



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

October 17, 2023

**ATOMIC ALCHEMY INC TERTIARY PRELIMINARY SAFETY ANALYSIS REPORT  
PRE-SUBMITTAL AUDIT PLAN  
(CAC NO. 000955; EPID NO. L-2023-LRM-0024)**

**APPLICANT INFORMATION**

**Applicant:** Atomic Alchemy, Inc.

**Applicant Address:** 855 North Capital Ave, STE #3  
Idaho Falls, ID 83402-3405

**Plant Name(s) and Unit(s):** Versatile Isotope Production Reactor (VIPR)

**Project No(s).:** 99902080

**Background:**

Atomic Alchemy, Inc (AAI) began pre-application discussions with the U.S. Nuclear Regulatory Commission (NRC) staff on their Versatile Isotope Production Reactor (VIPR) in October 2019. As discussed in various teleconferences and in a meeting held on August 9, 2022, AAI plans to submit an application for a construction permit (CP), including a preliminary safety analysis report (PSAR), for the VIPR in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic licensing of production and utilization facilities." The staff plans to review the PSAR in accordance with NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Format and Content" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML042430055), or applicable guidance.

**Purpose:**

To support pre-application engagement, AAI volunteered for this supplemental audit to ensure readiness of Chapters 3, Design of Structures, Systems and Components, and 7, Instrumentation and Control Systems, of the draft PSAR before it is formally submitted for the NRC staff's review. NRC staff provided feedback after initial audits were conducted in the fall of 2022 and spring of 2023, for AAI consideration (ML23086C032 and ML23194A200, respectively). The audit will allow the NRC staff to (1) identify any required information that is missing from the application, (2) identify technical or regulatory issues that may complicate the acceptance or technical reviews of the application, and (3) become familiar with the content of the application, particularly in areas where AAI plans to propose new concepts or novel design features. The NRC staff will summarize its observations related to items (1) and (2) in an audit report to be provided to AAI, as discussed below.

## **Regulatory Audit Basis:**

The bases for the audit are 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**

The NRC staff will use parts of NRC's Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-116, "Pre-application Readiness Assessment" (ADAMS Accession No. ML20104B698), as guidance for conducting this audit. This audit will cover all the chapters of the PSAR.

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

The NRC staff requests that all the documents in the audit scope be provided by AAI on the online reference portal.

## **Team Assignments**

Michael Balazik	Project Manager, Division of Advanced Reactors and Non-Power Production and Utilization Facilities (DANU) Audit Lead (responsible for technical review)
Holly Cruz	Sr. Project Manager, DANU (responsible for audit logistics)
Duane Hardesty	Sr. Project Manager, DANU
Joshua Borromeo	Branch Chief, DANU
Norbert Carte	Instrumentation and Controls, DEX
Dinesh Taneja	Senior Electronics Engineer, DEX

Additional audit team members may be added as needed.

## **Logistics**

Entrance Meeting	October 17, 2023
Exit Meeting	November 17, 2023, or earlier, Time TBD

Audit meetings will take place in a virtual format, using Microsoft Teams. Audit meetings will be scheduled on an as needed basis after the entrance meeting and once the NRC staff has had the opportunity to review any documents placed in the online reference portal. The audit duration is anticipated to be approximately 4 weeks with activities occurring intermittently during that period. The NRC staff estimates that the level of effort for the audit is approximately 80 hours.

## **Special Requests**

The NRC staff requests that AAI 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 30 days after the exit meeting. The audit summary will be declared and entered as an official agency record in

ADAMS and be made available for public viewing through the publicly available records component of ADAMS.

## References

Title 10 of the *Code of Federal Regulations*.

NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors, Format and Content," February 1996

NRR Office Instruction LIC-116, "Pre-application Readiness Assessment"

Please contact Holly Cruz (NRC) at 301-415-1053 or by email at [holly.cruz@nrc.gov](mailto:holly.cruz@nrc.gov) about any issues related to the conduct of the audit.

Date: October 17, 2023



Signed by Cruz, Holly  
on 10/17/23

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Holly Cruz, Sr. Project Manager  
Non-power Production and Utilization Facility  
Licensing Branch  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

**ATOMIC ALCHEMY, INC – VERSATILE ISOTOPE PRODUCTION REACTOR TERTIARY  
PRELIMINARY SAFETY ANALYSIS REPORT PRE-SUBMITTAL AUDIT PLAN  
(CAC NO. 000955; EPID NO. L-2023-LRM-0024) DATED OCTOBER 17, 2023**

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**ADAMS Accession Nos.:**

**ML23290A031 (Package)**

**ML23290A030 (Audit Plan)**

**NRR-106**

OFFICE	NRR/DANU/UNPL/PM	NRR/DANU/UNPL/BC	NRR/DANU/UNPL/PM
NAME	HCruz	JBorromeo	HCruz
DATE	9/15/2023	10/17/2023	10/17/2023

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