



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

**ATOMIC ALCHEMY INC PRELIMINARY SAFETY ANALYSIS REPORT
PRE-SUBMITTAL AUDIT PLAN
(CAC NO. 000955; EPID NO. L-2022-LRM-0075)**

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. Over the past several years, AAI has submitted topical reports and white papers that apply to the VIPR. 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 audit to provide the NRC staff an opportunity to assess the readiness of the draft PSAR before it is formally submitted for the NRC staff's review. 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)
Justin Hudson	Project Manager, DANU
Xiaosong Yin	Project Manager, DANU
Duane Hardesty	Sr. Project Manager, DANU
Michael Takacs	Security Specialist, DANU
Josh Borromeo	Branch Chief, DANU
Amit Ghosh	Geotechnical Engineer, Division of Engineering and External Hazards (DEX)
Jason White	Meteorologist, DEX
Hosung Ahn	Hydrologist, DEX
Bryce Lehman	Structural Engineer, DEX
Andrew Prinaris	Structural Engineer, DEX
Ian Tseng	Mechanical Engineer, DEX
Adam Rau	Nuclear Systems Performance, Division of Safety Systems (DSS)
Joshua Kaizer	Nuclear Methods and Fuel Analysis, DSS
Gordon Curran	Reactor Systems Engineer, DSS
Rao Karipineni	Safety and Plant Systems Engineer, DSS
Rossnyev Alvarado	Instrumentation and Controls, DEX
Norbert Carte	Instrumentation and Controls, DEX
Dinesh Taneja	Senior Electronics Engineer, DEX
Jorge Cintron-Rivera	Electrical Engineer, DEX
Yawar Faraz	Fuel Facility Licensing, Office of Nuclear Material Safety and Safeguards (NMSS)
Charles Moulton	Fire Protection Engineer, Division of Risk Assessment (DRA)
Jay Robinson	Senior Fire Protection Engineer, DRA
Zachary Gran	Radiation Protection and Consequence, DRA
Edward Robinson	Senior Emergency Preparedness Specialist, Office of Nuclear Security and Incident Response (NSIR)
Charles Teal	Materials Security, NSIR

Dan Warner	Cybersecurity, NSIR
Andrea Keim	Quality Assurance and Vendor Inspection, Division of Reactor Oversight
Amy Beasten	Non-Power Production and Utilization Facility Oversight, DANU
Kevin Roche	Non-Power Production and Utilization Facility Oversight, DANU
Nancy Martinez	Environmental Scientist, NMSS
Glenn Tuttle	Material Control and Accounting, NMSS
Elijah Dickson	Senior Reliability and Risk Analyst, DRA
Trent Wertz	Senior Financial Analyst, NMSS

Additional audit team members may be added as needed.

Logistics

Entrance Meeting	October 18, 2022
Exit Meeting	November 18, 2022, 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 300 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 about any issues related to the conduct of the audit.

Date: October 17, 2022

A handwritten signature in black ink, appearing to read 'Holly Cruz', with a stylized flourish at the end.

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 PRELIMINARY
SAFETY ANALYSIS REPORT PRE-SUBMITTAL AUDIT PLAN (CAC NO. 000955; EPID NO.
L-2022-LRM-0062) DATED OCTOBER 17, 2022**

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ADAMS Accession Nos.:

ML22286A169 (Package);

ML22286A167 (Audit Plan)

OFFICE	NRR/DANU/UNPL/PM	NRR/DANU/UNPL/BC	NRR/DANU/UNPL/PM
NAME	HCruz	JBorromeo	HCruz
DATE	09/26/2022	10/17/2022	10/17/2022

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