

SAFETY EVALUATION BY THE DIVISION OF REACTOR LICENSINGDOCKET NO. 50-59

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TEXAS A&M UNIVERSITYAMENDMENT NO. 8 (REVISIED LICENSE)INTRODUCTION

By application dated May 15, 1968, the Texas A&M University requested an amendment to Facility License No. R-23 which would (1) incorporate proposed Technical Specifications for the AGN-201 reactor into the facility license pursuant to Section 50.36(c) of 10 CFR Part 50, (2) approve a revised critical experiment based on experiences gained by previous performances of the experiment, and (3) authorize the performance of pulse neutron kinetic experiments using the AGN-201 reactor. Items (1) and (2) are considered in this evaluation. By letter dated January 4, 1969, the Texas A&M University withdrew its request for consideration of item (3).

DISCUSSION

The Technical Specifications proposed by the applicant include:

1. definition of key terms used in the specifications,
2. delineation of the facility's control and instrumentation systems important to reactor safety,
3. delineation of the limiting conditions for operation which define the lowest acceptable performance level for equipment, and the technical conditions necessary for continued safe operation,
4. requirements for surveillance of equipment which are essential to reactor safety,
5. administrative controls required for facility operation, and
6. delineation of the limiting safety system settings for those variables having safety significance.

These specifications set forth the requirements and limitations for reactor operation more clearly and precisely than the Hazards Summary Report, as amended (hereafter, safety analysis report (SAR)). Our

evaluation of the proposed Technical Specifications was based on the considerable experimental and operational experience accumulated on reactors of this type and power level, and on our review of the SAR which shows that all requirements significant to reactor safety are maintained. The Texas A&M University reactor has completed eleven years of safe operation under these safety requirements.

We have determined that the limits on reactor power, excess reactivity and reactivity worths of experiments provide sufficient assurance that an uncontrolled release of radioactivity will not occur. Furthermore, it is our conclusion that the safety system settings and the limits on plant equipment performance and plant technical characteristics, the specifications on surveillance of reactor components and systems, and the administrative controls will provide assurance of safe facility operation.

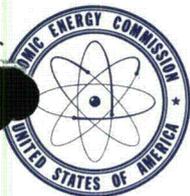
Amendment No. 5 to the facility license was issued to the Texas A&M University on April 27, 1962, authorizing the performance of core disassembly and critical loading experiments. The procedures and requirements for these experiments have been updated to include improvements developed from experience in performing the experiment. Provisions for these experiments and the review and approval of experimental procedures have been incorporated in the proposed Technical Specifications.

CONCLUSION

Based on the above discussion, we conclude that the incorporation of the proposed Technical Specifications, with minor modifications agreed to by the applicant, into Facility License No. R-23, does not involve significant hazards considerations different from those previously evaluated and that there is reasonable assurance that the health and safety of the public will not be endangered.


Donald J. Shovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

Date: February 26, 1969



UNITED STATES
ATOMIC ENERGY COMMISSION

WASHINGTON, D.C. 20545

February 6, 1971

DO NOT REMOVE
Safety
Eval Attached

Docket No. 50-59

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Texas A&M University
ATTN: Mr. J. K. Williams
President
College Station, Texas 77843

Gentlemen:

In accordance with your application dated November 3, 1970, enclosed is Construction Permit No. CPRR-112 which authorizes relocation of your AGN-201, Serial No. 106, nuclear reactor from the Mechanical Engineering Shops Building to the new Engineering Center Building and subsequent reconstruction of the reactor.

Copies of: (1) a Notice of Issuance of Construction Permit and Proposed Issuance of Facility License Amendment, which has been filed with the Office of the Federal Register for publication, (2) the proposed amendment to Facility License No. R-23, and (3) our related Safety Evaluation are enclosed for your information.

The license amendment to authorize operation of the reactor in the new location will be issued in the absence of good cause shown upon satisfactory completion of reconstruction of the facility as verified by a representative of the Commission.

Indemnity Agreement E-12 has been amended to add the above construction permit. Two copies of the amendment (No. 7) are enclosed for your signature and return of one copy to this office.

Sincerely,

Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

Enclosures:

1. Construction Permit No. CPRR-112
2. Federal Register Notice
3. Proposed Amendment to License
4. Safety Evaluation
5. Amendment No. 7 to Indemnity Agreement E-12



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

TEXAS A&M UNIVERSITY

DOCKET NO. 50-59

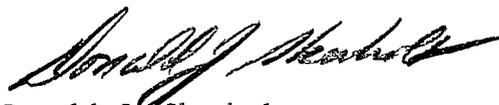
CONSTRUCTION PERMIT

Construction Permit No. CPRR-112

1. By application dated November 3, 1970, the Texas A&M University (hereinafter "the University"), College Station, Texas, requested authority to move its AGN-201 (Serial No. 106) nuclear reactor (herein referred to as "the reactor" or "the facility") from the Mechanical Engineering Shops to the new Engineering Center Building located on the University's campus in College Station, Texas.
2. The Atomic Energy Commission ("the Commission") has found that:
 - A. The application complies with the requirements of the Atomic Energy Act of 1954, as amended ("the Act"), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The reactor will be a utilization facility as defined in the Commission's regulations contained in 10 CFR Part 50, "Licensing of Production and Utilization Facilities";
 - C. The reactor will be used in the conduct of research and development activities of the types specified in Section 31 of the Act;
 - D. Texas A&M is technically and financially qualified to engage in the proposed activities in accordance with the Commission's regulations;
 - E. Texas A&M has submitted sufficient technical information concerning the facility to provide reasonable assurance that the facility can be dismantled, relocated, reconstructed and operated at the proposed location without endangering the health and safety of the public; and
 - F. The issuance of a construction permit to the University for dismantling, relocating, and reconstructing the facility will not be inimical to the common defense and security or to the health and safety of the public.

3. Pursuant to the Act and 10 CFR Part 50, "Licensing of Production and Utilization Facilities", the Commission hereby issues Construction Permit No. CPRR-112 to the Texas A&M University to dismantle, relocate, and reconstruct the AGN-201 (Serial No. 106) nuclear reactor in accordance with the application and this permit. This permit shall be deemed to contain and be subject to the conditions specified in Section 50.54 and 50.55 of said regulations; is subject to all applicable provisions of the Act and rules, regulations and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified below:
 - A. The facility to be dismantled, relocated, and reconstructed is the AGN-201 (Serial No. 106) nuclear reactor which is located on the University's campus in College Station, Texas, as specified in the application and amendments thereto.
 - B. Dismantlement, relocation and reconstruction of the facility shall be in accordance with the application dated November 3, 1970, and applicable regulations of the Commission; and
 - C. The earliest completion date is March 15, 1971. The latest completion date of the facility is December 1, 1971. The term "completion date", as used herein, means the date on which reconstruction of the facility in the new location is completed, except for the introduction of the fuel material.
4. Upon completion of the relocation and reconstruction of the reactor in accordance with the terms and conditions of this permit, upon finding by the Commission that the facility authorized has been reconstructed and will operate in conformity with the application and the provisions of the Act and of the rules and regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of a license for operation of the reactor in the new location would not be in accordance with the provisions of the Act, the Commission will issue to the University an amendment to Facility License No. R-23 for operation of the facility.

FOR THE ATOMIC ENERGY COMMISSION



Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

Date of Issuance: February 6, 1971

UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 50-59

TEXAS A&M UNIVERSITY

NOTICE OF ISSUANCE OF CONSTRUCTION PERMIT

AND PROPOSED ISSUANCE OF FACILITY LICENSE AMENDMENT

The Atomic Energy Commission ("the Commission") has issued Construction Permit No. CPRR-112, effective as of the date of issuance, to the Texas A&M University. The University presently possesses and operates an AGN-201 type training reactor at power levels up to 100 milliwatts (thermal) under Facility License No. R-23 issued by the Commission on August 26, 1957. The permit authorizes the University to dismantle the reactor which is located in the Mechanical Engineering Shops Building and to relocate and reconstruct the reactor in the new Engineering Center Building on the campus at College Station, Texas, in accordance with the procedures described in the application dated November 3, 1970, and the permit. The new location is approximately 1400 feet from its present location.

The Commission has found that the application complies with the requirements of the Atomic Energy Act of 1954, as amended ("the Act"), and the Commission's regulations published in 10 CFR Chapter I. The Commission has made the findings required by the Act and the Commission's regulations which are set forth in the construction permit, and has concluded that the issuance of the construction permit will not be inimical

to the common defense and security or to the health and safety of the public. The Commission has also found that prior public notice of proposed issuance of the construction permit is not required since the dismantlement, relocation, and reconstruction do not involve significant hazards considerations different from those previously evaluated.

Upon completion of the reconstruction of the AGN-201 reactor in the new location in compliance with the terms and conditions of the application and the construction permit, and in the absence of good cause to the contrary, the Commission will issue to the Texas A&M University (without prior notice) an amendment to Facility License No. R-23 authorizing operation of the AGN reactor at the new location at the presently authorized power level of up to 100 milliwatts (thermal) since the application is sufficiently complete to permit evaluation of the safety of the proposed operation in the Engineering Center Building.

Prior to the issuance of the amendment to the license, the facility will be inspected by the Commission to determine whether it has been constructed in accordance with the application and the provisions of Construction Permit No. CPRR-112. The license amendment will be issued after the Commission makes the findings related to its review of the application, which are set forth in the proposed amendment, and concludes that the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

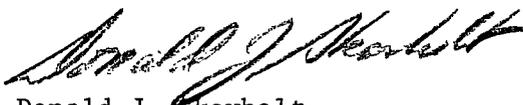
In addition, the University will be required to execute an amended indemnity agreement as required by Section 170 of the Act and by 10 CFR Part 140.

Within fifteen days from the date of publication of this notice in the FEDERAL REGISTER, the applicant may file a request for a hearing, and any person whose interest may be affected by the issuance of the permit or the proposed license amendment may file a petition for leave to intervene. Requests for a hearing and petitions to intervene shall be filed in accordance with the provisions of the Commission's "Rules of Practice", 10 CFR Part 2. If a request for a hearing or a petition for leave to intervene is filed within the time prescribed in this notice, the Commission will issue a notice of hearing or an appropriate order.

For further details with respect to these actions, see (1) the application dated November 3, 1970, (2) the construction permit and proposed facility license amendment, and (3) a related Safety Evaluation prepared by the Division of Reactor Licensing, all of which are available for public inspection in the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. Copies of items (2) and (3) above may be obtained upon request sent to the U. S. Atomic Energy Commission, Washington, D. C. 20545, Attention: Director, Division of Reactor Licensing.

Dated at Bethesda, Maryland, this 6th day of February 1971.

FOR THE ATOMIC ENERGY COMMISSION



Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

UNITED STATES ATOMIC ENERGY COMMISSION

TEXAS A&M UNIVERSITY

DOCKET NO. 50-59

PROPOSED FACILITY LICENSE AMENDMENT

License No. R-23
Amendment No. 9

The Atomic Energy Commission ("the Commission") has found that:

1. the application for license amendment dated November 3, 1970, complies with the requirements of the Atomic Energy Act of 1954, as amended ("the Act"), and the Commission's regulations set forth in 10 CFR, Chapter I;
2. there is reasonable assurance that the reactor can be operated at the new location without endangering the health and safety of the public; and
3. the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Facility License No. R-23 issued to the Texas A&M University is hereby amended to authorize the University to operate the reactor at the new location in accordance with the terms of the license.

Accordingly, paragraph 1 on page 2 of Facility License No. R-23 is amended (to add the application for relocation of the reactor) to read:

"1. This license applies to the Model AGN-201, Serial No. 106, nuclear reactor (herein, 'the reactor') which is owned by the Texas A&M University (hereinafter, 'the licensee' or 'the University') and located on its campus at College Station, Texas, and is described in the licensee's application for license dated June 13, 1957, and subsequent amendments thereto, including the amendment dated May 15, 1968 and November 3, 1970, (herein referred to as 'the application')."

This license amendment is effective as of the date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

Date of Issuance:

UNITED STATES ATOMIC ENERGY COMMISSION

SAFETY EVALUATION BY THE DIVISION OF REACTOR LICENSING

DOCKET NO. 50-59

TEXAS A&M UNIVERSITY

RELOCATION OF REACTOR

INTRODUCTION

By application dated November 3, 1970, the Texas A&M University requested an amendment to Facility License No. R-23 to authorize relocation of the AGN-201 reactor to the Engineering Center Building and subsequent operation at the new site. The proposed relocation, reconstruction and operation of the reactor at the new site are considered in this evaluation.

DISCUSSION

The licensee proposes to move its AGN-201 reactor approximately 1400 ft from its present location (Building 483) to the Engineering Center Building (Building 518) which is being constructed. Reactor relocation procedures provided in the application specify separate packaging of the core tank and the fuel-bearing control rods prior to relocation of the reactor tank and associated components. The reactor tank must be moved into the reactor room of Building 518 before the builder can complete the outside walls of the building. The core tank, which contains the fuel, and associated components will remain in Building 483. A cadmium rod will be inserted into the reactor glory hole before the core tank is placed in a special storage container to be stored in a controlled area until the new Engineering Center Building is completed and accepted by the University. A comprehensive radiation monitoring program will be performed during the relocation to control personnel exposures.

The applicant has stated that, after disassembly of the reactor has been completed, the disassembly will be reviewed to determine if the assembly procedures can be improved by the experience gained from disassembly of the facility. Such improvements will be incorporated into the assembly procedures before the reactor is reassembled in the new location. A radiation survey will be performed during initial operation at the new facility to assure that the radiation levels in the reactor room and surrounding areas are acceptable. The reactivity worth of the core under various conditions will be measured to assure that the reactor has been assembled properly. Surveys will also be performed in Building 483 after completing the move to ascertain that radiation levels are low enough to permit unrestricted occupancy.

EVALUATION

We have reviewed the site proposed for the operation of the reactor and have determined that the personnel control provided by the building design, and the shielding and radiation monitoring provided make this site acceptable.

During the period of relocation, subcriticality of the reactor will be assured by removing the fuel-bearing control rods from the core and separating the graphite reflector from the core, and by placing cadmium in the glory hole. Each of the three coarse control rods has a reactivity worth of 1.25% delta k/k and the fine rod has a reactivity worth of about 0.16% delta k/k. Since the excess reactivity of this reactor is limited to approximately 0.2% delta k/k when the glory hole is empty, the reflected core is subcritical by about 3.7% with all rods removed. With the reflector removed and cadmium in the glory hole, the core is more subcritical. We, therefore, conclude that the core cannot become critical if moved by the specified procedures and that the surveillance program will assure safe transport of the core and other reactor components.

The radiation survey and core physics measurements to be performed during initial reactor operations after assembly in the new location will provide assurance that the reactor has been assembled correctly and that it may be operated safely.

CONCLUSION

Based on the above considerations, we have concluded that there is reasonable assurance that the health and safety of the public will not be endangered by relocation and reconstruction of the University's AGN-201 reactor and subsequent operation at 0.1 watt in the new Engineering Center Building.



Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing

Date: February 6, 1971