



25-June-2021

Project Number: 99902080

US Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

**SUBJECT: STANDARD REVIEW PLAN CONFORMANCE FOR ATOMIC ALCHEMY'S
NON-POWER PRODUCTION AND UTILIZATION FACILITY**

ENCLOSURES:

- 1) Affidavit Pursuant to 10 CFR 2.390
- 2) AAO-VIPR-21-SRP-00(P), Atomic Alchemy Conformance to the Standard Review Plan, Rev. 0
- 3) AAO-VIPR-21-SRP-00(NP), Atomic Alchemy Conformance to the Standard Review Plan, Rev. 0
- 4) Basis for the Submittal of the Atomic Alchemy Standard Review Plan Conformance as a Topical Report
- 5) Format of the Atomic Alchemy SAR

The purpose of this letter is Atomic Alchemy's voluntary submittal of its conformance with the NUREG-1537 Part 2, Standard Review Plan (SRP) for its Non-power Production and Utilization Facility (NPUF) as a topical report for NRC review and approval, in support of the preparation of Atomic Alchemy's NPUF construction permit application and operating license application, under Title 10 Code of Federal Regulations (CFR) Part 50.

Atomic Alchemy's SRP Conformance document contains commercially sensitive, proprietary information and, as such, we are requesting that this information be withheld from public disclosure in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Request for Withholding." The proprietary information is appropriately marked and an affidavit documenting the basis for this request is provided in Enclosure 1. Accordingly, Enclosure 2 is the proprietary version of Atomic Alchemy's SRP Conformance which contains the non-redacted sensitive information. Atomic Alchemy provides the public redacted version in Enclosure 3.

The bases for the exemption of Criterion B in Section 4.2 of LIC-500 can be found in Enclosure 4.

Atomic Alchemy has also provided its preliminary Safety Analysis Report (SAR) formatting as an aid to assist the Staff's reviewers in Enclosure 5.

To help increase the efficiency of the licensing process, Atomic Alchemy discussed the concept of this topical report submittal of a standard review plan conformance matrix with the NRC staff during conference calls on May 6th, 2021, and June 8th, 2021.

Many of the regulations of Title 10 apply to both power and non-power reactors. However, the level of detail and rigor required to show conformance to applicable regulations for NUPFs is commensurate with the level of risk such a facility poses to the health and safety of the public, workers, and the environment. Because of this, and the broad nature of

NUPF facilities, NUREG-1537, Part 2¹ provides a vaguer description of acceptance criteria for the content of a NPUF SAR than is provided for power plants.

Atomic Alchemy has chosen to utilize the format of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis for Nuclear Power Plants" for the purpose of determining the applicability of specific Title 10 regulations and as a basis for establishing the level of detail to be included in the SAR that has already been determined acceptable to the NRC.

The NUREG-0800 Standard Review Plan (SRP) acceptance criterion are not directly applicable to the Atomic Alchemy NPUF design; however, they can be easily correlated to NUREG-1537 Part 2 SRP acceptance criteria, and it represents an established SAR basis of content that will provide the NRC with reasonable assurances of the safety of the design of the Atomic Alchemy facility and its compliance with the appropriate Title 10 regulations.

The Atomic Alchemy SRP conformance topical report document contains approximately 60% of the detailed information that will be contained in the PSAR submitted with the construction license application. Atomic Alchemy's expectation upon NRC review of this topical report is the Staff's agreement on the applicable Title 10 regulations (described within the topical report), acceptance of Atomic Alchemy's intended design approach and compliance with those regulations, its conformance to NUREG-1537 Part 2 Acceptance Criterion with a sufficient level of detail that is acceptable to the Staff (described within the topical report), and a preliminary Staff acceptance of Atomic Alchemy's compliance with 10 CFR 50.34(a) for the specific elements addressed in the SRP Topical Report document.

There are no commitments made in this submittal.

If there are any questions or a need for additional information, please contact Mr. Michael Grochowski at regulatory@atomicalchemy.us.

Sincerely,

Thomas Eiden
CEO, Atomic Alchemy Inc.

TE/mjg

¹ Section 50.34 of 10 CFR 50 of the Commission's regulations requires that each application for a construction permit for a nuclear facility shall include a Preliminary Safety Analysis Report (PSAR) and that each application for a license to operate such a facility shall include a Final Safety Analysis Report (FSAR). The SAR must be sufficiently detailed to permit the staff to determine whether the plant can be built and operated without undue risk to the health and safety of the public.

CC:

Nuclear Regulatory Commission:

Michael Balazik, Project Manager

Non-Power Production and Utilization Facilities Licensing Branch

Division of Advanced Reactors and Non-Power Production and Utilization Facilities (NPUFs)

Office of Nuclear Reactor Regulation

Greg Casto, Branch Chief

Non-Power Production and Utilization Facilities Licensing Branch

Division of Advanced Reactors and Non-Power Production and Utilization Facilities (NPUFs)

Office of Nuclear Reactor Regulation

Atomic Alchemy Inc.

Michael Grochowski, Nuclear Regulatory Affairs & Compliance Manager