



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

October 5, 1995

Dr. Lee H. Bettenhausen,
Reactor Supervisor
Radiation Laboratory
University of Massachusetts Lowell
One University Avenue
Lowell, Massachusetts 01854

SUBJECT: COMPLIANCE WITH 10 CFR PART 36, "LICENSES AND RADIATION SAFETY REQUIREMENTS FOR IRRADIATORS" (TAC NO. M89847)

Dear Dr. Bettenhausen:

This responds to your letter of February 6, 1995, regarding the subject topic. You raised two issues with regards to application of 10 CFR Part 36 to the University of Massachusetts Lowell (UML) gamma cave facility. The first issue raised several questions as to what regulations apply to different parts of the facility, and the second issue suggests that the backfit rule should be applied to any modifications.

Before I respond to each of the questions raised under the first issue, some background may be in order. The UML has a license which incorporates several parts of Title 10 of the Code of Federal Regulations. In license condition 2.B.(1), the UML is licensed pursuant to 10 CFR Part 50 to possess, use, and operate the facility. In license condition 2.B.(2), the UML is licensed pursuant to 10 CFR Part 70 to possess and use certain quantities of special nuclear material. In license condition 2.B.(3), the UML is licensed pursuant to 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operations of the reactor etc. The Cobalt-60 source is also licensed under this license condition. In license condition 2.C., the UML license is deemed to contain and is subject to the conditions specified in Parts 20, 30, 50, 51, 70, and 73 and to all applicable provisions of the Atomic Energy Act, and to the rules, regulations, and orders of the Commission now or hereafter in effect.

The requirements for the protection of very high radiation areas, which corresponds to the radiation levels experienced in the gamma cave, had to be complied with under the old Part 20 in 10 CFR 20.203(c)(6) and (c)(7). License condition 2.C. required that UML was (and still is) subject to Part 20. The new Part 36, which includes some of the requirements of 10 CFR 20.203(c)(6) and introduces some new ones, defines a panoramic wet-source-storage irradiator (PWSSI) as an irradiator in which the irradiation occurs in air, in areas potentially accessible to personnel, and in which the sources are stored under water in a storage pool. The UML gamma cave corresponds to the description of a PWSSI in Part 36, and must meet the requirements of Part 36 or exemptions requested as permitted under 10 CFR 36.17. Therefore, just as the license is subject to Part 20, it is also subject to Part 36, and license condition 2.C. will have to be amended to include Part 36. Answers to your specific questions are in Enclosure 1 to this letter.

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The second issue suggests that the backfit rule should be applied to any modifications. The backfit rule applies to power reactors only, and the development of Part 36 did not need to consider the application of the backfit rule. Therefore, the staff does not have to develop a backfit analysis for modifications required by Part 36.

We are cognizant of the safe operation of your gamma cave facility and that the current safety precautions appear to be reasonable and adequate to protect the personnel and the public. However, since your gamma cave facility corresponds to the definition of a PWSSI in Part 36, its correlation or exemptions to Part 36 requirements needs to be evaluated. The analysis of the acceptability of your present system should consider that a single failure of a system or component, or a failure to follow procedures, or loss of power would not permit a person to enter the gamma cave while the source is in front of the gamma cave window. Alternatively, if a person is in the gamma cave he/she should be able to leave it upon command or be able to alert an individual in the control room or upper deck of a desire to leave the gamma cave even if there is a single failure in the control circuitry. Also, in your response include the information outlined in Enclosure 2.

A response is requested within 60 days of the date of this letter. If you have any questions, please contact me at 301-415-1102.

This requirement affects nine or fewer respondents and, therefore, is not subject to Office of Management and Budget review under P. L. 96-511.

Sincerely,
Original signed by:
Theodore S. Michaels, Senior Project Manager
Non-power Reactors and Decommissioning
Project Directorate
Division of Reactor Program Management
Office of Nuclear Reactor Regulation

Docket No. 50-223

Enclosures:
As stated

cc: w/enclosures
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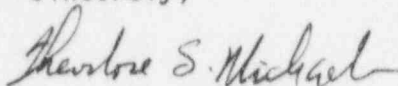
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University of Massachusetts Lowell

Docket No. 50-223

cc:

Mayor of Lowell
City Hall
Lowell, Massachusetts 08152

Mr. Lee H. Bettenhausen
Nuclear Reactor Supervisor
University of Massachusetts Lowell
One University Avenue
Lowell, Massachusetts 01854

Office of the Attorney General
Environmental Protection Division
19th Floor
One Ashburton Place
Boston, Massachusetts 02108

ANSWERS TO QUESTIONS RAISED IN LETTER DATED FEBRUARY 6, 1995,

L. BETTENHAUSEN, U. OF MASSACHUSETTS LOWELL TO U.S.N.R.C.

1. Where in the common pool is the boundary between the applicability of these regulations, i.e., Part 36 and Part 50?

Part 36 applies to the operation of the gamma cave and Part 50 applies to the possession and operation of the reactor. There is no boundary in the pool. The pool and the gamma cave are part of your facility and the reactor operation, including the pool comes under Part 50 and the radiation safety requirements of the gamma cave come under the requirements of Part 36, just as they were under the requirements of Part 20 before Part 36 became effective.

2. Does Part 36 apply to the entire facility as does Part 50?
Or does Part 36 to the gamma cave at all times?
Or does Part 36 apply to the gamma cave only when cobalt-60 is being used?

Part 36 applies to the gamma cave and not to the entire facility. Part 36 does apply to the gamma cave at all times as long as the radiation levels are those specified in Part 36, irrespective of the source.

3. Will different procedures be necessary for compliance to each of these rules?

There are procedures required for Part 50 and for Part 36. If the existing procedures in Part 50 cover the procedures required by Part 36, then duplicate procedures are not needed. If Part 36 requires procedures, which are not covered by Part 50, then procedures need to be developed. Operation of the gamma cave should have its unique set of procedures which may incorporate existing Part 50 procedures.

ENCLOSURE 1

INFORMATION TO BE INCLUDED IN RESPONSE

1. Describe the gamma cave configuration in detail. Show layout of the of the gamma cave and the gamma cave area in a plan view. Include all dimensions of the gamma cave.
2. In the plan view show where the radiation monitors are located in the area outside the gamma cave and describe their operation and list their settings. Will only one Co-60 pin in place on the window to the gamma cave be detected by the radiation monitors?
3. Include an updated schematic which shows how the interlocks operate. Describe where the lights are in relation to the gamma cave, i.e., the lights on the pool floor, and any other lights that are part of the control scheme that are not on the schematic. Describe the function of the lights. Include the latest procedures on the sequence of actions for gamma cave operations.

ENCLOSURE 2