

August 27, 1984

Docket No. 50-123

Dr. Albert E. Bolon, Director
Nuclear Reactor Facility
University of Missouri, Rolla
Rolla, Missouri 65401

Dear Dr. Bolon:

We are continuing our review of documentation that has been submitted in support of your application for renewal of the operating license of your reactor facility. An additional review was performed during our visit to your facility in June 1984. During these reviews, several questions have arisen for which we require answers. You are requested to provide written responses to the enclosed questions no later than October 1, 1984. Following receipt of this information we will continue our safety evaluation.

If you have any questions concerning this request, please contact our Project Manager for your facility, Robert Carter, at (301) 492-9795.

Sincerely,

Original signed by
Cecil O. Thomas, Chief
Standardization & Special
Projects Branch
Division of Licensing

Enclosure:
As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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UNIVERSITY OF MISSOURI-ROLLA REACTOR (UMRR)
FORMAL REVIEW QUESTIONS

1. Show that K_{eff} for the fuel storage pit will not exceed 0.9 if all positions contain fuel.
2. Section 3.3(1) of your proposed Technical Specifications states that the reactor shall not be operated unless there is at least 16 ft of water above the core. How is this assured?
3. What is the reactivity worth of a fuel element in (a) the most reactive position within the core and (b) at the periphery of the core?
4. The Final SAR should include an analysis of a hypothetical accident involving the step insertion of the normal maximum excess reactivity (1.5% $\Delta k/k$). There also should be an analysis of a step insertion for a core with 3.5% $\Delta k/k$ excess reactivity. This latter analysis should be compared with the worth of a fuel element added to the core periphery.
5. Discuss the startup accident in detail referring to the original Hazard Summary Report (HSR) as a source.
6. Provide an accident analysis for the irradiation of an experiment containing special nuclear material. Specify quantities and irradiation times. Consider the effects of loss of fission products to the reactor room and the environment.
7. Provide up-to-date (as-built) drawings of the reactor facility and the experimental facilities.
8. Describe the administrative organization of the radiation protection program.
9. Describe the responsibilities of the Radiation Safety Office for the reactor facility operations.
10. Identify the radiation safety related tasks that are performed routinely by the operations staff.
11. Describe the radiation protection training for the non-Health Physics reactor staff.
12. Summarize your general radiation safety procedures. Identify the minimum frequency of surveys, action points (levels), and appropriate responses.
13. Describe your program to ensure that personnel radiation exposure and releases of radioactive material are maintained at a level that is "as low as reasonably achievable" (ALARA). Identify steps taken to implement the ALARA principle.
14. Describe the liquid radwaste management program. Specify the locations and sizes of hold-up/storage tanks; summarize the sampling procedures and analytical techniques.

15. To the maximum extent possible, you are requested to incorporate the responses to the above questions in the revised Final Safety Analysis Report and revised proposed Technical Specifications that you have developed in recent months. This letter solicits their formal submittal. However, please identify the answers to each question in a clear and explicit way.