



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 6, 1993

Docket Nos. 50-151
50-356

Dr. Daniel F. Hang, Director
Nuclear Reactor Laboratory
Department of Nuclear Engineering
214 Nuclear Engineering Laboratory
103 South Goodwin Avenue
Urbana, Illinois 61801-2984

Dear Dr. Hang:

SUBJECT: REQUEST TO OPERATE FACILITY PURSUANT TO 10 CFR 20.1301

By letter dated October 4, 1993, as supplemented on October 26, 1993, the University of Illinois at Urbana-Champaign (UIUC) submitted an application for prior authorization to operate up to an annual dose limit for an individual member of the public of 0.5 rem (5 mSv) pursuant to 10 CFR 20.1301(c) for the UIUC Nuclear Reactor Laboratory (NRL). Without the authorization, 10 CFR 20.1301(a)(1) limits licensed operations so that the total effective dose equivalent to individual members of the public not exceed 0.1 rem (1 mSv) in a year.

Your application presents the results of your environmental monitoring program in the near vicinity of the NRL. The program shows that several Thermoluminescent Dosimeter (TLD) locations on the outside of the NRL building had received radiation in excess of 0.1 rem in a year. The highest extrapolated reading based on current data for 1993 is 0.22 rem for an area on the mechanical equipment room roof. Your letter summarized a number of actions that were taken to reduce exposures outside your facility.

10 CFR 20.1302(b) provides two methods to show compliance with the dose limits of 10 CFR 20.1301(a)(1). In particular, 10 CFR 20.1302(b)(1) allows a licensee to demonstrate compliance by measurement or calculation that the total effective dose equivalent to the individual likely to receive the highest dose from the licensed operation does not exceed the annual dose limit. Question 207 from the sixth set of questions and answers on the revisions to 10 CFR Part 20 (enclosed) addresses the use of 10 CFR 20.1302(b)(1) to show compliance with public dose limits. The answer states that if using 10 CFR 20.1302(b)(1) to show compliance with dose limits, occupancy times (time an individual is present) may be taken into account. Your application states that because the NRL is surrounded by parking lots and grassy unoccupied areas it is highly unlikely that an individual member of the general public could receive a dose remotely close to the 0.1 rem limit by passing by the facility.

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Dr. Daniel F. Hang

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December 6, 1993

We request, you evaluate whether you would be able to meet the requirements of 10 CFR 20.1302(b)(1) considering reasonable and justifiable occupancy times for individuals around the NRL. These occupancy times (and their bases) should be appropriately documented in the SAR or facility operating procedures. If you are able to meet the requirements of 10 CFR 20.1302(b)(1), then application under 10 CFR 20.1301(c) for prior NRC authorization to operate at the higher dose limit would be unnecessary.

Under any circumstances, you will be subject to 10 CFR 20.1301(a)(2) which requires that the dose in any unrestricted area from external sources not exceed 0.002 rem (0.02 mSv) in any one hour. This is similar to the requirement in 10 CFR 20.105(b)(1) that you are currently required to meet.

If you have any questions concerning this matter, please contact me at (301) 504-1127.

Sincerely,

Original signed by:

Alexander Adams, Jr., Senior Project Manager
Non-Power Reactors and Decommissioning
Project Directorate
Division of Operating Reactor Support
Office of Nuclear Reactor Regulation

Enclosure: As stated
cc: See next page

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Dr. Daniel F. Hang

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Alexander Adams, Jr., Senior Project Manager
Non-Power Reactors and Decommissioning
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Office of Nuclear Reactor Regulation

Enclosure: As stated
cc: See next page

cc:

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10 CFR 20.1302 Compliance with Dose Limits for
Individual Members of the Public

QUESTION 207: The dose limits for an individual member of the public as specified in 10 CFR 20.1301 are specified in terms of rem. Since rem is an absorbed dose, must an individual be present for the dose limit to apply?

ANSWER: No. If using 10 CFR 20.1302(b)(1) to show compliance with dose limits, occupancy times (time an individual is present) may be taken into account. If using the method in 10 CFR 20.1302(b)(2)(ii) to demonstrate compliance, dose is calculated as if an individual were continuously present, regardless of whether an individual is continuously present. See related Questions 68, Set 2, and 102 Set 3. (Reference: 10 CFR 20.1302, 20.1301)