



NUCLEAR SCIENCE & ENGINEERING

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Subject: Facility License R-89; Docket 50-97: Request for License Amendment to
Withdraw Authorization to Operate Cornell University's Zero Power
Reactor.

References: 1) Safety Evaluation Report (NUREG 1010)
2) Ward Laboratory Emergency Plan
3) Ward Laboratory Physical Security Plan

Dear Sir:

Cornell University has concluded that there is not sufficient foreseeable future utilization of its Zero Power Reactor to warrant the capital and personnel costs associated with maintaining the reactor's operating license (Facility License R-89). Therefore, whereas Cornell does not intend to continue operating its Zero Power Reactor, Cornell University hereby requests that its Facility License R-89 be amended so as to withdraw U.S. Nuclear Regulatory Commission (NRC) authorization to operate the subject reactor.

Accordingly, Cornell University (hereafter CU) requests that license conditions B.1, B.2 and B.3 in its Zero Power Reactor License R-89 be amended to read as follows:

B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses Cornell University:

1. Pursuant to Section 104(c) of the Act and 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to possess, but not operate the Zero Power Reactor in accordance with the procedures and limitations described in the application and this license;
2. Pursuant to the Act and 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material," to receive and possess up to 40.0 kilograms of

uranium 235 contained in uranium enriched in the isotope uranium 235 and up to 16.0 grams of plutonium contained in a plutonium-beryllium source;

3. Pursuant to the Act and 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material," to possess, but not to separate such byproduct material as may have been produced by past operation of the reactor.

Further, CU hereby requests that license condition C.1 be deleted in its entirety and license condition C.2 be amended to read as follows:

C.2 Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 3, are hereby incorporated into the license. The licensee shall possess the facility in accordance with the Technical Specifications as amended.

In support of the above request, CU hereby commits to cease operation of its Zero Power Reactor immediately upon obtaining the requested license amendment. Prior to this amendment change, CU will remove all fuel from the reactor core so as to render the reactor incapable of achieving criticality. The three control rod clusters with lower fuel follower sections will also be removed. The fuel elements removed from the core will be stored in a subcritical and safe geometry in the facility's secure fuel storage areas. The plutonium-beryllium startup source will be removed from its mounting in the reactor tank and placed in safe storage along with the fuel. The above activities may be achieved under the stipulations of the current operating license and technical specifications. CU will continue to safely store the Zero Power Reactor fuel until such time as arrangements can be made for shipping it offsite for ultimate disposition.

In view of the above request to withdraw CU's authorization to operate its Zero Power Reactor (R-89), there are several technical specifications which CU wishes to amend, by deleting. These technical specifications are listed below:

2. Safety Limits and Limiting Safety System Settings -
 - 2.1 Safety Limits
 - 2.2 Limiting Safety System Settings
3. Limiting Conditions for Operation -

- 3.1 General
- 3.2 Reactivity Worth of Experiments
- 3.3 Reactivity Worth of Control Rods
- 3.4 Reactivity Insertion Rates
- 3.5 Personnel
- 3.6 Measuring and Safety Channels
- 3.7 Isolation of Reactor Cell
- 4. Surveillance Requirements -
 - 4.1 Visual Inspection of Core
 - 4.2 Control Rods
 - 4.3 Reactor Safety System and Radiation Monitors §(a),(b),(c),(d),(e)
 - 4.4 Water Quality
- 6. Administrative Controls -
 - 6.1 Organization and Responsibilities of Personnel §(a),(f)
 - 6.2 Review and Audit §(b)-(3)&(6)
 - 6.3 Procedures §(a)&(b)
 - 6.4 Review of Proposals for Experiments
 - 6.6 Operator Requalification
 - 6.8 Action to be taken in the event a safety limit is exceeded
 - 6.9 Action to be Taken in the Event of a Reportable Occurrence §(a)
 - 6.11 Reporting Requirements §(a)(2), (b)(2), (c), (d), (e)

Inasmuch as CU will not be authorized to operate the Zero Power Reactor and that the reactor will be rendered incapable of achieving criticality, it will be unequivocally unnecessary and/or impossible to meet these technical specification requirements.

Further, there are several technical specifications which CU wishes to amend by rewording. These technical specifications, as modified, are listed below:

- 4.3 Reactor Safety System and Radiation Monitors Item (f): Omit and replace with, "The alarm set points for the Zero Power Reactor cell and control room radiation monitors shall be verified on a semi-annual basis."
- 5.1 Reactor Fuel - paragraph #3: Omit - "... when loaded into the reactor tank...".
- 5.2 Reactor Cell - Omit last sentence reading, "When water rises above a level

below the bottom of the fuel, the reactor cell is automatically sealed."

6.1 Organization and Responsibilities of Personnel Item (c): Omit "... (including but not limited to the Zero Power Reactor)..."

6.2 Review and Audit Item (a): Omit and replace with "There will be a Ward Laboratory Safety Committee which shall review the ZPR reactor status during the possession only phase, and through the decommissioning process, to assure that the reactor facility is used in a manner within the terms of the facility license and consistent with the safety of the public and of persons within the Laboratory."

The Technical Specifications as amended will ensure the appropriate oversight of the facility during the possession only phase and through decommissioning. The technical specifications will still require that:

- 1) All fuel will be stored in accordance with existing technical specification requirements for safe and secure fuel storage.
- 2) All fuel movements required to achieve the safe and secure storage will be conducted following existing fuel handling and storage practices and procedures.
- 3) The physical security of the stored fuel will be assured by continuing to implement the measures specified in CU's NRC approved Physical Security Plan, which remains in effect.
- 4) The Emergency Plan and Emergency Procedures will remain in effect.
- 5) All existing pertinent safety related technical specifications applicable and relevant to the reactor in a permanently shutdown/possession only mode and/or to safe handling and storage of fuel will remain in effect. The requirements of these technical specifications will continue to be met until the fuel is shipped off site for ultimate disposition.

Clearly, with the reactor being incapable of achieving criticality, the fuel being stored in approved secure locations, and in view of all of the above described measures to ensure safety and security, there are no safety considerations affected by this request.

Cornell University appreciates your assistance in considering this request and is hopeful of an expeditious approval. If you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,



Mr. Howard Aderhold
Laboratory Director

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