



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

January 24, 2025

Mr. Chanson Yang  
Radiant Industries,  
Inc. 1921 Maple St.  
El Segundo, CA 90245

SUBJECT: RADIANT INDUSTRIES, INC. - U.S. NUCLEAR REGULATORY COMMISSION'S FEEDBACK REGARDING TITLE 10 OF THE *CODE OF FEDERAL REGULATIONS* PART 50, "DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES" AND PART 52, "LICENSE, CERTIFICATIONS, AND APPROVALS FOR NUCLEAR POWER PLANTS," GAP ANALYSIS WHITE PAPER (EPID NO. L-2024-LRO-0045/CAC 000431)

Dear Mr. Yang:

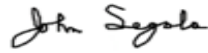
By submission dated September 6, 2024 (Agencywide Documents Access and Management System Accession No. ML24250A206), Radiant Industries, Inc. (Radiant), submitted for the U.S. Nuclear Regulatory Commission (NRC) staff's review, white paper DOC-0BD9, "10 CFR 50/52 Gap Analysis." This white paper describes a gap analysis of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities" and Part 52, "License, Certification, and Approvals for Nuclear Power Plants," against the specific requirements necessary to license a manufacturing facility capable of constructing and testing Radiant's Kaleidos reactor design and deploy the Kaleidos reactor units. The NRC staff was asked to perform a review of this white paper and provide feedback regarding the gap analysis. Given the availability of design information at this time, the NRC staff completed its review of the submittal. The enclosure to this letter provides the NRC staff's observations for Radiant to consider.

C. Yang

- 2 -

If you have questions regarding this matter, please contact Kevin Roche at (301) 415-1554 or via email at [Kevin.Roche@nrc.gov](mailto:Kevin.Roche@nrc.gov)

Sincerely,



Signed by Segala, John  
on 01/24/25

John. P. Segala, Chief  
Advanced Reactor Licensing Branch 2  
Division of Advanced Reactors and Non-Power  
Production and Utilization Facilities  
Office of Nuclear Reactor Regulation

Project No.: 99902106

Enclosure:  
As stated

C. Yang

- 3 -

SUBJECT: RADIANT INDUSTRIES, INC. - U.S. NUCLEAR REGULATORY COMMISSION'S FEEDBACK REGARDING TITLE 10 OF THE *CODE OF FEDERAL REGULATIONS* PART 50, "DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES" AND PART 52, "LICENSE, CERTIFICATIONS, AND APPROVALS FOR NUCLEAR POWER PLANTS," GAP ANALYSIS WHITE PAPER  
(EPID NO. L-2024-LRO-0045/CAC 000431) DATED: JANUARY 24, 2025

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**RADIANT INDUSTRIES, INC. - U.S. NUCLEAR REGULATORY COMMISSION'S FEEDBACK  
REGARDING RADIANT WHITE PAPER: "10 CFR 50/52 GAP ANALYSIS WHITE PAPER,"  
(L-2024-LRO-0045/CAC 000431)**

**SPONSOR INFORMATION**

**Sponsor:** Mr. Chanson Yang

**Sponsor Address:** Radiant Industries, Inc.  
1921 Maple St.  
El Segundo, CA 90245

**Docket/Project No(s):** 99902106/L-2024-LRO-0045/CAC 000431

**DOCUMENT INFORMATION**

**Submittal Date:** September 6, 2024

**Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.:** ML24250A206

**Purpose of the White Paper:** Radiant Industries, Inc., (Radiant) stated that the purpose of this white paper is to document its gap analysis of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities" and Part 52, "License, Certification, and Approvals for Nuclear Power Plants," against the requirements necessary to license a manufacturing facility that can perform online testing of its Kaleidos reactor and deploying Kaleidos reactor units.

**Action Requested:** Radiant requested the U.S. Nuclear Regulatory Commission (NRC) staff's feedback and observations regarding the information discussed in "10 CFR 50/52 Gap Analysis."

**FEEDBACK AND OBSERVATIONS**

The feedback and observations regarding this white paper are preliminary given the amount of available information and is subject to change. The feedback and observations are not regulatory findings regarding any specific licensing matter and are not official agency positions.

Enclosure

**General NRC Staff Observations:**

The NRC staff has reviewed the above referenced document and notes the following general observations.

- Given the availability of information at this time, the staff did not provide specific feedback for each regulation listed in sections 4 through 6.
- While the Kaleidos reactor will be manufactured off-site, the reactor itself is not moving during operation, e.g., powering a naval vessel. The Kaleidos reactor would likely be considered a stationary reactor, thus all parts of 10 CFR 50 and 10 CFR 52 should be considered applicable (e.g., 10 CFR 50.34(a)(1)(i)) at this time.
- The NRC staff is currently in the process of evaluating the applicability of aircraft impact assessment, e.g., 10 CFR 50.150 and 10 CFR 52.79(a)(47), regarding microreactors.
- Radiant may wish to consider reviewing DANU-ISG-2022-1, "Review of Risk-Informed, Technology-Inclusive Advanced Reactor Applications - Roadmap" (ML23297A158) and in particular, table 5, "Areas with anticipated exemptions," as guidance regarding which portion(s) of 10 CFR Part 50 and 10 CFR Part 52 may require an exemption.
- Radiant should continue to consider Commission direction for policy issues related to the regulations in 10 CFR Part 50, 52, and others that are before the Commission (e.g., SECY-24-0008, "Micro-Reactor Licensing and Deployment Considerations: Fuel Loading and Operational Testing at a Factory").

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