

**From:** Edward Helvenston  
**Sent:** Tuesday, May 9, 2023 1:36 PM  
**To:** Rusty Towell; Lester Towell; Jordan Robison; Tim Head; Alexander Adams  
**Cc:** Richard Rivera; Zackary Stone (He/Him/His); Michael Wentzel; Boyce Travis  
**Subject:** ACU MSRR Section 1.7 and 9.5 Audit Questions

Dear Dr. Towell,

Below are questions the U.S. Nuclear Regulatory Commission (NRC) staff has prepared for Abilene Christian University (ACU) related to the ACU Preliminary Safety Analysis Report (PSAR), Section 1.7, "Compliance with the Nuclear Waste Policy Act of 1982," and Section 9.5, "Possession and Use of Byproduct, Source, and Special Nuclear Material." The NRC staff would like to discuss these questions within the scope of the ACU construction permit (CP) application review Audit Plan for General Topics (see audit plan dated 3/2/2023, ML23065A052), and I am providing in advance to facilitate discussion during an audit meeting. We will add this email, with the questions, to public ADAMS. If you have any questions, please let Richard, Zackary, or I know.

Thank you,

**Ed Helvenston, U.S. NRC**

Non-Power Production and Utilization Facility Licensing Branch (UNPL)  
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Item #	Question
1.7-1	<p>Section 302 of the Nuclear Waste Policy Act of 1982, as amended (the NWPA) (42 USC § 10101 et seq.), specifies that the NRC may require, as a precondition to issuing a facility operating license for a research reactor, that the applicant have entered into an agreement with the U.S. Department of Energy (DOE) for the disposal of high-level radioactive waste and spent nuclear fuel that may result from the use of such license. Furthermore, the NWPA specifies that the NRC shall not issue a license to any person to use a utilization facility under section 103 or 104 of the AEA unless: (i) such person has entered into a contract with DOE for disposal under section 302 of the NWPA or (ii) DOE affirms in writing that that such person is actively and in good faith negotiating with DOE for such a contract.</p> <p>The staff notes that to be in compliance at the CP stage, an applicant needs to submit documentation showing communications in good faith between the applicant and DOE to enter into a contract for the disposition of high-level waste and nuclear fuel. (See, for example, ADAMS Accession No. ML23019A360.)</p> <p>MSRR PSAR Section 1.7, "Compliance with the Nuclear Waste Policy Act of 1982," states: "Abilene Christian University intends to enter into a contract with the Department of Energy for required fuel cycle services. This will be discussed further in the Operating License application, consistent with Section 302(b)(1) of the Nuclear Waste Policy Act of 1982."</p> <p>MSRR PSAR Appendix 15A provides a letter from DOE to ACU, dated November 15, 2019, indicating that DOE will consider ACU requests for fuel services including fuel disposition once ACU has an NRC-licensed research reactor. However, this letter does not appear to provide specific documentation from DOE of communications between ACU and DOE to enter into a fuel disposal contract.</p> <p>Please discuss whether ACU has specific documentation showing communications in good faith between ACU and DOE to enter into a contract for the disposition of high-level waste and nuclear fuel, as necessary to comply with the NWPA for the issuance of a CP for the MSRR.</p>
9.5-1	<p>PSAR Section 9.5 states that special nuclear material (SNM) at the MSRR will be uranium in the fuel salt, and byproduct materials at the MSRR will be those generated by MSRR operation and mixed in the fuel salt. Discuss whether ACU plans to possess other radioactive material (i.e., material not contained in fuel or generated by MSRR operation) under the MSRR license.</p>
9.5-2	<p>PSAR Section 9.5.1 states that SNM will be located and handled in the "fuel receiving station located in the research bay" and in the "experimental sampling system." However, the staff notes that this terminology does not appear to be used elsewhere in the PSAR.</p> <ol style="list-style-type: none"> <li>Please describe the "fuel receiving station." Is this part of the fuel storage enclosure (see PSAR Figure 3.1-3) located in the systems pit, or is it something different? If the fuel storage enclosure and tanks illustrated in PSAR Figure 3.1-3 are not included in the PSAR Section 9.5.1 description of where SNM will be used and handled, should these be added?</li> <li>Please describe the "experimental sampling system." Is this the same as the "sample extraction system" discussed in PSAR Sections 4.3.11 and 9.5.2, or is it something different?</li> </ol>
9.5-3	<p>PSAR Section 9.5.2 states that byproduct material will be present in the "reactor system." Please clarify what portions of the MSRR this is intended</p>

	to include. For example, does it include the fuel storage enclosure and tanks (the staff notes that information in PSAR Chapters 3 and 13 appears to suggest that the tanks could be used to hold irradiated fuel salt)?
9.5-4	PSAR Section 9.5.2 states that byproduct material will be present in the off-gas system. According to PSAR Section 9.6.2, the off-gas system is a subsystem of the gas management system (GMS). Given that gases in the entire GMS interface with fuel salt as discussed in PSAR Section 9.6.2, should PSAR Section 9.5.2 refer to the entire GMS as containing byproduct material? (The staff notes that PSAR Section 9.5.1 indicates the GMS generally as a location where SNM is handled.)

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