

Manhattan College

MANHATTAN COLLEGE PARKWAY

MECHANICAL ENGINEERING DEPARTMENT

RIVERDALE, NEW YORK 10471

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January 9, 1984

Mr. Cecil O. Thomas, Chief
Standardization and Special Projects Branch
Division of Licensing
United States Nuclear Regulatory Commission
Washington, D.C. 20555

Attn: Ms. Angela T. Chu

Subject: Docket 50-199,
Your letter of October 31, 1983,
Manhattan College Zero Power Reactor
Operator Regualification Program

Dear Ms. Chu:

In accordance with our letter of August 17, 1983, we implemented our proposed Operator Regualification Program prior to approval action on your part. A status report was sent to Mr. H. Booher, Branch Chief for License Qualification on October 12, 1983. We are pleased that you feel our program meets most of the requirements of Appendix A of 10 CFR Part 55. As requested in your letter of October 31, 1983, we provide our response to your comments.

To place proper perspective on our response, please note the following.

i) The Manhattan College Zero Power Reactor is licensed for the lowest power level by far of any academic research or test reactor in the United States, only 0.1 watt.

ii) The critical reactor is used only for experiments and demonstration in an undergraduate nuclear engineering course.

iii) The staff has only three licensed operators: one is the current (and recently installed) Chief Reactor Supervisor and another is the previous Chief Reactor Supervisor. All three staff members are full-time faculty members in either the Physics or Mechanical Engineering Departments of Manhattan College who are only assigned on a part-time basis to the nuclear facility. All three licensed operators possess a doctorate in either Physics or Mechanical Engineering and are involved with the program only if they supervise the nuclear engineering course or associated laboratory. This represents orders-of-magnitude better qualification than power plant operators and orders-of-magnitude less complication in the staffing needs.

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iv) The reactor is of unique and unchanging design, developed by American Machine and Foundry in the late 1950's and possesses a small core within an open pool.

v) While we based our proposed program on the spirit and general guidelines of paragraph 1 through 6 of 10 CFR55, Appendix A, we point out that our reactor specifically falls under the guidelines of paragraph 7 of 10 CFR55, Appendix A. That paragraph states, "...the requalification program for each licensed operator and senior operator of a research or test reactor...shall conform generally but need not be identical to the requalification program outlined in paragraphs 1 through 6 of this appendix." Paragraph 7 indicates that, "significant deviations...shall be permitted...if...approved by the Commission." We do not believe the deviations we have noted are significant (in terms of health and safety of the public) and are reasonable based on the unique nature of the facility and the unique qualifications of each operator at Manhattan College.

We now respond to the specific Staff Comments.

a) We agree with Staff Comment a; our letter of August 17, 1983 had two purposes: (1) to respond to a Severity Level IV Violation and (2) to describe a proposed Operator Requalification Program. The second purpose was accomplished by numbered paragraphs 1 through 6 of Attachment A to our August 17, 1983 letter. These numbered paragraphs do not include specific names of individuals.

b) We agree with Staff Comment b and have reviewed 10 CFR 50.54 (i-1).

c) We agree with Staff Comment c and note that our intent is in exact accordance with the comment. We do not intend to allow a licensed operator to remain qualified without such a lecture.

d) We have examined Section 5.3 of ANSI/ANS-15.4-1977 and note the consolidation of topics. The categories of our examination will cover the seven topics listed.

- (1) Nuclear Theory and Principles of Operation
- (2) Design and Operating Characteristics
- (3) Facility Instrumentation and Control Systems
- (4) Facility Safety Systems and Engineered Safety Features
- (5) Normal, Abnormal, and Emergency Procedures
- (6) Radiation Control and Safety
- (7) Technical Specification and Bases

e) We agree with Staff Comment e and would require additional training if the examination scores are unsatisfactory.

f) We do not agree with Staff Comment f for the following reasons.

Appendix A is replete with specific or implied exemptions under the aegis of Paragraph 7. The Manhattan College Zero Power Reactor is not a "production or utilization facility." As noted already in our introductory comments, deviations which are insignificant for research and test reactors are permissible. Significant deviations are permissible if approved by the Commission.

The Introduction to 10 CFR Appendix A has the statement "Individuals who maintain operator or senior operator licenses for the purpose of providing backup capability to the operating staff shall participate in the requalification program except to the extent that their normal duties preclude the need for specific retraining in particular areas." The closest we come to a full-time operating staff is our Chief Reactor Supervisor and he would operate the requalification programs. The normal duties of the Chief Reactor Supervisor and of the other part-time staff who provide backup include the administration of examinations and review of laboratory experiments on the theoretical aspects of nuclear engineering on a weekly or monthly basis. It is reiterated that every one of our operators has a doctorate in either Physics or Mechanical Engineering.

Quite frankly, the administration of theoretical examinations to these people would generate a great deal of paperwork without any tangible benefit whatsoever. These people are eminently qualified by experience and training to administer examinations in theoretical areas to (typically) non-degreed operators at production and utilization facilities. Finally the Manhattan College Zero Power Reactor does not have the "complexity of design and operating modes of production and utilization facilities."

g) We have reviewed the provisions of Section 6.5 of ANS 15.4 and Section 55.31 of 10 CFR Part 55 and agree with Staff Comment g.

h) We do not agree with Staff Comment h. The cited 10 reactivity manipulations is apparently taken from paragraph 30, Appendix A to 10 CFR 55. That paragraph applies specifically to a "production or utilization facility." That many manipulations represent a sizeable number of manipulations, particularly for our part-time staff, compared to the number we actually perform for teaching purposes over a two year period. The number of man-hours required to satisfy the requirements that apply to a full-time staff on a production facility (if applied to a part-time staff on a zero power test reactor) is an inappropriate burden for our facility. There would be no benefit to this. Our Chief Reactor Supervisor is the only staff member who would normally operate the controls that many times and he would operate the controls about 100 times over a two-year period.

Mr. Cecil O. Thomas

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We hope our response is satisfactory and you can approve our program.

Very truly yours,

Ronald S. Kane

Ronald S. Kane, Ph.D.
Chairman, Mechanical Engineering Dept.
Reactor Administrator

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cc: Br. Gabriel Kane, F.S.C., Ph.D.
Chief Reactor Supervisor