



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 24, 1994

Mr. Tom Harris  
28367 Sand Canyon Road #28  
Canyon County, California 91351

Dear Mr. Harris:

SUBJECT: REQUIREMENTS TO CONSTRUCT AND OPERATE A RESEARCH REACTOR

I am responding to our phone conversation of January 27, 1994, in which you requested the requirements for construction and operation of a 50kw, 25 percent uranium-235 enriched research reactor.

The U.S. Nuclear Regulatory Commission (NRC or the Commission) is responsible for licensing and regulating nuclear facilities and materials under the Atomic Energy Act of 1954, as amended (the Act), and other statutes. Our regulations are found in Title 10 of the Code of Federal Regulations, and the enclosed Part 50 of Title 10, "Domestic Licensing of Production and Utilization Facilities" (10 CFR Part 50), contains the requirements for nuclear reactors.

The following discussion touches some of the issues involved in the licensing process, but is in no way complete.

To issue a license, the Commission staff performs a safety evaluation of an application analysis to ensure that the proposed facility (1) can be built and operated without undue risk to the health and safety of the public, (2) is not inimical to the common defense and security of the United States, and (3) makes other findings as necessary.

Some of the information required as part of an application includes, in accordance with 10 CFR 50.33 and 50.34:

1. Updated Safety Analysis Report (SAR)

A complete Safety Analysis Report (SAR) and Technical Specifications (TS) are required to be submitted with applications. The SAR includes information that describes the facility; the design bases and limits on its operation; and a safety analysis of the structures, components and systems to ensure that they will be able to perform their intended functions. Potential and reasonable accident scenarios and their consequences are analyzed using the best current input data and computational techniques.

Furthermore, the SAR includes information and analyses on demography, meteorology, geology, seismology and other natural and unnatural phenomena.

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Licensing of production + Utilization facilities*

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RETURN TO REGULATORY CENTRAL FILES

2. Financial Qualifications (10 CFR 50.33(f))

This information must show that there is reasonable assurance that you will be able to obtain the funds necessary to cover estimated construction and operating costs for the period of the requested license plus the estimated costs of permanently shutting down the facility and decommissioning it. The following information is required to be provided, appropriately certified:

- a. The most recently published annual financial statement of the reactor owner. The source of funds utilized to cover costs of construction and operation of the reactor facility must be indicated.
- b. The estimated cost of facility construction and the estimated annual cost to operate the reactor for the requested licensing period, the underlying assumptions and bases of the estimate and certification that future budget will include these funds, and
- c. The estimated costs of eventually shutting down the reactor and safely disposing of it, a listing of what is included in these costs, the assumptions underlying these estimated costs, the type of shutdown contemplated, and the source of funds to cover these costs.

3. Environmental Report (10 CFR Part 51)

An Environmental Report (ER) is required that includes sufficient operational data, analyses and discussions to provide a substantial basis for NRC to develop its environmental assessment.

4. Technical Specifications

The content and format for Technical Specifications should be in conformance with ANSI/ANS 15.1-1982, "The Development of Technical Specifications for Research Reactors." This document is available from the American Nuclear Society.

5. Operator Requalification Program (10 CFR 50.54 (i-1) and 10 CFR Part 55)

A copy of a proposed operator requalification program must be submitted.

6. Emergency Plan (10 CFR 50.54(q) and (r) and 10 CFR 50, Appendix E)

An Emergency Response Plan (ERP) must be approved by NRC. The plan must be submitted for NRC review in accordance with the above-cited regulations.

7. Physical Security Plan (10 CFR 73.67)

A Physical Security Plan must be submitted with NRC which we shall review in accordance with 10 CFR 73.67.

Mr. Tom Harris  
8. Filing of Application

February 24, 1994

The requirements for submitting an application and all other forms, documentation relating to a license with respect to addressee, notarization, signatory and number of copies are defined in 10 CFR 50.4 and 10 CFR 50.30.

The NRC issues a construction permit to an applicant that authorizes the plant to be built in accordance with the application. During the construction process, NRC inspectors conduct inspections to ensure that the facility is constructed as described in the application.

The construction permit holder then submits an application to the Commission for an operating license. The staff performs a detailed review of this application. The licensing process provides an opportunity for a public hearing to persons whose interests may be affected.

NRC licensed reactors are operated by reactor operators and senior reactor operators who are licensed by the NRC. Persons who operate licensed reactors are subject to NRC operator licensing requirements, including requirements covering fitness for duty and completion of a training program.

Because you are interested in a reactor with 25 percent U-235 enrichment, the reactor would have to qualify for a unique purpose exemption in accord with the requirements of 10 CFR 50.64.

All Part 50 reactor licensees are required by 10 CFR Part 140 to maintain financial protection to cover liability caused by nuclear accidents.

Fees for NRC licensing and annual fees for nuclear reactors are contained in 10 CFR Part 170 and Part 171.

I hope that you will find this information useful in determining your course of action. For your information, I have enclosed a copy of the safety analysis report, NRC staff evaluation, license and technical specifications for the research reactor at the University of Texas. If you require additional information, 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

Enclosures:  
As stated

DISTRIBUTION: [CONSTRUCTION, AA] (Adams-1b) #3 Disk w/o enclosures  
Central Files AAdams HZibulsky (4-E-4)  
PDRs EHylton  
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ONDD:ZA  
EHylton  
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ONDD:PM  
AAdams  
2/17/94

ONDD:D  
SWeiss  
2/17/94

8. Filing of Application

The requirements for submitting an application and all other formal documentation relating to a license with respect to addressee, notarization, signatory and number of copies are defined in 10 CFR 50.4 and 10 CFR 50.30.

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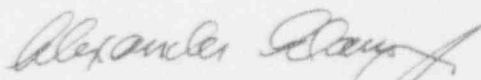
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