.95E-4	4.68E-3
Ar-41	2.09E-4	1.95E-1

TABLE 2. 50 YEAR ORGAN DOSES AT SITE BOUNDARY FOR RELEASE OF ISOTOPES IN GETR WATERS

Organ	50 Year Dose, Rem	Percent of ICRP-9 Dose Limits For Members of the Public
Total Body		0.98%
Inhalation	3.55E-3	
Submersion	1.33E-3	
Kidneys	3.49E-3	0.23
Liver	6.77E-3	0.45
Bone	1.01E-2	0.34
Lungs	1.17E-2	0.78
Thyroid	3.36E-3	0.22
Stomach	4.46E-4	0.03
Small Intestine	8.89E-4	0.06
Upper Large Intestine	7.78E-4	0.05
Lower Large Intestine	2.71E-3	0.18
Skin, Submersion	1.72E-3	0.06