ABILENE CHRISTIAN UNIVERSITY

DOCKET NO. 50-610

ABILENE CHRISTIAN UNIVERSITY MOLTEN SALT RESEARCH REACTOR

CONSTRUCTION PERMIT

Construction Permit No. CPRR-124

1. The Nuclear Regulatory Commission (NRC or the Commission) has found that:

   A. The application for a construction permit (CP), as supplemented and revised (the application), filed by Abilene Christian University (ACU, the applicant), complies with the requirements of the Atomic Energy Act of 1954, as amended (the Act), and the rules and regulations of the Commission set forth in Title 10 of the *Code of Federal Regulations* (10 CFR) chapter I – Nuclear Regulatory Commission. There is reasonable assurance that the activities authorized by the CP will be conducted in compliance with the rules and regulations of the Commission, and all required notifications to other agencies or bodies have been duly made;

   B. The applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;

   C. Such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report (FSAR);

   D. Safety features or components, if any, that require research and development have been described by the applicant;

   E. On the basis of the foregoing, there is reasonable assurance that: (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for the completion of construction of the proposed facility, and (ii) taking into consideration the site criteria contained in 10 CFR part 100, “Reactor Site Criteria,”[1] the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public;

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[1] While the site criteria contained in 10 CFR part 100 are applicable to nuclear power and testing reactors, but not the Molten Salt Research Reactor, the NRC staff considered, in Chapter 2 of its safety evaluation, site-specific conditions similar to those listed in 10 CFR part 100. Using the guidance in ORNL/TM-2020/1478, “Proposed Guidance for Preparing and Reviewing a Molten Salt Non-Power Reactor Application,” the NRC staff evaluated ACU’s analysis of site geography and demography; nearby industrial, transportation, and military facilities; site meteorology; site hydrology; and site geology, seismology, and geotechnical engineering to ensure that issuance of the CP will not be inimical to the common defense and security or to the health and safety of the public.

F. The processes to be performed provide reasonable assurance that the applicant will comply with the regulations in 10 CFR chapter I, including the regulations in 10 CFR part 20, “Standards for Protection Against Radiation,” and that the health and safety of the public will not be endangered;

G. ACU is technically qualified to design and construct the facility in accordance with the Commission’s regulations set forth in 10 CFR chapter I;

H. ACU is financially qualified to design and construct the facility in accordance with the Commission’s regulations set forth in 10 CFR chapter I;

I. The issuance of a CP for the construction of the facility will not be inimical to the common defense and security or to the health and safety of the public; and

J. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs, and considering reasonable alternatives, the issuance of this CP is in accordance with subpart A, “National Environmental Policy Act—Regulations Implementing Section 102(2),” of 10 CFR part 51, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,” of the Commission’s regulations and all applicable requirements have been satisfied.

2. On the basis of the foregoing findings regarding this facility, CP No. CPRR-124 is hereby issued to ACU pursuant to section 104c and section 185a of the Act and 10 CFR part 50, “Domestic Licensing of Production and Utilization Facilities,” for a utilization facility, as defined in 10 CFR 50.2, “Definitions,” useful in the conduct of research and development, as described in the application filed in this matter by the applicant. The utilization facility, known as the Molten Salt Research Reactor (MSRR), owned by ACU, will be located in the Gayle and Max Dillard Science and Engineering Research Center (SERC) on the ACU campus in Abilene, Texas, and is described in the application.

3. This CP shall be deemed to contain and be subject to the conditions specified in 10 CFR 50.55, “Conditions of construction permits, early site permits, combined licenses, and manufacturing licenses”; 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 conditions specified or incorporated below:

   A. The earliest date for the completion of the construction of the facility is March 31, 2026, and the latest date for completion is December 31, 2029.

   B. The facility shall be constructed and located at the site as described in the application, in the SERC on the ACU campus in the City of Abilene, Taylor County, Texas.

   C. The CP authorizes the applicant to construct a non-power research reactor facility described in the application, in accordance with the principal architectural and engineering criteria set forth therein.

   D. Prior to beginning construction of the MSRR, as defined in 10 CFR 50.10, “License required; limited work authorization,” ACU shall (a) develop and implement a Degradation Management Program (DMP) as described in ACU’s response

(ML24121A271) to the NRC, dated April 30, 2024, to request for additional information 2 (ML23348A196) and (b) submit its implemented DMP to the NRC per 10 CFR 50.4, "Written Communications."

ACU may change the DMP provided that any change that reduces commitments of the DMP shall be submitted to the NRC within 60 days of implementing the change.

ACU shall submit a report to the NRC on a recurring 6-month period on the application of the DMP to safety-related structures, systems, and components, including a summary of any program changes that were made during the period, commencing on the date of CP issuance.

E. ACU shall implement the quality assurance (QA) program described in the quality assurance program description (QAPD) referenced, pursuant to 10 CFR 50.34(a)(7), in section 12.9 of revision 2 of the preliminary safety analysis report, including revisions to the QA program in accordance with the provisions below.

ACU may make changes to its previously accepted QAPD without prior Commission approval, provided the changes do not reduce the commitments in the QAPD, as accepted by the Commission. Changes to the QAPD that do not reduce the commitments must be submitted to the Commission within 90 days.

Changes to the QAPD that do reduce the commitments must be submitted to the Commission and receive the Commission's approval prior to implementation, as follows:

(1) Changes must be submitted as specified in 10 CFR 50.4.

(2) The submittal of changes to the QAPD must include all pages affected by the changes and must be accompanied by a forwarding letter identifying the changes, the reason for the changes, and the basis for concluding that the revised program incorporating the changes continues to satisfy the QAPD commitments previously accepted by the Commission (the letter does not need to provide the basis for the changes that correct spelling, punctuation, or editorial items).

(3) A copy of the forwarding letter identifying the changes must be maintained as a record by ACU for 3 years.

(4) Changes to the QAPD shall be regarded as accepted by the Commission upon ACU's receipt of a letter to this effect from the appropriate reviewing office of the Commission or 60 days after ACU's submittal to the Commission, whichever occurs first.

4. This CP is subject to the limitation that a license authorizing operation of the facility will not be issued by the Commission unless (a) the applicant submits to the Commission the complete FSAR, portions of which may be submitted and evaluated from time to time; (b) the Commission finds that the final design provides reasonable assurance that the health and safety of the public will not be endangered by operation of the facility in accordance with procedures approved by it in connection with the issuance of said license; (c) the

Commission finds that the operation of the facility will be in accordance with 10 CFR part 51 of the Commission's regulations and all applicable requirements were satisfied; and (d) the applicant submits proof of financial protection and executes an indemnity agreement as required by Section 170 of the Act.

5. This CP is effective as of its date of issuance and shall expire on the latest completion date indicated in paragraph 3.A. above.

FOR THE NUCLEAR REGULATORY COMMISSION

ANDREA VEIL Digitally signed by ANDREA VEIL
Date: 2024.09.16 08:31:51 -04'00'

Andrea D. Veil, Director
Office of Nuclear Reactor Regulation

Date of Issuance: September 16, 2024