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TELEPHONE
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August 10, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. Walter A. Paulson, Acting Chief
Operating Reactors Branch No. 5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Exemption per 10 CFR 20.302
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Paulson:

In accordance with IE Notice No. 83-05, Disposal of Very Low-Level Radioactive Waste and 10 CFR 20.302, we request permission to dispose of 70 tons of very low level radioactive waste in a municipal landfill.

The material is from the roofs of the auxiliary building and other plant buildings. It consists of gravel, tar and plywood pieces. Several analyses of the material have been performed and are included in Attachment 1 for your review. The average concentration is 14.4 picocuries per gram in samples taken from the auxiliary building roof (see Figure 1). This roof has the highest concentrations.

The annual dose equivalent assuming continuous occupancy has been calculated to be approximately 1 mrem when this material is covered by two feet of earth in a landfill. The radiological impact of this type of disposal is negligible.

The concentrations of radioactive isotopes present are exempt according to the New York State Industrial Code Rule 38, Ionizing Radiation Protection (12NYCRR38).

Very truly yours,

Roger W. Kober
Roger W. Kober

Attachments

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Attachment 1

In order to determine the radioactivity levels in the material to be disposed, samples were taken from the auxiliary building and intermediate building roofs. To determine the average value for the auxiliary building, samples were taken in eight different locations, as shown in Figure 1. The measured values, the average and the standard deviation for the building roof are shown below. Based on sampling, it was determined that the activity levels for the intermediate building are bounded by those for the auxiliary building.

<u>Sample Area</u>	<u>Sample Analysis (pCi/gram)</u>		
	<u>Co-60</u>	<u>Cs-134</u>	<u>Cs-137</u>
1	6.0	2.9	11.5
2	1.9	1.8	7.4
3	2.1	2.0	8.4
4	1.5	1.2	5.0
5	3.3	3.8	15.7
6	4.7	3.0	12.3
7	3.2	2.2	9.4
8	1.3	1.0	3.9
Averages	3.0+1.66 pCi/gram	2.24+1.0 pCi/gram	9.2+3.4 pCi/gram

The dose rate at one meter above the ground was then calculated assuming a uniform distribution at the average concentration of the auxiliary building roof, no shielding from covering soil, and using the dose conversion factors in NCRP Report No. 50, Table 2-17. The resulting dose rate and annual dose, assuming continuous occupancy are:

Co-60	8.64	uR/hour
Cs-134	2.51	uR/hour
Cs-137	<u>6.67</u>	uR/hour

Total 17.8 uR/hour or 156 mR/year

For determining the shielding factor for two feet of soil cover in a landfill, it was assumed the soil density was 1 gm/cm³ and the average energy was 1 Mev gamma/disintegration. Using Taylor expansion for an infinite plane source, the shielding factor was calculated to be 0.0085. The calculation is described in Introduction to Nuclear Engineering, LaMarsh, J.R., page 431, Eddison-Wesley, 1975. Similar shielding factors are determined using Table 6.3 or Figure 6.10 in the Health Physics and Radiological Health Handbook, Nuclear Lectern Associates, 1984.

The shielded dose rate is then 156 mR/year x 0.0085 = 1.3 mR/year. Conservatively assuming 1 mrem = 1 mR, the annual dose equivalent rate for continuous occupancy is 1.3 mrem/year.

According to Industrial Code Rule 38 of the State of New York (12NYCRR38) entitled, "Ionizing Radiation Protection", the concentrations of the radioactive isotopes found on the roof are exempt. The exempt concentrations listed in Table 2 of Rule 38 are:

Co-60	5×10^{-4}	uCi/gram
Cs-134	9×10^{-5}	uCi/gram
Cs-137	2×10^{-4}	uCi/gram

Also, the sum of the quotients of concentrations present to exempt concentrations shall not exceed 1. In this case, the individual concentrations satisfy the criteria and the sum of the quotient, which is 0.076, also satisfies the criteria.

Figure 1

Auxiliary Building Roof
Sampling Locations



Sample Location 1	2	3	4
5	6	7	8

5600 Square Feet