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October 23, 1979

Director, Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket 50-142
License No. R-71

Dear Sir:

Pursuant to our Technical Specifications, item V.E., this will advise you of an increase in the occupancy of a roof area sometimes downwind of the reactor room ventilation exhaust. The subject area and activity is within Region II defined in the Safety Analysis that attended our Application for Amendment 10 to Facility License R-71. However that area is remote from the exhaust stack and Argon-41 concentrations are below MPC for 100% occupancy of that area. Consequently this letter is advisory and anticipatory, no action is deemed necessary.

The details of the occupancy and estimated individual exposures (upper bound) are described in the following paragraphs.

The UCLA Department of Atmospheric Sciences has informed us that on October 8, 1979 they initiated a routine balloon-release program at a meteorological station located on the roof of the Mathematical Sciences Building. The station is approximately 50 meters ENE of the reactor room exhaust vent.

We are further informed that the program will consist of two releases per day, at approximately 6:00 a.m. and 12:00 noon. The 6:00 a.m. release does not intersect reactor operating hours, the noon release may. Initially, the release is to be performed by two individuals who may occupy the meteorological station for as much as three hours per day. Thus the current occupancy factor can be taken as 3/9 = 0.333 for the nine hour period (8:00 a.m. to 5:00 p.m.) that the reactor might operate. However, for the year 1979, the program will only be operative in the last quarter and hence the annual average occupancy will be 0.333/9 = 0.083, an occupancy within the 10% attributed to Region II in the Safety Analysis.

In anticipation of the continuation of the balloon release program throughout 1980, we have estimated the possible exposure of individuals participating in that program. These estimates are based upon (a) the concentration of Argon-41 at the reactor stack, (b) the plume dispersion model, and (c) the independent Thermoluminescent Dosimeter program. Items (a) and (b) use the same conservative concentration (over-estimated) and dilution model that were used in applying for Amendment 10.

The conservatively calculated annual average concentration of Argon-41 at the meteorology station is 1.4×10^{-8} µCi/ml. This computation includes a reactor utilization factor of 0.188, a wind frequency factor of 0.295 for WSW winds, a dilution factor of 0.01583 for that wind direction at a 50 meter downwind distance, and an assumed stack concentration of 1.6×10^{-5} µCi/ml. For an individual who continued to participate in the program at a rate of 3 hours per 9 hour day, the occupancy factor of 3/9 yields a maximum expected exposure of 4.7×10^{-9} µCi/ml. Further details are shown in Attachment A.

The radiation exposure at the meteorological station is indicated by the results of the two-year, Thermoluminescent Dosimeter program as shown graphically in our 1978 report. The average radiation level observed at the meteorological station (TLD location 15) was 3.5 mr/quarter or about 13 mr/year for 100% occupancy.

As a consequence of the foregoing, individuals participating in the balloon release program will experience upper bound exposures that are well under federally prescribed maximum limits.

Sincerely,

Neill C. Ostrander

Neill C. Ostrander, Manager
Nuclear Energy Laboratory

cc: R. H. Engelken, Director, Region V, USNRC
I. Catton, Director, UCLA Nuclear Energy Laboratory
T. Collins, Assistant Dean, UCLA School of Engineering
A. Zane, Reactor Supervisor, UCLA Nuclear Energy Laboratory

enc.

Attachment A

Plume Dilution at the Meteorological Station

Wind Direction	Speed (M/S)	Frequency f_{ij}	σz(m) @100m	σz(m) @50m	χ/Q
WSW	2.48	.098	10.6	6.088	2.33×10^{-4}
	2.92	.099	9.9	5.686	2.42×10^{-4}
	3.06	.098	9.8	5.629	2.32×10^{-4}
		.295			7.07×10^{-4}

$$\frac{\chi}{\chi_o} = (7.07 \times 10^{-4})(6.607\ m^3/sec) = 4.671 \times 10^{-3}$$

(The stack volume rate of 14000 CFM = 6.607 m^3/sec)

Thus, if the reactor is operating, and if the stack release is 1.6×10^{-5} µc/ml, the downwind concentration at the meteorological station is calculated to be

$$\chi = 4.671 \times 10^{-3} \times 1.6 \times 10^{-5} = 7.47 \times 10^{-8}\ \mu Ci/ml$$

with a reactor utilization factor of 0.188 or less, the time averave concentration at the meteorological station is not more than:

$$\overline{\chi} = (7.47 \times 10^{-8})(0.188) = 1.41 \times 10^{-8}\ \mu Ci/ml.$$

The concentration is below MPC for 100% occupancy of that location. The expected occupancy is 3 hours per 9 hour day (of the 45 hour work week). With an occupancy factor of 3/9, the individual exposure will not exceed 4.7×10^{-9} µCi/ml.