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April 14, 1989

Docket No. 50-224
License No. R-101

Mr. Alexander Adams
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Attached to this letter are responses to your second request regarding questions for additional information and clarification dated April 6, 1989. These questions have arisen during your review of the Berkeley Research Reactor Decommissioning Plan.

Please call me at 415-642-5213 if you have further questions.

Sincerely,

Tek H. Lim
Acting Reactor Administrator

THL/jmh

Attachment

cc: T. K. Fowler w/o attachment
C. J. King w/o attachment
T. Budinger w/o attachment
M. Schoonoer
Kaiser Engineers

Cert No
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April 14, 1989

RESPONSE TO THE SECOND REQUEST FOR ADDITIONAL INFORMATION

NRC Letter of April 6, 1989, Docket No. 50-224

Question #1

Your answer to our question 21 states the criteria under which equipment will be disposed of as radwaste. The use of the word "or" between the criteria could be misinterpreted to mean that you will pick one of the two criteria to test against. Please confirm that equipment will be tested against both criteria and that if it meets either (or both), it will be disposed as radwaste.

Answer

Equipment will be tested against criteria specificed in Table I of Regulatory Guide 1.86 and against the 5 uR/hr at one meter limit. If it exceeds limits of either standard it will be disposed as radwaste.

Question #2

Your answer to our question 25 describes periodic radiation measurements that will be taken during the decommissioning process. You state that you will monitor airborne radioactivity continuously with samples analyzed weeky. Please provide additional details about your plans for monitoring airborne radioactivity.

Answer

Our program for monitoring airborne radioactivity referred to in Section 3.3.1.3. of the BRR Decommissioning Plan is as follows:

a. Room 1140 Etcheverry Hall:

Air exhausting from Room 1140 Etcheverry Hall is continuously monitored by the BRR stackgas monitor and the radiation monitor in the exhaust duct near the HEPA filters. Data from the stackgas monitor are processed and analyzed weekly. The air in Room 1140 Etcheverry Hall is continuously monitored by a constant air monitor. The air sample is counted and analyzed weekly. The stackgas monitor, the constant air monitor and the exhaust duct monitor are provided with a high alarm setpoint. Any abnormal results or alarms from these systems will cause immediate monitoring of areas adjacent to Room 1140 via surface wipes, meter scans and air sampling. Air samples in adjacent areas will be immediately removed from the samplers, counted and analyzed.

b. Areas Adjacent to Room 1140 Etcheverry Hall:

Continuous air samplers will be operated in areas adjacent to Room 1140 Etcheverry Hall including the Reactor Office Complex and roof exterior. Air samples will be removed, counted and analyzed weekly. Abnormal results will cause immediate monitoring as described in paragraph a. above.

Weekly meter and wipe surveys will be conducted in areas within Etcheverry Hall adjacent to Room 1140. Abnormal results will cause immediate monitoring as described in paragraph a. above.

Question #3

Your answer to our question 31 provides details on the survey instruments to be used to make 5 uR/hr above background measurements needed to justify license termination by the NRC. Please provide additional information on number of survey measurements to be taken, the survey instruments to be used, and why the survey instrument is appropriate to show that the 5uR/hr limit is not exceeded.

Answer

Prior to exposure rate measurements, surfaces will be scanned with NaI (Tl) scintillation detectors, pancake G-M detectors and ZnS alpha detectors.

Exposure rate measurements will be made with a gamma scintillation detector and a pressurized ionization chamber (PIC). As described in the Decommissioning Plan, the room floor and walls up to two meters will be divided into one by one meter grids. Each grid section and other areas

identified by surface scans will be measured at one meter from the surface with a scintillation detector; this will total at least 600 measurements. The detector used for the measurements will be a Bichron Micro Rem survey meter with a tissue equivalent organic scintillator. It will be independently calibrated over the energy spectrum. A PIC will then be used to correlate exposure rate measurements in the following areas:

a. A random sampling of locations measured with the scintillation detector.

b. Biased locations identified by surface scans and scintillation detector measurements, as having possibly elevated radiation levels.

At least 30 measurements will be made with the PIC.

In addition, Ge-Li gamma spectra will be obtained at selected surface points and exposure rate measurment points. This data will be used to identify the origin of the radiation detected in the exposure rate measurements, and to verify consistency of scintillation and PIC measurements.