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

June 25, 2025

Mr. Adam Lenarz
Vice President, Commercial Development
Last Energy Inc.
1923 Vermont Ave NW, Suite 300
Washington DC, 20001

SUBJECT: LAST ENERGY'S REVISED WHITE PAPER: HERMETICALLY SEALED CONTAINMENT

Dear Mr. Lenarz,

The purpose of this letter is to provide feedback on the revised white paper you submitted on behalf of Last Energy titled *Hermetically Sealed Containment*.[1] The white paper contains high-level reactor design criteria and requests the U.S. Nuclear Regulatory Commission (NRC) to confirm that these design criteria, "… in achieving total and complete isolation of radiohazards in all states of a reactor's lifecycle, will fully satisfy the NRC's mandate of national security, worker safety, environmental safety, and public safety."

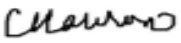
The NRC staff has considered the information in your white paper. The staff agrees that a reactor design that limits hazards to workers and members of the public from radioactive materials to levels indistinguishable from naturally occurring levels of radiation in all states of a reactor's lifecycle would provide reasonable assurance of adequate protection of public health and safety and the common defense and security. A license application for such a design that includes sufficiently detailed technical information and analyses could support an NRC conclusion that the application meets relevant licensing requirements, provided that the application justifies any necessary exemptions from current requirements, including the requirement for more than one barrier for fission product release. The NRC's evaluation of an application would focus on verifying the detailed technical information and analyses to support the design criteria outlined in the revised white paper to establish the safety of the design.

The NRC looks forward to future interactions on more comprehensive technical information, clearly defined design features, and a well-articulated design basis to facilitate effective engagement.

[1] "Last Energy White Paper: Hermetically Sealed Containment, Revision 1," dated May 27, 2025, Agencywide Documents and Access Management System Accession No. ML25146A001.

If you have questions regarding this matter, please contact me at Carolyn.Lauron@nrc.gov.

Sincerely,



Signed by Lauron, Carolyn
on 06/25/25

Carolyn L. Lauron, Senior Project Manager
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

Project No.: 99902140

Enclosure: Incoming Letter

cc w/enclosure: GovDelivery

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DATED: JUNE 25, 2025

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Last Energy White Paper: Hermetically Sealed Containment

Revision #1

Introduction:

The purpose of this document is to achieve alignment on our reactor's design criteria, which will form the basis of subsequent detailed technical submissions. We are not requesting feedback on how these criteria meet the current licensing requirements as the NRC has the ability to issue exceptions and will soon be undertaking a wholesale revision of their current rule set as per Presidential Executive Order. We seek confirmation that these criteria, in achieving total and complete isolation of radiohazards in all states of a reactor's lifecycle, will fully satisfy the NRC's mandate of national security, worker safety, environmental safety, and public safety.

Design Criteria:

- A reactor will sit inside of a hermetically sealed containment structure.
    - There are no penetrations, openings, or pathways for radiohazards to escape.
    - There is no provision for access or maintenance to the interior of containment.
- The shielding will be sufficient such that any radiation generated internally, when measured at any point of biological access, will be indistinguishable from naturally occurring levels of radiation.
- Detailed analysis will be provided that demonstrates such a structure ensures containment and shielding when subjected to any credible challenge to its integrity: from all external or internal forces or events including but not limited to mechanical, chemical, thermal, seismic, and environmental stresses.
- The structure, through the mass and strength of its materials, will be so secure as to eliminate any credible threat of unauthorized access, unauthorized transport, or proliferation risk.
- The containment structure will be situated on private property with no public access.
- Inspection and testing provisions will be made available prior to operation to certify these attributes.
- Preservation of the structure's shielding and containment functionality will be pre-funded and maintained indefinitely through the periodic addition of material.
- These qualities will be maintained in all states of the reactor's lifecycle, irrespective of any intended or unintended occurrence.

Our Claim:

A system with these design criteria, despite having only one safety critical component and being an alternative to defense in depth, will achieve total and complete isolation of radiohazards in all states of a reactor's lifecycle and thus fulfills the NRC's mandate of national security, worker safety, environmental safety, and public safety.

Feedback Requested:

Does the NRC concur with this claim? If not, please list the remaining concerns. If so, as a next step, we'd like to mutually decide on the minimum set of analysis necessary to substantiate the design implementation as listed.

Enclosure