

**From:** Zackary Stone  
**Sent:** Friday, January 13, 2023 10:37 AM  
**To:** Rusty Towell; Lester Towell; Jordan Robison; Tim Head; Alexander Adams  
**Cc:** Richard Rivera; Edward Helvenston  
**Subject:** Abilene Christian University - Audit Plan for the Molten Salt Research Reactor Construction Permit Application Technical Topics (EPID: L-2022-NFW-0002 and L-2022-NFW-0003)  
**Attachments:** January 13, 2023 - ACU CP Technical Topics Audit Plan.docx

Dear Dr. Towell,

By letter dated August 12, 2022, as supplemented by letter dated October 14, 2022, Abilene Christian University (ACU) submitted to the U.S. Nuclear Regulatory Commission (NRC), an application for a construction permit (CP) for a molten salt research reactor (MSRR), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and Section 104c of the Atomic Energy Act of 1954, as amended. By letter dated November 18, 2022, the NRC issued a letter accepting ACU's MSRR CP application for docketing. The acceptance letter highlighted five technical topics that would likely require increased focus by ACU and the NRC staff to ensure timely completion of the review.

The NRC has determined that a regulatory audit would assist in the resolution of these technical topics. The NRC staff will conduct the audit to seek clarification, gain understanding, and verify information regarding the five technical topics provided to ACU in the acceptance letter for the MSRR CP application. The NRC staff may also use the audit to seek clarification, gain understanding, and verify information regarding other topics relevant to the MSRR CP application, as appropriate, and determine the need for additional topic-specific audits. The NRC staff will coordinate with ACU to kick off the audit in late January, 2023, in accordance with the attached audit plan.

If you have any questions, please contact Richard Rivera at (301) 415-7190 or via email at [Richard.Rivera@nrc.gov](mailto:Richard.Rivera@nrc.gov), Edward Helvenston at (301) 415-4067 or via email at [Edward.Helvenston@nrc.gov](mailto:Edward.Helvenston@nrc.gov), or Zackary Stone at (301) 415-0615 or via email at [Zackary.Stone@nrc.gov](mailto:Zackary.Stone@nrc.gov).

Sincerely,

Zackary Stone, Project Manger  
Advanced Reactor Licensing Branch 2  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Docket No. 50-610

**Hearing Identifier:** NRR\_DRMA  
**Email Number:** 1909

**Mail Envelope Properties** (SA1PR09MB8687A3751D349F10BE52AD63E1C29)

**Subject:** Abilene Christian University - Audit Plan for the Molten Salt Research Reactor Construction Permit Application Technical Topics (EPID L-2022-NFW-0002 and L-2022-NFW-0003)  
**Sent Date:** 1/13/2023 10:36:36 AM  
**Received Date:** 1/13/2023 10:36:00 AM  
**From:** Zackary Stone

**Created By:** Zackary.Stone@nrc.gov

**Recipients:**

"Richard Rivera" <richard.rivera@nrc.gov>  
Tracking Status: None  
"Edward Helvenston" <Edward.Helvenston@nrc.gov>  
Tracking Status: None  
"Rusty Towell" <rxt01a@acu.edu>  
Tracking Status: None  
"Lester Towell" <ldt20a@acu.edu>  
Tracking Status: None  
"Jordan Robison" <jcr20b@acu.edu>  
Tracking Status: None  
"Tim Head" <tlh07b@acu.edu>  
Tracking Status: None  
"Alexander Adams" <axa20j@acu.edu>  
Tracking Status: None

**Post Office:** SA1PR09MB8687.namprd09.prod.outlook.com

Files	Size	Date & Time
MESSAGE	2096	1/13/2023 10:36:00 AM
January 13, 2023 - ACU CP Technical Topics Audit Plan.docx		86084

**Options**

**Priority:** Normal  
**Return Notification:** No  
**Reply Requested:** No  
**Sensitivity:** Normal  
**Expiration Date:**



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

**ABILENE CHRISTIAN UNIVERSITY –AUDIT PLAN FOR THE MOLTEN SALT RESEARCH  
REACTOR CONSTRUCTION PERMIT APPLICATION TECHNICAL TOPICS  
(EPID: L-2022-NFW-0002 AND L-2022-NFW-0003)**

**APPLICANT INFORMATION**

**Applicant:** Abilene Christian University (ACU)

**Applicant Address:** NEXT Lab, Abilene Christian University, ACU Box 28208  
Abilene, TX 79699-8208

**Plant Name:** ACU Molten Salt Research Reactor

**Docket No.:** 50-610

**Background:**

By letter dated August 12, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22227A202), as supplemented by letter dated October 14, 2022 (ML22293B816), Abilene Christian University (ACU) submitted to the U.S. Nuclear Regulatory Commission (NRC), an application for a construction permit (CP) for a molten salt research reactor (MSRR), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," and Section 104c of the Atomic Energy Act of 1954, as amended. By letter dated November 18, 2022 (ML22313A097), the NRC issued a letter accepting ACU's MSRR construction permit application for docketing. The acceptance letter highlighted five technical topics that would likely require increased focus by ACU and the NRC staff to ensure timely completion of the review.

**Purpose:**

The purpose of this audit is for the NRC staff to seek clarification, gain understanding, and verify information regarding the five technical topics provided to ACU in the acceptance letter for the MSRR CP application. The NRC staff may also use the audit to seek clarification, gain understanding, and verify information regarding other topics relevant to the MSRR CP application and determine the need for additional topic-specific audits. The audit achieves a more effective and efficient review by allowing the NRC staff to review and discuss supporting material with the objective of improving communication and helps focus the request for additional information to the most risk significant items. The NRC staff plans to audit material which may be needed to make a reasonable assurance finding that the preliminary design protects public health and safety. If the NRC staff identifies information that is needed to support a finding, ACU will need to submit that information on the application docket.

## **Regulatory Audit Basis:**

The basis for the audit is the regulations in 10 CFR Part 50, Sections 50.34(a), "Preliminary safety analysis report," and 50.35, "Issuance of construction permits."

## **Regulatory Audit Scope**

This audit will focus on information provided by ACU in the online reference portal (i.e., Certrec) and during virtual meetings. This audit will provide the NRC staff with information related to the NRC staff's evaluation of the CP application. Specific audit discussion topics associated with this audit may be provided in subsequent correspondence, such as an email.

## **Information and Other Material Necessary for the Regulatory Audit**

ACU should be prepared to provide documents, reports, calculations, computer code verification, and other material, as applicable, related to the five technical topic areas as outlined in the acceptance letter and provided below.

- Research and development programs necessary to confirm the adequacy of the MSRR design.
- Properties of graphite used in MSRR components.
- Potential corrosion and degradation mechanisms of metallic MSRR components.
- Use of effluent tanks in the fuel handling enclosure and how this may affect the proposed maximum hypothetical accident.
- Management and disposal of transuranic-contaminated low-level waste generated by the MSRR.

In addition, the NRC staff may provide to ACU audit topics or questions relevant to other areas of the MSRR CP application to support the NRC staff's review of the application, as appropriate.

The NRC staff may request that ACU make these materials available in the online reference portal and/or during a site visit if one is conducted.

## **Audit Team**

Christopher Van Wert	Sr. Technical Advisor for Reactor Fuels
Boyce Travis	Senior Nuclear Engineer
Alexander Chereskin	Materials Engineer
Donald Palmrose	Sr. Reactor Engineer, Environmental
Kyle Song	Reactor Systems Engineer
Richard Rivera	Project Manager, responsible for audit logistics
Patricia Vokoun	Environmental Project Manager
Zackary Stone	Project Manager
Ed Helvenston	Project Manager
Michelle Hayes	Branch Chief, Technical
Michael Wentzel	Branch Chief, Licensing
Kenneth Erwin	Branch Chief, Environmental

Additional audit team members may be added as needed.

## **Logistics**

Entrance Meeting	Late January 2023
Exit Meeting	Approximately July 2023, a precise date and time TBD

Audit meetings take place in a virtual format, using Microsoft Teams, or via other, similar platform. Audit meetings will be scheduled on an as needed basis after the entrance meeting and, as appropriate, once the NRC staff has had the opportunity to review any applicable documents placed in the online reference portal. If a site visit is needed, review topics will be provided to ACU, and mutually agreeable dates will be established. The audit will begin late January 2023, and continue as necessary, with activities occurring intermittently during the audit period.

The audit period may be reduced or extended, dependent on the NRC staff and ACU progress in addressing the audit topics. Additional audit activities may be planned as necessary to support the NRC staffs' understanding of information needed to complete the review of the application.

To improve the efficiency of the audit, ACU and NRC staff discussed the use of the online reference portal (i.e., Certrec), established by ACU, that would allow NRC staff limited read-only access to the requested material and other technical information provided by ACU. Use of the online reference portal is acceptable provided that ACU establishes measures to limit access to specific NRC staff (e.g., based on NRC e-mail addresses or the use of passwords which will only be assigned to NRC staff directly involved in the audit on a need-to-know basis), and to make the documents view-only (i.e., prevent NRC staff from saving, copying, downloading, or printing any documents). The conditions associated with the online reference portal must be maintained throughout the audit process. The NRC staff who should initially be granted access to the portal are those listed in the "Audit Team" section above. As needed, the NRC audit logistics lead may provide ACU with the names of additional NRC staff who are added to the audit team and should subsequently be granted access.

## **Special Requests**

The NRC staff requests that ACU ensure that their technical staff are available to answer questions during the audit.

## **Deliverables**

At the completion of the audit, the audit team will issue an audit summary within 90 days after the exit meeting but will strive for a shorter duration. The audit summary will be declared and entered as an official agency record in ADAMS and be made available for public viewing.