

**NUCLEAR REGULATORY COMMISSION
ISSUANCES**

**OPINIONS AND DECISIONS OF THE
NUCLEAR REGULATORY COMMISSION
WITH SELECTED ORDERS**

July 1, 2023 – December 31, 2023

Volume 98
Pages 1 - 91



Prepared by the
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(301-415-0955)

COMMISSIONERS

Christopher T. Hanson, Chairman
David A. Wright
Annie Caputo
Bradley R. Crowell

Daniel H. Dorman, Executive Director for Operations

Marian L. Zobler, General Counsel
(July 1, 2023 to October 14, 2023)
Brooke P. Clark, General Counsel
(October 15, 2023 to December 31, 2023)

E. Roy Hawken, Chief Administrative Judge,
Atomic Safety & Licensing Board Panel

ATOMIC SAFETY AND LICENSING BOARD PANEL

E. Roy Hawkens,* *Chief Administrative Judge*
Paul S. Ryerson,* *Associate Chief Administrative Judge (Legal)*
Dr. Sue H. Abreu,* *Associate Chief Administrative Judge (Technical)*

Members

Dr. Gary S. Arnold*	Dr Yassin A. Hassan	Dr. Alice C. Mignerey
Dr. Anthony J. Baratta	Dr. William E. Kastenberg	Dr. Sekazi K. Mtingwa
G. Paul Bollwerk, III*	Dr. Michael F. Kennedy	Dr. William W. Sager
William J. Froehlich	Emily I. Krause*	Nicholas G. Trikouros*
Michael M. Gibson*	Jeremy A. Mercer*	Dr. Craig M. White

* *Full-time panel members*

PREFACE

This is the ninety-eighth volume of issuances (1–91) of the Nuclear Regulatory Commission and its Atomic Safety and Licensing Boards, Administrative Law Judges, and Office Directors. It covers the period from July 1, 2023, to December 31, 2023.

Atomic Safety and Licensing Boards are authorized by Section 191 of the Atomic Energy Act of 1954. These Boards, comprised of three members, conduct adjudicatory hearings on applications to construct and operate nuclear power plants and related facilities and issue initial decisions which, subject to internal review and appellate procedures, become the final Commission action with respect to those applications. Boards are drawn from the Atomic Safety and Licensing Board Panel, comprised of lawyers, nuclear physicists and engineers, environmentalists, chemists, and economists. The Atomic Energy Commission (AEC) first established Licensing Boards in 1962 and the Panel in 1967.

Between 1969 and 1990, the AEC authorized Atomic Safety and Licensing Appeal Boards to exercise the authority and perform the review functions which would otherwise have been exercised and performed by the Commission in facility licensing proceedings. In 1972, that Commission created an Appeal Panel, from which were drawn the Appeal Boards assigned to each licensing proceeding. The functions performed by both Appeal Boards and Licensing Boards were transferred from the AEC to the Nuclear Regulatory Commission by the Energy Reorganization Act of 1974. Appeal Boards represented the final level in the administrative adjudicatory process to which parties could appeal. Parties, however, were permitted to seek discretionary Commission review of certain board rulings. The Commission also could decide to review, on its own motion, various decisions or actions of Appeal Boards.

On June 29, 1990, however, the Commission voted to abolish the Atomic Safety and Licensing Appeal Panel, and the Panel ceased to exist as of June 30, 1991. Since then, the Commission itself reviews Licensing Board and other adjudicatory decisions, as a matter of discretion. *See* 56 FR 29403 (1991).

The Commission also may appoint Administrative Law Judges pursuant to the Administrative Procedure Act, who preside over proceedings as directed by the Commission.

The hardbound edition of the Nuclear Regulatory Commission Issuances is a final compilation of the monthly issuances. It includes all of the legal precedents for the agency within a six-month period. Any opinions, decisions, denials, memoranda and orders of the Commission inadvertently omitted from the monthly softbounds and any corrections submitted by the NRC legal staff to the printed softbound issuances are contained in the hardbound edition. Cross references in the text and indexes are to the NRCI page numbers which are the same as the page numbers in this publication.

Issuances are referred to as follows: Commission (CLI), Atomic Safety and Licensing Boards (LBP), Administrative Law Judges (ALJ), Directors' Decisions (DD), and Decisions on Petitions for Rulemaking (DPRM).

The summaries and headnotes preceding the opinions reported herein are not to be deemed a part of those opinions or to have any independent legal significance.

Available from

U.S. Government Publishing Office
PO Box 979050
St. Louis, MO 63197-9000

<https://bookstore.gpo.gov/customer-service/order-methods>

See <https://catalog.gpo.gov/> for this publication.

Final 6-month compilations are available at:
<https://purl.fdlp.gov/GPO/LPS23577>

Errors in this publication may be reported to the
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(301-415-0955)

CONTENTS

Issuances of the Nuclear Regulatory Commission

KAIROS POWER LLC (Hermes Test Reactor) Docket 50-7513-CP Memorandum and Order, CLI-23-5, December 12, 2023	53
NUCLEAR FUEL SERVICES, INC. (License Amendment Application) Docket 70-143-LA Memorandum and Order, CLI-23-3, October 5, 2023	33
PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Independent Spent Fuel Storage Installation) Docket 72-26-ISFSI-MLR Memorandum and Order, CLI-23-4, October 19, 2023	51
U.S. DEPARTMENT OF ENERGY (Export of 93.20% Enriched Uranium) Docket 11006398 Memorandum and Order, CLI-23-2, September 11, 2023	21

Issuances of the Atomic Safety and Licensing Boards

PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Independent Spent Fuel Storage Installation) Docket 72-26-ISFSI-MLR Memorandum and Order, LBP-23-7, July 19, 2023	1
Memorandum and Order, LBP-23-8, September 15, 2023	29

Indexes

Case Name Index	I-1
Legal Citations Index	I-3
Cases	I-3
Regulations	I-9
Statutes	I-15
Subject Index	I-17
Facility Index	I-33

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**E. Roy Hawkens, Chair
Nicholas G. Trikouros
Dr. Gary S. Arnold**

In the Matter of

**Docket No. 72-26-ISFSI-MLR
(ASLBP No. 23-979-01-ISFSI-MLR-BD01)**

**PACIFIC GAS AND ELECTRIC
COMPANY
(Diablo Canyon Independent Spent Fuel
Storage Installation)**

July 19, 2023

This proceeding concerns a hearing request from San Luis Obispo Mothers for Peace (SLOMFP) challenging an application from Pacific Gas and Electric Company (PG&E) to renew its license to store spent nuclear fuel in the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI) for an additional 40 years beyond the current license expiration date in March 2024. The Licensing Board granted SLOMFP's hearing request, concluding that SLOMFP established standing and proffered one admissible contention.

RULES OF PRACTICE: INTERVENTION

To intervene, a petitioner must (1) demonstrate standing pursuant to 10 C.F.R. § 2.309(d); and (2) submit a timely contention that satisfies the admissibility criteria in 10 C.F.R. § 2.309(f). *See* 10 C.F.R. § 2.309(a).

RULES OF PRACTICE: STANDING

Pursuant to the NRC's regulatory standing requirements, a petitioner's hear-

ing request must include the information specified in 10 C.F.R. § 2.309(d)(1)(i)-(iv).

RULES OF PRACTICE: STANDING (REPRESENTATIONAL)

An organization that seeks to establish representational standing on behalf of its membership must show that (1) “at least one member has standing and has authorized the organization to represent [them] and to request a hearing on [their] behalf,” (2) “the interests that the representative organization seeks to protect [are] germane to its own purpose,” and (3) “neither the asserted claim nor requested relief must require an individual member to participate in the organization’s legal action.” *Southern Nuclear Operating Co., Inc.* (Vogtle Electric Generating Plant, Unit 3), CLI-20-6, 91 NRC 225, 238 (2020).

RULES OF PRACTICE: STANDING (PROXIMITY PRESUMPTION)

In a materials licensing case, an organization asserting representational standing can show a member has standing by, *inter alia*, demonstrating that the member satisfies the “proximity-plus test.” See *U.S. Army Installation Command* (Schofield Barracks, Oahu, Hawaii, and Pohakuloa Training Area, Island of Hawaii, Hawaii), CLI-10-20, 72 NRC 185, 189 (2010). Pursuant to this approach, a presumption of standing based on an individual’s geographic proximity to the relevant facility may be applied when the organization shows “(1) that the proposed licensing action involves a ‘significant source’ of radiation, which has (2) an ‘obvious potential for offsite consequences’” that will adversely affect the member. *Id.* (quoting *Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n.22 (1994)).

RULES OF PRACTICE: STANDING (PROXIMITY PRESUMPTION)

If the organization cannot satisfy the proximity-plus test, “then [it] must establish standing according to traditional standing principles.” *Schofield Barracks*, CLI-10-20, 72 NRC at 189.

RULES OF PRACTICE: STANDING

Even when no party disputes a petitioner’s standing, a licensing board has an obligation to “determine[] that the requester/petitioner has standing” before it may grant a hearing request. 10 C.F.R. § 2.309(a); see *Northern States Power Co.* (Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation), LBP-12-24, 76 NRC 503, 507 n.13 (2012) (citing cases for the prin-

ciple that a licensing board has an independent obligation to determine whether standing requirements are met).

RULES OF PRACTICE: STANDING

Although the petitioner bears the “burden of setting forth a clear and coherent argument for standing,” *Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-99-4, 49 NRC 185, 194 (1999), when a licensing board assesses the existence of standing, “we construe the petition in favor of the petitioner.” *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 115 (1995).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

To be admissible, a timely-filed contention must satisfy each of the criteria in 10 C.F.R. § 2.309(f)(1)(i)-(vi).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

The Commission’s contention admissibility rule is “strict by design.” *Amer-Gen Energy Co.* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 118 (2006). A petitioner bears the burden of demonstrating a contention’s admissibility, and a failure to satisfy any of the six admissibility criteria constitutes grounds for rejecting a proposed contention. *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

Although a petitioner need not “prove its contention at the pleading stage, we do require that it show a genuine dispute [on a material issue of law or fact] warranting a hearing.” *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004). A petitioner cannot rely on speculation to show the existence of a genuine dispute. *See Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-15-20, 82 NRC 211, 221 (2015).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

For a contention to be admissible, it must “refer to the specific portions of the

application [it] disputes, [and provide] the supporting reasons for each dispute.” *Vermont Yankee*, CLI-15-20, 82 NRC at 221.

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

“[G]eneralized assertions, without specific ties to NRC regulatory requirements . . . do not provide adequate support demonstrating the existence of a genuine dispute of fact or law.” *U.S. Department of Energy* (High-Level Waste Repository), CLI-09-14, 69 NRC 580, 588 (2009).

RULES OF PRACTICE: CONTENTIONS (ADMISSIBILITY)

A disputed issue “is material if its resolution would make a difference in the outcome of the licensing proceeding.” *Holtec International* (HI-STORE Consolidated Interim Storage Facility), CLI-20-4, 91 NRC 167, 190 (2020) (quotation marks omitted).

REGULATIONS: SAFETY STANDARDS

“Information provided to the Commission by a licensee . . . must be complete and accurate in all material respects.” 10 C.F.R. § 72.11(a).

FINANCIAL QUALIFICATIONS: APPLICABLE STANDARD

Section 72.22(e) requires an applicant to provide information in its LRA “sufficient to demonstrate . . . financial qualifications . . . to carry out, in accordance with the regulations in this chapter, the activities for which the license is sought.” 10 C.F.R. § 72.22(e). The LRA must show that the applicant possesses the necessary funds or has reasonable assurance of obtaining the necessary funds to cover the “[e]stimated operating costs over the planned life of the ISFSI.” *Id.* § 72.22(e)(2).

NATIONAL ENVIRONMENTAL POLICY ACT: RULE OF REASON

Although the scope of the cumulative impacts analysis in an ER must comply with the “rule of reason,” an ER is not perforce unreasonable if it fails to consider the cumulative impacts of an event that is entirely speculative. *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348-49 (2002); *see also Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974).

MEMORANDUM AND ORDER
(Granting the Hearing Request of San Luis Obispo
Mothers for Peace)

Pending before this Licensing Board is a hearing request from San Luis Obispo Mothers for Peace challenging an application from Pacific Gas and Electric Company to renew its license to store spent nuclear fuel in the Diablo Canyon Independent Spent Fuel Storage Installation for an additional 40 years beyond the current license expiration date of March 22, 2024. Because we conclude that San Luis Obispo Mothers for Peace has demonstrated standing and submitted an admissible contention, we grant its hearing request.

I. BACKGROUND

In March 2022, Pacific Gas and Electric Company (PG&E) filed an application with the Nuclear Regulatory Commission (NRC) Staff to renew its license to store spent nuclear fuel for an additional 40 years in the Diablo Canyon Independent Spent Fuel Storage Installation (ISFSI), which is located on the Diablo Canyon Power Plant (DCPP) site in San Luis Obispo County, California.¹ The license, which was initially issued in March 2004 for a 20-year term, authorizes PG&E to “provide interim storage in a dry cask storage system for up to 2100 metric tons of uranium contained in intact and damaged fuel assemblies and associated radioactive materials resulting from the operation of the [DCPP].”²

When PG&E filed its ISFSI license renewal application (LRA) in March 2022, it intended to shut down and decommission the DCPP nuclear reactors, Units 1 and 2, at the end of their license terms (i.e., November 2, 2024, and August 26, 2025, respectively)³ pursuant to a 2018 planning decision by the California Public Utilities Commission (CPUC).⁴ However, on September 2, 2022 — six months after PG&E filed the ISFSI LRA — the Governor of California signed Senate Bill No. 846 (SB 846), which invalidated the 2018 CPUC plan-

¹ See Letter from M.R. Zawalick, PG&E, to NRC Document Control Desk, License Renewal Application for the Diablo Canyon [ISFSI] (Mar. 9, 2022) (ADAMS Accession No. ML22068A189) [hereinafter LRA].

² Notice of Issuance of Materials License SNM-2511; Diablo Canyon [ISFSI], 69 Fed. Reg. 15,910 (Mar. 26, 2004); *see also* LRA, app. G, at G-2.

³ See [PG&E, DCPP] Unit 1, Docket No. 50-275, Facility Operating License No. DPR-80 at 12 (ADAMS Accession No. ML053140349); [PG&E, DCPP] Unit 2, Docket No. 50-323, Facility Operating License No. DPR-82 at 10 (ADAMS Accession No. ML053140353).

⁴ See Decision Approving Retirement of Diablo Canyon Nuclear Power Plant, Decision 18-01-022, Pub. Utils. Comm’n of the State of Cal. (Jan. 11, 2018).

ning decision and directed PG&E to seek renewal of the operating licenses for Units 1 and 2.⁵ Consistent with the statutory directive in SB 846, on October 31, 2022, PG&E's Senior Vice President and Chief Nuclear Officer, Paula Gerfen, submitted a request to the NRC Staff (Gerfen Letter) asking, *inter alia*, for an exemption from the NRC's "timely renewal" regulation.⁶ On March 2, 2023, the NRC Staff granted the exemption request, which will allow PG&E's license renewal application for the DCPD reactors to be considered "timely" if it is filed no later than December 31, 2023 and if the NRC Staff finds it acceptable for docketing.⁷

Meanwhile, in January 2023, the NRC Staff published a *Federal Register* notice describing PG&E's ISFSI LRA and informing the public of the opportunity to petition to intervene and request a hearing. *See* [PG&E]; Diablo Canyon [ISFSI], 88 Fed. Reg. 1431 (Jan. 10, 2023).

On March 13, 2023, San Luis Obispo Mothers for Peace (SLOMFP) filed a hearing request in which it (1) alleged it had standing to intervene; and (2) proffered a safety contention (Contention A) and an environmental contention (Contention B).⁸ In both contentions, SLOMFP claims that the LRA is deficient

⁵ *See* S.B. 846, Diablo Canyon Powerplant: Extension of Operations (Cal. 2022) (approved by Governor Sept. 2, 2022).

⁶ *See* Letter from Paula Gerfen, Senior Vice President and Chief Nuclear Officer, PG&E, to NRC Document Control Desk (Oct. 31, 2022) (ADAMS Accession No. ML22304A691). Pursuant to NRC's "timely renewal" regulation, if the licensee of a nuclear power plant files a sufficient application for renewal of an operating license at least five years before the existing license expires, the existing license will not be deemed to have expired until the NRC Staff makes a final determination on the renewal application. *See* 10 C.F.R. § 2.109(b).

⁷ As explained in the *Federal Register* notice granting PG&E's request, pursuant to this exemption, if PG&E submits an LRA for DCPD, Units 1 and 2, by "December 31, 2023, and if the NRC staff finds it acceptable for docketing, the existing operating licenses will be in timely renewal under NRC regulations [and the reactors may therefore continue operations] until the NRC has made a final determination on whether to approve the license renewal application." [PG&E; DCPD], Units 1 and 2; Exemption; Issuance, 88 Fed. Reg. 14,395, 14,395 (Mar. 8, 2023).

⁸ *See* [SLOMFP] Hearing Request and Petition to Intervene in License Renewal Proceeding for Diablo Canyon [Independent] Spent Fuel Storage Installation (Mar. 13, 2023) [hereinafter SLOMFP Petition]. SLOMFP filed its petition on the NRC's E-Filing system on March 14, a day after the filing deadline; however, no one was prejudiced by the late E-Filing because SLOMFP provided all participants with its petition on March 13 via e-mail. *See* Licensing Board Memorandum and Order (Initial Prehearing Order) at 1 n.2, 2 (Mar. 29, 2023) (unpublished). SLOMFP was unable to E-File its petition on March 13 because it waited until that day to inform the Office of the Secretary (SECY) of its intent to file a petition. SECY therefore lacked the necessary information to create a timely electronic docket for SLOMFP's filing. *See* E-mail from SECY to Diane Curran (Mar. 14, 2023). To ensure timely E-Filings, petitioners should inform SECY of their intent to intervene "at least 10 days prior to the filing deadline," as advised in the *Federal Register* hearing opportunity notice for this proceeding. 88 Fed. Reg. at 1432.

because it fails to consider PG&E's intention to seek renewal of the operating licenses for the DCP nuclear reactors, Units 1 and 2.

On April 7, 2023, PG&E and the NRC Staff filed answers.⁹ PG&E does not dispute that SLOMFP has standing, *see* PG&E Answer at 1 n.3, but it argues that SLOMFP's hearing request should be denied for failure to proffer an admissible contention. *See id.* at 1-2. The NRC Staff, on the other hand, argues that SLOMFP's hearing request should be granted because SLOMFP demonstrated standing and proffered one contention (Contention A) that is admissible in part. *See* NRC Staff Answer at 1.¹⁰

On April 13, 2023, SLOMFP filed a reply in which it reiterated that it demonstrated standing and proffered two admissible contentions.¹¹ Notably, however, SLOMFP narrowed the scope of Contention A, abandoning its argument relating to the General Design Criteria and seeking admission only of the two components relating to PG&E's financial qualifications to operate and decommission the ISFSI. *See* SLOMFP Reply at 3-4.

On June 13, 2023, this Licensing Board held oral argument on standing and contention admissibility. *See* Official Transcript of Proceedings, [NRC], [PG&E], Diablo Canyon [ISFSI], Docket No. 72-26-ISFSI-MLR (June 13, 2023) (Revised Transcript, filed July 6, 2023) [hereinafter Tr.]. During the oral argument, SLOMFP further narrowed the scope of Contention A, abandoning its claim relating to PG&E's financial qualifications to decommission the ISFSI. *See* Tr. at 66-67 (Curran). SLOMFP now seeks admission only of that portion of Contention A that challenges PG&E's financial qualifications to operate the ISFSI pursuant to 10 C.F.R. § 72.22(e). *See id.*

II. ANALYSIS

To intervene in a licensing proceeding, a petitioner must (1) demonstrate standing pursuant to 10 C.F.R. § 2.309(d); and (2) submit a timely contention

⁹ *See* [PG&E's] Answer Opposing [SLOMFP's] Hearing Request and Petition to Intervene (Apr. 7, 2023) [hereinafter PG&E Answer]; NRC Staff Answer to [SLOMFP] Hearing Request and Petition to Intervene (Apr. 7, 2023) [hereinafter NRC Staff Answer].

¹⁰ As proffered in SLOMFP's petition, Contention A consisted of three components, alleging that the ISFSI is deficient because it fails to provide accurate and complete information regarding (1) PG&E's financial qualifications to operate the ISFSI pursuant to 10 C.F.R. § 72.22(e); (2) PG&E's financial qualifications to decommission the ISFSI pursuant to 10 C.F.R. § 72.30(a) and (b); and (3) the General Design Criteria in 10 C.F.R. Part 72, Subpart F. *See* SLOMFP Petition at 5. According to the NRC Staff, only the first component is admissible. *See* NRC Staff Answer at 11-13.

¹¹ *See* [SLOMFP's] Reply to PG&E's and NRC Staff's Responses to SLOMFP's Hearing Request and Petition to Intervene in License Renewal Proceeding for Diablo Canyon [ISFSI] (Apr. 13, 2023) [hereinafter SLOMFP Reply].

that satisfies the admissibility criteria in 10 C.F.R. § 2.309(f). *See* 10 C.F.R. § 2.309(a). We conclude that SLOMFP satisfies both requirements.

A. Standing

1. Standards for Establishing Standing

NRC regulations on standing require that a petitioner's hearing request include the following:

- (i) The name, address and telephone number of the requestor or petitioner;
- (ii) The nature of the requestor's/petitioner's right under the [Atomic Energy Act] to be made a party to the proceeding;
- (iii) The nature and extent of the requestor's/petitioner's property, financial or other interest in the proceeding; and
- (iv) The possible effect of any decision or order that may be issued in the proceeding on the requestor's/petitioner's interest.

10 C.F.R. § 2.309(d)(1)(i)-(iv).

Additionally, an organization, like SLOMFP, that seeks to establish representational standing on behalf of its membership must show that (1) "at least one member has standing and has authorized the organization to represent [them] and to request a hearing on [their] behalf," (2) "the interests that the representative organization seeks to protect [are] germane to its own purpose," and (3) "neither the asserted claim nor requested relief must require an individual member to participate in the organization's legal action." *Southern Nuclear Operating Co., Inc.* (Vogtle Electric Generating Plant, Unit 3), CLI-20-6, 91 NRC 225, 238 (2020).

In a materials licensing case like this, an organization asserting representational standing can show a member has standing by, *inter alia*, demonstrating that the member satisfies the "proximity-plus test." *See U.S. Army Installation Command* (Schofield Barracks, Oahu, Hawaii, and Pohakuloa Training Area, Island of Hawaii, Hawaii), CLI-10-20, 72 NRC 185, 189 (2010).¹² Pursuant to this approach, a presumption of standing based on an individual's geographic proximity to the relevant facility may be applied when the organization shows "(1) that the proposed licensing action involves a 'significant source' of radiation, which has (2) an 'obvious potential for offsite consequences'" that will adversely affect the member. *Id.* (quoting *Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n.22 (1994)).

¹² If the organization cannot satisfy the proximity-plus test, "then [it] must establish standing according to traditional standing principles." *Schofield Barracks*, CLI-10-20, 72 NRC at 189.

Although the petitioner bears the “burden of setting forth a clear and coherent argument for standing,” *Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-99-4, 49 NRC 185, 194 (1999), when a licensing board assesses the existence of standing, “we construe the petition in favor of the petitioner.” *Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 115 (1995).

2. SLOMFP Has Established Standing

SLOMFP maintains that it satisfies representational standing requirements based on the geographic proximity of its members to the DCPD site. *See* SLOMFP Petition at 3-4 & n.6. The NRC Staff agrees that SLOMFP has representational standing pursuant to the proximity-plus test, *see* NRC Staff Answer at 6, and PG&E does not dispute SLOMFP’s standing. *See* PG&E Answer at 1 n.3.

Although the NRC Staff and PG&E do not dispute SLOMFP’s assertion of representational standing, this Board has an obligation to “determine[] that the requester/petitioner has standing” before it may grant a hearing request. 10 C.F.R. § 2.309(a); *see Northern States Power Co.* (Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation), LBP-12-24, 76 NRC 503, 507 n.13 (2012) (citing cases for the principle that a licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing). We conclude that SLOMFP satisfies the three prerequisites for representational standing.

First, SLOMFP demonstrates that it has members who have standing and have authorized SLOMFP to represent them and request a hearing on their behalf. *See Vogtle*, CLI-20-6, 91 NRC at 238. In this regard, SLOMFP provides affidavits from four members who declare that they (1) live within six to eighteen miles of the DCPD site; (2) are concerned about the safety and environmental impacts of the continued operation of the Diablo Canyon ISFSI; and (3) authorize SLOMFP to represent their interests in this proceeding. *See* SLOMFP Petition, attachs. 1-4.¹³

SLOMFP claims that these members have standing based on the proximity of their homes to the DCPD site and, in support of that claim, references the proximity-plus standing analysis in *Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413 (2002). We agree that the analysis in that case provides persuasive

¹³ According to the affidavits, Kaoru Hisasue lives within six miles of the DCPD site, *see* SLOMFP Petition, attach. 1; Linda Seeley lives within eight miles, *see id.*, attach. 2; Lucy Jane Swanson lives within twelve miles, *see id.*, attach. 3; and Jill ZamEk lives within eighteen miles. *See id.*, attach. 4.

support. That case involved a challenge to PG&E's 2001 application to construct and operate the Diablo Canyon ISFSI that is at issue here. The licensing board, guided by agency rulings on standing in the analogous context of cases involving the expansion of spent fuel pool storage, *see id.* at 428, coupled with the "obvious potential for offsite consequences" posed by the large volume of spent nuclear fuel that would be stored at the Diablo Canyon ISFSI, *id.* at 427 (internal quotation marks omitted), ruled that persons living within seventeen miles of the DCP site had standing. *See id.* at 429. Because the facts in that case are identical in material respects to the facts in this case, we follow that board's cogent ruling and conclude that SLOMFP members who live within seventeen miles of the DCP site — i.e., Kaoru Hisasue, Linda Seeley, and Jane Swanson, *see supra* note 13 — have standing. As the NRC Staff correctly states, SLOMFP satisfies the "proximity-plus standard [because this proceeding involves] the renewal of the [DCPP] ISFSI license to store up to 2100 metric tons of spent nuclear fuel, [which is a significant] source of radioactivity [with an] obvious potential for offsite consequences" to SLOMFP members. NRC Staff Answer at 6-7.¹⁴

In compliance with the second requirement for representational standing, *see Vogtle*, CLI-20-6, 91 NRC at 238, SLOMFP shows that the interests it seeks to protect on behalf of its members are germane to its own purpose. Its members aver that they are concerned that the continued operation of the Diablo Canyon ISFSI will jeopardize their health and safety, the quality of their environment, and the value of their property. *See* SLOMFP Petition, attachs. 1-4. SLOMFP states that it is an "organization concerned with the dangers posed by Diablo Canyon and other nuclear reactors, nuclear weapons, and radioactive waste." *Id.* at 4. It also "works to promote peace, environmental and social justice, and renewable energy." *Id.* Insofar as SLOMFP seeks to protect its members' health, safety, and environmental concerns, it seeks to protect interests germane to its own purpose.

Lastly, consistent with the third requirement for representational standing, *see Vogtle*, CLI-20-6, 91 NRC at 238, neither SLOMFP's asserted claim nor its requested relief requires an individual member to participate in this proceeding.

We therefore conclude that SLOMFP has representational standing.

¹⁴ The Commission's standing analyses in two recent ISFSI proceedings are consistent with the conclusion that SLOMFP satisfies proximity-plus standing. *See Interim Storage Partners LLC* (WCS Consolidated Interim Storage Facility), CLI-20-15, 92 NRC 491, 494-96 (2020) (affirming licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual who lived six miles from the site); *Holtec International* (HI-STORE Consolidated Interim Storage Facility), CLI-20-4, 91 NRC 167, 177-78 (2020) (affirming licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual's operation of a ranch three miles from the site).

B. Contention Admissibility

1. Contention Admissibility Standards

To be admissible, a timely-filed contention must satisfy each of the following regulatory criteria:

- (i) Provide a specific statement of the issue of law or fact to be raised or controverted . . . ;
- (ii) Provide a brief explanation of the basis for the contention;
- (iii) Demonstrate that the issue raised in the contention is within the scope of the proceeding;
- (iv) Demonstrate that the issue raised in the contention is material to the findings the NRC must make to support the action that is involved in the proceeding;
- (v) Provide a concise statement of the alleged facts or expert opinions which support the [petitioner's] position on the issue . . . , together with references to the specific sources and documents on which the [petitioner] intends to rely to support its position on the issue; [and]
- (vi) [P]rovide sufficient information to show that a genuine dispute exists with the [applicant] on a material issue of law or fact. This information must include references to specific portions of the application . . . that the petitioner disputes and the supporting reasons for each dispute, or, if the petitioner believes that the application fails to contain information on a relevant matter as required by law, the identification of each failure and the supporting reasons for the petitioner's belief

10 C.F.R. § 2.309(f)(1)(i)-(vi).

The Commission's contention admissibility rule is "strict by design." *AmerGen Energy Co.* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 118 (2006). A petitioner bears the burden of demonstrating a contention's admissibility, and a failure to satisfy any of the six admissibility criteria constitutes grounds for rejecting a proposed contention. *See Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999). Although a petitioner need not "prove its contention at the pleading stage, we do require that it show a genuine dispute [on a material issue of law or fact] warranting a hearing." *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004). A petitioner cannot rely on speculation to show the existence of a genuine dispute. *See Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-15-20, 82 NRC 211, 221 (2015). Likewise, "generalized assertions, without specific ties to NRC regulatory requirements . . . do not provide adequate support demonstrating the existence of a genuine dispute of fact or law." *U.S. Department of Energy* (High-Level Waste Repository), CLI-09-14, 69 NRC 580, 588 (2009).

2. *Contention A Is Admissible*

SLOMFP's Contention A alleges that the "information provided in [PG&E's LRA] is incorrect and insufficient to satisfy NRC safety regulations." SLOMFP Petition at 5. More precisely, SLOMFP argues that PG&E's analysis of its financial qualifications to operate the ISFSI fails to satisfy 10 C.F.R. § 72.22(e)¹⁵ because the analysis is based on the invalid assumption that PG&E will not seek renewal of the DCP reactors. In fact, asserts SLOMFP, PG&E intends to seek renewal of those reactors and has obtained a regulatory exemption from the NRC Staff for that purpose. *See id.*; *infra* note 16.

PG&E argues that Contention A is not admissible because the alleged deficiency is "beyond the scope of this proceeding, unsupported, and fail[s] to raise a genuine dispute with the LRA, as required by 10 C.F.R. § 2.309(f)(1)(iii), (v), and (vi)." PG&E Answer at 15. The NRC Staff argues that Contention A is admissible.¹⁶ As discussed below, we agree with SLOMFP and the NRC Staff that Contention A satisfies the six criteria in 10 C.F.R. § 2.309(f)(1) and therefore is admissible.

First, in compliance with section 2.309(f)(1)(i), SLOMFP provides the following specific statement of the issue of law or fact to be raised: "PG&E's [LRA] is incorrect and insufficient to satisfy NRC . . . regulations for ISFSIs because it fails to provide accurate and complete information regarding its satisfaction of NRC safety regulation[] 10 C.F.R. § 72.22(e)" SLOMFP Petition at 5.

Second, as required by section 2.309(f)(1)(ii), SLOMFP provides a brief explanation of the basis for Contention A. SLOMFP points out that PG&E has a regulatory obligation to provide the Commission with information that is "both correct and sufficient to demonstrate satisfaction of NRC's safety regulations." SLOMFP Petition at 7; *see also id.* n.11 (citing 10 C.F.R. § 72.11(a)).¹⁷ SLOMFP explains that, notwithstanding this regulatory requirement, PG&E neglected to

¹⁵ Section 72.22(e) requires PG&E to provide information in its LRA "sufficient to demonstrate . . . financial qualifications . . . to carry out, in accordance with the regulations in this chapter, the activities for which the license is sought." 10 C.F.R. § 72.22(e). As relevant here, the LRA must show that the applicant possesses the necessary funds or has reasonable assurance of obtaining the necessary funds to cover the "[e]stimated operating costs over the planned life of the ISFSI." *Id.* § 72.22(e)(2).

¹⁶ As explained *supra* Part I, the NRC Staff's answer argued that Contention A was only admissible in part. *See* NRC Staff Answer at 11; *see also* Tr. at 54 (Gendelman). SLOMFP thereafter abandoned the portions of Contention A that the NRC Staff viewed as inadmissible. *See* SLOMFP Reply at 3; Tr. at 66-67 (Curran). Consequently, the NRC Staff now views SLOMFP's version of Contention A as admissible in full. *See* Tr. at 55 (Gendelman).

¹⁷ Section 72.11(a) states that the "[i]nformation provided to the Commission by a licensee . . . must be complete and accurate in all material respects." 10 C.F.R. § 72.11(a).

revise the LRA to reflect its intent to seek renewal of the DCPD reactors.¹⁸ Instead, when discussing PG&E's financial qualifications to operate the ISFSI, the LRA relies on the incorrect assumption that Unit 1 will be permanently shut down when its current license expires in November 2024. *See id.* at 5.

Third, SLOMFP demonstrates that the issue raised is within the scope of the proceeding, as required by section 2.309(f)(1)(iii). This proceeding involves the issue of whether the analysis in the LRA "meets the standards and requirements of the Atomic Energy Act of 1954 . . . and the NRC's regulations." 88 Fed. Reg. at 1432. Contention A asserts that the financial qualifications analysis in the LRA relies on an incorrect and incomplete assumption regarding the retirement of the DCPD reactors, which, in turn, raises a question as to the impact of that allegedly flawed analysis on PG&E's compliance with 10 C.F.R. § 72.22(e). *See* SLOMFP Petition at 5-6; *see also* Tr. at 57-58 (Gendelman). Thusly framed, Contention A falls within the scope of this proceeding.¹⁹

Fourth, in compliance with section 2.309(f)(1)(iv), SLOMFP demonstrates that the issue raised in Contention A is material to the findings the NRC must make in this proceeding. *See* SLOMFP Petition at 5-6, 8. A disputed issue "is material if its resolution would make a difference in the outcome of the licensing proceeding." *HI-STORE*, CLI-20-4, 91 NRC at 190 (quotation marks omitted). A conclusion that the LRA contains a deficient financial qualifications analysis regarding PG&E's ability to cover the "[e]stimated operating costs over the planned life of the ISFSI," 10 C.F.R. § 72.22(e)(2), would make a difference

¹⁸ Counsel for PG&E acknowledged at oral argument that PG&E intends to seek renewal of the operating licenses for the DCPD reactors. *See* Tr. at 35 (Lighty).

¹⁹ PG&E argues that SLOMFP's financial qualifications claim is beyond the scope of this proceeding because the LRA's discussion is properly confined to the *status quo* of the ISFSI, and "SLOMFP identifies zero support for its suggestion that PG&E was required, for purposes of satisfying 10 C.F.R. § 72.22(e)," to address a "separate, potential, future licensing application for renewal of the DCPD [reactor] licenses." PG&E Answer at 11, 12. But, as the NRC Staff observes, "while operations at one facility would not ordinarily bear upon the licensing of another, here operations at the [DCPD] are connected to operations at the Diablo Canyon ISFSI by the [LRA]." NRC Staff Answer at 11. Specifically, in light of PG&E's current intention to seek renewal of DCPD, Units 1 and 2, the factual assumption in the LRA regarding the retirement dates of the DCPD reactors is incorrect, which, in turn, raises questions about "the impact of these developments for the [LRA's] satisfaction of NRC requirements." *Id.* at 13. In other words, PG&E brought the renewal of the DCPD reactor licenses within the scope of this proceeding by including an allegedly inaccurate and incomplete factual assumption about the reactors' retirement dates in its financial qualifications analysis.

in the outcome of this licensing proceeding. Contention A thus raises a material issue.²⁰

Fifth, SLOMFP provides a concise statement of the alleged facts and it references specific sources and documents to support its position, thus satisfying section 2.309(f)(1)(v). As a factual matter, SLOMFP alleges that PG&E failed to revise its LRA to reflect the fact that it intends to seek renewal of the DCP reactors and, as a result, the LRA's discussion of PG&E's financial qualifications is based on the incorrect assumption that Unit 1 will cease operating in 2024. *See* SLOMFP Petition at 5, 6 (citing LRA at 1-4). In support of its assertion that, contrary to the LRA, PG&E intends to seek renewal of the DCP reactors, SLOMFP cites SB 846 and the Gerfen Letter. *See id.* at 2, 7; *see also supra* note 18. Finally, SLOMFP cites NRC regulations to support its claim that the LRA's financial qualifications analysis must be grounded on facts that are complete and accurate in material respects. *See* SLOMFP Petition at 5 (citing 10 C.F.R. § 72.22(e)); *id.* at 7 n.11 (citing 10 C.F.R. § 72.11(a)).

Sixth and last, as required by section 2.309(f)(1)(vi), SLOMFP shows that a genuine dispute exists with PG&E on a material issue of law or fact. An ISFSI LRA must include complete and accurate information demonstrating the applicant's financial qualifications to operate the storage facility. *See* 10 C.F.R. §§ 72.11(a) and 72.22(e). Here, PG&E acknowledges that SB 846 "explicitly directed PG&E to pursue continued operation of DCP," PG&E Answer at 24, and PG&E concedes that it intends to seek renewal of the DCP reactors in compliance with that directive. *See supra* note 18. Yet, the LRA's financial qualifications analysis does not reflect PG&E's intention to seek renewal of the

²⁰ "[A]s a practical matter," states PG&E, "the scenario contemplated in the LRA — in which DCP shuts down as of the units' current expiration dates — presents a more conservative financial scenario than the one postulated by SLOMFP." PG&E Answer at 12 (emphasis omitted). PG&E argues that SLOMFP "has not identified a material reason why anything beyond that conservative analysis . . . is required or even meaningful in this proceeding." Tr. at 42-43 (Lighty). The salient question, however, is not whether PG&E's allegedly inadequate analysis presents a more conservative financial scenario (which is a question that goes to the merits); rather, it is whether SLOMFP has alleged sufficient support for its assertion that, in light of PG&E's plan to seek renewal of the DCP reactors, the LRA's financial qualifications analysis is grounded on assumptions that are inaccurate and incomplete in material respects. In our judgment, SLOMFP has made an adequate showing.

Relatedly, PG&E also argues that Contention A fails to satisfy the materiality requirement in section 2.309(f)(1)(iv) because "PG&E is financially qualified to continue operating the ISFSI regardless of whether the reactor licenses are renewed." Tr. at 41 (Lighty). As the NRC Staff correctly counters, however, that argument goes to the merits; here, we are concerned only with whether SLOMFP has satisfied the contention admissibility requirements. *See* Tr. at 59 (Gendelman); *see also* NRC Staff Answer at 13 n.61 ("This is not to suggest that the Staff has substantive concerns with PG&E's financial qualification to operate the ISFSI, but only that [SLOMFP] has met the pleading requirements of 10 C.F.R. § 2.309(f)(1).").

reactors; instead, it expressly refers to, and relies on, the 2024 retirement date of Unit 1 to demonstrate PG&E's financial qualifications to operate the ISFSI.

Specifically, the LRA states that PG&E will satisfy the financial qualifications requirement in section 72.22 by using the decommissioning trust fund to operate the ISFSI following Unit 1's decommissioning in November 2024:

PG&E will remain financially qualified to carry out the operation . . . of the ISFSI during the period of the renewed material license as required by 10 C.F.R. 72.22(e). *The source of funds to operate the [Diablo Canyon] ISFSI until the DCPD Unit 1 permanent shutdown in November 2024 is the General Rate Case process The source of funds to operate . . . the [Diablo Canyon] ISFSI starting in November 2024 of the renewed license period will include the PG&E Decommissioning Trust Fund, which is regulated by the CPUC and [NRC].*

LRA at 1-3 to 1-4 (emphasis added). However, assuming Unit 1 is still operating beyond November 2024 (as directed by SB 846 and as intended by PG&E), the decommissioning trust fund would not be available for ISFSI operations, and the above highlighted statement would be erroneous, thus raising a genuine question regarding PG&E's demonstration of its compliance with section 72.22(e). *See* SLOMFP Petition at 5-6; NRC Staff Answer at 12-13; Tr. at 58 (Gendelman). SLOMFP thus has shown that a genuine dispute exists on a material issue of law or fact, as required by section 2.309(f)(1)(vi).²¹

We therefore conclude that Contention A is admissible, as follows: PG&E's ISFSI LRA fails to provide accurate and complete information regarding its satisfaction of NRC safety regulation 10 C.F.R. § 72.22(e) because its financial qualifications analysis is based on the incorrect assumption that PG&E will not seek renewal of the DCPD reactors.²²

²¹ PG&E attempts to justify its financial qualifications analysis by asserting that, pursuant to Commission case law, "financial qualification discussions are not required to present 'absolutely certain predictions.'" PG&E Answer at 13 n.48 (quoting *Exelon Generation Company, LLC* (Braidwood Station, Units 1 and 2), CLI-22-1, 95 NRC 1, 7, (2022)). PG&E's assertion is true, but it is also quite beside the point. SLOMFP does not challenge PG&E's financial qualifications analysis for lacking predictive certainty; rather, it contends that the factual assumption underlying that analysis is not complete and correct in material respects, which calls into question whether PG&E satisfies regulatory requirements.

²² In PG&E's view, the LRA was "complete and accurate" when it was filed, it "reflects the current legal reality," and no regulation compels that it be updated until "the reactor licenses are, in fact, renewed." Tr. at 31 (Lighty). That legal argument remains open for PG&E to advance; however, it overlooks a principal thrust of Contention A, which is whether the LRA satisfies section 72.22(e) when its financial qualifications analysis is based on the incorrect assumption that PG&E will start using the decommissioning trust fund to operate the ISFSI in 2024. *See* Tr. at 65-66 (Curran); *see also* Tr. at 53 (Gendelman) (Counsel for NRC Staff states that "the developments associated with

(Continued)

3. *Contention B Is Not Admissible*

SLOMFP also seeks to admit Contention B, which alleges that the “Purpose and Need for the Proposed Action” discussion in the Environmental Report (ER) is improperly “based on the assumption that the [DCPP] reactors will close when their operating licenses expire in 2024 and 2025.” SLOMFP Petition at 9.²³ As a result, argues SLOMFP, the ER (1) improperly fails to address the spent fuel storage needs created by PG&E’s intention to seek renewal of the DCPP reactors, *see id.*; (2) insufficiently considers alternatives for the proposed action, *see id.* at 11; (3) inadequately analyzes the cumulative impacts of the proposed action, *see id.*; and (4) improperly fails to reconcile renewal of the ISFSI with California law and policies regarding the creation and storage of spent fuel. *See id.* at 10-11.

PG&E and the NRC Staff argue that Contention B fails to satisfy the admissibility requirements in 10 C.F.R. § 2.309(f)(1). *See* PG&E Answer at 17-25; NRC Staff Answer at 15-18. We agree.

At the outset, we observe that the “purpose and need” statement in the ER does not explicitly refer to, much less rely on, the retirement dates for DCPP, Units 1 and 2, as the basis for satisfying NRC regulatory requirements. Rather, it says in relevant part: “Due to the current timeframe projections for development of a federal geologic repository, the purpose and the need for the proposed action is to provide for continued temporary dry storage of spent nuclear fuel generated from operation of DCPP at the [Diablo Canyon] ISFSI until facilities are available for interim or permanent disposal.” LRA, app. F, at F-2. As it is framed, the “purpose and need” statement is correct regardless of when the DCPP reactors are shut down; namely, it will “provide for continued temporary dry storage of spent nuclear fuel generated from operation of DCPP.” *Id.* SLOMFP’s claim that the statement improperly relies on an inaccurate assumption, *see* SLOMFP Petition at 9, is thus incorrect and fails to demonstrate the existence of a genuine dispute on a material issue of law or fact, as required by 10 C.F.R. § 2.309(f)(1)(vi).

Because SLOMFP does not identify a deficiency in the “purpose and need” statement, its assertion that this (non-existent) deficiency taints other analyses in the ER is seemingly baseless. We will nevertheless examine the four derivative claims embedded in Contention B.

Preliminarily, however, we take a moment to discuss the spent fuel storage

potential reactor renewal are relevant . . . [and form] the basis for an admissible contention . . . because they bear factually on the satisfaction of [section 72.22(e)].”.

²³ What SLOMFP refers to as the Environmental Report is actually entitled the Environmental Report Supplement. *See* LRA, app. F. In this decision, we will use the terminology employed by SLOMFP.

capacity at DCP, because the derivative claims in Contention B are largely grounded on the premise that if the operating licenses for the DCP reactors are renewed, and if the reactors continue to operate for 20 more years, then PG&E may need to expand its existing ISFSI to accommodate all 60 years of spent fuel. PG&E explains, however, that the dry storage capacity in the ISFSI coupled with the wet storage capacity in the spent fuel pools provides DCP with enough capacity to store at least 60 years' worth of spent fuel, which is sufficient to allow for the operation of Units 1 and 2 through a full renewal period. *See* PG&E Answer at 2-3, 6.²⁴ Assuming, for the sake of argument, that additional dry storage were desired in the future (e.g., after permanent DCP shutdown to support decommissioning), PG&E states that it could elect to develop that capacity in a separate spent fuel storage facility under its general license pursuant to 10 C.F.R. § 72.210. *See id.* at 6 & n.22. Moreover, the possibility exists that, at some point during the 40-year renewal period of the ISFSI, either a consolidated interim storage facility or a permanent repository may become available. *See id.* at 6. In short, declares PG&E, neither the need to construct additional storage, nor the need to do so at this existing ISFSI, is a foregone conclusion, and PG&E has made no decision on how it will proceed at this time. *See id.*

We now turn to the four derivative claims embedded in Contention B. First, SLOMFP alleges that the ER improperly fails to discuss the spent fuel storage needs created by PG&E's intention to seek renewal of the DCP reactors. *See* SLOMFP Petition at 9-10. Such discussion is necessary, contends SLOMFP, because the DCP reactors may not be able to operate for a full 20-year renewal period before running out of storage space for the spent fuel. *See id.* at 10. But SLOMFP's assertion that DCP *might* run out of spent-fuel storage space is conjectural, *see supra* note 24, and does not satisfy the requirement in 10 C.F.R. § 2.309(f)(1)(v) that a contention must be supported by facts or expert opinion. Nor does SLOMFP cite any regulation that would require PG&E to discuss expanding its storage space at the Diablo Canyon ISFSI under these circumstances. A generalized assertion without a specific tie to an NRC regulatory requirement does not provide adequate support to demonstrate a genuine dispute of law or fact. *See* 10 C.F.R. § 2.309(f)(1)(vi); *High-Level Waste Repository*, CLI-09-14, 69 NRC at 588.

²⁴ PG&E states that the DCP ISFSI consists of seven storage pads that collectively provide sufficient storage for all spent fuel generated at DCP for the initial 40-year operating periods of Units 1 and 2. *See* PG&E Answer at 2. The current operating licenses for Units 1 and 2 provide for a spent fuel pool at each unit that can store more than 20 years of spent fuel. *See id.* at 2-3 & n.7. DCP thus can store at least 60 years' worth of spent fuel, *see id.* 3, 6, which includes the ability to offload the cores of Units 1 and 2 at the end of their renewal periods. *See* Tr. at 32 (Lighty).

Second, SLOMFP asserts that the ER is deficient because it fails to consider “a reasonable array of alternatives [for the proposed action] as required by 10 C.F.R. §§ 51.30(a)(1)(ii) and 51.45(b)(3).”²⁵ SLOMFP Petition at 11. The ER’s description of alternatives consists of (1) the no-action alternative; (2) shipping fuel to a permanent federal repository; (3) shipping fuel to a reprocessing facility; (4) shipping fuel to a private spent fuel storage facility; and (5) shipping fuel to another nuclear power plant. *See* LRA, app. F, at F-7 to F-9. SLOMFP does not specify which of these alternatives it disagrees with or why. Nor does it provide adequate support for its claim that PG&E’s “array of alternatives” is unreasonable. The Commission has declared that for a contention to be admissible it must “refer to the specific portions of the application [it] disputes, [and provide] the supporting reasons for each dispute.” *Vermont Yankee*, CLI-15-20, 82 NRC at 221. In our judgment, SLOMFP has not provided sufficient information to show a genuine dispute with the LRA. *See* 10 C.F.R. § 2.309(f)(1)(v), (vi).²⁶

Third, SLOMFP argues that the ER inadequately considers the cumulative impacts of the proposed action as required by 10 C.F.R. §§ 51.23(c) and 51.30(a)(1)(iii), *see* SLOMFP Petition at 11, because it fails to consider “the cumulative impacts of adding yet another spent fuel facility.” *Id.* at 16. However, whether PG&E will construct another spent fuel facility at DCP is conjectural, *see supra* note 26, and a contention that is grounded on mere conjecture lacks

²⁵ SLOMFP’s petition does not cite section 51.30(a)(1)(ii); rather, it cites section 52.30(a)(1)(ii). *See* SLOMFP Petition at 11. Because section 52.30(a)(1)(ii) does not exist, we assume that SLOMFP intended to cite to section 51.30(a)(1)(ii).

²⁶ SLOMFP opines that the purpose and need statement is “excessively narrow” when compared with the purpose and need statement in the ER that accompanied the 2001 Diablo Canyon ISFSI license application. SLOMFP Petition at 12. As a result of this alleged shortcoming, SLOMFP argues that the ER improperly fails to discuss alternatives for increasing the capacity of the ISFSI or adding another ISFSI. *See id.* at 14, 16; *see also* SLOMFP Reply at 7 (asserting that the ER’s discussion of alternatives represents a “blinded approach to the continued generation of spent fuel.”). As discussed *supra* note 24 and accompanying text, however, PG&E states that DCP can store at least 60 years’ worth of spent fuel, so the need for additional on-site storage during the renewal period of Units 1 and 2 is speculative. Moreover, a consolidated interim storage facility or a permanent repository may become available at some point during the ISFSI’s 40-year renewal period, in which case “no additional spent fuel storage capacity will be needed.” PG&E Answer at 22. Given these circumstances, SLOMFP has not provided factual support or expert opinion to sustain its assertion that PG&E’s purpose and need statement is “excessively narrow,” SLOMFP Petition at 12, much less its assertion that PG&E’s approach in discussing alternatives is “blinded” or otherwise unreasonable. SLOMFP Reply at 7. Nor has SLOMFP demonstrated that a genuine dispute exists on a material issue. This aspect of Contention B is therefore not admissible.

supporting facts and fails to show a genuine dispute on a material issue of law or fact. *See* 10 C.F.R. § 2.309(f)(1)(v), (vi).²⁷

Moreover, as the NRC Staff points out, *see* NRC Staff Answer at 17, the ER provides a summary of different environmental impacts from the Diablo Canyon ISFSI, with reference to the Updated Final Safety Analysis Report's cumulative impact discussion. *See* LRA, app. F, at F-31 to F-41. Of all the analyzed environmental impacts, the ER finds that the only potential impacts are occupational and public doses, both of which are within regulatory limits. *See id.* at F-40. Within those discussions, the ER specifically looks at the cumulative doses delivered to site personnel and the public. *See id.* at F-33, F-34. For example, under "Occupational Dose," the ER "establishes the expected cumulative dose delivered to site personnel during the fuel handling and transfer activities," including doses received during overpack loading, ISFSI walkdowns, and maintenance and repairs. *Id.* at F-33. For doses to the public, the ER looks at the doses received from the dry cask storage system surfaces, the spent fuel loading activity, and other uranium fuel cycle operations. *See id.* at F-34. Because the ER's discussion of environmental impacts evaluates the cumulative impacts for the resource areas that it found may have impacts from the ISFSI license renewal, we agree with the Staff's assertion that "SLOMFP's bare claim that such discussion is absent is not sufficient to raise a genuine dispute of law or fact under 10 C.F.R. § 51.30(a)(1)(iii), as required by 10 C.F.R. § 2.309(f)(1)(iv)." NRC Staff Answer at 17-18.

Lastly, SLOMFP argues that the ER improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel. *See* SLOMFP Petition at 10-11. But this proceeding concerns the LRA's compliance with NRC regulations in 10 C.F.R. Parts 51 and 72, not with state law and policies. SLOMFP identifies no federal regulation requiring PG&E to address California's law and policies. *See* Tr. at 23-24 (Curran). This aspect of Contention B is thus inadmissible for being outside the scope of the proceeding and failing to demonstrate a genuine dispute with the LRA on a material issue of law or fact. *See* 10 C.F.R. § 2.309(f)(1)(iii), (vi).

²⁷ SLOMFP correctly observes that the "rule of reason" governs the scope of environmental analyses in an ER. *See* SLOMFP Reply at 7-8 (quoting *City of Carmel-by-the-Sea v. Dept. of Transportation*, 123 F.3d 1142, 1150 (9th Cir. 1997)). But that rule does not salvage this aspect of Contention B because SLOMFP has not shown that PG&E acted unreasonably in declining to consider the cumulative impacts of an event that, at this juncture, is entirely speculative. *See Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation)*, CLI-02-25, 56 NRC 340, 348-49 (2002); *see also Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974).

III. CONCLUSION

For the foregoing reasons, we *grant* SLOMFP's hearing request, and we *admit* Contention A as follows: PG&E's ISFSI LRA fails to provide accurate and complete information regarding its satisfaction of NRC safety regulation 10 C.F.R. § 72.22(e) because its financial qualifications analysis is based on the incorrect assumption that PG&E will not seek renewal of the DCPD reactors.

This proceeding shall be conducted pursuant to the Simplified Hearing Procedures for NRC Adjudications described in Subpart L of 10 C.F.R. Part 2.

This Memorandum and Order is subject to appeal in accordance with the provisions in 10 C.F.R. § 2.311(b) and (d)(1).

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

E. Roy Hawken, Chair
ADMINISTRATIVE JUDGE

Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

Dr. Gary S. Arnold
ADMINISTRATIVE JUDGE

Rockville, Maryland
July 19, 2023

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Christopher T. Hanson, Chair
David A. Wright
Annie Caputo
Bradley R. Crowell

In the Matter of

Docket No. 11006398
(License No. XSNM3819)

U.S. DEPARTMENT OF ENERGY
(Export of 93.20% Enriched Uranium)

September 11, 2023

HEARING REQUEST

To grant a hearing in an export licensing proceeding, the Commission must find that such a hearing will be in the public interest and will assist in making the statutory determinations required by the Atomic Energy Act. To satisfy these factors, a petitioner must show how a hearing would bring new information to light.

HEARING REQUEST

If a hearing request or intervention petition asserts an interest which may be affected by the export license proceeding, the Commission will consider the nature of the alleged interest; how that interest relates to issuance or denial; and the possible effect of any order on that interest, including whether the relief requested is within the Commission's authority, and, if so, whether granting relief would redress the alleged injury.

HEARING REQUEST

An institutional interest in providing information to the public is insufficient to show an affected interest in the export license proceeding.

HEARING REQUEST

Persons without an affected interest are not as likely as persons with an affected interest to contribute to the Commission's decisionmaking; they are also less likely to be able to show that a hearing would be in the public interest and would assist the Commission in making the requisite statutory and regulatory determinations.

HEARING REQUEST

Even if a petitioner does not satisfy the test for obtaining a hearing, the NRC may still consider the points raised in a petition as public comments pursuant to 10 C.F.R. § 110.81(a), which explicitly encourages written comments from the public regarding export license applications.

MEMORANDUM AND ORDER

I. INTRODUCTION

Dr. Alan J. Kuperman requests leave to intervene on an export license application filed by the Department of Energy and National Nuclear Security Administration (DOE/NNSA).¹ DOE/NNSA seeks to export up to 130 kilograms (kg) of highly enriched uranium (HEU) in the form of broken metal to Framatome's facility in Romans-sur-Isère, France. Dr. Kuperman requests an oral hearing, and he asks the NRC to limit the amount of HEU that DOE/NNSA may export under its license.

For the reasons discussed below, we deny Dr. Kuperman's request for a hearing, and we refer his request to the Office of International Programs to address as a non-adjudicatory comment on the license application.

II. BACKGROUND

In September 2020, DOE/NNSA submitted to the NRC a license application to export up to 130 kg of HEU (enriched up to 93.20%) in the form of broken metal to Framatome, who will fabricate the HEU into fuel and then transfer

¹ See Petition of Alan J. Kuperman for Leave to Intervene and Request for Hearing (Mar. 5, 2021) (Petition); Submission of Additional Information from Alan Kuperman (Jan. 5, 2023) (Supplemental Filing); Application to Export Enriched Uranium to France, License No. XSNM3819 (Sept. 10, 2020) (ADAMS accession no. ML20262H100) (Application).

the fuel to the Institut Laue-Langevin (ILL) for use in its High Flux Reactor. This proposed export would take place under the U.S.-Euratom Agreement for Cooperation in the Peaceful Uses of Nuclear Energy. The European Commission has confirmed that the French recipients are authorized to receive this type of nuclear material.

The ultimate end user — ILL — is a research center that specializes in neutron science. It uses the High Flux Reactor to produce neutrons that, in turn, are used in a variety of research settings. The High Flux Reactor operates continuously on a 50-day cycle, followed by a shutdown after each cycle.²

ILL cannot currently meet required performance objectives through use of commercially available and qualified for use low-enriched uranium (LEU) to fuel the High Flux Reactor. Work towards converting the reactor to LEU fuel remains ongoing, with completion expected by approximately 2031.³

On February 3, 2021, the NRC published a notice of opportunity to request a hearing on DOE/NNSA's application.⁴ Dr. Kuperman thereafter filed the hearing request now before us. Dr. Kuperman seeks an oral hearing on DOE/NNSA's export application and requests that the Commission limit the amount of HEU that DOE/NNSA would be permitted to export to ILL.⁵ DOE/NNSA filed a response to Dr. Kuperman's petition providing specific information that Dr. Kuperman identified in his petition as being needed before the Commission could make an informed license determination.⁶ Subsequently, Dr. Kuperman filed supplemental information in support of his position that the Commission should limit the amount of HEU that DOE/NNSA can export to ILL.⁷

In accordance with section 126 of the Atomic Energy Act of 1954, as amended (AEA),⁸ and 10 C.F.R. § 110.41, the NRC submitted DOE/NNSA's application to the Executive Branch for review. On May 31, 2023, the State Department provided the NRC with the Executive Branch views. The Executive Branch recommended approval of the requested license. The Executive Branch concluded that the proposed export will not be inimical to the common defense and security of the United States and is consistent with the provisions of the Atomic Energy Act. As part of its views letter, the Executive Branch also included additional

² *High-flux Reactor - ILL Neutrons for Society*, Institut Laue-Langevin, <https://www.ill.eu/reactor-and-safety/high-flux-reactor> (last visited Feb. 10, 2023).

³ See Response to the Petition of Alan J. Kuperman (Apr. 5, 2021), at 1 (DOE/NNSA Response).

⁴ Export license application; opportunity to provide comments, request a hearing, and petition for leave to intervene, 86 Fed. Reg. 8047 (Feb. 3, 2021).

⁵ Petition at 21-26.

⁶ DOE/NNSA Response at 1.

⁷ Supplemental Filing at 1.

⁸ 42 U.S.C. § 2155.

technical information relevant to the amount of material requested in the export license application.⁹

III. DR. KUPERMAN’S HEARING REQUEST

A. Requirements for Obtaining a Hearing on an Export License

In an export licensing proceeding, we will grant a hearing when we find that such a hearing will be in the public interest and will assist us in making the statutory determinations required by the Atomic Energy Act.¹⁰

Our regulations further provide that a hearing request must “specify, when a person asserts that his interest may be affected, both the facts pertaining to his interest and how it may be affected.”¹¹ And, “[i]f a hearing request or intervention petition asserts an interest which may be affected, the Commission will consider:

- (1) The nature of the alleged interest;
- (2) How that interest relates to issuance or denial; and
- (3) The possible effect of any order on that interest, including whether the relief requested is within the Commission’s authority, and, if so, whether granting relief would redress the alleged injury.”¹²

As we have previously explained, “[p]ersons without an affected interest are not as likely as persons with an affected interest to contribute to our decisionmaking; they are also less likely to be able to show that a hearing would be in the public interest and would assist us in making the requisite statutory and regulatory determinations.”¹³

We first consider Dr. Kuperman’s assertion of an interest, and then we address whether Dr. Kuperman has shown that a hearing would be in the public interest and would assist us in making the required statutory and regulatory determinations.

⁹ See Letter from James R. Warden, Nuclear Energy, Safety and Security, U.S. Department of State, to Peter J. Habighorst, Office of International Programs, U.S. Nuclear Regulatory Commission (May 31, 2023), pp. 6-9 (ML23233A173).

¹⁰ *U.S. Department of Energy* (Export of 93.20% Enriched Uranium), CLI-16-15, 84 NRC 53, 57 (2016) (quoting 42 U.S.C. § 2155a); 10 C.F.R. § 110.84(a). Our hearing procedures for export license proceedings are generally contained in 10 C.F.R. Part 110, Subparts H, I, and J.

¹¹ 10 C.F.R. § 110.82(b)(4).

¹² *Id.* § 110.84(b).

¹³ *Diversified Scientific Services, Inc.* (Export of Low-Level Waste), CLI-19-2, 89 NRC 229, 231 (2019).

B. Analysis of Dr. Kuperman's Hearing Request

In his petition, Dr. Kuperman asserts both institutional and personal interests.¹⁴ Dr. Kuperman first provides biographical information describing his past and ongoing professional work on non-proliferation issues and his organization's institutional interests in the topic.¹⁵ Dr. Kuperman asserts that these institutional interests relate to public information and education programs concerning nuclear proliferation, nuclear terrorism, and the use of HEU, and that his "ability to carry out these functions would be significantly and adversely impaired" unless we hold a full, open, and independent review of the issues.¹⁶

We have previously held, however, that an "institutional interest in providing information to the public" is insufficient to show an affected interest.¹⁷ Dr. Kuperman has not shown that issuing this export license will hinder his ability to continue his educational activities and his activities related to nuclear weapons, proliferation, terrorism, and the use of HEU — that is, he has not shown that his institutional interest will be "affected" by this particular proceeding.¹⁸

In addition to his institutional interest, Dr. Kuperman asserts "individual interests that could be directly affected by the outcome of this proceeding" in that the "[e]xport of HEU increases global risks of nuclear proliferation and nuclear terrorism, thereby increasing the likelihood that an adversary's nuclear weapon will be detonated in the United States, adversely affecting the Petitioner's health, safety, and well-being."¹⁹ Dr. Kuperman, however, fails to provide any evidence of a specific credible threat, let alone any evidence of a specific risk or threat tied to this particular export license application.²⁰ Dr. Kuperman's concern of a nuclear attack arises not from the export itself but from the unlawful acts of a

¹⁴ Petition at 3-6.

¹⁵ *Id.* at 3-5. Dr. Kuperman notes that he is the Coordinator of the Nuclear Proliferation Prevention Project, which engages in "research, debate, and public education to ensure that civilian applications of nuclear technology do not foster the spread of nuclear weapons to states or terrorist groups." *Id.* at 3.

¹⁶ *Id.* at 5.

¹⁷ See *Transnuclear, Inc.* (Export of 93.15% Enriched Uranium), CLI-94-1, 39 NRC 1, 5 (1994).

¹⁸ See *Transnuclear, Inc.* (Export of 93.3% Enriched Uranium), CLI-00-16, 52 NRC 68, 72 (2000) (noting that the Commission "has long held" that merely asserting a "generalized interest . . . in minimizing the danger from proliferation" is insufficient to show an affected interest in an export proceeding).

¹⁹ Petition at 5.

²⁰ See *Diversified Scientific*, CLI-19-2, 89 NRC at 232 (concluding that Petitioners did not possess an interest that may be affected by this proceeding because "none of the asserted harms derive directly and specifically from exports that might be made if the application before us is granted.").

hypothetical, unnamed adversary of the United States.²¹ “[T]he Commission’s responsibility for considering the possibility of diversion as one aspect of protecting the common defense and security of the United States does not establish that diversion would cause any concrete personal or direct harm to petitioners which would entitle them to a voice in its proceedings.”²² Accordingly, we conclude that Dr. Kuperman has not demonstrated that he possesses an interest that may be affected by this proceeding.

Dr. Kuperman also has not demonstrated how a hearing would be in the public interest and assist us in making the required statutory and regulatory determinations.²³ “[T]o satisfy these factors, a petitioner must show how a hearing would bring new information to light.”²⁴

Here, Dr. Kuperman argues that “[o]nly a public hearing in which issues related to the ostensible justification for the proposed HEU export are fully aired and subjected to public scrutiny can serve to resolve legitimate public questions concerning both the need for granting this license application and the risks associated with such action.”²⁵ In this regard, Dr. Kuperman maintains that “a hearing would bring to light” specific information “which thus far has been withheld from the public,” including “when ILL will exhaust its current HEU supply based on the reactor’s planned operating schedule; the number of years that the proposed export would last based on the reactor’s planned operating schedule; and the earliest date that the operator could complete conversion to LEU fuel.”²⁶ Dr. Kuperman asserts that a hearing would be in the public interest and assist the Commission in making the required statutory and regulatory determinations because it would “compel the Applicant to provide such information publicly.”²⁷ In his supplemental filing, Dr. Kuperman provided additional related information, including that “the operator’s existing supply of HEU fuel may last until 2025 or later,” “the reactor’s safety authorization expires in 2030,” and “the operator plans to insert an LEU fuel lead test assembly in 2029.”²⁸

²¹ *U.S. Department of Energy* (Plutonium Export License), CLI-04-17, 59 NRC 357, 367 (2004) (“Petitioners fail to establish a nexus between the agency’s actions and their alleged injury. The alleged harm — the attack or diversion of nuclear material by terrorist organizations — does not result from the grant or denial of the export license; rather, the remote potential for harm is dependent on the intervening acts of unknown third parties.”).

²² *Id.* at 365-66 (quoting *Edlow International Co.* (Agent for the Government of India on Application to Export Special Nuclear Material), CLI-76-6, 3 NRC 563, 577 (1976)).

²³ 10 C.F.R. § 110.84(a).

²⁴ *Diversified Scientific*, CLI-19-2, 89 NRC at 232-33 (citing *U.S. Department of Energy*, CLI-16-15, 84 NRC at 58 n.25).

²⁵ Petition at 24.

²⁶ *Id.* at 13, 21-26.

²⁷ *Id.* at 25.

²⁸ Supplemental Filing at 2.

In its response to Dr. Kuperman's petition, DOE/NNSA provided information relevant to that identified by Dr. Kuperman, including that the proposed export of 130 kg of HEU would support the fabrication of approximately four years' worth of fuel; that the mid-2022 date initially projected for ILL's receipt of the material factored in sufficient lead time for fuel fabrication to support continued operation of ILL's High Flux Reactor; and that the High Flux Reactor is expected to convert to the exclusive use of a qualified LEU fuel by approximately 2031.²⁹

In its letter, the Executive Branch included information relevant to Dr. Kuperman's concerns, including that the HEU export, based on updated operational projections, would provide enough fuel for three to four years of operation, from mid-2026 until late 2029, assuming three to four cycles each year; that ILL's current HEU inventory is sufficient to last approximately through August 2026; and that the U.S. government and ILL are working towards a conversion of the High Flux Reactor to LEU by approximately 2031, while also seeking opportunities to shorten that timeframe. Further, the Executive Branch recognized that there is some inherent uncertainty regarding the High Flux Reactor's operational schedule going forward and the as-yet unknown results of the LEU fuel irradiation still to be performed.

Although Dr. Kuperman has extensive knowledge of non-proliferation issues, he has not adequately specified what new information would be provided at a hearing that is not already available to the Commission. The crux of Dr. Kuperman's argument is that the Commission should not approve the export of HEU beyond the recipient's demonstrated need.³⁰ But the categories of information he identified as necessary for public participation to assess the recipient's need have already been provided.³¹ Dr. Kuperman fails to explain how a hearing

²⁹ DOE/NNSA Response at 1.

³⁰ Supplemental Petition at 2 (stating that "it is not apparent that the recipient requires the full amount of HEU requested in the export license application" and thus, "Commission approval of the full amount of HEU in the license request would raise substantial risk of creating a surplus of U.S.-origin HEU abroad, which would be inimical to the common defense and security, thus violating U.S. non-proliferation law and policy"); Petition at 22 ("Petitioner does not necessarily oppose the granting of the license application *for some portion* of the HEU sought, assuming that the requisite need can be demonstrated.").

³¹ See DOE/NNSA Response at 1; Supplemental Filing at 2; *see also* U.S. Department of Energy (Export of 93.35% Enriched Uranium), CLI-20-2, 91 NRC 103, 114 (2020) ("In export proceedings, we must be persuaded by the Petitioners that holding a hearing would result in the acquisition of new information that will assist in making statutory determinations concerning this application that we otherwise could not make based on the existing record."); *Transnuclear*, CLI-00-16, 52 NRC at 72 (explaining that nothing in the petitioner's filings indicates it will be able to "present significant information not already available to and considered by the Commission").

would add additional clarity to the points that he already made in his petition and supplemental filing.³²

Even though Dr. Kuperman has not satisfied the NRC's hearing requirements in Part 110, the NRC can still consider the points raised in his petition and supplemental filing. Part 110 explicitly encourages written comments from the public regarding export license applications and provides that the NRC will consider and, if appropriate, respond to any comments received.³³ In our view, Dr. Kuperman's petition and supplemental filing are properly considered as a public comment on the application. We therefore refer the amended petition to the Office of International Programs to address as a public comment pursuant to 10 C.F.R. § 110.81(a).

IV. CONCLUSION

We deny Dr. Kuperman's request for a hearing. For the reasons discussed above, we find that the request does not meet the established standard for holding a hearing because Dr. Kuperman does not demonstrate that a hearing would be in the public interest and would assist us in making the required statutory and regulatory determinations. The NRC Staff should consider and address the amended petition as a public comment on DOE/NNSA's application, consistent with 10 C.F.R. § 110.81(a).

IT IS SO ORDERED.

For the Commission

Brooke P. Clark
Secretary of the Commission

Dated at Rockville, Maryland,
this 11th day of September 2023.

³² *U.S. Department of Energy*, CLI-20-2, 91 NRC at 115 (denying hearing requests where petitioners "already provided robust discussion and detailed analyses, and we have ample information in the existing record to assess the merits of the issues [petitioners] have raised in making our licensing determination").

³³ 10 C.F.R. § 110.81.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

**E. Roy Hawkens, Chair
Nicholas G. Trikouros
Dr. Gary S. Arnold**

In the Matter of

**Docket No. 72-26-ISFSI-MLR
(ASLBP No. 23-979-01-ISFSI-MLR-BD01)**

**PACIFIC GAS AND ELECTRIC
COMPANY
(Diablo Canyon Independent Spent
Fuel Storage Installation)**

September 15, 2023

**MEMORANDUM AND ORDER
(Dismissing Contention and Terminating Proceeding)**

Pending before this Licensing Board in this license renewal proceeding for the Diablo Canyon Power Plant (DCPP) Independent Spent Fuel Storage Installation (ISFSI) is (1) Pacific Gas and Electric Company's (PG&E's) motion to dismiss or for summary disposition of Contention A,¹ and (2) San Luis Obispo Mothers for Peace's (SLOMFP's) notice of withdrawal of Contention A.² Contention A, which is the sole contention admitted in this proceeding, challenges PG&E's financial qualifications analysis in its license renewal application (LRA) for the

¹ See [PG&E's] Motion to Dismiss or for Summary Disposition of Contention A as Moot (Aug. 24, 2023) [hereinafter PG&E Motion].

² See [SLOMFP's] Notice of Withdrawal of Contention A (Sept. 11, 2023) [hereinafter SLOMFP Withdrawal Notice].

Diablo Canyon ISFSI.³ As discussed below, we dismiss Contention A pursuant to SLOMFP's withdrawal notice (which renders PG&E's motion moot), and we terminate this proceeding.

I. BACKGROUND

On March 13, 2023, SLOMFP filed a hearing request challenging PG&E's LRA that seeks to extend operation of the Diablo Canyon ISFSI for an additional 40 years beyond the current license expiration date of March 22, 2024.⁴ On July 19, 2023, this Licensing Board granted SLOMFP's hearing request and admitted one of its contentions, Contention A, as follows: "PG&E's ISFSI LRA fails to provide accurate and complete information regarding its satisfaction of [Nuclear Regulatory Commission (NRC)] safety regulation 10 C.F.R. § 72.22(e) because its financial qualifications analysis is based on the incorrect assumption that PG&E will not seek renewal of the DCPD reactors." LBP-23-7, 98 NRC at 15.

On August 10, 2023, PG&E submitted a revision to the LRA that amends the financial qualifications discussion "to reflect the potential for DCPD continued operations beyond the current operating license expiration dates."⁵

On August 24, 2023, PG&E filed a motion asking this Board to dismiss or, alternatively, grant summary disposition of Contention A as moot. *See* PG&E Motion at 1. PG&E explains that Contention A is a contention of omission alleging that the financial qualifications discussion in the LRA improperly fails to acknowledge PG&E's plan to seek renewal of the DCPD reactors. *See id.* at 4. PG&E states that the revised LRA cures that alleged deficiency, *see id.* at 1, and pursuant to 10 C.F.R. § 2.1205(a), PG&E provides the following statement of material facts for which there is no genuine issue to be heard:

- On July 19, 2023, the Board issued LBP-23-7, granting [SLOMFP's hearing request].
- In LBP-23-7, the Board admitted only one contention for hearing.
- The sole contention admitted for hearing in LBP-23-7 alleged as follows:
PG&E's ISFSI LRA fails to provide accurate and complete information regarding its satisfaction of NRC safety regulation 10 C.F.R. § 72.22 be-

³ *See Pacific Gas and Electric Co.* (Diablo Canyon Independent Spent Fuel Storage Installation), LBP-23-7, 98 NRC 1, 15 (2023).

⁴ *See* [SLOMFP] Hearing Request and Petition to Intervene in License Renewal Proceeding for Diablo Canyon [Independent] Spent Fuel Storage Installation (Mar. 13, 2023).

⁵ *See* Letter from M. Zawalick, PG&E, to NRC Document Control Desk, Diablo Canyon [ISFSI LRA], rev. 1, at 1 (Aug. 10, 2023) (ADAMS Accession No. ML23222A287).

- cause its financial qualifications analysis is based on the incorrect assumption that PG&E will not seek renewal of the DCPD reactors.
- On August 10, 2023, PG&E submitted the [revised LRA].
- The [revised LRA amends] the LRA [financial qualifications] analysis “to reflect the potential for DCPD continued operations beyond the current [operating] license expiration dates.”
- Following the [revised LRA], the LRA [financial qualifications] analysis is no longer “based on the incorrect assumption that PG&E will not seek renewal of the DCPD reactors.”

Id., attach. A. PG&E therefore moves this Board to summarily dismiss the contention as moot. *See id.* at 5.

On September 5, 2023, the NRC Staff filed an answer supporting PG&E’s motion.⁶ In the NRC Staff’s view, because of PG&E’s revision to the ISFSI LRA, “Contention A as admitted has become moot, and there is no remaining genuine material dispute of fact or law with respect to Contention A.” NRC Staff Answer at 2.

On September 11, 2023, SLOMFP notified this Board and the Commission that it was withdrawing Contention A. *See* SLOMFP Withdrawal Notice at 1.⁷ SLOMFP explains that it is “withdrawing the contention because PG&E’s August 10, 2023 amendment to its license renewal application now appears to resolve the concerns raised by Contention A.” *Id.* SLOMFP recognizes that “withdrawal of Contention A will result in the termination of this adjudicatory proceeding,” but it “reserves the right [pursuant to 10 C.F.R. § 2.309(c)] to submit a new hearing request . . . if subsequent events or changes to PG&E’s ISFSI license renewal application give rise to new safety or environmental concerns.” *Id.*

II. ORDER

In recognition of SLOMFP’s notice of withdrawal of Contention A, we *dismiss* Contention A. Our dismissal of Contention A renders PG&E’s motion for

⁶ *See* NRC Staff Answer to [PG&E’s] Motion to Dismiss or for Summary Disposition of Contention A as Moot (Sept. 5, 2023) [hereinafter NRC Staff Answer].

⁷ SLOMFP included the Commission in its filing to ensure it would be aware that “as a result of withdrawing the contention, SLOMFP will not respond to PG&E’s brief on appeal of LBP-23-07 (filed with the Commission on August 14, 2023).” SLOMFP Withdrawal Notice at 1.

summary disposition moot.⁸ Because Contention A was the only admitted contention in this proceeding, we *terminate* this proceeding at the Board level.

Pursuant to 10 C.F.R. § 2.341(b), any petition for review to the Commission must be filed within 25 days of this issuance.

It is so ORDERED.

THE ATOMIC SAFETY AND
LICENSING BOARD

E. Roy Hawkens, Chair
ADMINISTRATIVE JUDGE

Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

Dr. Gary S. Arnold
ADMINISTRATIVE JUDGE

Rockville, Maryland
September 15, 2023

⁸ Although our dismissal of Contention A pursuant to SLOMFP's withdrawal notice moots PG&E's motion, it is to be acknowledged that the reasoning underlying both filings is identical — namely, PG&E's revised LRA cured the deficiency alleged in Contention A.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Christopher T. Hanson, Chair
David A. Wright
Annie Caputo
Bradley R. Crowell

In the Matter of

Docket No. 70-143-LA

NUCLEAR FUEL SERVICES, INC.
(License Amendment Application)

October 5, 2023

APPEALS

The Commission need not consider arguments raised for the first time on appeal.

CONTENTIONS, ADMISSIBILITY

The contention admissibility criteria do not serve as a “fortress to deny intervention,” but they do serve to frame issues for an evidentiary hearing.

CONTENTIONS, ADMISSIBILITY

Expert opinions that state a conclusion without explaining the basis for that conclusion do not fulfill the requirement in 10 C.F.R. § 2.309(f)(1)(v) that the contention have adequate support.

NATIONAL ENVIRONMENTAL POLICY ACT

A “reasonably close causal relationship” must exist between the proposed action and a purported environmental effect to compel consideration in the agency’s NEPA analysis. The license amendment would not allow the licensee to produce a nuclear weapon or a component of a nuclear weapon, and therefore, there is not a sufficiently close causal relationship between the agency’s action

and the potential for the licensee's new activities to cause an increase in proliferation.

NATIONAL ENVIRONMENTAL POLICY ACT

The NRC is not required to evaluate potential extraterritorial environmental effects of its domestic licensing actions.

NUCLEAR NON-PROLIFERATION

NRC safety regulations on information security, physical security, and material control adequately address nonproliferation concerns as part of a comprehensive regulatory infrastructure.

MEMORANDUM AND ORDER

Erwin Citizens Awareness Network, Inc. (ECAN) has appealed the Atomic Safety and Licensing Board's decision denying its petition to intervene and hearing request.¹ In its petition to intervene, ECAN proposed four contentions related to the request of Nuclear Fuel Services, Inc. (NFS) to amend the existing license for its Erwin, Tennessee nuclear fuel fabrication facility. For the reasons detailed below, we affirm the Board's decision.

I. BACKGROUND

NFS requested an amendment to its existing 10 C.F.R. Part 70 special nuclear materials license in November 2021.² If granted, the amendment would allow NFS to provide uranium purification and conversion services at its Erwin, Tennessee facility.³ After entering a contract with the U.S. Department of Energy's National Nuclear Security Administration (NNSA) for the "U-Metal Project," NFS submitted this license amendment request. The contract is intended to bridge the gap between the shutdown of the legacy uranium processing equipment at the NNSA Y-12 National Security Complex in Oak Ridge, Tennessee,

¹ Notice of Appeal of LBP-23-02 by Petitioner Erwin Citizens Awareness Network, Inc. and Brief in Support of Appeal (Feb. 24, 2023) (ECAN Appeal).

² Letter from Tim Knowles, NFS, to NRC Document Control Desk (Nov. 18, 2021) (ADAMS accession no. ML21327A099) (License Amendment Application).

³ *Id.* at 1 (unnumbered).

and the transition to a new facility at Y-12 that will use new electrorefining technology to purify high-enriched uranium metal.⁴

In support of the license amendment request, NFS submitted a supplemental environmental report (Supplemental ER) pursuant to 10 C.F.R. § 51.60(a).⁵ Because NFS had previously prepared an environmental report for its 2009 license renewal application, its Supplemental ER for this request “evaluates the environmental impacts associated with the addition of the U-Metal Project and documents changes to key information between 2009 and this submittal.”⁶

In response to a notice of hearing opportunity published in the *Federal Register*, ECAN filed a petition proffering four contentions challenging various aspects of the NFS license amendment request.⁷ Both the NRC Staff and NFS argued that none of ECAN’s contentions were admissible.⁸ The Board found that ECAN established its representational standing in the proceeding but did not find any of its four contentions admissible.⁹

II. DISCUSSION

ECAN has appealed the Board’s decision under 10 C.F.R. § 2.311(c), which allows a petitioner whose hearing request has been wholly denied to appeal as of right. To be admitted for hearing, a proposed contention must set forth with particularity the matters to be raised, be within the scope of the hearing, be material to the findings the agency must make in taking the requested action, be

⁴ *Id.* at 1-2 (unnumbered).

⁵ In a February 24, 2022, response, NFS provided a version of the supplemental ER suitable for public release. See Letter from Tim Knowles, NFS, to NRC Document Control Desk (Feb. 24, 2022) (ML22066B004), Encl. (ML22066B005) (Supplemental ER). That publicly available version of the Supplemental ER is the version referenced in this decision.

⁶ License Amendment Application at 3 (unnumbered); see also 10 C.F.R. § 51.60(a) (“If the application is for an amendment to . . . a license . . . for which the applicant has previously submitted an environmental report, the supplement to applicant’s environmental report may be limited to incorporating by reference, updating or supplementing the information previously submitted to reflect any significant environmental change, including any significant environmental change resulting from operational experience or a change in operations or proposed decommissioning activities.”).

⁷ Amended Petition of Erwin Citizens Awareness Network for Leave to Intervene in Nuclear Fuel Services, Inc. License Amendment Proceeding, and Request for a Hearing (Oct. 31, 2022) (Petition to Intervene).

⁸ NRC Staff Answer to Erwin Citizens Awareness Network’s Petition to Intervene and Request for Hearing (Nov. 23, 2022) (Staff Answer to Petition to Intervene); Nuclear Fuel Services, Inc.’s Answer to Erwin Citizens Awareness Network’s Hearing Request and Petition for Leave to Intervene (Nov. 25, 2022) (NFS Answer to Petition to Intervene).

⁹ LBP-23-2, 97 NRC 8, 57-58 (2023).

factually supported, and show that a genuine dispute exists with the application.¹⁰ We will defer to the Board's rulings on contention admissibility unless an appeal demonstrates an error of law or abuse of discretion.¹¹ As discussed below, we find no Board error or abuse of discretion and affirm the Board's decision.

A. Contention A: Nuclear Weapons Proliferation Assessment

In Contention A, ECAN asserted that the new process at NFS will generate purified high-enriched uranium material for inclusion in nuclear weapons.¹² ECAN further argued that the U.S. nuclear weapons program is “controversial,” “arguably illegal,” and “violative of international norms.”¹³ According to ECAN, under the National Environmental Policy Act (NEPA), “the NRC is required to investigate, analyze and publicly disclose a nuclear weapons proliferation assessment,¹⁴ discussing the impacts and policy implications of the new NFS purification process on the U.S. weapons program and prospects.”¹⁵

The Board found Contention A inadmissible because it did not fall within the scope of the proceeding or raise a genuine dispute regarding a material issue of law or fact.¹⁶ In reaching the conclusion that the contention is outside the scope of the proceeding, the Board applied two Commission decisions concerning enrichment facilities, where we found contentions seeking proliferation assessments under NEPA and the AEA inadmissible.¹⁷ In *LES*, we found the NEPA-based contention beyond the scope of the proceeding because a domestic licensing action's impact on nuclear nonproliferation concerns is speculative

¹⁰ See 10 C.F.R. § 2.309(f)(1)(i)-(vi).

¹¹ See, e.g., *Crow Butte Resources, Inc.* (Marsland Expansion Area), CLI-14-2, 79 NRC 11, 13-14 (2014).

¹² LBP-23-2, 97 NRC at 24 (quoting Petition to Intervene at 8).

¹³ *Id.* at 24-25 (quoting Petition to Intervene at 11).

¹⁴ The term “nuclear proliferation assessment statement” is used in the Atomic Energy Act of 1954, as amended (AEA), in the context of U.S. agreements for cooperation with a foreign nation under sections 123 and 131. It does not appear that ECAN wants the NRC to produce this type of statement. Accordingly, the term “proliferation assessment” as used in this order does not refer to the statement described in sections 123 and 131 of the AEA.

¹⁵ LBP-23-2, 97 NRC at 24 (quoting Petition to Intervene at 8). ECAN argued that the NRC's responsibility under the AEA to consider whether granting a license would be inimical to the common defense and security of the United States or the health and safety of the public requires the NRC's NEPA analysis to “consider the full range of risks to the common defense and security potentially arising from its licensing decision.” *Id.* at 25 (quoting Petition to Intervene at 12). The Board found that ECAN's contention ultimately was a contention of omission, challenging the failure of the Supplemental ER to include a proliferation analysis. *Id.* at 31. The Board considered whether a “proliferation assessment” was required under either the AEA or NEPA. *Id.* at 31-35.

¹⁶ *Id.* at 35 (citing 10 C.F.R. § 2.309(f)(1)(iii), (vi)).

¹⁷ *Id.* at 31-33.

and lacks a proximate causal connection to the proposed facility.¹⁸ In *USEC*, we found the safety-based contention to be beyond the scope of the proceeding because it “raise[d] issues of international policy unrelated to the NRC’s licensing criteria.”¹⁹ The Board also noted that, in response to a comment on a petition for rulemaking, the Commission addressed all types of fuel cycle facilities and stated that proliferation assessments should not be required because existing NRC requirements already address proliferation risks and concerns at all fuel cycle facilities.²⁰ Because these cases and the rulemaking statements indicate that neither the AEA nor NEPA requires the NRC to produce a proliferation assessment in a fuel cycle facility licensing action, the Board found Contention A to be beyond the scope of the proceeding.²¹

In addition, ECAN disputed NFS’s assertion that the facility will not produce nuclear weapons or nuclear weapons material. According to the Board, ECAN did not establish the required genuine material dispute because the end use of the material processed at the NFS facility “is not a relevant factor for the purpose of determining whether a proliferation impacts analysis is required under the AEA or NEPA.”²² As the Board noted, the fabrication of purified uranium metal at the NFS facility falls within the NRC’s Part 70 regulatory framework, and “Part 70’s health, safety, and security protections are designed to prevent nuclear equipment and material, as well as classified information and sensitive technologies, from becoming available to unauthorized foreign or domestic individuals or entities.”²³ The Board applied the Commission’s previous reasoning to find that neither the AEA nor NEPA mandates preparation of proliferation assessments due to the comprehensiveness of Part 70 and the speculative nature of a proliferation assessment that would be based on information and analyses outside the expertise of the NRC.²⁴

On appeal, ECAN claims that the Board improperly transformed a determination on contention admissibility into a decision on the merits of the contention.²⁵

¹⁸ *Id.* at 31-32 (citing *Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-28, 62 NRC 721, 724 (2005)).

¹⁹ *Id.* at 32 (quoting *USEC Inc.* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 463 (2006)).

²⁰ *Id.* (citing Nuclear Proliferation Assessment in Licensing Process for Enrichment or Reprocessing Facilities, 78 Fed. Reg. 33,995, 34,007 (June 6, 2013) (Denial of Petition for Rulemaking) (“[T]he existing NRC licensing framework is adequate to address proliferation concerns associated with nuclear fuel cycle facilities by including requirements to prevent the unauthorized disclosure of classified matter and sensitive technologies, and provide physical protection of nuclear equipment and materials.”)).

²¹ LBP-23-2, 97 NRC at 32-33.

²² *Id.* at 34.

²³ *Id.*

²⁴ *Id.* at 34-35.

²⁵ ECAN Appeal at 12.

In particular, ECAN asserts that it is relevant whether the uranium metal that would be produced at NFS would be used in nuclear weapons.²⁶ ECAN faults the Board for “using circular reasoning” to determine that a weapons proliferation analysis is not required because Part 70 does not cover nuclear weapons facilities.²⁷ ECAN further claims that the failure to undertake a proliferation assessment violates NEPA because it is improper segmentation.²⁸

While ECAN is correct that the contention admissibility criteria do not serve as a “fortress to deny intervention,” they do serve to frame issues for an evidentiary hearing.²⁹ And while hearings resolve the substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing — in this case, the Board found that the issue was not within the scope of the hearing and did not raise a genuine material dispute with the applicant.³⁰ ECAN argues that the Board’s application of the contention admissibility criteria “transformed a preliminary, procedural decision . . . into a summary ruling on the merits.”³¹ We disagree. Even assuming that the material produced at the NFS facility would ultimately be included in nuclear weapons, as ECAN argued, the Board determined that such an end use would still not make ECAN’s contention fall within the scope of the proceeding or raise a genuine dispute on a material issue with the applicant. The Board laid out its reasoning for this legal determination in its decision. We find that ECAN has not shown that the Board erred in its treatment of Contention A.

With respect to ECAN’s claims related to the AEA and nonproliferation, we continue to find that our existing regulations fulfill our statutory mandate.³² The AEA grants the NRC broad regulatory latitude to protect public health and safety, common defense, and security in its domestic licensing activities. While the AEA does not prescribe that the NRC explicitly consider nuclear proliferation as a prerequisite to domestic licensing, NRC safety regulations on information security, physical security, and material control adequately address

²⁶ *Id.* at 14-17.

²⁷ *Id.* at 14.

²⁸ *Id.* at 18.

²⁹ See *id.* at 13 (quoting *Power Authority of the State of New York* (James A. FitzPatrick Nuclear Power Plant; Indian Point, Unit 3), CLI-00-22, 52 NRC 266, 295 (2000)). In adopting the contention standard in section 2.309(f), the Commission stated that the criteria are “necessary to ensure that hearings cover only genuine and pertinent issues of concern and that the issues are framed and supported concisely enough at the outset to ensure that the proceedings are effective and focused on real, concrete issues.” Changes to Adjudicatory Process, 69 Fed. Reg. 2182, 2189-90 (Jan. 14, 2004).

³⁰ See LBP-23-2, 97 NRC at 35 (citing 10 C.F.R. § 2.309(f)(1)(iii), (vi)).

³¹ ECAN Appeal at 12.

³² See Denial of Petition for Rulemaking, 78 Fed. Reg. at 34,001-02.

nonproliferation concerns as part of a comprehensive regulatory infrastructure.³³ Given the NRC's comprehensive regulatory framework, ongoing oversight, and active inter-agency cooperation, a nuclear nonproliferation assessment is not necessary to ensure the protection of the public health and safety or common defense and security.

Additionally, ECAN raises issues related to the wisdom of the nuclear weapons policy of the United States. The executive and legislative branches of the federal government are responsible for developing national nuclear nonproliferation policies and goals. ECAN's claim that "[t]he U.S. nuclear weapons program may be unlawful under at least two international treaties" is outside of the NRC's authority.³⁴ The implementation of U.S. government policies on nonproliferation is a coordinated effort of the federal agencies, with each contributing according to its area of expertise and assigned responsibilities.³⁵ In this regard, the NRC's responsibility is to issue a license for a nuclear facility to possess nuclear material only if it determines that the health and safety of the public and the common defense and security of the nation will be protected.

With respect to ECAN's NEPA claims, a "reasonably close causal relationship" must exist between the proposed action and a purported environmental effect to compel consideration in the agency's NEPA analysis.³⁶ The action before the agency is a license amendment that would allow NFS to provide uranium purification and conversion services. NFS disputed ECAN's claim that the amendment authorizes activities related to nuclear weapons and stated that the "primary licensed activity is the production of nuclear fuel for the United States Navy."³⁷ The AEA and NRC regulations prohibit licensees from using special nuclear material to construct nuclear weapons; therefore, the license amendment would not allow NFS to produce a nuclear weapon or a component of a nuclear weapon.³⁸ Whether some of the U-metal produced at NFS may be further processed by NNSA at a later date to be used in a nuclear weapon is not within the

³³ The NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation. See, e.g., 10 C.F.R. pts. 73, 74, and 95.

³⁴ ECAN Appeal at 19.

³⁵ See Denial of Petition for Rulemaking, 78 Fed. Reg. at 33,996.

³⁶ *Sierra Club v. FERC*, 827 F.3d 36, 47 (D.C. Cir. 2016) (quoting *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004)); see also *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 & n.7 (1983) (stating that courts must "draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not").

³⁷ LBP-23-2, 97 NRC at 26; see also Supplemental ER at 2.

³⁸ AEA § 53(e)(6) ("[S]pecial nuclear material shall be distributed only on terms, as may be established by rule of the Commission, such that no user will be permitted to construct an atomic weapon."); 10 C.F.R. § 70.32(a)(6) ("The licensee shall not use the special nuclear material to construct an atomic weapon or any component of an atomic weapon.").

NRC's scope of authority.³⁹ To the extent that any NEPA analysis is necessary, other federal agencies possess the relevant expertise.⁴⁰ For this proposed action, there is not a sufficiently close causal relationship between the agency decision and the potential for NFS's new processes to cause an increase in proliferation; in other words, the causal chain under NEPA is too attenuated.⁴¹

ECAN further argues that the NRC's failure to perform a proliferation assessment is improper segmentation because "NFS's part in the nuclear weapons supply chain is obfuscated and there is no big-picture understanding nor accountability for the sprawling, trillion-dollar weapons enterprise."⁴² First, ECAN makes this argument for the first time on appeal. Therefore, we need not consider it.⁴³ Second, ECAN acknowledges but has not addressed the environmental impact statement that DOE has already prepared for Y-12 site-wide activities, which covers the process that this license amendment would authorize. Therefore, ECAN has not explained why the NRC's consideration of this process as part of a license amendment to transition these same functions to the NFS facility should be considered improper segmentation.⁴⁴

³⁹ See, e.g., *Metro. Edison*, 460 U.S. at 774; *Pub. Citizen*, 541 U.S. at 767.

⁴⁰ See LBP-23-2, 97 NRC at 34 n.39 (noting that DOE has prepared an EIS that contains a nonproliferation assessment for NNSA activities conducted at the Y-12 National Security Complex); Denial of Petition for Rulemaking, 78 Fed. Reg. at 33,996 ("It would be neither prudent nor useful for the NRC to devote resources in a domestic licensing proceeding to address national policy objectives that are already being addressed by the appropriate Federal agencies with the expertise and mandate to do so.").

⁴¹ First, another federal agency would need to determine that U-metal from the NFS facility should be further processed into a nuclear weapon component, at which time a NEPA analysis could be undertaken. Second, counsel for NFS stated that the services to be provided under the proposed license amendment "are, essentially, a one-for-one replacement of like-for-like activities [currently being performed at Y-12]; that there is no net change in terms of what is being done. The only real change is where it's being done." Tr. at 44. As noted above, DOE has already prepared an EIS that covers the Y-12 National Security Complex. LBP-23-2, 97 NRC at 34 n.39 (citing U.S. Department of Energy, National Nuclear Security Administration, "Final Site-Wide Environmental Impact Statement for the Y-12 National Security Complex," DOE/EIS-0387 (Feb. 2011) (Y-12 EIS)). We also note that DOE has prepared an EIS that addresses stockpile stewardship and management programmatically, including an evaluation of proliferation impacts. Y-12 EIS at 1-23 (citing U.S. Department of Energy, National Nuclear Security Administration, "Final Programmatic Environmental Impact Statement for Stockpile Stewardship and Management," DOE/EIS-0236 (Sept. 1996)).

⁴² ECAN Appeal at 18.

⁴³ *USEC*, CLI-06-10, 63 NRC at 458.

⁴⁴ See NFS Answer to Petition to Intervene at 11 n.42 (citing Petition to Intervene at 15 (citing Y-12 EIS)). NFS cited to the environmental impact statement that NNSA prepared for the Y-12 site, which was cited by ECAN in its petition to intervene, and argued that ECAN's claim that the potential environmental impacts of U.S. policy related to the nuclear weapons program have not been evaluated under NEPA is factually incorrect.

Finally, to the extent that ECAN would like the NRC to evaluate potential extraterritorial environmental effects of its domestic licensing decision, the NRC is not required to evaluate such impacts under NEPA or its regulations.⁴⁵ The domestic environmental impacts of proliferation, as discussed above, are too attenuated to necessitate inclusion in a NEPA analysis.

In sum, we find that ECAN does not point to any Board error, and we affirm the Board's determination that Contention A is inadmissible.

B. Contention B: Unduly Restrictive Purpose and Need Statement

As background, the NNSA currently conducts both purification and conversion activities at its Y-12 plant in Oak Ridge, Tennessee.⁴⁶ The NNSA intends to stop using the aging equipment used for these processes in the 2023 time-frame and replace the *purification* equipment with new equipment that will use a new electrorefining technology.⁴⁷ While the NNSA may replace the legacy *conversion* equipment in the future, it does not currently have plans to do so.⁴⁸

In Contention B, ECAN claimed that the purpose and need statement of the Supplemental ER was too narrow and time-limited, which resulted in inadequate consideration of the no-build alternative.⁴⁹ According to ECAN, the continued functioning of an old purification line at Y-12 obviates the need for a change at NFS to bridge the projected interruption of high-enriched uranium metal purification.⁵⁰ The Board ruled that Contention B did not raise a genuine dispute with the application because ECAN did not address "critical facts" in the Supplemental ER.⁵¹ NFS stated that the project is intended "to create a 'separate process of converting isotopes to metal, *as well as* creating redundant capacity' if issues arise with the new electrorefining process at the Y-12 facility."⁵² On appeal, ECAN claims that these "critical facts" were not in the Supplemental ER

⁴⁵ See *NRDC v. NRC*, 647 F.2d 1345, 1365-68 (D.C. Cir. 1981) (finding that the NRC need not evaluate environmental impacts felt in foreign nations even when approving exports directly to those nations); 10 C.F.R. § 51.1 ("These regulations do not apply . . . to any environmental effects which NRC's domestic licensing and related regulatory functions may have upon the environment of foreign nations.").

⁴⁶ Nuclear Fuel Services, Inc.'s Brief in Opposition to Erwin Citizens Awareness Network's Appeal of LBP-23-02 (Mar. 21, 2023), at 12 (NFS Opposition to Appeal).

⁴⁷ *Id.*

⁴⁸ *Id.* at 12-13.

⁴⁹ Petition to Intervene at 16.

⁵⁰ LBP-23-2, 97 NRC at 36 (quoting Petition to Intervene at 17).

⁵¹ *Id.* at 40.

⁵² *Id.* (emphasis added) (quoting Tr. at 68 and citing NFS Answer to Petition to Intervene at 13 (quoting Supplemental ER at 1)).

but were provided for the first time at oral argument.⁵³ ECAN also argues that “[t]he indefinite continuation of the old refinement [purification] operations at Y-12 undermines any justification for expenditure of millions of public dollars to build redundancy at NFS.”⁵⁴

NFS and the Staff respond by noting that the “critical facts” ECAN claims were not provided until the oral argument were in the Supplemental ER.⁵⁵ In addition, ECAN is reiterating arguments it made before the Board, where it argued that the old production process in Building 9212 could act as a redundancy until the new process is fully operational.⁵⁶ But, the Staff notes, the process in Building 9212 only relates to the purification of uranium metal and does not include the ability to convert oxides to metal.⁵⁷ NFS asserts that the purpose and need for the proposed action is two-fold: (1) to provide a conversion capability when the aging Y-12 equipment shuts down indefinitely, and (2) to “hedge against the technology risk associated with new purification equipment at Y-12 that is expected to come online in 2023 at the earliest.”⁵⁸ NFS also refutes ECAN’s assertion that it had “no burden to show that it disputes the need for a redundant refinement line at NFS”⁵⁹ by pointing to 10 C.F.R. § 2.309(f)(1)(vi), which provides that the petitioner must provide sufficient information to show a genuine dispute on a material issue of law or fact.⁶⁰

We find that the Supplemental ER contained the dual purpose of and need for the proposed action, as the Board noted.⁶¹ ECAN provides no reason why it could not have disputed these claims in its petition to intervene and points to no error or abuse of discretion in the Board’s holding. ECAN reiterates its argument before the Board that the redundancy at NFS is unjustified.⁶² But

⁵³ ECAN Appeal at 20.

⁵⁴ *Id.* at 22; *see also id.* at 20-21 (arguing that the no-build alternative does not adequately account for the fact that the old production process in Building 9212 could act as a redundancy until the new process is fully operational).

⁵⁵ NFS Opposition to Appeal at 14-15 (citing Supplemental ER at 1); NRC Staff Answer in Opposition to Erwin Citizens Awareness Network, Inc.’s Appeal of LBP-23-02 (Mar. 21, 2023), at 9 (Staff Opposition to Appeal) (citing Supplemental ER at 1). The Board’s decision also notes that these statements are in the Supplemental ER. LBP-23-2, 97 NRC at 39-40.

⁵⁶ Staff Opposition to Appeal at 9.

⁵⁷ *Id.* at 9-10; *see also* LBP-23-2, 97 NRC at 38.

⁵⁸ NFS Opposition to Appeal at 13; *see also* License Amendment Application at 1-2 (unnumbered).

⁵⁹ ECAN Appeal at 21. ECAN explains that its “point was that the no-build alternative as postulated by NFS did not adequately expose the sheer, unjustified redundancy of the new NFS line.” *Id.*

⁶⁰ NFS Opposition to Appeal at 16.

⁶¹ Supplemental ER at 1; LBP-23-2, 97 NRC at 40.

⁶² *See Interim Storage Partners LLC* (WCS Consolidated Interim Storage Facility), CLI-20-15, (Continued)

ECAN does not point to any error or abuse of discretion in the Board's finding that ECAN did not raise a genuine dispute with the applicant because one of the NNSA's purposes is to provide a replacement for conversion capabilities, not just purification. Therefore, we affirm the Board's decision on Contention B.

C. Contention C: Inadequate Consideration of Legacy Contamination in Cumulative Effects Analysis

In Contention C, ECAN asserted that the Supplemental ER omits required information related to legacy contamination, which leads to an inadequate cumulative effects analysis.⁶³ ECAN claimed that the Supplemental ER is missing information related to contamination from (1) radioisotopes, including plutonium and uranium-235 in the Nolichucky River downstream of the Erwin site; (2) undiscovered PFAS (per- and polyfluoroalkyl substances) chemicals that could be present at the Erwin site; and (3) the presence of unremediated chemicals in the groundwater at the site. ECAN further argued that unanalyzed karst features, nearby sinkholes, and insufficiently modeled groundwater flow on the site led to an incomplete assessment of the proposed amendment's potential environmental impacts.⁶⁴ The Board found Contention C to be a contention of omission challenging the failure of the Supplemental ER to address historical contamination at the Erwin facility and considered four categories of claims for this contention: (1) historical radiological contamination, (2) PFAS groundwater contamination, (3) sinkhole activity and groundwater plumes, and (4) air emissions.⁶⁵ The Board concluded that ECAN's claims were outside the scope of the proceeding, were otherwise unsupported, or did not raise a genuine dispute on a material issue of law or fact.⁶⁶

1. Historical Radiological Contamination

ECAN argued that the Supplemental ER should have contained a cumulative impacts analysis that considered historical contamination.⁶⁷ The Board cited

92 NRC 491, 498 (2020) (explaining that an appeal must address the licensing board's reasoning for rejecting a contention and that "it is not enough for an appellant to simply repeat the arguments it made before the Board and hope for a different result from the Commission").

⁶³ Petition to Intervene at 21-22.

⁶⁴ *Id.* at 24-34.

⁶⁵ LBP-23-2, 97 NRC at 49-52.

⁶⁶ *Id.* at 49.

⁶⁷ ECAN Appeal at 22.

the NRC’s environmental assessment for the renewal of NFS’s license,⁶⁸ which identified specific radioisotopes and their quantities resulting from Erwin site effluents and discussed cumulative impacts to surface water and groundwater resources.⁶⁹ The Board noted that the Supplemental ER and NFS’s June 2022 response to the Staff’s request for additional information (RAI Response)⁷⁰ provided updated information on radiological effluents, which showed no amounts exceeding regulatory limits.⁷¹ NFS represented that “the U-Metal process is expected to cause minimal gaseous or liquid effluent impacts.”⁷² And the Board further found that ECAN did not show that the activities authorized by the license amendment would cause an increase in radiological contamination.⁷³ The Board also found that many of ECAN’s concerns were not related to the current license amendment request but historical contamination, which was evaluated in the Supplemental ER.⁷⁴

On appeal, ECAN argues that cumulative impacts include past actions and there is nothing in the Supplemental ER to indicate that NFS has taken action to prevent future contamination, thus making future contamination reasonably foreseeable.⁷⁵ With respect to the Board’s findings that the Supplemental ER addressed radiological contamination, ECAN argues that it was not required to consider information outside of the Supplemental ER, including the License Renewal EA and RAI Response referenced by the Board.⁷⁶

We find that ECAN does not identify any Board error or abuse of discretion with respect to this aspect of Contention C. ECAN argues that a cumulative impacts analysis was not conducted, but neither NFS nor the Staff disputed the premise that cumulative impacts should be considered. Rather, NFS and the Staff identified where the Supplemental ER and other documents discussed historical contamination relevant to the license amendment request. Therefore, the Board found that ECAN “fails to substantiate its claims that relevant data are missing and fails to supply its own supporting data.”⁷⁷ The Board determined

⁶⁸ “Final Environmental Assessment for the Proposed Renewal of U.S. Nuclear Regulatory Commission License No. SNM-124 for Nuclear Fuel Services, Inc.” (Oct. 2011) (ML112560265) (License Renewal EA).

⁶⁹ LBP-23-2, 97 NRC at 50 (citing License Renewal EA at iv, 3-31 to 3-34); License Renewal EA at 4-13, 4-15.

⁷⁰ Letter from Tim Knowles, NFS, to NRC Document Control Desk (June 30, 2022), Attach. 1, “NFS Response to the Request for Additional Information” (ML22193A034) (RAI Response).

⁷¹ LBP-23-2, 97 NRC at 50.

⁷² *Id.* (citing RAI Response at 1-2, 6-8, 40).

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ ECAN Appeal at 24.

⁷⁶ *Id.* at 24-25.

⁷⁷ LBP-23-2, 97 NRC at 49-50.

that (1) the License Renewal EA discussed radioisotopes in facility effluents; (2) the license amendment request provided updated data showing that radiological effluents and Erwin facility-associated levels of stream, soil, and vegetation radioactivity are within regulatory limits; and (3) NFS demonstrated that effluents are not expected to materially change if the license amendment request is approved.⁷⁸ We find that ECAN did not explain why the proposed amendment would cause a significant environmental change with respect to the NRC's previous conclusion on cumulative impacts, and therefore, ECAN did not point to any Board error.

ECAN also argues that it was not required to look beyond the Supplemental ER and that the Board erred by relying on the License Renewal EA and RAI Response. As an initial matter, we find that ECAN improperly raises this argument for the first time on appeal.⁷⁹ In any event, ECAN itself cited these documents in its petition to intervene.⁸⁰ NFS and the Staff then responded to ECAN's petition to intervene with citations to these documents.⁸¹ ECAN failed to object to the use of these documents before the Board.

Even if we were to consider ECAN's argument, it was reasonable for the Board to look to these documents in this license amendment proceeding. With respect to the License Renewal EA, NFS requested an amendment to its existing materials license, and section 51.60(a) allows license amendment applicants that have already submitted an environmental report to limit their environmental report to an update or supplement of "information previously submitted to reflect any significant environmental change."⁸² Accordingly, in the introduction of the Supplemental ER, NFS stated that "[t]he contents of this Supplemental Environmental Report address the impacts to human health and the environment required to construct and operate the Uranium Purification and Conversion Services process, and update information last provided by NFS in its 2009 Environmental Report for the Renewal of Special Nuclear Material License No. SNM-124."⁸³ ECAN had an opportunity in this proceeding to challenge the Supplemental ER with respect to significant environmental changes since the previous environmental report submitted by NFS. Such an opportunity reasonably entails looking

⁷⁸ *Id.* at 50 (citing License Renewal EA at vi, 3-31 to 3-34; RAI Response at 1-2, 6-8, 40).

⁷⁹ See *USEC*, CLI-06-10, 63 NRC at 458.

⁸⁰ Petition to Intervene at 19 n.36, 20 n.48, & 31 n.74.

⁸¹ NFS Answer to Petition to Intervene at 16, 18, 19, 20, 21, 22-23; Staff Answer to Petition to Intervene at 19, 20 & n.98, 22-23, 24.

⁸² 10 C.F.R. § 51.60(a).

⁸³ Supplemental ER at 1.

at the previous environmental documents prepared for the NFS facility.⁸⁴ With respect to the RAI Response, we find no error in the Board referring to an on-the-docket communication between the Staff and applicant related to the license amendment request that all participants had referenced before the Board.

2. *PFAS Chemicals*

ECAN claimed that the Supplemental ER was deficient because it did not present an analysis of PFAS chemicals at the NFS site.⁸⁵ The Board found that ECAN's factual claims were based on speculation and that ECAN did not identify any requirement in Part 51 to support its demand for an analysis of PFAS chemicals.⁸⁶ On appeal, ECAN claims that the Board ignored a statement from its expert that PFAS chemicals are "likely present in contaminated groundwater underlying NFS" and likely would follow the same transport pathways to the Nolichucky River as enriched uranium. But ECAN conceded that it provided no direct evidence that the groundwater at the Erwin site is contaminated by PFAS chemicals.⁸⁷ As we have previously stated, expert opinions that state a conclusion without explaining the basis for that conclusion do not fulfill the requirement in section 2.309(f)(1)(v) that the contention have adequate support.⁸⁸ Because ECAN's expert, Dr. Ketterer, did not provide an explanation for his assertion that PFAS chemicals are likely present, ECAN has not identified an error of law or abuse of discretion.

Furthermore, the Board noted that ECAN does not relate the PFAS contamination to the U-Metal process license amendment request.⁸⁹ Therefore, the Board concluded that the PFAS aspect of the contention was outside the scope of the proceeding and failed to raise a genuine dispute with the application.⁹⁰ In its appeal, ECAN did not address these independent grounds for finding the contention inadmissible.

⁸⁴ Because 10 C.F.R. § 51.60 is directed at what applicants must submit, the focus is on an environmental report. Since the purpose of the environmental report is to facilitate the Staff's preparation of its environmental assessment or environmental impact statement, we find it reasonable that a petitioner should examine the previous environmental assessment in this scenario, especially when it is referenced by all participants before the licensing board.

⁸⁵ Petition to Intervene at 26-28.

⁸⁶ LBP-23-2, 97 NRC at 51.

⁸⁷ *Id.* (citing Petition to Intervene at 28).

⁸⁸ *USEC*, CLI-6-10, 63 NRC at 472.

⁸⁹ LBP-23-2, 97 NRC at 51.

⁹⁰ *Id.*

3. *Groundwater Plumes and Sinkholes*

ECAN raised concerns relating to historic groundwater plumes and the possibility of sinkholes.⁹¹ The Board recognized that the Supplemental ER identified and analyzed groundwater plumes and that the License Renewal EA addressed sinkhole activity and its relevance to the Erwin site.⁹² The Board found that ECAN did not discuss the license amendment request in connection with its claims regarding sinkholes and groundwater plumes and did not explain why NFS needed to provide further information on historical plumes or the possibility of sinkhole activity.⁹³

On appeal, ECAN argues that NFS does not provide sufficient information in the Supplemental ER to support its claims that it is remediating the plumes of contaminants, because NFS does not quantify the level of remediation.⁹⁴ But because ECAN does not explain why more information is needed to support a discussion of environmental impacts flowing from this license amendment request, we find that ECAN has not pointed out any error in the Board's decision.

With respect to sinkholes, ECAN takes issue with the Board's references to the License Renewal EA, an NFS frequently asked questions document, and a "2019 NFS Supplemental ER" when the Supplemental ER does not mention sinkholes.⁹⁵ As discussed above, the License Renewal EA provides information relevant to this license amendment request; ECAN was both aware of this document and the other participants' references to this document but did not raise an objection until the appeal. While the Board did refer to a 2019 Supplemental ER in its decision, this seems to be a typographical error. The corresponding footnote refers to the 2021 Supplemental ER at issue in this proceeding and contains a relevant quotation from the 2021 Supplemental ER.⁹⁶ There are no other references to a 2019 Supplemental ER in the Board's decision. Finally, we need not address ECAN's argument that the Board should not have cited the frequently asked questions document because the Board primarily relied on the License Renewal EA for its finding on sinkholes.⁹⁷ We find that ECAN has

⁹¹ *Id.* (citing Petition to Intervene at 30-32).

⁹² *Id.* at 51 & n.59. The Board also cited the Supplemental ER's statement that "[t]he bedrock strata at the NFS Erwin Facility are consolidated, providing firm foundations for buildings that lie directly on the strata or that are supported by footings." *Id.* at 51 n.59.

⁹³ *Id.* at 51-52.

⁹⁴ ECAN Appeal at 26.

⁹⁵ *Id.*

⁹⁶ LBP-23-2, 97 NRC at 51 & n.59.

⁹⁷ *See id.* In a footnote, the Board cited an NRC response on its frequently asked questions website about the NFS facility that discussed, with reference to the License Renewal EA, sinkholes in the Erwin area. *Id.* at 52 n.59.

not identified any error of law or abuse of discretion in the Board's treatment of this aspect of Contention C.

4. Air Emissions

ECAN also argued in Contention C that air emissions would double if the license amendment request were granted.⁹⁸ As the Board noted, this claim was based on a misunderstanding of a statement in the Supplemental ER that air emissions from the U-Metal activity would be similar to those from current operations.⁹⁹ NFS clarified that it does not seek to increase the material possession limit in its license, so any new activities under the license amendment would be offset by a reduction in NFS's current activities.¹⁰⁰ On appeal, ECAN asserts that "[a] new additional industrial process will obviously increase air emissions."¹⁰¹ But ECAN does not present any support for this position.¹⁰² ECAN also argues that the Board did not consider revision 1 of the Supplemental ER, which was submitted to the NRC the day after LBP-23-2 was issued.¹⁰³ ECAN does not state how anything in the revised document points to a fault in the Board's decision. Moreover, a new or amended contention would be the appropriate method of raising a concern based on new information in the revised environmental report. ECAN has not identified an error of law or abuse of discretion by the Board regarding this portion of Contention C.

Because ECAN has not pointed to Board error for any aspect of this contention, we affirm the Board's decision with respect to Contention C.

D. Contention D: Inadequacy of Fuel Cycle Facility Regulations

In Contention D, ECAN argues that the NRC's fuel cycle facility regulations are insufficient to protect public health, safety, and security because they lack stringent quality assurance requirements.¹⁰⁴ The Board rejected Contention D as an improper challenge to a Commission regulation and outside the scope of the proceeding because ECAN did not account for the applicable quality assurance

⁹⁸ *Id.* at 52 (citing Petition to Intervene at 22).

⁹⁹ *See id.* at 43, 52 (citing Petition to Intervene at 20 (quoting RAI Response at 6)).

¹⁰⁰ *Id.* at 52 (citing NFS Answer to Petition to Intervene at 19 (quoting RAI Response at 6)).

¹⁰¹ ECAN Appeal at 26-27.

¹⁰² ECAN claims that "there is no indication that any of the current sources of air emissions will be discontinued or reduced" but does not engage with NFS's statement in the RAI Response that any new activities performed under the license amendment would be offset by a reduction in NFS's current activities. *Id.* at 27; RAI Response at 6.

¹⁰³ ECAN Appeal at 27.

¹⁰⁴ Petition to Intervene at 35.

requirements in 10 C.F.R. § 74.59 and did not submit a petition for waiver of those requirements.¹⁰⁵

On appeal, ECAN largely repeats the claims it made before the Board. ECAN contends that the license amendment would authorize a process that mirrors the one at the Y-12 facility.¹⁰⁶ ECAN further claims that the Y-12 industrial process line is subject to DOE's quality assurance requirements, which are more comprehensive than the NRC quality assurance regulations that would apply at the NFS facility.¹⁰⁷ As it argued before the Board, ECAN contends that the NFS facility should be subject to stricter DOE quality assurance regulations. In part, ECAN maintains that stricter standards should apply due to the asserted poor quality assurance corporate culture of NFS and the historical safety record at the Erwin site.¹⁰⁸

Despite arguing that the applicable NRC regulations are not stringent enough, ECAN did not submit a waiver petition under 10 C.F.R. § 2.335. Nor has ECAN discussed the criterion in section 2.335 "that special circumstances with respect to the subject matter of the particular proceeding are such that the application of the rule or regulation (or a provision of it) would not serve the purposes for which the rule or regulation was adopted."¹⁰⁹ ECAN has not explained the differences between the DOE and NRC quality assurance requirements or why any differences between the DOE and NRC requirements would render the NRC regulations insufficient. Because ECAN has not satisfied the rule waiver requirements of section 2.335, we do not need to address ECAN's remaining arguments relating to NFS's character and historical performance. ECAN has not pointed to any error in the Board's decision; therefore, we affirm the Board's decision on Contention D.

¹⁰⁵ LBP-23-2, 97 NRC at 57. "Under 10 C.F.R. § 2.335, licensing boards may not entertain challenges to the validity of Commission regulations in individual licensing proceedings except in certain 'special circumstances' in which a waiver is requested and found to be appropriate. Section 2.335(b) and Commission caselaw detail the prima facie showing that an intervenor must make to establish the requisite 'special circumstances' so that a waiver may be granted. . . . Without a waiver determination by the Commission, a contention that challenges a rule is outside the scope of the proceeding and may not be given further consideration by a licensing board." *Id.* (citing *Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-05-24, 62 NRC 551, 559-60 (2005); *NextEra Energy Point Beach, LLC* (Point Beach Nuclear Plant, Units 1 and 2), CLI-22-5, 95 NRC 97, 101, 105 (2022))

¹⁰⁶ ECAN Appeal at 28.

¹⁰⁷ *Id.*

¹⁰⁸ *Id.* at 29-30.

¹⁰⁹ 10 C.F.R. § 2.335(b).

III. CONCLUSION

ECAN has not identified any error of law or abuse of discretion on the part of the Board in LBP-23-2. For the above reasons and for the reasons given by the Board, we *affirm* the Board's decision in LBP-23-2.

IT IS SO ORDERED.

For the Commission

Brooke P. Clark
Secretary of the Commission

Dated at Rockville, Maryland,
this 5th day of October 2023.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Christopher T. Hanson, Chair
David A. Wright
Annie Caputo
Bradley R. Crowell

In the Matter of

Docket No. 72-26-ISFSI-MLR

**PACIFIC GAS AND ELECTRIC
COMPANY
(Diablo Canyon Independent Spent
Fuel Storage Installation)**

October 19, 2023

VACATUR

The Commission typically vacates a challenged licensing board decision when the proceeding becomes moot. *See Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-13-9, 78 NRC 551, 558-59 (2013).

MEMORANDUM AND ORDER

On August 14, 2023, Pacific Gas and Electric Company (“PG&E”) filed a Notice of Appeal of the Atomic Safety and Licensing Board’s (“Board”) July 19, 2023, Memorandum and Order LBP-23-7, which granted a hearing request by San Luis Obispo Mothers for Peace (“SLOMFP”).¹ The appeal has become moot and accordingly, we dismiss it.

This proceeding involves PG&E’s application to renew its license to store spent nuclear fuel in the Diablo Canyon Independent Spent Fuel Storage In-

¹ Pacific Gas and Electric Company’s Notice of Appeal and Brief in Support of Appeal of LBP-23-7 (Aug. 14, 2023); LBP-23-7, 98 NRC 1 (2023).

stallation for an additional 40 years beyond the current license expiration date of March 22, 2024. The Board's decision admitted a single contention which challenged PG&E's analysis of financial qualifications because the analysis was based on the outdated assumption that PG&E would not seek renewal of the licenses to operate the Diablo Canyon reactors.²

On August 10, 2023, PG&E updated the financial analysis in its application, and on August 24, 2023, it moved to dismiss the contention as moot.³ On September 11, 2023, SLOMFP moved to withdraw the contention.⁴ Subsequently, on September 15, 2023, the Board dismissed the contention and terminated the proceeding.⁵

We therefore find that PG&E's appeal has become moot. Accordingly, we vacate the Board's decision and dismiss the appeal.⁶

IT IS SO ORDERED.

For the Commission

Tomas E. Herrera
Acting Secretary of the Commission

Dated at Rockville, Maryland,
this 19th day of October 2023.

² LBP-23-7, 98 NRC at 15.

³ Letter from M. Zawalick, PG&E, to NRC Document Control Desk, Diablo Canyon Independent Spent Fuel Storage Installation License Renewal Application, Rev. 1 (Aug. 10, 2023) (ML23222-A287); Pacific Gas and Electric Company's Motion to Dismiss or for Summary Disposition of Contention A as Moot (Aug. 24, 2023); *see also* NRC Staff Answer to Pacific Gas and Electric Company's Motion to Dismiss or for Summary Disposition of Contention A as Moot (Sept. 5, 2023).

⁴ San Luis Obispo Mothers for Peace's Notice of Withdrawal of Contention A (Sept. 11, 2023).

⁵ LBP-23-8, 98 NRC 29 (2023).

⁶ *See Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-13-9, 78 NRC 551, 558-59 (2013) (the Commission's customary practice is to vacate a challenged licensing board decision when the proceeding becomes moot).

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

COMMISSIONERS:

Christopher T. Hanson, Chair
David A. Wright
Annie Caputo
Bradley R. Crowell

In the Matter of

Docket No. 50-7513-CP

KAIROS POWER LLC
(Hermes Test Reactor)

December 12, 2023

CONSTRUCTION PERMIT PROCEEDING

Section 189a. of the AEA requires that we hold a hearing on an application to construct a testing facility.

MANDATORY HEARINGS: SAFETY ISSUES

In a case involving a construction permit application for a testing facility, we must determine whether (1) the processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals, in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with NRC regulations, including the regulations in 10 C.F.R. Part 20, and that the health and safety of the public will not be endangered; (2) the applicant is technically and financially qualified to engage in the proposed activities; (3) the issuance of the construction permit will not be inimical to the common defense and security or to the health and safety of the public; and (4) any applicable requirements of Subpart A of 10 C.F.R. Part 51 have been satisfied.

MANDATORY HEARINGS: SAFETY ISSUES

In making our safety findings, we consider whether (1) the applicable stan-

dards and requirements of the AEA and our regulations have been met; (2) the applicant is technically and financially qualified to engage in the activities authorized by the construction permit; (3) issuance of the construction permit will not be inimical to the common defense and security or to the health and safety of the public; (4) the findings required by subpart A of 10 C.F.R. part 51 have been made.

MANDATORY HEARINGS: NATIONAL ENVIRONMENTAL POLICY ACT

To meet its obligations under the National Environmental Policy Act (NEPA) in an uncontested proceeding, the Commission must (1) determine whether the requirements of sections 102(2)(A), (C), and (E) of NEPA and the applicable regulations in 10 C.F.R. part 51 have been met; (2) independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken; (3) determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the early site permit should be issued, denied, or appropriately conditioned to protect environmental values; and (4) determine whether the NEPA review conducted by the NRC staff has been adequate.

MANDATORY HEARINGS

We do not review Kairos's application de novo; rather, we consider the sufficiency of the Staff's review of the application on both safety and environmental matters. In other words, we consider whether the safety and environmental record is adequate to support issuance of the construction permit and whether the Staff's findings are reasonably supported in logic and fact.

MANDATORY HEARINGS: NATIONAL ENVIRONMENTAL POLICY ACT

Under our regulations, we must reach our own independent determination on certain environmental findings — i.e., whether the relevant NEPA requirements have been met, what is the appropriate final balance among conflicting factors, and whether the construction permit should be issued, denied, or appropriately conditioned.

FUNCTIONAL CONTAINMENT

The safety case for the Hermes reactor is based on the concept of functional containment, which is a barrier, or a set of barriers taken together, that effectively limits the physical transport of radioactive materials to the environment. For the Hermes test reactor, functional containment consists of physical barriers, operating conditions, coolant design, and fuel form.

FUNCTIONAL CONTAINMENT

We approved the concept of functional containment in SRM-SECY-18-0096.

CONSTRUCTION PERMITS

The construction permit does not constitute approval of the safety of any design feature or specification.

NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their undertakings on historic properties listed or eligible for listing on the National Register of Historic Places. The section 106 process must be completed prior to the issuance of any license.

NATIONAL ENVIRONMENTAL POLICY ACT

NEPA section 102(2)(A) requires agencies to use a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in decisionmaking that may impact the environment.

NATIONAL ENVIRONMENTAL POLICY ACT

In addition to the general requirement that an environmental impact statement address the reasonably foreseeable environmental effects of a proposed action, NEPA section 102(2)(C) requires federal agencies to describe (1) any reasonably foreseeable adverse environmental effects which cannot be avoided should the proposal be implemented; (2) a reasonable range of alternatives to the proposed agency action, including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal; (3) the relationship between local short-term

uses and long-term productivity of the environment; and (4) any irreversible and irretrievable commitments of federal resources associated with the proposed agency action.

CONSIDERATION OF ALTERNATIVES

The alternatives analysis is the “heart of the environmental impact statement.” NEPA section 102(2)(H), formerly section 102(2)(E), calls for agencies to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts involving alternative uses of available resources.

CONSIDERATION OF ALTERNATIVES

NEPA section 102(2)(C) requires consideration of a reasonable range of alternatives to the proposed agency action that are technically and economically feasible and meet the purpose and need of the proposed action. Where the alternatives considered include taking no action on the proposal, the analysis must consider any negative environmental impacts of not implementing the proposed agency action.

MEMORANDUM AND ORDER

On October 19, 2023, we held a hearing on the application of Kairos Power LLC (Kairos) for a construction permit for the Hermes non-power test reactor.¹ In this uncontested proceeding, we consider the sufficiency of the NRC Staff’s review of Kairos’s application. As discussed below, we find that the Staff’s review was sufficient to support the regulatory findings. We authorize issuance of the construction permit.

I. BACKGROUND

A. Proposed Action

The construction permit would allow construction of a 35-megawatt thermal

¹ See Kairos Power LLC; Construction Permit Application; Notice of Hearing, 88 Fed. Reg. 60,724 (Sept. 5, 2023) (Hearing Notice); Tr. at 1-165 (attached to Order of the Secretary (Setting Deadline for Proposed Transcript Corrections) (Oct. 24, 2023) (unpublished) (as amended by Order of the Secretary (Adopting Transcript Corrections and Admitting Revised Exhibit) (Nov. 13, 2023) (unpublished))).

test reactor on an approximately 185-acre brownfield site in Oak Ridge, Tennessee.² The Hermes test reactor will use a combination of tri-structural isotropic (TRISO) fuel particles and a molten fluoride salt coolant known as Flibe. The non-power reactor will serve as a scaled demonstration plant to test and demonstrate key technical elements, design features, safety functions, and equipment performance for Kairos's salt-cooled, fluoride high temperature reactor technology.³ Kairos expects to complete construction by the end of 2026 and then to operate for four years.⁴

Before submitting its construction permit application in 2021,⁵ Kairos engaged in extensive preapplication activities with the Staff, including the development of topical reports and participation in public meetings and audits.⁶ Topical reports cover safety-related topics that apply to multiple nuclear reactors and increase the efficiency of the licensing process by minimizing the time and resources that both applicants and the Staff spend on multiple reviews of the same topic. Kairos submitted eleven topical reports for the Staff's review and approval, eight of which were referenced in its application.⁷ Kairos supplemented its application and provided clarifications through timely responses to several hundred Staff questions during audit meetings and in docketed correspondence.⁸ The Staff also issued three requests for additional information and one request for confirmation of information.⁹ Kairos and the Staff used regulatory guidance in NUREG-1537 in the preparation and review of the construction permit ap-

² Ex. KRS-001, Applicant's Pre-Filed Testimony of Peter Hastings; Kairos Power LLC; Evidentiary Hearing (Sept. 28, 2023), at 3, 8 (Kairos Testimony).

³ *Id.* at 3.

⁴ *Id.* at 4, 25; Ex. NRC-007, "Safety Evaluation Related to the Kairos Power LLC Construction Permit Application for the Hermes Test Reactor" (June 13, 2023), at 1-8, 1-11 (Safety Evaluation).

⁵ The public version of the application can be found in Exhibits NRC-005A through NRC-005E in this proceeding.

⁶ Ex. NRC-001, "Staff's Statement in Support of the Uncontested Hearing for Issuance of a Construction Permit for the Kairos Hermes Test Reactor," Commission Paper SECY-23-0074 (Aug. 23, 2023), at 2 (Staff Information Paper). The topics covered by the topical reports, preapplication meetings, and preapplication audits are listed in the Staff Information Paper. *Id.* at 2-3.

⁷ *Id.* The Staff prepared a safety evaluation for each of the topical reports, and any condition or limitation on the use of a topical report is provided in the approved version of the report. *Id.* at 3. The Staff's review of the construction permit application confirmed that the conditions or limitations for the topical reports referenced in the application were satisfied or could reasonably be left for the operating license application. *Id.*

⁸ Ex. KRS-001, Kairos Testimony, at 20.

⁹ *Id.*

plication.¹⁰ Kairos did not request, and the Staff did not grant, any exemptions from NRC regulations.¹¹

The Staff conducted a safety review of the application to determine whether it complies with the Atomic Energy Act of 1954, as amended (AEA), and the NRC's regulations.¹² The Advisory Committee on Reactor Safeguards (ACRS), a committee of technical experts charged with reviewing and reporting on safety studies and applications for construction permits and facility operating licenses, provided an independent assessment of the safety aspects of the application.¹³ The ACRS recommended that the construction permit be issued.¹⁴ The Staff also performed an environmental review, in accordance with the National Environmental Policy Act of 1969 (NEPA),¹⁵ that evaluated the environmental impacts of constructing, operating, and decommissioning the Hermes test reactor.¹⁶ Based on its safety and environmental reviews, the Staff recommended that the Commission issue the construction permit to Kairos once the National Historic Preservation Act of 1966 (NHPA) section 106 consultation process is complete.¹⁷

B. Review Standards

Section 189a. of the AEA requires that we hold a hearing on an application to construct a testing facility.¹⁸ The Staff published a notice of hearing in the *Federal Register* and provided an opportunity for interested members of the

¹⁰ See *id.* at 6 (citing “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Format and Content,” NUREG-1537, pt. 1 (Feb. 1996) (ADAMS accession no. ML042430055); “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors: Standard Review Plan and Acceptance Criteria,” NUREG-1537, pt. 2 (Feb. 1996) (ML042430048)); Ex. NRC-001, Staff Information Paper, at 6-8.

¹¹ Ex. NRC-001, Staff Information Paper, at 8.

¹² See Ex. NRC-007, Safety Evaluation.

¹³ See Letter from Joy L. Rempe, ACRS, Chairman, to Christopher T. Hanson, Chair, NRC, “Kairos Non-Power Reactor Hermes Construction Permit Application” (May 16, 2023) (ML23130-A183) (ACRS Letter).

¹⁴ *Id.* at 2.

¹⁵ 42 U.S.C. § 4321 et seq.

¹⁶ See Ex. NRC-008, “Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor” (Final Report), NUREG-2263 (Aug. 2023) (FEIS).

¹⁷ Ex. NRC-001, Staff Information Paper, at 22; Tr. at 61 (Mr. Regan). At the time of the hearing, the Staff had not yet completed the section 106 consultation process.

¹⁸ AEA § 189a., 42 U.S.C. § 2239(a) (“The Commission shall hold a hearing . . . on any application under section 104c. for a construction permit for a testing facility.”).

public to petition for leave to intervene.¹⁹ No petitions to intervene were filed. Therefore, there was no separate contested hearing.

We issued a second notice that set the time and place for the uncontested hearing and outlined the standards for our review.²⁰ These standards track the two major areas of focus for the review of a construction permit application: the Staff's safety and environmental reviews. For the safety review, we must determine whether:

1. the applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public;
2. such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report;
3. safety features or components, if any, which require research and development have been described by the applicant and the applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and
4. on the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facility, and (ii) taking into consideration the site criteria contained in 10 C.F.R. Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.²¹

In making these findings, we are guided by the additional considerations in 10 C.F.R. § 50.40. We consider whether:

1. the processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals, in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with NRC regulations, including the regulations in

¹⁹ Kairos Power, LLC; Construction Permit Application; Opportunity to Request a Hearing and Petition for Leave to Intervene; Order Imposing Procedures, 87 Fed. Reg. 7503 (Feb. 9, 2022).

²⁰ Hearing Notice, 88 Fed. Reg. at 60,724-25.

²¹ 10 C.F.R. § 50.35(a); Hearing Notice, 88 Fed. Reg. at 60,724-25.

- 10 C.F.R. Part 20,²² and that the health and safety of the public will not be endangered;
2. the applicant is technically and financially qualified to engage in the proposed activities;
 3. the issuance of the construction permit will not be inimical to the common defense and security or to the health and safety of the public; and
 4. any applicable requirements of Subpart A of 10 C.F.R. Part 51 have been satisfied.²³

Overlapping this last consideration are the environmental findings that we must make to support issuance of the construction permit.²⁴ The findings reflect our agency's obligations under NEPA, a statute that requires us to consider the impacts of NRC actions on environmental values.²⁵ To ensure that these obligations are fulfilled for this construction permit proceeding, we must:

1. determine whether the requirements of NEPA Sections 102(2)(A), (C), and (E),²⁶ and the applicable regulations in 10 C.F.R. Part 51, have been met;
2. independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken;

²² The regulations in Part 20 "apply to persons licensed by the Commission to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material or to operate a production or utilization facility." 10 C.F.R. § 20.1002. Kairos has neither requested approval of design information nor has applied for a license to receive, possess, use, transfer, or dispose of byproduct, source, or special nuclear material at the facility. Ex. NRC-007, Safety Evaluation, at 11-2. "Therefore, the [S]taff did not evaluate whether requirements in 10 CFR Part 20 would be met for the construction of the Hermes reactor. Instead, the [S]taff assessed whether Kairos had identified the relevant requirements for an operating facility and provided descriptions of the preliminary facility design and provisions for protecting the health and safety of the public, workers, and the environment in sufficient detail to determine whether the [preliminary safety analysis report] provides an acceptable basis for the development of the radiation protection programs and radioactive waste management, and whether there is reasonable assurance that Kairos will comply with the regulations in 10 CFR Part 20 during operation of the Hermes facility." *Id.* We agree that the Staff's approach meets 10 C.F.R. § 50.40(a).

²³ 10 C.F.R. § 50.40(a)-(d).

²⁴ *See, e.g., id.* § 51.105(a).

²⁵ NEPA § 102(2), 42 U.S.C. § 4332(2); *see* 10 C.F.R. § 51.10.

²⁶ On June 3, 2023, President Biden signed into law the Fiscal Responsibility Act of 2023. Pub. L. No. 118-5, 137 Stat. 10. In addition to increasing the debt ceiling and addressing other matters related to federal spending, the Act, in section 321, included amendments to NEPA. The amendments added new sections (D), (E), and (F) to section 102(2); as a result, the section 102(2)(E) referred to in 10 C.F.R. § 51.105(a)(1) is now section 102(2)(H), but the substance of the provision remains the same.

3. determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the construction permit should be issued, denied, or appropriately conditioned to protect environmental values; and
4. determine whether the NEPA review conducted by the NRC Staff has been adequate.²⁷

If we determine that the application meets the standards and requirements of the AEA and the NRC's regulations and that any notifications to other agencies or bodies have been duly made, we will issue a construction permit "in such form and containing such conditions and limitations" that we deem "appropriate and necessary."²⁸

We do not review Kairos's application *de novo*; rather, we consider the sufficiency of the Staff's review of the application on both safety and environmental matters.²⁹ In other words, we consider whether the safety and environmental record is adequate to support issuance of the construction permit and whether the Staff's findings are reasonably supported in logic and fact.³⁰ Under our regulations, we must reach our own independent determination on certain environmental findings — i.e., whether the relevant NEPA requirements have been met, what is the appropriate "final balance among conflicting factors," and whether the construction permit "should be issued, denied[,] or appropriately conditioned."³¹ But we will not "second-guess [the Staff's] underlying technical or factual findings" unless we find the Staff's review incomplete or inadequate or its findings insufficiently explained in the record.³²

C. The Hearing Process

The Staff completed its safety review of the Hermes application in June 2023, with the publication of the Safety Evaluation, and its environmental review in August 2023, with the issuance of the Final Environmental Impact Statement (FEIS).³³ Shortly after publication of the FEIS we received the Staff's informa-

²⁷ 10 C.F.R. § 51.105(a)(1)-(4); Hearing Notice, 88 Fed. Reg. at 60,725. Because this is an uncontested proceeding, 10 C.F.R. § 51.105(a)(5), which concerns only contested proceedings, does not apply.

²⁸ 10 C.F.R. § 50.50.

²⁹ See *Exelon Generation Co.* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 34, 38-39 (2005).

³⁰ See *id.* at 39.

³¹ *Id.* at 45 (quoting 10 C.F.R. § 51.105(a)(1)-(3)).

³² *Id.*

³³ See Ex. NRC-007, Safety Evaluation; Ex. NRC-008, FEIS.

tion paper, which serves as the Staff's pre-filed testimony for the uncontested hearing.³⁴

1. Pre-Hearing Activities

The notice of hearing set a schedule for pre-hearing filings.³⁵ We issued twenty-eight questions on environmental and safety-related topics for the Staff and Kairos to answer in writing in advance of the hearing. The questions addressed a variety of topics including functional containment, temperature monitoring of the safety-related decay heat removal system, how to address the new NEPA requirements enacted in June 2023, and whether the cumulative impacts of the proposed Hermes 2 facility are analyzed in the FEIS.³⁶

We also invited interested states, local government bodies, and federally recognized Indian tribes to provide statements for us to consider as part of the uncontested proceeding.³⁷ In response, we received a statement from the City of Oak Ridge, Tennessee.³⁸ The letter from the City of Oak Ridge expressed its continued support for the Kairos project and described the positive interaction with Kairos during the City's zoning approval process.³⁹

2. The Hearing

We set the topics for and the order of presentations at the hearing.⁴⁰ In the first panel, witnesses for Kairos provided an overview of the Hermes test reactor project and the Hermes construction permit application.⁴¹ In the second panel, witnesses for the Staff provided an overview of the construction permit review process and a summary of the Staff's review and regulatory findings.⁴² The third panel focused on safety-related issues, and the fourth panel focused on

³⁴ See Ex. NRC-001, Staff Information Paper.

³⁵ Hearing Notice, 88 Fed. Reg. at 60,725.

³⁶ See Order of the Secretary (Transmitting Pre-Hearing Questions) (Sept. 15, 2023) (unpublished), at 2-16 (Pre-Hearing Questions Order).

³⁷ See Hearing Notice, 88 Fed. Reg. at 60,725.

³⁸ See Letter from Jack Suggs, Interim City Manager, City of Oak Ridge, Tennessee, to NRC Document Control Desk (Sept. 22, 2023) (ML23268A361).

³⁹ *Id.* at 2-3.

⁴⁰ See Memorandum from Brooke P. Clark, Secretary of the Commission, to Counsel for Applicant and Staff (Oct. 5, 2023), Encl. (ML23278A210) (Scheduling Note).

⁴¹ Ex. KRS-002, Hermes Mandatory Hearing — Overview Panel (Oct. 12, 2023) (Kairos Overview Panel Presentation).

⁴² Ex. NRC-009-R, Kairos Hermes Mandatory Hearing Construction Permit Application Review: Overview of Review Methodology and Summary of Key Regulatory Findings (Oct. 24, 2023) (Staff Overview Panel Presentation).

environmental issues.⁴³ The Staff made available thirty-two witnesses at the hearing.⁴⁴ Thirteen of these witnesses were scheduled panelists; the remainder stood by to answer questions on topics related to their areas of expertise.⁴⁵ A total of twenty-one Kairos witnesses attended the hearing, four of whom offered testimony on behalf of Kairos on panels at the hearing and in pre-filed written testimony.⁴⁶

a. Summary of the Overview Panels

Mike Laufer, Chief Executive Officer; Ed Blandford, Chief Technology Officer; Per Peterson, Chief Nuclear Officer; and Peter Hastings, Vice President, Regulatory Affairs and Quality of Kairos Power LLC, provided testimony for the Kairos overview panel.⁴⁷ Dr. Laufer provided information on the background and mission of Kairos.⁴⁸ Dr. Peterson provided testimony on technical aspects and the objectives for the Hermes reactor project.⁴⁹ Dr. Laufer, Dr. Peterson, and Mr. Hastings also answered questions regarding the effectiveness of Kairos's interactions with the Staff during its review, the interactions with the community around Oak Ridge, Tennessee, and the public more generally, and the purpose of the mandatory hearing process.⁵⁰

Robert Taylor, Deputy Director of the Office of Nuclear Reactor Regulation (NRR); Mohamed Shams, Director, Division of Advanced Reactors and Non-Power Production and Utilization Facilities (DANU), NRR; Jeremy Bowen, Deputy Director, DANU, NRR; and Christopher Regan, Director, Division of

⁴³ See Ex. KRS-003, Hermes Mandatory Hearing — Safety Panel (Oct. 12, 2023) (Kairos Safety Panel Presentation); Ex. NRC-010, Kairos Hermes Mandatory Hearing Construction Permit Application Review: Safety Panel (Oct. 12, 2023) (Staff Safety Panel Presentation); Ex. KRS-004, Hermes Mandatory Hearing — Environmental Panel (Oct. 12, 2023) (Kairos Environmental Panel Presentation); Ex. NRC-011, Kairos Hermes Mandatory Hearing Construction Permit Application Review (Oct. 12, 2023) (Staff Environmental Panel Presentation).

⁴⁴ See Tr. at 10-11 (Ms. Wright); see also *NRC Staff Witness List* (Sept. 28, 2023), Attach. (ML-23271A251).

⁴⁵ See Ex. NRC-009-R, Staff Overview Panel Presentation, at 3; Ex. NRC-010, Staff Safety Panel Presentation, at 3 (ML23285A164) (Staff Safety Panel Presentation); Ex. NRC-011, Staff Environmental Panel Presentation, at 3.

⁴⁶ See *List of Anticipated Witnesses for Kairos Power, LLC for the Hearing on Uncontested Issues* (Sept. 28, 2023), at 1-3; Tr. at 7-8 (Mr. Lighty); Ex. KRS-001, Kairos Testimony; Ex. KRS-002, Kairos Overview Panel Presentation, at 1; Ex. KRS-003, Kairos Safety Panel Presentation, at 1; Ex. KRS-004, Kairos Environmental Panel Presentation, at 1.

⁴⁷ Tr. at 13-26 (Dr. Laufer, Dr. Peterson); Scheduling Note, Encl. at 1.

⁴⁸ Tr. at 13-22 (Dr. Laufer).

⁴⁹ *Id.* at 22-26 (Dr. Peterson).

⁵⁰ *Id.* at 26-42 (Dr. Laufer, Dr. Peterson, Mr. Hastings).

Rulemaking, Environmental, and Financial Support (REFS), Office of Nuclear Material Safety and Safeguards (NMSS), presented the Staff's overview panel and provided testimony on the Staff's review of the Kairos construction permit application.⁵¹ Mr. Taylor provided an overview of the Kairos construction permit application.⁵² Mr. Shams described the pre-application engagement with Kairos, regulatory standards governing the construction permit application review, and public engagement during the review.⁵³ Mr. Bowen provided insights into the Staff's safety review.⁵⁴ Mr. Regan provided an overview of the Staff's environmental review and findings in support of issuance of the construction permit.⁵⁵ Mr. Shams, Mr. Taylor, and Mr. Bowen answered questions relating to the applicant's construction permit application, research activities, pre-application engagement, the use of topical reports in the construction permit application review, knowledge management for future advanced reactor applications, and lessons learned from the Staff's review of this construction permit application that can be applied to the Hermes 2 construction permit application.⁵⁶

b. Summary of the Safety Panel

The safety panel discussed the Kairos construction permit application and Staff conclusions from the Safety Evaluation, focusing on unique features of the facility and novel issues, including TRISO fuel, molten salt coolant, high-temperature materials, functional containment, and passive accident response.⁵⁷ Ed Blandford, Chief Technology Officer, Kairos Power LLC, served as the witness for Kairos.⁵⁸ William Jessup, Chief, Advanced Reactor Licensing Branch 1, DANU, NRR; Edward Helvenston, Project Manager, DANU, NRR; Chris Van Wert, Senior Technical Advisor for Reactor Fuel, Division of Safety Systems, NRR; Alexander Chereskin, Materials Engineer, DANU, NRR; Michelle Hart, Senior Reactor Engineer, DANU, NRR; and Alexandra Siwy, Senior Nuclear Engineer, DANU, NRR, testified for the Staff.⁵⁹

⁵¹ *Id.* at 42-63 (Mr. Taylor, Mr. Shams, Mr. Bowen, Mr. Regan); Scheduling Note, Encl. at 2.

⁵² *Id.* at 43-47 (Mr. Taylor).

⁵³ *Id.* at 47-51 (Mr. Shams).

⁵⁴ *Id.* at 51-55 (Mr. Bowen).

⁵⁵ *Id.* at 55-62 (Mr. Regan).

⁵⁶ *Id.* at 63-82 (Mr. Shams, Mr. Taylor, Mr. Bowen).

⁵⁷ *Id.* at 82-107 (Mr. Blandford, Mr. Jessup, Mr. Helvenston, Mr. Van Wert, Mr. Chereskin, Ms. Hart, Ms. Siwy); Ex. KRS-003, Kairos Safety Panel Presentation, at 3-6; Ex. NRC-010, Staff Safety Panel Presentation, at 4-26.

⁵⁸ Tr. at 83-87 (Mr. Blandford); Scheduling Note, Encl. at 2.

⁵⁹ *Id.* at 87-107 (Mr. Jessup, Mr. Helvenston, Mr. Van Wert, Mr. Chereskin, Ms. Hart, Ms. Siwy); Scheduling Note, Encl. at 2.

Kairos's testimony focused on the inherent safety features of the Hermes test reactor, including how the TRISO fuel and the Fluoride coolant allow for the use of functional containment in making Kairos's safety case.⁶⁰ The Staff's testimony addressed the regulatory requirements for issuing a construction permit and covered novel technical issues presented by the Hermes test reactor, including the TRISO fuel, molten salt coolant, high temperature materials, functional containment, and passive accident response.⁶¹ Following the safety panel presentations, we posed questions to witnesses for both Kairos and the Staff.

c. Summary of the Environmental Panel

The environmental panel focused on the FEIS, including the proposed federal action, purpose and need for the project, the environmental review process and public outreach, NEPA findings, and alternatives to the proposed action.⁶² Peter Hastings, Vice President, Regulatory Affairs and Quality, represented Kairos.⁶³ Kenneth Erwin, Branch Chief, New Reactor Environmental Review Branch, REFS, NMSS; Tamsen Dozier, Project Manager, REFS, NMSS; and Peyton Doub, Environmental Scientist, REFS, NMSS, testified on behalf of the Staff.⁶⁴ Mr. Hastings discussed the environmental report, the site-selection process, and characteristics of the Hermes test reactor site.⁶⁵ The Staff described the proposed federal action, its environmental review process, evaluation of alternatives to the proposed action, consultation with other agencies and tribes, public outreach, and consideration of and conclusions on environmental impacts.⁶⁶ Following the environmental panel presentations, we posed questions to witnesses for both Kairos and the Staff.

3. Post-Hearing Activities

After the hearing, we adopted corrections to the hearing transcript and admitted a revised Staff exhibit.⁶⁷ We held the record open because the Staff had not

⁶⁰ Tr. at 83-87 (Mr. Blandford).

⁶¹ *Id.* at 87-107 (Mr. Jessup, Mr. Helvenston, Mr. Van Wert, Mr. Chereskin, Ms. Hart, Ms. Siwy).

⁶² *Id.* at 123-35 (Mr. Hastings, Mr. Erwin, Ms. Dozier, Mr. Doub); Scheduling Note, Encl. at 3; Ex. KRS-004, Kairos Environmental Panel Presentation, at 3-7; Ex. NRC-011, Staff Environmental Panel Presentation, at 4-17.

⁶³ Tr. at 123-27 (Mr. Hastings); Scheduling Note, Encl. at 3.

⁶⁴ *Id.* at 127-35 (Mr. Erwin, Ms. Dozier, Mr. Doub); Scheduling Note, Encl. at 3.

⁶⁵ Tr. at 124-27 (Mr. Hastings).

⁶⁶ *Id.* at 127-35 (Mr. Erwin, Ms. Dozier, Mr. Doub).

⁶⁷ Order of the Secretary (Adopting Transcript Corrections and Admitting Revised Exhibit) (Nov. 13, 2023) (unpublished).

yet completed its consultation activities under the NHPA.⁶⁸ On December 1, the Staff filed revisions to two exhibits: NRC-002, the draft construction permit, and NRC-003, the draft record of decision.⁶⁹ In the revised draft construction permit, the Staff made several non-substantive edits and replaced placeholder language relating to NHPA section 106 with a requirement that Kairos implement its Archaeological Resource Monitoring and Unanticipated Discovery Plan.⁷⁰ In the revised draft record of decision, the Staff documented completion of the NHPA section 106 process for this licensing action.⁷¹ Kairos does not object to the admission of these exhibits.⁷² Accordingly, we strike exhibits NRC-002 and NRC-003, admit exhibits NRC-002-R and NRC-003-R, and close the evidentiary record.

II. Discussion

As discussed in Section II.E, we find that Kairos's application meets our regulatory requirements for issuance of a construction permit. Although we authorize issuance of a construction permit, our decision does not constitute approval of the design.⁷³ Kairos has represented that it will apply for an operating license and submit with that application a final safety analysis report, which will contain the final detailed design.⁷⁴ The discussion that follows provides a survey of the key facts that support our findings and certain novel issues in the Staff's safety review. We do not discuss every aspect of Kairos's construction permit application, the Staff's review, or our sufficiency review. Our decision to authorize issuance of the construction permit, however, is based on the record in its entirety.

⁶⁸ *Id.* at 1.

⁶⁹ NRC Staff Exhibit List (Dec. 1, 2023) (Staff Revised Exhibit List), at 1; *see* Ex. NRC-002-R, Kairos Power LLC, Docket No. 50-7513, Hermes Test Reactor Construction Permit (Oct. 6, 2023) (Draft Construction Permit); Ex. NRC-003-R, Draft Summary Record of Decision, U.S. Nuclear Regulatory Commission, Docket No. 50-7513, Construction Permit Application for the Kairos Hermes Test Reactor (Nov. 30, 2023) (Draft Record of Decision).

⁷⁰ *See* Staff Revised Exhibit List at 1-2; Ex. NRC-002-R, Draft Construction Permit, app. A, at A-3.

⁷¹ Staff Revised Exhibit List at 2; Ex. NRC-003-R, Draft Record of Decision, at 7, 8.

⁷² Staff Revised Exhibit List at 2.

⁷³ *See* 10 C.F.R. § 50.35(b) ("A construction permit will constitute authorization to the applicant to proceed with construction but will not constitute Commission approval of the safety of any design feature or specification unless the applicant specifically requests such approval and such approval is incorporated into the permit."). Kairos did not request such approval.

⁷⁴ *See, e.g.*, Ex. KRS-001, Kairos Testimony, at 44.

A. The Proposed Design

Kairos's Hermes reactor will be configured as a pebble bed with a chemically stable, low-pressure molten fluoride salt coolant known as Flibe.⁷⁵ The pairing of high-temperature-tolerant TRISO fuel and low-pressure, single-phase, chemically stable reactor coolant reduces the number of potential fuel-damage scenarios, thus simplifying the reactor design and reducing the number of required safety systems.⁷⁶ For example, low-leakage, pressure retaining containment structures are not necessary due to the low pressure of the reactor and associated piping in combination with the fission product retention provided by the TRISO fuel.⁷⁷ The Hermes design further relies on passive decay heat removal and does not require an emergency core cooling system for decay heat removal or replacement of coolant inventory.⁷⁸

The Hermes reactor has three major plant systems: the reactor system, the primary heat transport system, and the decay heat removal system.⁷⁹ The facility includes engineered safety features that provide functional containment and decay heat removal — these features are credited for mitigation of the consequences of postulated events.⁸⁰

Kairos uses a definition of “safety-related structures, systems, and components” that differs from the definition found in 10 C.F.R. § 50.2 to establish those structures, systems, and components that are classified as safety related for the Hermes reactor. Specifically, in lieu of using “the integrity of the reactor coolant pressure boundary” terminology in 10 C.F.R. § 50.2, Kairos's definition reads: “the integrity of the *portions* of the reactor coolant boundary *relied upon to maintain coolant level above the active core.*”⁸¹ Kairos uses this definition because the Hermes reactor does not rely on the functional capability of the primary heat transport system to remove decay heat from the reactor core, and the Staff found this definition acceptable for the proposed facility.⁸²

⁷⁵ Ex. NRC-007, Safety Evaluation, at 4-1.

⁷⁶ Ex. KRS-001, Kairos Testimony, at 3.

⁷⁷ *Id.*; Tr. at 23 (Dr. Peterson).

⁷⁸ Ex. KRS-001, Kairos Testimony, at 3.

⁷⁹ *Id.*

⁸⁰ See Ex. KRS-001, Kairos Testimony, at 10.

⁸¹ Ex. NRC-007, Safety Evaluation, at 3-20 (emphasis added). The Staff found that the 10 C.F.R. § 50.2 definition of “safety-related structures, systems, and components” is not applicable to the Hermes facility. *Id.*; Ex. NRC-004, *NRC Staff Responses to Commission Pre-Hearing Questions* (Sept. 28, 2023), at 11 (Staff Pre-Hearing Responses).

⁸² Ex. NRC-007, Safety Evaluation, at 3-20, 3-4 to 3-5.

1. *TRISO Fuel*

Hermes will use TRISO fuel particles embedded in a carbon matrix pebble.⁸³ The pebbles are roughly the size of golf balls, and the TRISO particles are roughly the size of poppy seeds.⁸⁴ The fuel particle is composed of a uranium oxycarbide fuel kernel encased in coating layers to limit fission product releases.⁸⁵ The fuel particles will contain high assay low enriched uranium.⁸⁶ The coating layers are composed of pyrolytic carbon and silicon carbide.⁸⁷ In addition, there is a carbon buffer layer between the kernel and the inner pyrolytic carbon layer that serves to accommodate fission gases and limit pressure buildup.⁸⁸ The TRISO particles are arranged in a fuel annulus near the outer surface of the pebble surrounding a low-density graphite core.⁸⁹ In addition to fuel pebbles, the reactor also contains moderator pebbles, which have the same diameter as the fuel pebbles but contain no uranium and are made of graphite material.⁹⁰ Both the fuel and moderator pebbles are designed to maintain positive buoyancy under normal operation and postulated events.⁹¹ Pebbles are buoyant in Flibe and travel upward through the core.⁹²

The TRISO particle specification is based on the U.S. Department of Energy (DOE) Advanced Gas Reactor program.⁹³ The TRISO fuel is similar to that developed for high temperature gas-cooled reactors, and the coatings on the particle fuel have demonstrated retention of fission products to temperatures above 1,600°C.⁹⁴ In comparison, the Hermes test reactor normal operating temperature is up to 650°C.⁹⁵

The Staff evaluated the Kairos fuel qualification program as described in the topical report and concluded that it meets the applicable regulatory requirements.⁹⁶ Tribology testing will be conducted on fuel pebbles in two separate

⁸³ Ex. NRC-010, Staff Safety Panel Presentation, at 11.

⁸⁴ Tr. at 94 (Mr. Van Wert).

⁸⁵ Ex. NRC-001, Staff Information Paper, at 9.

⁸⁶ Ex. NRC-007, Safety Evaluation, at ii.

⁸⁷ Ex. NRC-001, Staff Information Paper, at 9.

⁸⁸ *Id.*

⁸⁹ Ex. NRC-001, Staff Information Paper, at 10; Tr. at 94 (Mr. Van Wert); Ex. NRC-010, Staff Safety Panel Presentation, at 11.

⁹⁰ Ex. NRC-007, Safety Evaluation, at 4-2.

⁹¹ *Id.*

⁹² *Id.* at 4-35.

⁹³ Ex. NRC-001, Staff Information Paper, at 9.

⁹⁴ *Id.* at 10; Ex. NRC-007, Safety Evaluation, at 1-12 to 1-14; Tr. at 23-24 (Dr. Peterson).

⁹⁵ Ex. NRC-001, Staff Information Paper, at 14; Ex. KRS-001, Kairos Testimony, at 11.

⁹⁶ *Id.*; see “Final Safety Evaluation for Topical Report KP-TR-011, Revision 2, ‘Fuel Qualification
(Continued)”

environments: (1) Flibe with an argon cover gas, and (2) an argon only environment.⁹⁷ The coefficient of friction and wear rates will be determined during tribology tests in both of these environments.⁹⁸ In its preliminary safety analysis report, Kairos provided the relevant principal design criteria, a design description of the TRISO particle and corresponding fuel elements (pebbles), and a preliminary analysis and evaluation of the fuel element demonstrating the margins of safety during normal operations and transient conditions anticipated during the life of the facility.⁹⁹ The Staff concluded that the information was sufficient to conform to the applicable guidance and meet the regulatory requirements of 10 C.F.R. §§ 50.35 and 50.40.¹⁰⁰

Both fuel and moderator pebbles will be inspected by the pebble handling and storage system as they are removed from the core.¹⁰¹ Therefore, neither the fuel nor moderator pebbles are expected to produce debris or dust in the reactor coolant that could inhibit the removal of heat from the core.¹⁰²

2. Molten Salt Coolant

Flibe is a lithium fluoride-beryllium fluoride mixture ($2\text{LiF}\text{-BeF}_2$).¹⁰³ In the Hermes design, the Flibe coolant is credited with supporting reactivity control and serving as a fission product barrier.¹⁰⁴ Flibe is able to retain radionuclides and prevent radionuclide release to the environment during normal operations and postulated events.¹⁰⁵ The Staff reviewed the capabilities of Flibe to retain fission products in its review of Kairos's topical report on mechanistic source term.¹⁰⁶

Flibe has advantageous heat transfer properties and is thermally and radiolytically stable at high temperatures.¹⁰⁷ But Flibe contains beryllium, which requires controls to mitigate potential worker exposure, and the transmutation

Methodology for the Kairos Power Fluoride Salt-Cooled High Temperature Reactor (KP-FHR)," (Mar. 2, 2023) (ML23089A398).

⁹⁷ Ex. KRS-006, Kairos Power LLC's Responses to Commission's Pre-hearing Questions (Oct. 12, 2023), at 14 (Kairos Pre-Hearing Responses).

⁹⁸ *Id.*

⁹⁹ Ex. NRC-001, Staff Information Paper, at 11.

¹⁰⁰ *Id.*

¹⁰¹ Ex. NRC-007, Safety Evaluation, at 4-7; Ex. KRS-006, Kairos Pre-Hearing Responses, at 10.

¹⁰² Ex. KRS-006, Kairos Pre-Hearing Responses, at 10; Ex. NRC-007, Safety Evaluation, at 4-6 to 4-7; *see also* Ex. NRC-004, Staff Pre-Hearing Responses, at 13.

¹⁰³ Ex. KRS-003, Kairos Safety Panel Presentation, at 3.

¹⁰⁴ Ex. NRC-001, Staff Information Paper, at 9.

¹⁰⁵ Ex. KRS-001, Kairos Testimony, at 11.

¹⁰⁶ Tr. at 97 (Mr. Chereskin).

¹⁰⁷ Ex. NRC-001, Staff Information Paper, at 9.

of lithium will generate tritium, which will also need to be managed.¹⁰⁸ The Staff will evaluate the potential beryllium hazard and its ability to impact operations or accident response and the methods and systems to control tritium during the operating license review.¹⁰⁹ During reactor operations, the Flibe coolant is expected to accumulate impurities, which may affect the corrosion of primary system components, create some circulating activity in the primary system, affect reactivity characteristics, and potentially affect thermophysical properties.¹¹⁰ To ensure that the Flibe coolant maintains the properties needed for natural circulation heat transfer, Kairos must monitor, and potentially correct, the salt composition.¹¹¹ Kairos expects to include a limiting condition of operation to maintain the reactor coolant composition within allowable limits as part of the technical specifications in its operating license application.¹¹²

3. *High-Temperature Materials*

The Hermes test reactor design operates at higher temperatures than light-water reactors.¹¹³ Therefore, the primary system components must be qualified for these high temperatures as well as for the Flibe coolant environment.¹¹⁴ This construction permit application is the first to reference American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section III, Division 5, “High Temperature Materials,” which was endorsed in NRC Regulatory Guide 1.87, Revision 2.¹¹⁵ Kairos will use 316H stainless steel and ER-16-8-2 weld filler material for safety-related metallic components and ET-10 for graphite reflector components.¹¹⁶

ASME Boiler and Pressure Vessel Code Section III, Division 5 provides an approach to ensure the mechanical and structural integrity of components that operate in high-temperature environments. It specifies material properties, such as allowable stresses based on creep damage for the metallic materials at the times and temperatures the Hermes reactor components will experience.¹¹⁷ The

¹⁰⁸ Tr. at 97 (Mr. Chereskin).

¹⁰⁹ *Id.*

¹¹⁰ Ex. NRC-001, Staff Information Paper, at 9.

¹¹¹ *Id.*

¹¹² See Ex. NRC-007, Safety Evaluation, at 5-4.

¹¹³ Ex. NRC-001, Staff Information Paper, at 14.

¹¹⁴ *Id.*

¹¹⁵ Ex. NRC-010, Staff Safety Panel Presentation, at 17; Ex. NRC-001, Staff Information Paper, at 14; Tr. at 99 (Mr. Chereskin).

¹¹⁶ Tr. at 98-99 (Mr. Chereskin); Ex. NRC-010, Staff Safety Panel Presentation, at 17-18; Ex. NRC-001, Staff Information Paper, at 14.

¹¹⁷ Tr. at 99 (Mr. Chereskin).

use of Section III, Division 5 also provides rules for aspects related to structural and mechanical integrity for the use of 316H stainless steel.¹¹⁸

ASME Boiler and Pressure Vessel Code Section III, Division 5 does not address the interactions between the Flibe environment and metallic structural materials.¹¹⁹ Therefore, Kairos submitted a topical report describing its qualification plan for metallic structural materials used in Flibe-wetted areas for safety-related high-temperature components of its reactor designs, including the Hermes test reactor.¹²⁰ The qualification plan includes extensive testing to quantify degradation mechanisms in normal and postulated accident conditions, and the Staff's evaluation of the topical report concluded that the Kairos qualification program for metallic materials satisfies the regulatory requirements related to the qualification of 316H stainless steel in the Flibe environment.¹²¹

The Hermes test reactor uses graphite reflector blocks to moderate and reflect neutrons back into the reactor core and protect the reactor vessel from the effects of neutron fluence.¹²² The reflector blocks provide a heat sink for the core and form coolant flow channels, the pebble defueling chute, and channels for the insertion and withdrawal of reactivity control and shutdown elements.¹²³ For graphite components, Kairos cited an approved topical report for the qualification of the material.¹²⁴ In its evaluation of the topical report on graphite qualification, the Staff concluded that the methodology is acceptable because it is generally consistent with applicable portions of ASME Boiler and Pressure Vessel Code, Section III, Division 5, with departures related to graphite material qualification.¹²⁵ The behavior of graphite as a function of fluence and temperature is an important design consideration to ensure graphite components maintain their integrity and perform their design functions.¹²⁶

4. Functional Containment

The safety case for the Hermes reactor is based on the concept of functional containment, which is a barrier, or a set of barriers taken together, that

¹¹⁸ *Id.*

¹¹⁹ Tr. at 100 (Mr. Chereskin).

¹²⁰ See "Metallic Material Qualification for the Kairos Power Fluoride Salt-Cooled High Temperature Reactor," KP-TR-013-NP-A, Revision 4 (Sept. 2022) (ML23102A179).

¹²¹ Ex. NRC-001, Staff Information Paper, at 14.

¹²² *Id.*

¹²³ *Id.*; Ex. NRC-007, Safety Evaluation, at 4-16.

¹²⁴ See "Graphite Material Qualification for the Kairos Power Fluoride Salt-Cooled High-Temperature Reactor," KP-TR-014-NP-A, Revision 4 (Sept. 2022) (ML23108A317).

¹²⁵ Ex. NRC-001, Staff Information Paper, at 14.

¹²⁶ *Id.*; see Tr. at 99-100 (Mr. Chereskin).

effectively limits the physical transport of radioactive materials to the environment.¹²⁷ For the Hermes test reactor, functional containment consists of physical barriers, operating conditions, coolant design, and fuel form.¹²⁸ We previously approved the concept of functional containment in SRM-SECY-18-0096.¹²⁹ Instead of using the event categorization scheme described in SECY-18-0096, Kairos identified anticipated operational occurrences, design-basis events, and beyond-design-basis events, consistent with a maximum hypothetical accident (MHA) approach.¹³⁰ The MHA is intended to bound all postulated events in terms of dose consequences, consistent with the guidance for non-power reactors in NUREG-1537.¹³¹

To establish the MHA, Kairos considered a broad range of event categories, including insertion of reactivity, salt spills, loss of forced circulation, malfunction of the pebble handling and storage system, radioactive releases from a subsystem or component, general challenges to normal operation, internal hazards (fire and flood), and external hazards (seismic, wind, and flood).¹³² The Staff concluded that Kairos's MHA analysis demonstrates that the dose consequences of the MHA are within the accident dose criteria of 10 C.F.R. § 100.11(a).¹³³ Even with conservative estimates for releases from TRISO fuel, tritium in graphite structures, and argon-41 from activation of the cover gas, the MHA results in radiological doses at the site boundary that are well below the siting criteria of 25 rem and also below the U.S. Environmental Protection Agency Protective Action Guides.¹³⁴

The safety case for the Hermes reactor does not rely on traditional containment barriers like reactor coolant piping or the reactor building due to the effectiveness of the TRISO fuel particle and the Flibe coolant at retaining radionuclides.¹³⁵ The fuel particle forms four of the five fission product barriers credited for functional containment: the fuel kernel, an inner pyrolytic carbon layer, a silicon carbide layer, and an outer pyrolytic carbon layer.¹³⁶ Addition-

¹²⁷ See Ex. KRS-003, Kairos Safety Panel Presentation, at 4; Ex. NRC-010, Staff Safety Panel Presentation, at 20 (citing SECY-18-0096, "Functional Containment Performance Criteria for Non-Light-Water-Reactors," (ML18114A546)).

¹²⁸ Ex. NRC-007, Safety Evaluation, at 6-2.

¹²⁹ Staff Requirements — SECY-18-0096 — Functional Containment Performance Criteria for Non-Light-Water-Reactors (Dec. 4, 2018) (ML18338A502).

¹³⁰ Ex. NRC-001, Staff Information Paper, at 12.

¹³¹ See Ex. KRS-006, Kairos Pre-Hearing Responses, at 1.

¹³² ACRS Letter at 6.

¹³³ Ex. NRC-001, Staff Information Paper, at 12.

¹³⁴ ACRS Letter at 6. The dose consequences of the MHA are less than 1 rem at the site boundary. Ex. KRS-003, Kairos Safety Panel Presentation, at 6.

¹³⁵ See Ex. KRS-003, Kairos Safety Panel Presentation, at 4.

¹³⁶ Ex. NRC-001, Staff Information Paper, at 12.

ally, the fuel particles are embedded in an annular shell arrangement inside a spherical pebble, which provides physical protection against mechanical damage.¹³⁷ The majority of radioactive material at risk for release is held within the TRISO fuel, and the Flibe coolant serves as an additional barrier for release of radionuclides for submerged fuel pebbles.¹³⁸ Because the TRISO fuel and Flibe coolant effectively contain fission products such as cesium and iodine, the MHA's dose driving elements are mobile activation products, such as argon-41 and tritium, rather than fission products.¹³⁹

Kairos described the components and operating conditions that define the Hermes test reactor functional containment in its preliminary safety analysis report.¹⁴⁰ Kairos also identified key performance criteria on specific structures, systems, and components to ensure that the MHA remains bounding: (1) specified acceptable system radionuclide release design limits for the fuel and (2) circulating activity limits for the Flibe coolant.¹⁴¹

5. *Passive Accident Response*

The reactor vessel system contains the reactor core and provides for circulation of reactor coolant and pebbles as well as insertion of the reactivity control and shutdown system elements in the reactor core.¹⁴² The Hermes test reactor is designed with three safety-related shutdown elements, only two of which are needed to shut down the reactor and maintain it in a safe condition.¹⁴³ These elements have two positions — fully withdrawn or fully inserted.¹⁴⁴ The shutdown elements accomplish a safe shutdown (reactor trip) through gravity insertion on a reactor trip signal or on a loss of normal electrical power, after a short delay to mitigate spurious trips.¹⁴⁵ The reactor trip signal removes power from an electromagnetic clutch, which causes the shutdown elements to fall into the core by gravity and shut down the reactor.¹⁴⁶

The reactor relies on passive decay heat removal and does not need an active emergency core cooling system for decay heat removal or replacement of

¹³⁷ Ex. NRC-007, Safety Evaluation, at 6-2.

¹³⁸ See Ex. KRS-003, Kairos Safety Panel Presentation, at 4.

¹³⁹ Ex. KRS-006, Kairos Pre-Hearing Responses, at 15; ACRS Letter at 6.

¹⁴⁰ Ex. NRC-001, Staff Information Paper, at 13.

¹⁴¹ *Id.*

¹⁴² Ex. NRC-007, Safety Evaluation, at 4-14.

¹⁴³ See Ex. NRC-004, Staff Pre-Hearing Responses, at 9.

¹⁴⁴ Ex. NRC-001, Staff Information Paper, at 13.

¹⁴⁵ *Id.*; Ex. NRC-007, Safety Evaluation, at 4-11.

¹⁴⁶ Ex. NRC-010, Staff Safety Panel Presentation, at 24.

coolant inventory.¹⁴⁷ The decay heat removal system removes residual decay heat from the reactor core through the reactor vessel wall during both normal and off-normal conditions.¹⁴⁸ In postulated events where the normal heat rejection system is unavailable, the decay heat removal system, along with natural circulation flow within the core, provides heat removal from fuel in the reactor core via thermal radiation and convection without the need for external sources of electrical power or operator intervention.¹⁴⁹ Natural circulation and the passive decay heat removal system reject residual heat from the reactor core to the atmosphere.¹⁵⁰ The decay heat removal system and natural circulation together provide adequate heat removal to ensure that the vessel temperature remains below design limits and that the fuel integrity is not challenged.¹⁵¹

The decay heat removal system is made up of four independent trains to provide redundancy in the event of a single failure.¹⁵² The decay heat removal system has sufficient inventory in the thermosyphons to operate for up to seven days to mitigate a postulated event where normal cooling systems are unavailable.¹⁵³ The fluidic diodes, which are part of the reactor internals and enable natural circulation when forced circulation is lost, will be subject to planned qualification testing and inspection.¹⁵⁴ The Staff concluded that there is reasonable assurance that the reactor vessel system will perform its safety functions of maintaining structural integrity, geometry, and coolant inventory to ensure sufficient heat removal.¹⁵⁵

B. The Proposed Site

The site is located in an industrial area of Oak Ridge, Tennessee. The property is at the site of former Buildings K-31 and K-33 of the DOE gaseous diffusion plant, where uranium enrichment occurred between the mid-1950s

¹⁴⁷ Ex. NRC-001, Staff Information Paper, at 13; Ex. KRS-002, Kairos Overview Panel Presentation, at 9. Active emergency replacement of coolant inventory is not required based on the results of the maximum Flibe spill event. See Ex. NRC-007, Safety Evaluation, 13-14 to 13-17. The evaluation determined that, without active emergency makeup, sufficient inventory was maintained to support adequate in-vessel natural circulation, to ensure the fuel remains covered, and to limit the heat up and radionuclide release. Additionally, the Staff determined that a Flibe salt spill beyond that assumed in the analysis is not expected to occur. *Id.* at 13-34.

¹⁴⁸ Ex. NRC-001, Staff Information Paper, at 13.

¹⁴⁹ Ex. KRS-001, Kairos Testimony, at 11.

¹⁵⁰ See Ex. KRS-003, Kairos Safety Panel Presentation, at 5.

¹⁵¹ Ex. KRS-001, Kairos Testimony, at 11.

¹⁵² *Id.*

¹⁵³ Ex. NRC-001, Staff Information Paper, at 13.

¹⁵⁴ *Id.*; Ex. NRC-007, Safety Evaluation, at 4-23.

¹⁵⁵ Ex. NRC-001, Staff Information Paper, at 13-14.

and mid-1980s.¹⁵⁶ The site boundary encompasses 185 acres, of which about 30 acres would be permanently disturbed for operations of the facility.¹⁵⁷ The site is adjacent to Poplar Creek and 0.4 mile (0.6 kilometer) from the Clinch River arm of the Watts Bar Reservoir.¹⁵⁸

The Staff considered the relevant siting criteria in Part 100 and guidance in NUREG-1537 and concluded that the Hermes facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.¹⁵⁹ The Staff considered site characteristics such as geography and demography; nearby industrial, transportation, and military facilities; meteorology; hydrology; and geology, seismology, and geotechnical engineering.¹⁶⁰ In addition, the Staff evaluated structures, systems, and components and equipment designed to ensure safe operation, performance, and shutdown when subjected to extreme weather, floods, seismic events, missiles (including aircraft impacts), chemical and radiological releases, and loss of offsite power.¹⁶¹ As stated earlier, Kairos plans to operate the reactor for four years. When the Staff assessed flooding hazards from potential dam failures, it relied on this limited operating lifetime to approve the acceptability of the site.¹⁶² Therefore, an operating license, if issued, would include “a license term that would be limited to ensure the validity of assumptions and conclusions in the safety analysis for the final design of the Hermes facility.”¹⁶³

The Staff verified that the Hermes emergency planning zone size is appropriate and consistent with guidance based on the preliminary MHA calculations, which indicate that accident doses at the emergency planning zone boundary would not exceed the doses recommended by the U.S. Environmental Protection Agency protective action guidelines of 1 rem total effective dose equivalent or 5 rem projected child thyroid dose.¹⁶⁴ The Staff will review the final justification for the emergency planning zone size based on more detailed plant design information during review of the operating license application.¹⁶⁵

In pre-hearing questions, we inquired into potential hazards associated with the proposed Oak Ridge Airport. Kairos used DOE guidelines and methodologies in its evaluation of crash frequencies related to the proposed airport in its

¹⁵⁶ *Id.* at 4; Ex. KRS-001, Kairos Testimony, at 4.

¹⁵⁷ Ex. KRS-002, Kairos Overview Panel Presentation, at 10.

¹⁵⁸ Ex. KRS-001, Kairos Testimony, at 8.

¹⁵⁹ *See* 10 C.F.R. § 50.35(a)(4)(ii).

¹⁶⁰ Ex. NRC-007, Safety Evaluation, at 1-3 to 1-4.

¹⁶¹ *Id.*

¹⁶² Ex. NRC-004, Staff Pre-Hearing Responses, at 6-7.

¹⁶³ *Id.* at 7.

¹⁶⁴ Ex. NRC-007, Safety Evaluation, at 2-3; Ex. NRC-004, Staff Pre-Hearing Responses, at 2-4.

¹⁶⁵ Ex. NRC-004, Staff Pre-Hearing Responses, at 4.

preliminary safety analysis report.¹⁶⁶ Kairos will design the safety-related portion of the reactor building to withstand the impact of general aviation aircraft associated with operations at the proposed airport.¹⁶⁷ Based on information in the environmental assessment prepared by DOE for the proposed Oak Ridge Airport, the Staff expects that the Beechcraft King Air 350i likely bounds the other types of general aviation aircraft that would use the airport.¹⁶⁸ Additionally, Kairos stated that any proposed configuration of the airport runways is not anticipated to change the need to design for aircraft impact.¹⁶⁹

C. Technical and Design Information for Later Consideration

Kairos has described the principal design features and the technology that it plans to use, but Kairos will supply further technical and design information in the final safety analysis report filed as part of the operating license application in accordance with 10 C.F.R. § 50.35(a)(2). The construction permit will not constitute approval of the safety of any design feature or specification.¹⁷⁰ Because Kairos did not request approval of any design features or specifications to be included in the construction permit, the Staff did not make any findings regarding the safety of any Part 50 design feature or specification.¹⁷¹

The Staff identified two conditions to include in the construction permit — one relating to site characteristics and one relating to quality assurance. The first condition directs Kairos to confirm the condition of bedrock supporting the facility and provides for examination of excavations by the Staff, if necessary.¹⁷² The second requires Kairos to implement its quality assurance program for design, procurement, and construction of the Hermes reactor.¹⁷³ By including this condition, the construction permit will have an explicit requirement comparable to 10 C.F.R. § 50.55(f)(1). This condition will allow Kairos to make changes to the program without prior NRC approval that do not reduce commitments in the program description previously approved by the NRC, consistent with 10 C.F.R.

¹⁶⁶ Ex. KRS-006, Kairos Pre-Hearing Responses, at 4.

¹⁶⁷ *Id.* at 4-5; see Ex. NRC-004, Staff Pre-Hearing Responses, at 6.

¹⁶⁸ Ex. NRC-004, Staff Pre-Hearing Responses, at 5.

¹⁶⁹ Ex. KRS-006, Kairos Pre-Hearing Responses, at 4.

¹⁷⁰ Ex. NRC-001, Staff Information Paper, at 8; Ex. NRC-010, Staff Safety Panel Presentation, at 7.

¹⁷¹ Ex. NRC-001, Staff Information Paper, at 8; Ex. NRC-004, Staff Pre-Hearing Responses, at 1.

¹⁷² Ex. NRC-010, Staff Safety Panel Presentation, at 7; Ex. NRC-001, Staff Information Paper, at 18; Ex. KRS-001, Kairos Testimony, at 31.

¹⁷³ Ex. NRC-010, Staff Safety Panel Presentation, at 7; Ex. NRC-001, Staff Information Paper, at 18; Ex. KRS-001, Kairos Testimony, at 31.

§ 50.55(f)(3).¹⁷⁴ Without this license condition, the Staff would need to approve a license amendment request from Kairos to make any changes to the quality assurance plan regardless of whether the change would reduce a commitment.¹⁷⁵

As it finalizes the design of its facility, Kairos will need to complete the following research and development activities: (1) perform a laboratory testing program to confirm fuel pebble behavior; (2) develop a high-temperature material surveillance sampling program for the reactor vessel and internals; (3) perform testing of high-temperature material to qualify Alloy 316H and ER-16-8-2; (4) perform an analysis related to potential oxidation in certain postulated events for the qualification of the graphite used in the reflector structure; (5) develop and validate computer codes for core design and analysis methodology; (6) develop a fluidic diode device to ensure proper circulation during normal operation and passive cooling by natural circulation; (7) justify thermodynamic data and associated vapor pressure correlations of representative species; (8) develop process sensor technology for key reactor process variables; and (9) develop the reactor coolant chemical monitoring instrumentation.¹⁷⁶ The Staff listed these activities in Appendix A, Section A.3 of the Safety Evaluation and will verify that they are completed prior to the completion of construction, which Kairos projects to be December 2026.¹⁷⁷

The Staff will also track several other items listed in Appendix A, Section A.2 of the Safety Evaluation that Kairos must address in its operating license application.¹⁷⁸ This list contains elements of design, analysis, and administration that are not necessary for issuance of a construction permit but need additional development or resolution before issuance of an operating license.

After reviewing the construction permit application, the ACRS recommended that Kairos address three topics in the operating license application: (1) combustible gas generation, (2) tritium release levels, and (3) management of airborne tritium and beryllium in the facility.¹⁷⁹ In response to the ACRS review, the Staff stated that it will consider the identified topics in its review of the operating license application.¹⁸⁰ In response to our pre-hearing questions, Kairos stated that the specific instrumentation of the tritium management system and

¹⁷⁴ Ex. KRS-006, Kairos Pre-Hearing Responses, at 14.

¹⁷⁵ *Id.*

¹⁷⁶ Ex. NRC-001, Staff Information Paper, at 17-18; Ex. KRS-001, Kairos Testimony, at 24.

¹⁷⁷ Ex. NRC-001, Staff Information Paper, at 18; Ex. KRS-001, Kairos Testimony, at 24-25; *see also* Ex. NRC-002-R, Draft Construction Permit, at 2.

¹⁷⁸ *See* Ex. KRS-001, Kairos Testimony, at 23.

¹⁷⁹ Ex. NRC-010, Staff Safety Panel Presentation, at 8, 15; Tr. at 97 (Mr. Chereskin).

¹⁸⁰ *See* Letter from Robert Taylor on behalf of Andrea D. Veil, NRR, to Joy L. Rempe, ACRS (June 20, 2023) (ML23160A255).

its capabilities to measure tritium, for comparison with limits derived from the MHA, will be discussed in further detail in the final safety analysis report.¹⁸¹

D. The Staff's Environmental Review

As required by our regulations, the Staff prepared an environmental impact statement (EIS) for the Hermes construction permit application.¹⁸² Although the Staff's safety review was limited to the findings necessary for issuance of the construction permit, the Staff's environmental review was broader in scope. In addition to evaluating the environmental impacts of facility construction, the Staff evaluated the impacts of facility operation and decommissioning to the extent that information was available for these activities.¹⁸³ In its review of the Hermes project, the Staff made effective use of existing resources, such as the recently completed EIS for the Tennessee Valley Authority's early site permit application for the Clinch River small modular reactor project, which would be situated approximately two miles south of where the Hermes reactor would be constructed.¹⁸⁴

The Staff issued the draft EIS (DEIS) in September 2022 and the FEIS in August 2023.¹⁸⁵ After publishing a notice of its intent to prepare an EIS, the Staff conducted a virtual joint public outreach and scoping meeting in March 2022.¹⁸⁶ The Staff received public comments during a sixty-day scoping process in early 2022. The Staff also conducted a virtual environmental audit in March 2022 to verify information in the Kairos environmental report and discuss information needs with Kairos staff and their contractors.¹⁸⁷ The DEIS was issued for public comment, and the comments received were addressed by the Staff in the FEIS.¹⁸⁸

As discussed above, the proposed site for the Hermes project is a 185-acre site in the Heritage Center Industrial Park of the East Tennessee Technology

¹⁸¹ Ex. KRS-006, Kairos Pre-Hearing Responses, at 12-13; Ex. NRC-004, Staff Pre-Hearing Responses, at 15-16.

¹⁸² See 10 C.F.R. § 51.20(b)(1) (requiring EIS for issuance of a permit to construct a nuclear testing facility); Ex. NRC-008, FEIS, at xiii, 1-1.

¹⁸³ Ex. NRC-008, FEIS, at 1-2, 3-1. The Staff would perform separate environmental reviews for any subsequent licensing actions, such as an operating license application, operating license renewal, and decommissioning.

¹⁸⁴ See *id.* at 1-1.

¹⁸⁵ "Environmental Impact Statement for the Construction Permit for the Kairos Hermes Test Reactor" (Draft Report for Comment), NUREG-2263 (ML22259A126); Ex. NRC-008, FEIS.

¹⁸⁶ Ex. NRC-008, FEIS, at 1-4. The Staff's decision to conduct a virtual meeting was based on high Covid-19 transmission rates in the Oak Ridge area at that time. *Id.* at G-28.

¹⁸⁷ *Id.* at 1-4.

¹⁸⁸ *Id.*, app. G.

Park, located within the corporate limits of the City of Oak Ridge, Tennessee.¹⁸⁹ The industrial park was established on land formerly owned by DOE, and the site proposed for the Hermes project was previously the site of two buildings that formed part of the Oak Ridge Gaseous Diffusion Plant. These buildings were razed after the gaseous diffusion plant ceased operations in the 1980s, and the site was environmentally remediated and released for industrial reuse, subject to certain restrictions.¹⁹⁰ Most of the 185-acre site consists of developed land and herbaceous grassland, with bands of forested land in perimeter areas between previously developed land and adjacent waterways.¹⁹¹ The site is bounded on the south and east by Poplar Creek, and the Clinch River arm of the Watts Bar Reservoir lies near the western border of the site boundary.¹⁹² The Hermes project would make use of existing industrial infrastructure, with the exception of additional roads and parking lots that would be constructed to service the 30-acre portion of the site on which the reactor and its auxiliary buildings would be situated.¹⁹³

The Staff evaluated the environmental impacts of constructing, operating, and decommissioning the Hermes reactor across a variety of resource areas: land use and visual resources; air quality and noise; hydrogeology and water resources; ecological resources; historic and cultural resources; socioeconomics and environmental justice; human health; nonradiological waste management; uranium fuel cycle and radiological waste management; transportation; accidents; and climate change.¹⁹⁴ The Staff also analyzed the cumulative environmental impacts of other projects proposed in the Oak Ridge region in conjunction with the Hermes project for each resource area considered.¹⁹⁵ The Staff found that the direct and indirect impacts of the proposed action in each of these areas would be small.¹⁹⁶ Impacts are considered “small” if they are “not detectable or

¹⁸⁹ *Id.* at 1-1.

¹⁹⁰ *Id.* at 1-1, G-20 to G-22. These restrictions pertain to the use of and occupational exposure to contaminated groundwater and at the site. *See id.* at G-17 to G-22.

¹⁹¹ *Id.* at 3-27.

¹⁹² *Id.* at 1-2 fig. 1-1, 3-23. The only wetland on or adjacent to the Hermes site occurs in the forested perimeter lands adjoining Poplar Creek. *Id.* at 3-27 to 3-28.

¹⁹³ *See id.* at 2-2.

¹⁹⁴ *Id.* at 5-1 tbl. 5-1.

¹⁹⁵ *Id.* at 1-1. These included continuing DOE operations at Oak Ridge National Laboratory and the Y-12 site; industrial development in the East Tennessee Technology Park; the Ultra Safe Nuclear Corporation Pilot Fuel Manufacturing Facility; the Sequoyah and Watts Bar nuclear plants; and future projects such as the construction and operation of small modular reactors at the Clinch River Nuclear site; the applicant’s plan to construct and operate the Kairos Atlas Fuel Fabrication Facility at the Hermes site; the planned TRISO-X fuel fabrication facility; and development of a general aviation airport to the south of the Hermes site. *Id.* at 3-2.

¹⁹⁶ *Id.* at 5-1 tbl. 5-1.

are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.”¹⁹⁷

In July 2023, Kairos submitted a construction permit application for the Hermes 2 project, a two-unit fluoride salt-cooled, high temperature test reactor that would be situated adjacent to the Hermes test reactor. We asked the Staff whether the analysis in the FEIS accounted for the cumulative impacts of the applicant’s new proposed project. The Staff explained that the FEIS was published too soon after submission of the Hermes 2 application to account for these impacts in the Hermes FEIS, but that an evaluation was performed to determine the significance of the Hermes 2 project on the FEIS’s cumulative impacts analysis.¹⁹⁸ The Staff concluded in this evaluation that the proposed Hermes 2 project “would not alter the conclusion in the FEIS that the cumulative impacts from the Hermes reactor and other past, present, and reasonably foreseeable actions would be SMALL for all environmental resources.”¹⁹⁹ Accordingly, the Staff determined that information in the Hermes 2 application did not require preparation of a supplement to the Hermes FEIS.²⁰⁰

To fulfill its obligations under section 7 of the Endangered Species Act of 1973, the Staff compiled a table of federally listed endangered species using databases maintained by the U.S. Fish and Wildlife Service (FWS) and the Tennessee Department of Environment and Conservation, and the information in Kairos’s environmental report.²⁰¹ The Staff defined the action area for the purposes of this review as the 185-acre Hermes site, which consists of lands previously disturbed by DOE’s operations but also includes, for conservatism, “slivers of riparian forested land on the site bordering Poplar Creek that might be affected by project-related noise.”²⁰² The Staff identified the potential for four

¹⁹⁷ *Id.* at 1-3.

¹⁹⁸ Ex. NRC-004, Staff Pre-Hearing Responses, at 20-21.

¹⁹⁹ Memorandum from Christopher M. Regan, Director, Division of Rulemaking, Environmental, and Financial Support, NMSS, to John W. Lubinski, Director, NMSS, “Consideration of New Information Regarding Potential Cumulative Impacts from the Proposed Kairos Hermes 2 Test Reactor on the Kairos Hermes Construction Permit Review” (Sept. 7, 2023), Encl. at 7 (ML23220A164 (package)).

²⁰⁰ *Id.*

²⁰¹ Ex. NRC-008, FEIS, at 1-3, 3-28. Section 7 of the Endangered Species Act requires an agency, in consultation with the Secretary of the Interior or the Secretary of Commerce (as appropriate), to ensure that “any action authorized, funded, or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species.” Endangered Species Act § 7(a)(2), 16 U.S.C. § 1536(a)(2). The Fish and Wildlife Service (under the Department of the Interior) and the National Marine Fisheries Service (under the Department of Commerce) jointly administer the Act.

²⁰² Ex. NRC-008, FEIS, at 3-28.

federally listed endangered species, four federally listed threatened species, and one federal candidate species to occur at the site.²⁰³ At the request of the FWS, the Staff included in the FEIS a biological evaluation addressing the potential impacts from the Hermes project on these species.²⁰⁴ Because of historical disturbances to the affected site and the lack of disturbance to forest and other natural vegetation, wetlands, or aquatic habitat from construction activities, the Staff found that effects on terrestrial wildlife habitats would be minimal, and the potential ecological impacts of the proposed action would be small.²⁰⁵ The Staff determined that the Hermes project may affect, but is not likely to adversely affect (or would not affect), any of these endangered species.²⁰⁶ On January 27, 2023, the FWS concurred with the Staff's conclusions in its biological evaluation, which completed the NRC's responsibilities under section 7 of the Endangered Species Act.²⁰⁷

The Staff originally proposed to include a condition in the Environmental Protection Plan (EPP), which is incorporated into the construction permit, that Kairos must request a license amendment to incorporate the requirements of any Terms and Conditions set forth in the Incidental Take Statement of Biological Opinions issued subsequent to the effective date of this EPP.²⁰⁸ However, the Staff did not engage in formal consultation with FWS and, as a result, did not receive from FWS a biological opinion containing an Incidental Take Statement with Terms and Conditions.²⁰⁹ In response to our pre-hearing question asking about the necessity of this condition, the Staff elected to remove this condition from the construction permit and noted that it will consider whether the condition should be added at the operating license stage.²¹⁰

Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties listed or eligible for listing on the National Register of Historic Places.²¹¹ The section 106 process must be completed

²⁰³ *Id.* at 3-28. The endangered species are the gray bat, the Indiana bat, and two freshwater clam species — the finereyed pigtoe and shiny pigtoe. The threatened species are the northern long-eared bat, the spotfin chub, and two plant species — the Virginia spiraea and white fringeless orchid. The federal candidate species is the monarch butterfly. The Staff did not identify the presence of critical habitat within the action area. *Id.* at 3-28 to 3-29.

²⁰⁴ *Id.* at 3-29; *see id.* at 3-29 to 3-34 & tbl. 3-5.

²⁰⁵ *Id.* at 3-29.

²⁰⁶ *Id.* at 3-36.

²⁰⁷ *Id.* at 3-34.

²⁰⁸ *See* Ex. NRC-002-R, Draft Construction Permit, app. A, Environmental Protection Plan.

²⁰⁹ *See* Ex. NRC-004, Staff Pre-Hearing Responses, at 19.

²¹⁰ *Id.*

²¹¹ Section 106 of the NHPA requires federal agencies to consider the effects of their undertakings on historic properties listed or eligible for listing on the National Register of Historic Places. NHPA § 106, 54 U.S.C. § 306108. The NRC's undertaking is the issuance of a construction permit to Kairos

“prior to the issuance of any license.”²¹² The Staff considered the direct effects of the construction and operation of the Hermes facility on the 185-acre Hermes site, as well as the indirect effects of these activities on a 0.5-mile area around the site.²¹³ Relying on an environmental assessment prepared in 2011 by DOE for the East Tennessee Technology Park, the Staff initially concluded that there are likely no intact archaeological sites or prehistorical archaeological resources to be found within the APE due to extensive prior cut and fill excavation activities associated with construction of the former DOE facilities and their subsequent decontamination, demolition, and decommissioning.²¹⁴ However, in response to a comment on the DEIS from a consulting tribe, the Staff gathered additional information from DOE related to the geology and geomorphology of the site, as well as the total area and depth of prior disturbance at the former DOE facility locations.²¹⁵ Based on this new information and a discussion with DOE, the Staff determined that there is a potential for deeply buried archaeological deposits to occur within the APE.²¹⁶

To satisfy its consultation responsibilities under the NHPA, the Staff contacted the Tennessee Historical Commission, the Advisory Council on Historic Preservation, the National Park Service, and eighteen federally recognized Indian tribes.²¹⁷ The Tennessee Historical Commission advised that the Kairos project would not adversely affect the Manhattan Project National Historic Park, the only property located within the APE that is eligible for listing on the National Register of Historic Places.²¹⁸ In December 2022, after publication of the DEIS, one Tribe initiated government-to-government consultation, requested consulting party status, and requested that a cultural resources survey be conducted for the proposed project.²¹⁹ The Staff met with Kairos several times between February

that allows for the construction of the proposed Kairos Hermes project. Ex. NRC-008, FEIS, at 3-37.

²¹² 36 C.F.R. § 800.1(c).

²¹³ Ex. NRC-008, FEIS, at 3-38. Together, these areas constitute the area of potential effects (APE) for the NRC’s section 106 review. *See generally id.* at 3-37 to 3-47.

²¹⁴ *See* DEIS at 3-39, 3-41. The Staff also reviewed information held by the Tennessee Historical Commission and determined that there are no extant architectural resources within the direct-effects APE. *Id.*

²¹⁵ Ex. NRC-008, FEIS, at 3-41, *see id.* at G-18 to G-19.

²¹⁶ *Id.* at 3-41.

²¹⁷ *Id.* at 3-42.

²¹⁸ *Id.* at 3-41, 3-42. The Manhattan Project National Historical Park, which is jointly administered by DOE and the National Park Service, includes the K-25 History Center, which opened in 2020 and focuses on the men and women who built and operated the K-25 Gaseous Diffusion Plant during the Manhattan Project and Cold War. *Id.* at 3-41; *see National Park Service, K-25 History Center*, <https://www.nps.gov/places/k-25-history-center.htm> (last visited Nov. 15, 2023).

²¹⁹ Ex. NRC-008, FEIS, at 3-44, G-18 to G-19.

and April 2023 to discuss information needs to support the Staff's consultations with the Tribe. In April 2023, the Staff forwarded additional information Kairos provided to the consulting Tribe for review and comment. Between June and the publication of the FEIS in August 2023, the Staff met with the Tribe and Kairos to discuss the Tribe's request for an additional reconnaissance field investigation, updates to the archaeological resource monitoring and unanticipated discovery plan, and a path forward to support NHPA section 106 consultation closure.²²⁰

The Staff's section 106 consultation efforts were still in progress when we held the hearing on Kairos's construction permit application. Prior to the hearing, we asked the Staff to clarify the purpose of the additional reconnaissance field investigation and the basis for the Staff's conclusions regarding impacts to historic and cultural resources from the Hermes project.²²¹ At the hearing, the Staff informed us that Kairos had completed the requested field investigation, had used the resulting information to update its monitoring plan, and had incorporated the Staff's and Tribe's input into the plan.²²²

After the hearing, the Staff provided notice of consultation closure in a revised draft record of decision.²²³ The draft record of decision explained that after Kairos submitted the updated monitoring plan and Geoarchaeological Reconnaissance Survey Report, the Staff sent the monitoring plan and Kairos's report to the Tennessee Historical Commission and the consulting Tribe.²²⁴ The Tennessee Historical Commission responded that it had no objections to the project proceeding as proposed. Likewise, the consulting Tribe stated that it had no objections to the project proceeding, "provided the NRC agrees to notify the consulting Tribe of changes to project activities on the site and to any unanticipated discoveries."²²⁵ The Staff noted that these stipulations were previously discussed and agreed upon between the consulting parties and that the NRC's process for implementing these stipulations had been documented in a memorandum to the NRC's Federal Preservation Officer.²²⁶

²²⁰ *Id.* at 3-44 to 3-45; Ex. NRC-001, Staff Information Paper, at 6, 20; Ex. NRC-004, Staff Pre-Hearing Responses, at 21.

²²¹ *See* Pre-Hearing Questions Order at 14-15.

²²² *See* Tr. at 59 (Mr. Regan); *see also* Ex. NRC-003-R, Draft Record of Decision, at 7 (stating that the reconnaissance field investigation was completed in August 2023).

²²³ *See* Staff Revised Exhibit List at 1; Ex. NRC-003-R, Draft Record of Decision, at 7.

²²⁴ Ex. NRC-003-R, Draft Record of Decision, at 7.

²²⁵ *Id.*

²²⁶ *Id.* (citing Memorandum from Tamsen Dozier, NRC, to Christopher M. Regan, NRC, "Implementation of Provisions from Consultations Under Section 106 of the National Historic Preservation Act on the Kairos Hermes Test Reactor Construction Permit Review" (Nov. 30, 2023) (ML23318A516)).

Because there are no known historic properties on the proposed Hermes site and mitigation measures will be in place to protect any undiscovered resources, the Staff determined under the NHPA that there would be no adverse effects to historic properties from the proposed undertaking.²²⁷ For the same reason, the Staff concluded for the purposes of NEPA that the potential environmental impacts on cultural and historic resources from constructing, operating, and decommissioning the Hermes project would be small.²²⁸

In its environmental review of the Hermes project, the Staff also analyzed alternatives to the proposed action.²²⁹ This review included consideration of the no-action alternative and one alternative site.²³⁰ For the no-action alternative, i.e., if the construction permit were to be denied, the Staff found that the environmental effects described in the FEIS would not occur, but because these effects were found to be small, any environmental benefit from selecting the no-action alternative would be minimal.²³¹ Moreover, the proposed site would remain available for other government or private industrial development projects, which might lead to similar environmental effects as the proposed project.²³² In addition, this alternative would not meet the purpose of the proposed action — to demonstrate key elements of the Kairos Power Fluoride Salt-Cooled, High Temperature Reactor technology for possible future commercial deployment.²³³

After reviewing the applicant's systematic site-selection process and finding it to have been reasonable, the Staff examined an alternative site on federal land approximately twenty miles west of Idaho Falls, Idaho, termed the Eagle Rock site.²³⁴ The Staff compared the environmental costs and benefits of the proposed action at the Eagle Rock site with the costs and benefits of the proposed action at the Oak Ridge site. The Staff found that the impacts at the Eagle Rock site would be small for all resource areas except for visual, ecological, and cultural resources, which would experience moderate impacts from construction, reflecting the Staff's determination that building the Hermes facilities at the Eagle Rock site could be visually intrusive in that rural setting and "would require disturbance of soils supporting natural vegetation and po-

²²⁷ See *id.* at 7, 8; Ex. NRC-004, Staff Pre-Hearing Responses, at 21-22; Ex. NRC-008, FEIS, at 3-45 to 3-47.

²²⁸ See Ex. NRC-003-R, Draft Record of Decision, at 4, 6, 8; Ex. NRC-004, Staff Pre-Hearing Responses, at 21-22; Ex. NRC-008, FEIS, at 3-45 to 3-47.

²²⁹ Ex. NRC-008, FEIS, ch. 4.

²³⁰ *Id.* at 4-2.

²³¹ *Id.*

²³² *Id.*

²³³ *Id.* at 4-11; see *id.* at 1-3. For the same reason, Kairos and the Staff did not consider alternative technologies for the Hermes reactor. *Id.* at 4-1.

²³⁴ *Id.* at 4-2.

tentially containing subsurface archaeological resources.”²³⁵ With the Oak Ridge site presenting only small environmental impacts, as contrasted with the Eagle Rock site, the Staff concluded that the Oak Ridge site was the environmentally preferable alternative.²³⁶

On the basis of its environmental review, the Staff recommended issuing the construction permit to Kairos.²³⁷ At the operating license stage, the Staff will prepare a supplement to the FEIS to address any new and significant information that was not available during its review of the construction permit application.²³⁸

E. Findings

We have conducted an independent review of the sufficiency of the Staff’s safety findings, with particular attention to the topics discussed above. Our findings, however, are based on the record as a whole.

1. Safety Findings

Based on the evidence presented in the uncontested hearing, including the Staff’s review documents and the testimony provided, we find that Kairos has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and it has identified major features or components incorporated therein for the protection of the health and safety of the public.²³⁹ Further technical or design information as may be required to complete the safety analysis has reasonably been left for later consideration and will be supplied in the final safety analysis report. Kairos has described the safety features or components that require research and development and has identified and will establish a research and development program reasonably designed to resolve any safety questions associated with these features or components. On the basis of the foregoing, we find that there is reasonable assurance that open safety questions will be resolved satisfactorily at or before the latest date stated in the application for completion of construction of the proposed facility. Taking into consideration the site criteria in 10

²³⁵ *Id.* at 4-7 to 4-8, 4-10 & tbl. 4-1.

²³⁶ *Id.* at 4-10 to 4-11.

²³⁷ *Id.* at 5-11. The Staff conditioned its recommendation on completion of the NHPA section 106 process, which was not yet complete at the time the FEIS was issued. *Id.*

²³⁸ See 10 C.F.R. § 51.95(b); Ex. NRC-008, FEIS, at 1-3; Tr. at 132 (Mr. Doub) (stating that the Staff “would supplement the EIS and update the analysis for later life cycle stages should the applicant apply for future licenses for Hermes”).

²³⁹ See Ex. KRS-006, Kairos Pre-Hearing Responses, at 1-2.

C.F.R. Part 100, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

In making these findings, we also conclude that: (1) there is reasonable assurance that construction of the facility will not endanger the health and safety of the public, and the authorized activities can be conducted in compliance with the NRC's regulations, including the requirements in 10 C.F.R. Part 20; (2) Kairos is technically and financially qualified to engage in the activities authorized;²⁴⁰ (3) issuance of the construction permit will not be inimical to the common defense and security or to the health and safety of the public; and (4) Kairos's application meets the standards and requirements of the AEA and the NRC's regulations. Required notifications to other agencies have been duly made.²⁴¹ Additionally, we find that the Staff's proposed permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety.²⁴²

2. Environmental Findings

We also conducted an independent review of the Staff's environmental analysis in the FEIS, taking into account the particular requirements of NEPA. NEPA section 102(2)(A) requires agencies to use "a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts" in decision making that may impact the environment.²⁴³ We find that the environmental review team used the systematic, interdisciplinary approach that NEPA requires.²⁴⁴ The environmental review team consisted of over two dozen individuals with expertise in disciplines including ecology, geology, hydrology, human health, socioeconomics, and cultural resources.²⁴⁵

In addition to the general requirement that an EIS address the reasonably foreseeable environmental effects of a proposed action, NEPA section 102(2)(C) requires federal agencies to describe (1) any reasonably foreseeable adverse envi-

²⁴⁰ Ex. NRC-007, Safety Evaluation, chs. 12, 15; Ex. NRC-001, Staff Information Paper, at 22; Ex. KRS-001, Kairos Testimony, at 28-29.

²⁴¹ See, e.g., 10 C.F.R. § 2.104(a); Ex. NRC-004, Staff Pre-Hearing Responses, at 2; Ex. NRC-008, FEIS, app. B.

²⁴² See 10 C.F.R. §§ 50.35(b), 50.50; Ex. NRC-002-R, Draft Construction Permit, at 2-3.

²⁴³ NEPA § 102(2)(A), 42 U.S.C. § 4332(2)(A), as amended.

²⁴⁴ See, e.g., Tr. at 127-35 (Mr. Erwin, Ms. Dozier, Mr. Doub) (providing an overview of the Staff's environmental review methodology and findings); Ex. NRC-011, Staff Environmental Panel Presentation, at 4-16.

²⁴⁵ See Ex. NRC-008, FEIS, app. A tbl. A-1 (listing contributors from the NRC and Pacific Northwest National Laboratory).

ronmental effects which cannot be avoided should the proposal be implemented; (2) a reasonable range of alternatives to the proposed agency action, “including an analysis of any negative environmental impacts of not implementing the proposed agency action in the case of a no action alternative, that are technically and economically feasible, and meet the purpose and need of the proposal”; (3) the relationship between local short-term uses and long-term productivity of the environment; and (4) any irreversible and irretrievable commitments of federal resources associated with the proposed agency action.²⁴⁶ The Staff’s evaluation of alternatives is in chapter 4 of the FEIS and summarized in chapter 5; the other enumerated items are discussed under the heading of “resource commitments” in chapter 5.

Because the Staff issued the FEIS shortly after Congress amended section 102(2)(C), we asked the Staff to provide additional information explaining how its environmental review satisfied these standards, as amended by the Fiscal Responsibility Act.²⁴⁷ The Staff stated that prior to issuing the FEIS, the Staff reviewed the Fiscal Responsibility Act and the amendments to NEPA, and found that the FEIS was consistent with the Staff’s current understanding of these new requirements and that it had made all the findings necessary in the FEIS to support issuance of the construction permit.²⁴⁸ In response to our question, the Staff revised the record of decision to reflect this determination.²⁴⁹ In further questions to the Staff before and during the hearing, we asked the Staff to clarify whether the FEIS considered the irreversible and irretrievable commitment of exclusively federal resources involved in issuing a construction permit to Kairos, commensurate with the more specific analysis required by amended NEPA section 102(2)(C)(v).²⁵⁰ The Staff explained that its comprehensive analysis of irreversible and irretrievable resources in the FEIS accounted for federal resources as well.²⁵¹

²⁴⁶ NEPA § 102(2)(C)(i)-(v), 42 U.S.C. § 4332(2)(C)(i)-(v), as amended.

²⁴⁷ See Pre-Hearing Questions Order at 13, 15-16; Tr. at 150-51 (Commissioner Wright). As noted above, pursuant to 10 C.F.R. § 51.105(a), we must “determine whether the requirements of NEPA Sections 102(2)(A), (C), and (E) have been met,” and determine as a general matter “whether the NEPA review conducted by the NRC Staff has been adequate.” The amendments to NEPA which became effective upon enactment of the Fiscal Responsibility Act substantively affect the requirements in NEPA section 102(2)(C). For example, section 102(2)(C)(iii) has been amended to specify that the alternatives analysis must include a discussion of the negative impacts of not implementing the proposed action, and section 102(2)(C)(v) now requires an analysis of any irreversible and irretrievable commitment of federal resources, as opposed to the broader analysis of resources typically performed by the Staff to satisfy this requirement.

²⁴⁸ Ex. NRC-004, Staff Pre-Hearing Responses, at 19-20; Tr. at 62 (Mr. Regan).

²⁴⁹ Ex. NRC-004, Staff Pre-Hearing Responses, at 19-20.

²⁵⁰ See Pre-Hearing Questions Order at 15-16; Tr. at 150-51 (Commissioner Wright).

²⁵¹ See Ex. NRC-004, Staff Pre-Hearing Responses, at 24; Tr. at 151 (Mr. Doub).

a. Resource Commitments

Chapter 5 of the FEIS includes a table of the unavoidable adverse environmental impacts anticipated from construction, operation, and decommissioning, along with actions to mitigate those impacts.²⁵² As noted above, the Staff concluded that the impacts of the proposed action in all resource areas would be small, despite the potential unavoidable adverse impacts presented in this table. To address these unavoidable impacts, the Staff identified mitigation and control measures that Kairos could implement to lessen some of these potential adverse effects.²⁵³ Examples of such mitigation measures include instituting best management practices to control dust and manage stormwater runoff, developing an Archaeological Resources Monitoring and Unanticipated Discovery Plan to address unexpected discoveries of human remains and archaeological materials, and restoring temporarily disturbed lands with native plants or landscaping when no longer needed for construction or decommissioning activities.²⁵⁴

Concerning irreversible and irretrievable commitments of federal resources, the Staff found that construction of the Hermes facility would irretrievably commit capital, energy, labor, and material resources, some of which are expended by the NRC during its review of the Hermes application and would thus constitute federal resources.²⁵⁵ Although the Staff did not separately analyze federal resources in the FEIS, the Staff clarified that the FEIS analysis considered the totality of resources, including but not limited to federal resources, and therefore adequately addressed the requirements of the Fiscal Responsibility Act.²⁵⁶ With respect to other resources, the Staff concluded that construction of the Hermes facility would irretrievably consume energy, water, chemicals, fossil fuels, as well as construction materials, unless Kairos recycles them during decommissioning.²⁵⁷ Historic and cultural resources buried beneath the 1949 surface or in deeply buried paleosoils are nonrenewable and may be disturbed by construction, but impacts to any such resources would be mitigated by implementation of Kairos's Archaeological Resources Monitoring and Unanticipated Discovery Plan.²⁵⁸ During operations, uranium used in TRISO fuel pebbles would be irreversibly and irretrievably committed, and nonradiological irreversible impacts

²⁵² Ex. NRC-008, FEIS, at 5-6 to 5-8 tbl. 5-2.

²⁵³ *Id.* at 5-5.

²⁵⁴ *Id.* at 5-6 to 5-8 tbl. 5-2.

²⁵⁵ *Id.* at 5-10; Ex. NRC-004, Staff Pre-Hearing Responses, at 24; *see also* Tr. at 60 (Mr. Regan).

²⁵⁶ Tr. at 151 (Mr. Erwin, Mr. Doub).

²⁵⁷ Ex. NRC-008, FEIS, at 5-10.

²⁵⁸ *Id.*

on occupational human health could occur but are expected to be comparable to potential hazards at any industrial construction site.²⁵⁹

Finally, with respect to the relationship between local short-term uses and long-term productivity of the environment, the Staff found that the short-term uses of the environment — construction, operation, and decommissioning of the Hermes facility — would commit 30 acres of previously used industrial land over the life of the project and up to 108 acres of land during construction and decommissioning. Use of the entire 185-acre Hermes site would also be limited during operation due to its designation as the exclusion area.²⁶⁰ Further short-term uses of the environment would include consumption of small quantities of water supplied by municipal or commercial sources, small increases in demand for housing and services in the local community, an increase in the volume of traffic on local roads, and energy consumption.²⁶¹ The Staff noted that management and disposal of waste — radioactive, hazardous, and nonhazardous — would consume space at treatment, storage, or disposal facilities, and the use of land to meet waste disposal needs would reduce the long-term productivity of the land, but Hermes would contribute only a minimal amount to these reductions.²⁶² In addition, in the short term, the project would bring increased employment, expenditures, and tax revenues that would directly benefit local, regional, and State economies.²⁶³ As compared to the minimal impacts of the project over the short term, the Staff found substantial potential long-term benefits from the Hermes project, including demonstrating the commercial viability of its fluoride salt-cooled, high temperature reactor technology, generating data helpful in future commercial deployment of the technology, and helping the nation meet its climate change objectives with less reliance on more land-intensive energy generation processes.²⁶⁴

Having considered the unavoidable adverse environmental impacts and resource commitments — the environmental “costs” of the project — as well as the project’s benefits as summarized above, we agree with the Staff’s conclusion that the benefits of the project outweigh the costs.²⁶⁵

b. Alternatives

The alternatives analysis is the “heart of the environmental impact state-

²⁵⁹ *Id.* at 5-10 to 5-11.

²⁶⁰ *Id.* at 5-8.

²⁶¹ *Id.* at 5-9.

²⁶² *Id.*

²⁶³ *Id.*

²⁶⁴ *Id.*

²⁶⁵ *Cf.* 10 C.F.R. § 51.105(a); *see* Ex. NRC-008, FEIS, at 4-10.

ment.”²⁶⁶ NEPA section 102(2)(H), formerly section 102(2)(E), calls for agencies to study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts involving alternative uses of available resources.²⁶⁷ Further, section 102(2)(C) requires consideration of a reasonable range of alternatives to the proposed agency action that are technically and economically feasible, and meet the purpose and need of the proposed action. Where the alternatives considered include taking no action on the proposal, the analysis must consider any negative environmental impacts of not implementing the proposed agency action.²⁶⁸ Based on the Staff’s testimony at the hearing, as well as the discussion in the FEIS, we find that the environmental review identified an appropriate range of alternatives with respect to the no-action alternative and the alternative Eagle Rock site, and adequately described the environmental impacts of both alternatives. The Staff’s decision not to consider alternative technologies was reasonable in light of the purpose and need of the proposed project, which is to demonstrate and test its reactor technologies.²⁶⁹

We also find that the Staff adequately considered the negative impacts of not implementing the proposed action. For example, the Staff found that under the no-action alternative, Kairos could not build the proposed Hermes reactor, and therefore would not have an opportunity to test its technologies, design features, and safety functions at a reduced scale relative to a potential commercial power reactor. The Staff noted that forgoing the opportunity provided by Hermes may not necessarily preclude future development of reactors using the salt-cooled, fluoride high temperature reactor technologies but anticipated that it could slow or impede safe and efficient development of the technologies.²⁷⁰ The Staff also identified that any environmental benefits from implementing the proposed action would not be realized if the action is not approved, and additionally, the proposed site would remain available for other development projects, potentially giving rise to environmental impacts from land disturbance and construction from those projects in the future.²⁷¹

In sum, we find reasonable the Staff’s conclusion that, because there are no “environmentally preferable alternatives that meet the purpose and need of the

²⁶⁶ 10 C.F.R. pt. 51, subpt. A, app. A, § 5.

²⁶⁷ NEPA § 102(2)(H), 42 U.S.C. § 4332(2)(H). In its review of the potential impacts associated with the proposed action, the Staff did not identify any unresolved conflicts concerning alternative uses of available resources. Ex. NRC-008, FEIS, at 5-11.

²⁶⁸ NEPA § 102(2)(C)(iii), 42 U.S.C. § 4332(2)(C)(iii), as amended.

²⁶⁹ See Ex. NRC-008, FEIS, at 4-1, 5-4.

²⁷⁰ *Id.* at 4-2.

²⁷¹ *Id.*; see also *id.* at G-11.

proposed action, . . . there are no obviously superior alternatives to the proposed action from an environmental perspective.”²⁷²

c. Commission Determination

For each of the topics discussed at the hearing and in today’s decision, we find that the Staff’s review was reasonably supported in logic and fact and sufficient to support the Staff’s conclusions. Based on our review of the FEIS, we also find that the remainder of the FEIS was reasonably supported and sufficient to support the Staff’s conclusions. Therefore, as a result of our review of the FEIS, and in accordance with the notice of hearing for this uncontested proceeding, we find that the relevant requirements of NEPA section 102(2), and the applicable regulations in 10 C.F.R. Part 51, have been satisfied with respect to the construction permit application.²⁷³ We independently considered the final balance among conflicting factors contained in the record of this proceeding. We find, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, that the construction permit should be issued.

III. CONCLUSION

We find that, with respect to the safety and environmental issues before us, the Staff’s review of Kairos’s construction permit application was sufficient to support issuance of the construction permit. We *authorize* the Director of the Office of Nuclear Reactor Regulation to issue the permit for the construction of the Hermes Test Reactor. Additionally, we *authorize* the Staff to issue the record of decision.

IT IS SO ORDERED.

For the Commission

Tomas E. Herrera
Acting Secretary of the Commission

Dated at Rockville, Maryland,
this 12th day of December 2023.

²⁷² *Id.* at 4-11; *see also id.* at 5-5.

²⁷³ *See supra* note 26.

CASE NAME INDEX

KAIROS POWER LLC
CONSTRUCTION PERMIT; MEMORANDUM AND ORDER; Docket No. 50-7513-CP; CLI-23-5, 98 NRC 53 (2023)

NUCLEAR FUEL SERVICES, INC.
MATERIALS LICENSE AMENDMENT; MEMORANDUM AND ORDER; Docket No. 70-143-LA; CLI-23-3, 98 NRC 33 (2023)

PACIFIC GAS AND ELECTRIC COMPANY
MATERIALS LICCENSE RENEWAL; MEMORANDUM AND ORDER; Docket No. 72-26-ISFSI-MLR; CLI-23-4, 98 NRC 51 (2023)

MATERIALS LICENSE RENEWAL; MEMORANDUM AND ORDER (Granting the Hearing Request of San Luis Obispo Mothers for Peace); Docket No. 72-26-ISFSI-MLR (ASLBP No. 23-979-01-ISFSI-MLR-BD01); LBP-23-7, 98 NRC 1 (2023)

MATERIALS LICENSE RENEWAL; MEMORANDUM AND ORDER (Dismissing Contention and Terminating Proceeding); Docket No. 72-26-ISFSI-MLR (ASLBP No. 23-979-01-ISFSI-MLR-BD01); LBP-23-8, 98 NRC 29 (2023)

U.S. DEPARTMENT OF ENERGY
EXPORT LICENSE; MEMORANDUM AND ORDER; Docket No. 11006398 (License No. XSNM3819); CLI-23-2, 98 NRC 21 (2023)

CASE NAME INDEX

LEGAL CITATIONS INDEX
CASES

- AmerGen Energy Co.* (Oyster Creek Nuclear Generating Station), CLI-06-24, 64 NRC 111, 118 (2006)
contention admissibility rule is strict by design; LBP-23-7, 98 NRC 1, 11 (2023)
- City of Carmel-by-the-Sea v. Dept. of Transportation*, 123 F.3d 1142, 1150 (9th Cir. 1997)
rule of reason governs the scope of environmental analyses in an environmental report; LBP-23-7, 98 NRC 1, 19 n.27 (2023)
- Commonwealth Edison Co.* (Zion Nuclear Power Station, Units 1 and 2), CLI-99-4, 49 NRC 185, 194 (1999)
petitioner bears the burden of setting forth a clear and coherent argument for standing; LBP-23-7, 98 NRC 1, 9 (2023)
- Crow Butte Resources, Inc.* (Marsland Expansion Area), CLI-14-2, 79 NRC 11, 13-14 (2014)
Commission will defer to a board's rulings on contention admissibility unless an appeal demonstrates an error of law or abuse of discretion; CLI-23-3, 98 NRC 33, 36 (2023)
- Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004)
reasonably close causal relationship must exist between a proposed action and a purported environmental effect to compel consideration in the agency's NEPA analysis; CLI-23-3, 98 NRC 33, 39 (2023)
whether some of the U-metal produced at an enrichment facility may be further processed by NNSA at a later date to be used in a nuclear weapon is not within the NRC's scope of authority; CLI-23-3, 98 NRC 33, 39-40 (2023)
- Diversified Scientific Services, Inc.* (Export of Low-Level Waste), CLI-19-2, 89 NRC 229, 231 (2019)
persons without an affected interest are not as likely as persons with an affected interest to contribute to NRC decisionmaking; CLI-23-2, 98 NRC 21, 24 (2023)
- Diversified Scientific Services, Inc.* (Export of Low-Level Waste), CLI-19-2, 89 NRC 229, 232 (2019)
petitioner did not possess an interest affected by the proceeding because none of the asserted harms derive directly and specifically from exports that might be made if the application is granted; CLI-23-2, 98 NRC 21, 25 n.20 (2023)
- Diversified Scientific Services, Inc.* (Export of Low-Level Waste), CLI-19-2, 89 NRC 229, 232-33 (2019)
to demonstrate how a hearing would be in the public interest and assist NRC in making the required statutory and regulatory determinations, petitioner must show how a hearing would bring new information to light; CLI-23-2, 98 NRC 21, 26 (2023)
- Dominion Nuclear Connecticut, Inc.* (Millstone Nuclear Power Station, Units 2 and 3), CLI-05-24, 62 NRC 551, 559-60 (2005)
without a rule waiver determination by the Commission, a contention that challenges a rule is outside the scope of the proceeding and may not be given further consideration by a licensing board; CLI-23-3, 98 NRC 33, 49 n.105 (2023)
- Edlow International Co.* (Agent for the Government of India on Application to Export Special Nuclear Material), CLI-76-6, 3 NRC 563, 577 (1976)
NRC's responsibility for considering possibility of diversion as one aspect of protecting the common defense and security of the United States does not establish that diversion would cause any concrete personal or direct harm to petitioner that would entitle him to a voice in its proceedings; CLI-23-2, 98 NRC 21, 26 (2023)
- Entergy Nuclear Vermont Yankee, LLC, and Entergy Nuclear Operations, Inc.* (Vermont Yankee Nuclear Power Station), CLI-15-20, 82 NRC 211, 221 (2015)
for a contention to be admissible it must refer to specific portions of the application it disputes and provide the supporting reasons for each dispute; LBP-23-7, 98 NRC 1, 18 (2023)

LEGAL CITATIONS INDEX

CASES

- petitioner cannot rely on speculation to show existence of a genuine dispute; LBP-23-7, 98 NRC 1, 11 (2023)
- Exelon Generation Co.* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 34, 38-39 (2005)
Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53, 61 (2023)
- Exelon Generation Co.* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 34, 45 (2005)
Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53, 61 (2023)
Commission will not second-guess NRC Staff's underlying technical or factual findings on test reactor construction permit application unless it finds Staff's review incomplete or inadequate or its findings insufficiently explained in the record; CLI-23-5, 98 NRC 53, 61 (2023)
- Exelon Generation Co., LLC* (Braidwood Station, Units 1 and 2), CLI-22-1, 95 NRC 1, 7, (2022)
financial qualification discussions are not required to present absolutely certain predictions; LBP-23-7, 98 NRC 1, 15 n.21 (2023)
- Georgia Institute of Technology* (Georgia Tech Research Reactor, Atlanta, Georgia), CLI-95-12, 42 NRC 111, 115 (1995)
licensing board construes arguments on standing in favor of petitioner; LBP-23-7, 98 NRC 1, 9 (2023)
- Holtec International* (HI-STORE Consolidated Interim Storage Facility), CLI-20-4, 91 NRC 167, 177-78 (2020)
licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual's operation of a ranch 3 miles from the site was affirmed; LBP-23-7, 98 NRC 1, 10 n.14 (2023)
- Holtec International* (HI-STORE Consolidated Interim Storage Facility), CLI-20-4, 91 NRC 167, 190 (2020)
disputed issue is material if its resolution would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1, 13-14 (2023)
- Interim Storage Partners LLC* (WCS Consolidated Interim Storage Facility), CLI-20-15, 92 NRC 491, 494-96 (2020)
licensing board finding of proximity-plus standing in ISFSI proceeding based on individual who lived 6 miles from the site was affirmed; LBP-23-7, 98 NRC 1, 10 n.14 (2023)
- Interim Storage Partners LLC* (WCS Consolidated Interim Storage Facility), CLI-20-15, 92 NRC 491, 498 (2020)
appeal must address licensing board's reasoning for rejecting a contention and it is not enough for appellant to simply repeat arguments made before the board and hope for a different result from the Commission; CLI-23-3, 98 NRC 33, 42-43 n.62 (2023)
- Louisiana Energy Services, L.P.* (National Enrichment Facility), CLI-05-28, 62 NRC 721, 724 (2005)
domestic licensing action's impact on nuclear nonproliferation concerns is speculative and lacks a proximate causal connection to the proposed facility; CLI-23-3, 98 NRC 33, 37 (2023)
- Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983)
whether some of the U-metal produced at an enrichment facility may be further processed by NNSA at a later date to be used in a nuclear weapon is not within the NRC's scope of authority; CLI-23-3, 98 NRC 33, 39-40 (2023)
- Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 & n.7 (1983)
courts must draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not; CLI-23-3, 98 NRC 33, 39 n.36 (2023)
- NextEra Energy Point Beach, LLC* (Point Beach Nuclear Plant, Units 1 and 2), CLI-22-5, 95 NRC 97, 101, 105 (2022)
without a rule waiver determination by the Commission, a contention that challenges a rule is outside the scope of the proceeding and may not be given further consideration by a licensing board; CLI-23-3, 98 NRC 33, 49 n.105 (2023)
- Northern States Power Co.* (Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation), LBP-12-24, 76 NRC 503, 507 n.13 (2012)
licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing; LBP-23-7, 98 NRC 1, 9 (2023)

LEGAL CITATIONS INDEX

CASES

- NRDC v. NRC*, 647 F.2d 1345, 1365-68 (D.C. Cir. 1981)
NRC is not required to evaluate potential extraterritorial environmental effects of its domestic licensing decision; CLI-23-3, 98 NRC 33, 41 & n.45 (2023)
- Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413, 427, 428 (2002)
proximity-plus standing analysis is provided; LBP-23-7, 98 NRC 1, 9 (2023)
- Pacific Gas and Electric Co.* (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), LBP-02-23, 56 NRC 413, 427, 429 (2002)
persons living within 17 miles of an ISFSI site had standing; LBP-23-7, 98 NRC 1, 10 (2023)
- Power Authority of the State of New York* (James A. FitzPatrick Nuclear Power Plant; Indian Point, Unit 3), CLI-00-22, 52 NRC 266, 295 (2000)
contention admissibility criteria do not serve as a fortress to deny intervention but rather to serve to frame issues for an evidentiary hearing; CLI-23-3, 98 NRC 33, 38 (2023)
- Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-99-10, 49 NRC 318, 325 (1999)
petitioner bears the burden of demonstrating a contention's admissibility, and failure to satisfy any of the six admissibility criteria is grounds for rejecting a proposed contention; LBP-23-7, 98 NRC 1, 11 (2023)
- Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 348-49 (2002)
petitioner failed to show that applicant acted unreasonably in declining to consider the cumulative impacts of an event that, at this juncture is entirely speculative; LBP-23-7, 98 NRC 1, 19 n.27 (2023)
- Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), CLI-04-22, 60 NRC 125, 139 (2004)
petitioner need not prove its contention at the pleading stage, but must show a genuine dispute on a material issue of law or fact warranting a hearing; LBP-23-7, 98 NRC 1, 11 (2023)
presumption of proximity-plus standing requires a showing that the proposed licensing action involves a significant source of radiation that has an obvious potential for offsite consequences that will adversely affect the member; LBP-23-7, 98 NRC 1, 8 (2023)
- Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site), CLI-94-12, 40 NRC 64, 75 n.22 (1994)
presumption of proximity-plus standing requires a showing that the proposed licensing action involves a significant source of radiation that has an obvious potential for offsite consequences that will adversely affect the member; LBP-23-7, 98 NRC 1, 8 (2023)
- Sierra Club v. FERC*, 827 F.3d 36, 47 (D.C. Cir. 2016)
reasonably close causal relationship must exist between a proposed action and a purported environmental effect to compel consideration in the agency's NEPA analysis; CLI-23-3, 98 NRC 33, 39 (2023)
- Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-13-9, 78 NRC 551, 558-59 (2013)
Commission's customary practice is to vacate a challenged licensing board decision when the proceeding becomes moot; CLI-23-4, 98 NRC 51, 52 n.6 (2023)
- Southern Nuclear Operating Co., Inc.* (Vogtle Electric Generating Plant, Unit 3), CLI-20-6, 91 NRC 225, 238 (2020)
neither an organization's asserted claim nor its requested relief requires an individual member to participate in the proceeding; LBP-23-7, 98 NRC 1, 10 (2023)
organization demonstrates that it has members who have standing and have authorized it to represent them and request a hearing on their behalf; LBP-23-7, 98 NRC 1, 9 (2023)
organization shows that interests it seeks to protect on behalf of its members are germane to its own purpose; LBP-23-7, 98 NRC 1, 10 (2023)
standards for representational standing by an organization on behalf of its membership are described; LBP-23-7, 98 NRC 1, 8 (2023)
- Transnuclear, Inc.* (Export of 93.15% Enriched Uranium), CLI-94-1, 39 NRC 1, 5 (1994)
institutional interest in providing information to the public is insufficient to show an affected interest; CLI-23-2, 98 NRC 21, 25 (2023)

LEGAL CITATIONS INDEX

CASES

- Transnuclear, Inc.* (Export of 93.3% Enriched Uranium), CLI-00-16, 52 NRC 68, 72 (2000)
merely asserting a generalized interest in minimizing danger from nuclear weapons proliferation is insufficient to show an affected interest in an export proceeding; CLI-23-2, 98 NRC 21, 25 n.18 (2023)
nothing in petitioner's filings indicates it will be able to present significant information not already available to and considered by the Commission; CLI-23-2, 98 NRC 21, 27 n.31 (2023)
- Trout Unlimited v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974)
petitioner failed to show that applicant acted unreasonably in declining to consider the cumulative impacts of an event that, at this juncture, is entirely speculative; LBP-23-7, 98 NRC 1, 19 n.27 (2023)
- U.S. Army Installation Command* (Schofield Barracks, Oahu, Hawaii, and Pohakuloa Training Area, Island of Hawaii, Hawaii), CLI-10-20, 72 NRC 185, 189 (2010)
organization asserting representational standing in a materials licensing case can show a member has standing by demonstrating that the member satisfies the proximity-plus test; LBP-23-7, 98 NRC 1, 8 (2023)
organization that cannot satisfy the proximity-plus test must establish standing according to traditional standing principles; LBP-23-7, 98 NRC 1, 8 n.12 (2023)
presumption of proximity-plus standing requires a showing that the proposed licensing action involves a significant source of radiation that has an obvious potential for offsite consequences that will adversely affect the member; LBP-23-7, 98 NRC 1, 8 (2023)
- U.S. Department of Energy* (Export of 93.20% Enriched Uranium), CLI-16-15, 84 NRC 53, 57 (2016)
hearing on an export license will be granted when the Commission finds that the hearing will be in the public interest and will assist it in making the statutory determinations required by the Atomic Energy Act; CLI-23-2, 98 NRC 21, 24 (2023)
- U.S. Department of Energy* (Export of 93.20% Enriched Uranium), CLI-16-15, 84 NRC 53, 58 n.25 (2016)
to demonstrate how a hearing would be in the public interest and assist NRC in making the required statutory and regulatory determinations, petitioner must show how a hearing would bring new information to light; CLI-23-2, 98 NRC 21, 26 (2023)
- U.S. Department of Energy* (Export of 93.35% Enriched Uranium), CLI-20-2, 91 NRC 103, 114 (2020)
petitioners in export proceedings must persuade the Commission that holding a hearing would result in acquisition of new information that will assist in making statutory determinations concerning the application that could not be made based on the existing record; CLI-23-2, 98 NRC 21, 27 n.31 (2023)
- U.S. Department of Energy* (Export of 93.35% Enriched Uranium), CLI-20-2, 91 NRC 103, 115 (2020)
export licensing hearing requests were denied where there was ample information in the existing record to assess the merits of the issues petitioners raised; CLI-23-2, 98 NRC 21, 28 n.32 (2023)
- U.S. Department of Energy* (High-Level Waste Repository), CLI-09-14, 69 NRC 580, 588 (2009)
generalized assertions, without specific ties to NRC regulatory requirements, do not provide adequate support demonstrating existence of a genuine dispute of fact or law; LBP-23-7, 98 NRC 1, 11, 17 (2023)
- U.S. Department of Energy* (Plutonium Export License), CLI-04-17, 59 NRC 357, 365-66 (2004)
NRC's responsibility for considering possibility of diversion as one aspect of protecting the common defense and security of the United States does not establish that diversion would cause any concrete personal or direct harm to petitioner that would entitle him to a voice in its proceedings; CLI-23-2, 98 NRC 21, 26 (2023)
- U.S. Department of Energy* (Plutonium Export License), CLI-04-17, 59 NRC 357, 367 (2004)
petitioner fails to establish a nexus between the export license and the alleged injury from attack or diversion of nuclear material by terrorist organizations; CLI-23-2, 98 NRC 21, 25-26 & n.21 (2023)
- USEC Inc.* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 458 (2006)
Commission need not consider arguments made for the first time on appeal; CLI-23-3, 98 NRC 33, 40 (2023)
- USEC Inc.* (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 463 (2006)
safety-based contention that raises issues of international policy unrelated to the NRC's licensing criteria is beyond the scope of the proceeding; CLI-23-3, 98 NRC 33, 37 (2023)

LEGAL CITATIONS INDEX

CASES

USEC Inc. (American Centrifuge Plant), CLI-06-10, 63 NRC 451, 472 (2006)
expert who does not provide an explanation for his assertion does not identify an error of law or
abuse of discretion; CLI-23-3, 98 NRC 33, 46 (2023)

LEGAL CITATIONS INDEX REGULATIONS

- 10 C.F.R. 2.104(a)
other agencies must be notified regarding construction authorization for salt-cooled test reactor; CLI-23-5, 98 NRC 53, 86 (2023)
- 10 C.F.R. 2.109(b)
existing license will not be deemed to have expired until NRC Staff makes a final determination on a renewal application; LBP-23-7, 98 NRC 1, 6 n.6 (2023)
- 10 C.F.R. 2.309(a)
intervention petitioner must demonstrate standing and submit a timely contention that satisfies admissibility criteria; LBP-23-7, 98 NRC 1, 7-8 (2023)
licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing; LBP-23-7, 98 NRC 1, 9 (2023)
- 10 C.F.R. 2.309(c)
withdrawal of contention results in termination of adjudicatory proceeding, but petitioner reserves the right to submit a new hearing request if subsequent events or changes to ISFSI license renewal application give rise to new safety or environmental concerns; LBP-23-8, 98 NRC 29, 31 (2023)
- 10 C.F.R. 2.309(d)
intervention petitioner must demonstrate standing; LBP-23-7, 98 NRC 1, 7 (2023)
- 10 C.F.R. 2.309(d)(1)(i)-(iv)
standards for establishing standing are described; LBP-23-7, 98 NRC 1, 8 (2023)
- 10 C.F.R. 2.309(f)
contention admission criteria are necessary to ensure that hearings cover only genuine and pertinent issues of concern and that the issues are framed and supported concisely enough at the outset to ensure that the proceedings are effective and focused on real, concrete issues; CLI-23-3, 98 NRC 33, 38 n.29 (2023)
intervention petitioner must submit a timely contention that satisfies the admissibility criteria; LBP-23-7, 98 NRC 1, 7-8 (2023)
- 10 C.F.R. 2.309(f)(1)
contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1, 12 (2023)
- 10 C.F.R. 2.309(f)(1)(i)-(vi)
admissible contention must set forth with particularity the matters to be raised, be within the scope of the hearing, be material to the findings the agency must make in taking the requested action, be factually supported, and show that a genuine dispute exists with the application; CLI-23-3, 98 NRC 33, 36 (2023)
timely-filed contentions must satisfy each of the regulatory criteria to be admissible; LBP-23-7, 98 NRC 1, 11 (2023)
- 10 C.F.R. 2.309(f)(1)(iii)
contention seeking proliferation assessments under NEPA and the AEA is inadmissible; CLI-23-3, 98 NRC 33, 36 (2023)
contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1, 19 (2023)

LEGAL CITATIONS INDEX

REGULATIONS

- while hearings resolve substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing; CLI-23-3, 98 NRC 33, 38 (2023)
- 10 C.F.R. 2.309(f)(1)(v)
contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)
expert opinions that state a conclusion without explaining the basis for that conclusion do not fulfill the requirement that the contention have adequate support; CLI-23-3, 98 NRC 33, 46 (2023)
- 10 C.F.R. 2.309(f)(1)(vi)
contention alleging that discussion of purpose and need for proposed action in environmental report is improperly based on assumption that reactors will close when their operating licenses expire in 2024 and 2025 is inadmissible; LBP-23-7, 98 NRC 1, 16 (2023)
contention seeking proliferation assessments under NEPA and the AEA is inadmissible; CLI-23-3, 98 NRC 33, 36 (2023)
contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1, 19 (2023)
contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)
generalized assertion without a specific tie to an NRC regulatory requirement does not provide adequate support to demonstrate a genuine dispute of law or fact; LBP-23-7, 98 NRC 1, 17 (2023)
petitioner must provide sufficient information to show a genuine dispute on a material issue of law or fact; CLI-23-3, 98 NRC 33, 42 (2023)
while hearings resolve substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing; CLI-23-3, 98 NRC 33, 38 (2023)
- 10 C.F.R. 2.311(c)
petitioner whose hearing request has been wholly denied may appeal as of right; CLI-23-3, 98 NRC 33, 35 (2023)
- 10 C.F.R. 2.335
licensing boards may not entertain challenges to the validity of Commission regulations in individual licensing proceedings except in certain special circumstances in which a waiver is requested and found to be appropriate; CLI-23-3, 98 NRC 33, 49 n.105 (2023)
- 10 C.F.R. 2.335(b)
prima facie showing that intervenor must make to establish the requisite special circumstances for a rule waiver is required; CLI-23-3, 98 NRC 33, 49 n.105 (2023)
- 10 C.F.R. 2.1205(a)
sole admitted contention is dismissed as moot following statement of material facts curing financial qualifications deficiencies in materials license renewal application; LBP-23-8, 98 NRC 29, 30 (2023)
- 10 C.F.R. 20.1002
applicability of Part 20 to test reactor is discussed; CLI-23-5, 98 NRC 53, 60 n.22 (2023)
- 10 C.F.R. 50.2
definition of safety-related structures, systems, and components is not applicable to test reactor; CLI-23-5, 98 NRC 53, 67 (2023)
- 10 C.F.R. 50.35
TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53, 69 (2023)
- 10 C.F.R. 50.35(a)
findings that NRC must make that proposed test facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public are discussed; CLI-23-5, 98 NRC 53, 59 (2023)
- 10 C.F.R. 50.35(a)(2)
test reactor design information will be provided in the final safety analysis report filed as part of the operating license application; CLI-23-5, 98 NRC 53, 76 (2023)

LEGAL CITATIONS INDEX

REGULATIONS

- 10 C.F.R. 50.35(a)(4)(ii)
Hermes test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53, 75 (2023)
- 10 C.F.R. 50.35(b)
issuance of a construction permit does not constitute approval of test reactor design; CLI-23-5, 98 NRC 53, 66 n.73 (2023)
NRC Staff's proposed construction permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety; CLI-23-5, 98 NRC 53, 86 (2023)
- 10 C.F.R. 50.40
TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53, 69 (2023)
- 10 C.F.R. 50.40(a)
NRC Staff assessed whether preliminary safety analysis report for test reactor provides an acceptable basis for development of radiation protection and waste management programs and reasonable assurance of compliance with Part 20 during operation; CLI-23-5, 98 NRC 53, 60 (2023)
- 10 C.F.R. 50.40(a)-(d)
additional considerations for grant of test facility construction permit are described; CLI-23-5, 98 NRC 53, 59-60 (2023)
- 10 C.F.R. 50.40(b)
test reactor applicant must be technically and financially qualified to engage in the proposed activities; CLI-23-5, 98 NRC 53, 60 (2023)
- 10 C.F.R. 50.40(c)
issuance of test reactor construction permit must not be inimical to the common defense and security or to the health and safety of the public; CLI-23-5, 98 NRC 53, 60 (2023)
- 10 C.F.R. 50.40(d)
applicable requirements of Subpart A of 10 C.F.R. Part 51 to test reactor must be satisfied; CLI-23-5, 98 NRC 53, 60 (2023)
- 10 C.F.R. 50.50
NRC Staff's proposed construction permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety; CLI-23-5, 98 NRC 53, 86 (2023)
test reactor construction permit will be issued in such form and with such conditions and limitations that NRC deems appropriate and necessary; CLI-23-5, 98 NRC 53, 61 (2023)
- 10 C.F.R. 50.55(f)(1)
construction permit condition requiring test reactor licensee to implement its quality assurance program for design, procurement, and construction of the Hermes reactor is comparable to this regulation's requirements; CLI-23-5, 98 NRC 53, 76 (2023)
- 10 C.F.R. 50.55(f)(3)
construction permit condition will allow licensee to make changes to the quality assurance program without prior NRC approval; CLI-23-5, 98 NRC 53, 76-77 (2023)
- 10 C.F.R. 51.1
these regulations do not apply to any environmental effects that NRC's domestic licensing and related regulatory functions may have on the environment of foreign nations; CLI-23-3, 98 NRC 33, 41 n.45 (2023)
- 10 C.F.R. 51.10
environmental findings that NRC must make to support issuance of the test reactor construction permit are described; CLI-23-5, 98 NRC 53, 60 (2023)
- 10 C.F.R. 51.20(b)(1)
NRC Staff must prepare an environmental impact statement for test reactor construction permit application; CLI-23-5, 98 NRC 53, 78 (2023)
- 10 C.F.R. 51.23(c)
contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)

LEGAL CITATIONS INDEX

REGULATIONS

- 10 C.F.R. 51.30(a)(1)(ii)
contention asserting that environmental report is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)
- 10 C.F.R. 51.30(a)(1)(iii)
contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)
- 10 C.F.R. 51.45(b)(3)
contention asserting that environmental report is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1, 18 (2023)
- 10 C.F.R. 51.60
regulation is directed at what applicants must submit in an environmental report; CLI-23-3, 98 NRC 33, 46 n.84 (2023)
- 10 C.F.R. 51.60(a)
license amendment applicants that have already submitted an environmental report may limit their ER to an update or supplement of information previously submitted to reflect any significant environmental change; CLI-23-3, 98 NRC 33, 35 & n.6, 45 (2023)
- 10 C.F.R. 51.105(a)
costs and benefits of proposed test reactor are discussed; CLI-23-5, 98 NRC 53, 89 (2023)
environmental findings that NRC must make to support issuance of the test reactor construction permit are described; CLI-23-5, 98 NRC 53, 60 (2023)
NRC must determine whether the requirements of NEPA section 102(2)(A), (C), and (E) have been met and whether NRC Staff's environmental review has been adequate; CLI-23-5, 98 NRC 53, 87 n.247 (2023)
- 10 C.F.R. 51.105(a)(1)-(3)
Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53, 61 (2023)
- 10 C.F.R. 51.105(a)(1)-(4)
applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53, 60-61 & n.26 (2023)
- 10 C.F.R. 51.105(a)(5)
regulation applies only to contested proceedings; CLI-23-5, 98 NRC 53, 61 n.27 (2023)
- 10 C.F.R. Part 51, Subpart A, Appendix A, § 5
alternatives analysis is the heart of the environmental impact statement; CLI-23-5, 98 NRC 53, 89-90 (2023)
- 10 C.F.R. Part 70
health, safety, and security protections are designed to prevent nuclear equipment and material and classified information and sensitive technologies from becoming available to unauthorized foreign or domestic individuals or entities; CLI-23-3, 98 NRC 33, 37 (2023)
- 10 C.F.R. 70.32(a)(6)
NRC licensees are prohibited from using special nuclear material to construct nuclear weapons; CLI-23-3, 98 NRC 33, 39 n.38 (2023)
- 10 C.F.R. 72.11(a)
applicant must provide NRC with information that is both correct and sufficient to demonstrate satisfaction of NRC's safety regulations; LBP-23-7, 98 NRC 1, 12 n.17, 1 (2023)
- 10 C.F.R. 72.22(e)
contention that ISFSI license renewal application fails to provide accurate and complete information regarding financial qualifications analysis is withdrawn; LBP-23-8, 98 NRC 29, 30 (2023)
contention that ISFSI license renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1, 7 & n.10, 12, 15 & n.22 (2023)
if reactor unit is still operating, decommissioning trust fund would not be available for ISFSI operations; LBP-23-7, 98 NRC 1, 15 (2023)

LEGAL CITATIONS INDEX

REGULATIONS

- 10 C.F.R. 72.22(e)(2)
conclusion that renewal application contains a deficient financial qualifications analysis regarding applicant's ability to cover estimated operating costs over the planned life of the ISFSI would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1, 13-1 (2023)
license renewal application must show that applicant possesses the necessary funds or has reasonable assurance of obtaining them to cover estimated operating costs over the planned life of the ISFSI; LBP-23-7, 98 NRC 1, 12 n.15, 1 (2023)
- 10 C.F.R. 72.30(a) and (b)
contention that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to decommission the ISFSI is admissible; LBP-23-7, 98 NRC 1, 7 n.10 (2023)
- 10 C.F.R. 72.210
applicant could elect to develop spent fuel storage capacity in a separate spent fuel storage facility under its general license; LBP-23-7, 98 NRC 1, 17 (2023)
- 10 C.F.R. Parts 73 and 74, and 95
NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33, 39 n.33 (2023)
- 10 C.F.R. 74.59
contention that fuel cycle facility regulations are inadequate because they lack stringent quality assurance requirements is inadmissible; CLI-23-3, 98 NRC 33, 48-49 (2023)
- 10 C.F.R. Part 95
NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33, 39 n.33 (2023)
- 10 C.F.R. Part 100
proposed salt-cooled test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53, 85-86 (2023)
- 10 C.F.R. Part 110, Subparts H, I, and J
hearing procedures for export license proceedings are generally contained in these regulations; CLI-23-2, 98 NRC 21, 24 n.10 (2023)
- 10 C.F.R. 100.11(a)
maximum hypothetical accident analysis for test reactor demonstrates that dose consequences are within the accident dose criteria; CLI-23-5, 98 NRC 53, 72 (2023)
- 10 C.F.R. 110.41
NRC must submit DOE/NNSA export license applications to the Executive Branch for review; CLI-23-2, 98 NRC 21, 23 (2023)
- 10 C.F.R. 110.81
written comments from the public on export license applications are encouraged and NRC will consider and, if appropriate, respond to any comments received; CLI-23-2, 98 NRC 21, 28 (2023)
- 10 C.F.R. 110.81(a)
petition and supplemental filing are properly considered as a public comment on the application and are therefore referred to the Office of International Programs to address as a public comment; CLI-23-2, 98 NRC 21, 28 (2023)
- 10 C.F.R. 110.82(b)
if a hearing request or intervention petition asserts an interest that may be affected, the Commission will consider nature of the alleged interest, its relationship to issuance or denial, and possible effect of any order on that interest; CLI-23-2, 98 NRC 21, 24 (2023)
- 10 C.F.R. 110.82(b)(4)
export license hearing request must specify, when a person asserts that his interest may be affected, both the facts pertaining to petitioner's interest and how it may be affected; CLI-23-2, 98 NRC 21, 24 (2023)

LEGAL CITATIONS INDEX

REGULATIONS

10 C.F.R. 110.84(a)

hearing on an export license will be granted when the Commission finds that the hearing will be in the public interest and will assist it in making the statutory determinations required by the Atomic Energy Act; CLI-23-2, 98 NRC 21, 24 (2023)

to demonstrate how a hearing would be in the public interest and assist NRC in making the required statutory and regulatory determinations, petitioner must show how a hearing would bring new information to light; CLI-23-2, 98 NRC 21, 26 (2023)

36 C.F.R. 800.1(c)

NRC must consider effects of construction of test reactor on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53, 82 (2023)

LEGAL CITATIONS INDEX STATUTES

Atomic Energy Act, 53(e)(6)
NRC licensees are prohibited from using special nuclear material to construct nuclear weapons; CLI-23-3, 98 NRC 33, 39 n.38 (2023)

Atomic Energy Act, 126, 42 U.S.C. § 2155
NRC must submit DOE/NNSA export license applications to the Executive Branch for review; CLI-23-2, 98 NRC 21, 23 (2023)

Atomic Energy Act, 126a, 42 U.S.C. § 2155a
hearing on an export license will be granted when the Commission finds that the hearing will be in the public interest and will assist it in making the statutory determinations required by the Act; CLI-23-2, 98 NRC 21, 24 (2023)

Atomic Energy Act, 189a, 42 U.S.C. § 2239(a)
NRC must hold a hearing on an application to construct a testing facility; CLI-23-5, 98 NRC 53, 58 (2023)

Endangered Species Act, 7(a)(2), 16 U.S.C. § 1536(a)(2)
protection of endangered species is described; CLI-23-5, 98 NRC 53, 80 n.201 (2023)

Fiscal Responsibility Act of 2023, Pub. L. No. 118-5, 137 Stat. 10, § 321
applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53, 60 n.26 (2023)

National Environmental Policy Act, 102(2), § 4332(2)
environmental findings that NRC must make to support issuance of the test reactor construction permit are described; CLI-23-5, 98 NRC 53, 60 (2023)

National Environmental Policy Act, 102(2)(A), 42 U.S.C. § 4332(2)(A)
agencies must use a systematic, interdisciplinary approach ensuring the integrated use of natural and social sciences and environmental design arts in decision making that may impact the environment; CLI-23-5, 98 NRC 53, 86 (2023)

National Environmental Policy Act, 102(2)(C)(i)-(v), 42 U.S.C. § 4332(2)(C)(i)-(v)
federal agencies must describe unavoidable adverse environmental effects, range of alternatives, relationship between local short-term uses and long-term productivity of the environment, and irreversible and irretrievable commitments of federal resource; CLI-23-5, 98 NRC 53, 86-87 (2023)

National Environmental Policy Act, 102(2)(C)(iii), 42 U.S.C. § 102(2)(C)(iii)
alternatives analysis must consider any negative environmental impacts of not implementing the proposed agency action; CLI-23-5, 98 NRC 53, 87 n.247, 90 (2023)

National Environmental Policy Act, 102(2)(C)(v)
analysis of any irreversible and irretrievable commitment of federal resources is required; CLI-23-5, 98 NRC 53, 87 n.247 (2023)

National Environmental Policy Act, 102(2)(H), 42 U.S.C. § 4332(2)(H)
agencies must study, develop, and describe appropriate alternatives to recommended courses of action in any proposal involving unresolved conflicts in alternative uses of available resources; CLI-23-5, 98 NRC 53, 90 (2023)

applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53, 60, 90 (2023)

National Historic Preservation Act, 106, 54 U.S.C. § 306108
federal agencies must consider effects of their undertakings on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53, 81-82 (2023)

SUBJECT INDEX

AIR POLLUTION

contention that air emissions from the U-Metal activity would double if the license amendment request were granted was inadmissible; CLI-23-3, 98 NRC 33 (2023)

AIRCRAFT CRASHES

safety-related portion of test reactor building will be designed to withstand impact of general aviation aircraft associated with operations at proposed airport; CLI-23-5, 98 NRC 53 (2023)

APPEALS

appellant must address licensing board's reasoning for rejecting a contention and it is not enough for appellant to simply repeat arguments made before the board and hope for a different result from the Commission; CLI-23-3, 98 NRC 33 (2023)

expert who does not provide an explanation for his assertion does not identify an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

petitioner whose hearing request has been wholly denied may appeal as of right; CLI-23-3, 98 NRC 33 (2023)

APPELLATE REVIEW

Commission need not consider arguments made for the first time on appeal; CLI-23-3, 98 NRC 33 (2023)
Commission will defer to a board's rulings on contention admissibility unless an appeal demonstrates an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

ATOMIC ENERGY ACT

NRC must hold a hearing on an application to construct a testing facility; CLI-23-5, 98 NRC 53 (2023)

BENEFIT-COST ANALYSIS

costs and benefits of proposed test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

BURDEN OF PERSUASION

petitioner bears the burden of demonstrating a contention's admissibility, and failure to satisfy any of the six admissibility criteria is grounds for rejecting a proposed contention; LBP-23-7, 98 NRC 1 (2023)
petitioner bears the burden of setting forth a clear and coherent argument for standing; LBP-23-7, 98 NRC 1 (2023)

CHEMICAL CONTAMINANTS

contention that materials license amendment applicant inadequately considered legacy contamination in cumulative effects analysis is inadmissible; CLI-23-3, 98 NRC 33 (2023)

COMMON DEFENSE AND SECURITY

issuance of test reactor construction permit must not be inimical to the common defense and security or to the health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

CONSIDERATION OF ALTERNATIVES

agencies must study, develop, and describe appropriate alternatives to recommended courses of action in any proposal involving unresolved conflicts in alternative uses of available resources; CLI-23-5, 98 NRC 53 (2023)

alternatives analysis is the heart of the environmental impact statement; CLI-23-5, 98 NRC 53 (2023)

alternatives analysis must include a discussion of the negative impacts of not implementing the proposed action; CLI-23-5, 98 NRC 53 (2023)

contention asserting that environmental report is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

CONSTRUCTION AUTHORIZATION

other agencies must be notified of construction authorization for salt-cooled test reactor; CLI-23-5, 98 NRC 53 (2023)

proposed salt-cooled test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

CONSTRUCTION PERMIT PROCEEDING

additional considerations for grant of test facility construction permit are described in 10 C.F.R. 50.40(a)-(d); CLI-23-5, 98 NRC 53 (2023)

Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53 (2023)

Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

Commission will not second-guess NRC Staff's underlying technical or factual findings on test reactor construction permit application unless it finds Staff's review incomplete or inadequate or its findings insufficiently explained in the record; CLI-23-5, 98 NRC 53 (2023)

environmental findings that NRC must make to support issuance of the test reactor construction permit are described in 10 C.F.R. 51.105(a); CLI-23-5, 98 NRC 53 (2023)

findings that NRC must make that proposed test facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public are in section 50.35(a); CLI-23-5, 98 NRC 53 (2023)

NRC must hold a hearing on an application to construct a testing facility; CLI-23-5, 98 NRC 53 (2023)

CONSTRUCTION PERMITS

applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53 (2023)

applicable requirements of Subpart A of 10 C.F.R. Part 51 to test reactor must be satisfied; CLI-23-5, 98 NRC 53 (2023)

Hermes test reactor can be constructed and operated at the proposed location without undue risk to health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

issuance of a construction permit does not constitute approval of test reactor design; CLI-23-5, 98 NRC 53 (2023)

issuance of test reactor construction permit must not be inimical to the common defense and security or to health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

NRC must consider effects of construction of test reactor on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53 (2023)

NRC Staff must prepare an environmental impact statement for test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

NRC Staff's proposed construction permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety; CLI-23-5, 98 NRC 53 (2023)

test reactor construction permit will be issued in such form and with such conditions and limitations that NRC deems appropriate and necessary; CLI-23-5, 98 NRC 53 (2023)

CONTAINMENT DESIGN

functional containment concept of Hermes test reactor is described; CLI-23-5, 98 NRC 53 (2023)

low-leakage, pressure-retaining containment structures are not necessary for test reactor; CLI-23-5, 98 NRC 53 (2023)

CONTENTIONS, ADMISSIBILITY

admissibility criteria do not serve as a fortress to deny intervention but rather to serve to frame issues for an evidentiary hearing; CLI-23-3, 98 NRC 33 (2023)

admissible contention must set forth with particularity the matters to be raised, be within the scope of the hearing, be material to the findings the agency must make in taking the requested action, be factually supported, and show that a genuine dispute exists with the application; CLI-23-3, 98 NRC 33 (2023)

appeal must address licensing board's reasoning for rejecting a contention and it is not enough for appellant to simply repeat arguments made before the board and hope for a different result from the Commission; CLI-23-3, 98 NRC 33 (2023)

SUBJECT INDEX

Commission will defer to a board's rulings on contention admissibility unless an appeal demonstrates an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

concern relating to historic groundwater plumes and the possibility of sinkholes in the uranium enrichment facility area is inadmissible; CLI-23-3, 98 NRC 33 (2023)

concern that materials license amendment applicant inadequately considered legacy contamination in cumulative effects analysis is inadmissible; CLI-23-3, 98 NRC 33 (2023)

contention admissibility rule is strict by design; LBP-23-7, 98 NRC 1 (2023)

contention admission criteria are necessary to ensure that hearings cover only genuine and pertinent issues of concern and that issues are framed and supported concisely enough at the outset to ensure that the proceedings are effective and focused on real, concrete issues; CLI-23-3, 98 NRC 33 (2023)

contention alleging that discussion of purpose and need for the proposed action in the environmental report is improperly based on the assumption that reactors will close when their operating licenses expire in 2024 and 2025 is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)

contention asserting that environmental report is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention must refer to specific portions of the application it disputes and provide the supporting reasons for each dispute; LBP-23-7, 98 NRC 1 (2023)

contention seeking proliferation assessments under NEPA and the AEA is inadmissible; CLI-23-3, 98 NRC 33 (2023)

contention that air emissions from U-Metal activity would double if the license amendment request were granted is inadmissible; CLI-23-3, 98 NRC 33 (2023)

contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention that fuel cycle facility regulations are inadequate because they lack stringent quality assurance requirements is inadmissible; CLI-23-3, 98 NRC 33 (2023)

contention that new process will generate purified high-enriched uranium material for inclusion in nuclear weapons is inadmissible; CLI-23-3, 98 NRC 33 (2023)

disputed issue is material if its resolution would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1 (2023)

domestic licensing action's impact on nuclear nonproliferation concerns is speculative and lacks a proximate causal connection to the proposed facility; CLI-23-3, 98 NRC 33 (2023)

expert opinions that state a conclusion without explaining the basis for that conclusion do not fulfill the requirement that the contention have adequate support; CLI-23-3, 98 NRC 33 (2023)

generalized assertion without a specific tie to an NRC regulatory requirement does not provide adequate support to demonstrate a genuine dispute of law or fact; LBP-23-7, 98 NRC 1 (2023)

licensing boards may not entertain challenges to the validity of Commission regulations in individual licensing proceedings except in certain special circumstances in which a waiver is requested and found to be appropriate; CLI-23-3, 98 NRC 33 (2023)

petitioner bears the burden of demonstrating a contention's admissibility, and failure to satisfy any of the six admissibility criteria is grounds for rejecting a proposed contention; LBP-23-7, 98 NRC 1 (2023)

petitioner cannot rely on speculation to show existence of a genuine dispute; LBP-23-7, 98 NRC 1 (2023)

petitioner failed to show that applicant acted unreasonably in declining to consider the cumulative impacts of an event that, at this juncture, is entirely speculative; LBP-23-7, 98 NRC 1 (2023)

petitioner must provide sufficient information to show a genuine dispute on a material issue of law or fact; CLI-23-3, 98 NRC 33 (2023)

petitioner need not prove its contention at the pleading stage, but must show a genuine dispute on a material issue of law or fact warranting a hearing; LBP-23-7, 98 NRC 1 (2023)

prima facie showing that intervenor must make to establish the requisite special circumstances for a rule waiver is provided; CLI-23-3, 98 NRC 33 (2023)

SUBJECT INDEX

safety-based contention that raises issues of international policy unrelated to the NRC's licensing criteria is beyond the scope of the proceeding; CLI-23-3, 98 NRC 33 (2023)

timely-filed contentions must satisfy each of the regulatory criteria to be admissible; LBP-23-7, 98 NRC 1 (2023)

while hearings resolve substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing; CLI-23-3, 98 NRC 33 (2023)

without a rule waiver determination by the Commission, a contention that challenges a rule is outside the scope of the proceeding and may not be given further consideration by a licensing board; CLI-23-3, 98 NRC 33 (2023)

COOLANT

See Reactor Coolant

CULTURAL RESOURCES

mitigation of impacts to historic and cultural resources buried beneath the site of proposed test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

NRC must consider effects of construction of test reactor on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53 (2023)

CUMULATIVE IMPACTS ANALYSIS

contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention that materials license amendment applicant inadequately considered legacy contamination in cumulative effects analysis is inadmissible; CLI-23-3, 98 NRC 33 (2023)

petitioner failed to show that applicant acted unreasonably in declining to consider the cumulative impacts of an event that, at this juncture, is entirely speculative; LBP-23-7, 98 NRC 1 (2023)

DECAY HEAT REMOVAL SYSTEMS

passive decay heat removal does not require an emergency core cooling system for decay heat removal or replacement of coolant inventory; CLI-23-5, 98 NRC 53 (2023)

DECISION ON THE MERITS

while hearings resolve substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing; CLI-23-3, 98 NRC 33 (2023)

See also LICENSING BOARD DECISIONS

DECOMMISSIONING FUND DISBURSEMENTS

if reactor unit is still operating, decommissioning trust fund would not be available for ISFSI operations; LBP-23-7, 98 NRC 1 (2023)

DEFINITIONS

section 50.2 definition of safety-related structures, systems, and components is not applicable to test reactor; CLI-23-5, 98 NRC 53 (2023)

DESIGN

See Containment Design; Reactor Design

EMERGENCY PLANNING ZONES

Hermes test reactor EPZ size is appropriate and consistent with guidance based on preliminary maximum hypothetical accident calculations; CLI-23-5, 98 NRC 53 (2023)

ENDANGERED SPECIES ACT

protection of endangered species is described; CLI-23-5, 98 NRC 53 (2023)

ENVIRONMENTAL ANALYSIS

agencies must use a systematic, interdisciplinary approach ensuring the integrated use of natural and social sciences and environmental design arts in decision making that may impact the environment; CLI-23-5, 98 NRC 53 (2023)

rule of reason governs the scope of environmental analyses in an environmental report; LBP-23-7, 98 NRC 1 (2023)

ENVIRONMENTAL EFFECTS

Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

courts must draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not; CLI-23-3, 98 NRC 33 (2023)

SUBJECT INDEX

NRC is not required to evaluate potential extraterritorial effects of its domestic licensing decision;
CLI-23-3, 98 NRC 33 (2023)

ENVIRONMENTAL IMPACT STATEMENT

alternatives analysis is the heart of the EIS; CLI-23-5, 98 NRC 53 (2023)
alternatives analysis must consider any negative environmental impacts of not implementing the proposed agency action; CLI-23-5, 98 NRC 53 (2023)
alternatives analysis must include a discussion of the negative impacts of not implementing the proposed action; CLI-23-5, 98 NRC 53 (2023)
analysis of any irreversible and irretrievable commitment of federal resources is required; CLI-23-5, 98 NRC 53 (2023)
federal agencies must describe unavoidable adverse environmental effects, range of alternatives, relationship between local short-term uses and long-term productivity of the environment, and irreversible and irretrievable commitments of federal resource; CLI-23-5, 98 NRC 53 (2023)
NRC Staff must prepare an EIS for test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

ENVIRONMENTAL REPORT

contention that discussion of purpose and need for the proposed action in the ER is improperly based on the assumption that reactors will close when their operating licenses expire in 2024 and 2025 is inadmissible; LBP-23-7, 98 NRC 1 (2023)
contention that ER inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)
contention that ER is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)
license amendment applicants that have already submitted an ER may limit their ER to an update or supplement of information previously submitted to reflect any significant environmental change; CLI-23-3, 98 NRC 33 (2023)
purpose of ER is to facilitate NRC Staff's preparation of its environmental assessment or environmental impact statement; CLI-23-3, 98 NRC 33 (2023)
rule of reason governs the scope of environmental analyses in an ER; LBP-23-7, 98 NRC 1 (2023)
section 51.60 of 10 C.F.R. is directed at what applicants must submit in an ER; CLI-23-3, 98 NRC 33 (2023)

ENVIRONMENTAL REVIEW

Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53 (2023)
environmental findings that NRC must make to support issuance of the test reactor construction permit are described in 10 C.F.R. 51.105(a); CLI-23-5, 98 NRC 53 (2023)
NRC must determine whether the requirements of NEPA section 102(2)(A), (C), and (E) have been met and whether NRC Staff's environmental review has been adequate; CLI-23-5, 98 NRC 53 (2023)
reasonably close causal relationship must exist between a proposed action and a purported environmental effect to compel consideration in the agency's NEPA analysis; CLI-23-3, 98 NRC 33 (2023)

EXPIRATION OF LICENSE

existing license will not be deemed to have expired until NRC Staff makes a final determination on a renewal application; LBP-23-7, 98 NRC 1 (2023)

FINANCIAL QUALIFICATIONS

conclusion that renewal application contains a deficient financial qualifications analysis regarding applicant's ability to cover estimated operating costs over the planned life of the ISFSI would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1 (2023)
contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)
financing discussions are not required to present absolutely certain predictions; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

license renewal application must show that applicant possesses the necessary funds or has reasonable assurance of obtaining the necessary funds to cover the estimated operating costs over the planned life of the ISFSI; LBP-23-7, 98 NRC 1 (2023)

test reactor applicant must be technically and financially qualified to engage in the proposed activities; CLI-23-5, 98 NRC 53 (2023)

FINDINGS OF FACT

environmental findings that NRC must make to support issuance of the test reactor construction permit are described in 10 C.F.R. 51.105(a); CLI-23-5, 98 NRC 53 (2023)

findings that NRC must make that proposed test facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public are in section 50.35(a); CLI-23-5, 98 NRC 53 (2023)

FISCAL RESPONSIBILITY ACT OF 2023

applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53 (2023)

FUEL

pairing of high-temperature-tolerant TRISO fuel and low-pressure, single-phase, chemically stable reactor coolant reduces number of potential fuel-damage scenarios; CLI-23-5, 98 NRC 53 (2023)

TRISO fuel particles embedded in a carbon matrix pebble will be used in test reactor; CLI-23-5, 98 NRC 53 (2023)

TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53 (2023)

GENERAL LICENSES

applicant could elect to develop spent fuel storage capacity in a separate spent fuel storage facility under its general license; LBP-23-7, 98 NRC 1 (2023)

GEOLOGIC CONDITIONS

construction permit condition directs licensee to confirm condition of bedrock supporting facility and provides for examination of excavations by NRC Staff; CLI-23-5, 98 NRC 53 (2023)

GROUNDWATER

concern relating to historic groundwater plumes and the possibility of sinkholes in the uranium enrichment facility area is inadmissible; CLI-23-3, 98 NRC 33 (2023)

HEALTH AND SAFETY

proposed salt-cooled test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

HEARING DENIALS

petitioner whose hearing request has been wholly denied may appeal as of right; CLI-23-3, 98 NRC 33 (2023)

HYDROGEOLOGY

concern relating to historic groundwater plumes and the possibility of sinkholes in the uranium enrichment facility area is inadmissible; CLI-23-3, 98 NRC 33 (2023)

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)

if reactor unit is still operating, decommissioning trust fund would not be available for ISFSI operations; LBP-23-7, 98 NRC 1 (2023)

license renewal application must show that applicant possesses the necessary funds or has reasonable assurance of obtaining the necessary funds to cover the estimated operating costs over the planned life of the ISFSI; LBP-23-7, 98 NRC 1 (2023)

INDEPENDENT SPENT FUEL STORAGE INSTALLATION PROCEEDINGS

contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention that environmental report inadequately considers the cumulative impacts of the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

contention that environmental report is deficient because it fails to consider a reasonable array of alternatives for the proposed action is inadmissible; LBP-23-7, 98 NRC 1 (2023)

contention that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)

licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual who lived 6 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)

licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual's operation of a ranch 3 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)

organization asserting representational standing in a materials licensing case can show a member has standing by demonstrating that the member satisfies the proximity-plus test; LBP-23-7, 98 NRC 1 (2023)

persons living within 17 miles of an ISFSI site had standing; LBP-23-7, 98 NRC 1 (2023)

INTERVENTION

petitioner must demonstrate standing and submit a timely contention that satisfies the admissibility criteria; LBP-23-7, 98 NRC 1 (2023)

INTERVENTION RULINGS

Commission will defer to a board's rulings on contention admissibility unless an appeal demonstrates an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

licensing board construes arguments on standing in favor of petitioner; LBP-23-7, 98 NRC 1 (2023)

licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing; LBP-23-7, 98 NRC 1 (2023)

LICENSE RENEWAL APPLICATIONS

applicant must provide NRC with information that is both correct and sufficient to demonstrate satisfaction of NRC's safety regulations; LBP-23-7, 98 NRC 1 (2023)

conclusion that renewal application contains a deficient financial qualifications analysis regarding applicant's ability to cover estimated operating costs over the planned life of the ISFSI would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1 (2023)

contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)

financial qualification discussions are not required to present absolutely certain predictions; LBP-23-7, 98 NRC 1 (2023)

LICENSE RENEWALS

existing license will not be deemed to have expired until NRC Staff makes a final determination on a renewal application; LBP-23-7, 98 NRC 1 (2023)

license renewal application must show that applicant possesses the necessary funds or has reasonable assurance of obtaining the necessary funds to cover the estimated operating costs over the planned life of the ISFSI; LBP-23-7, 98 NRC 1 (2023)

LICENSING BOARD DECISIONS

Commission's customary practice is to vacate a challenged licensing board decision when the proceeding becomes moot; CLI-23-4, 98 NRC 51 (2023)

LICENSING BOARDS, AUTHORITY

licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing; LBP-23-7, 98 NRC 1 (2023)

MANDATORY HEARINGS

Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53 (2023)

Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

NRC must hold a hearing on an application to construct a testing facility; CLI-23-5, 98 NRC 53 (2023)

MATERIAL INFORMATION

applicant must provide NRC with information that is both correct and sufficient to demonstrate satisfaction of NRC's safety regulations; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

MATERIALITY

conclusion that renewal application contains a deficient financial qualifications analysis regarding applicant's ability to cover estimated operating costs over the planned life of the ISFSI would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1 (2023)

disputed issue is material if its resolution would make a difference in the outcome of the licensing proceeding; LBP-23-7, 98 NRC 1 (2023)

petitioner need not prove its contention at the pleading stage, but must show a genuine dispute on a material issue of law or fact warranting a hearing; LBP-23-7, 98 NRC 1 (2023)

MATERIALS LICENSE AMENDMENT APPLICATIONS

license amendment applicants that have already submitted an environmental report may limit their ER to an update or supplement of information previously submitted to reflect any significant environmental change; CLI-23-3, 98 NRC 33 (2023)

MATERIALS LICENSE AMENDMENT PROCEEDINGS

contention that materials license amendment applicant inadequately considered legacy contamination in cumulative effects analysis is inadmissible; CLI-23-3, 98 NRC 33 (2023)

domestic licensing action's impact on nuclear nonproliferation concerns is speculative and lacks a proximate causal connection to the proposed facility; CLI-23-3, 98 NRC 33 (2023)

safety-based contention that raises issues of international policy unrelated to the NRC's licensing criteria is beyond the scope of the proceeding; CLI-23-3, 98 NRC 33 (2023)

MATERIALS LICENSE RENEWAL

contention alleging that ISFSI renewal application is deficient because it fails to provide accurate and complete information regarding applicant's financial qualifications to operate the ISFSI is admissible; LBP-23-7, 98 NRC 1 (2023)

MATERIALS LICENSE RENEWAL PROCEEDINGS

contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1 (2023)

MITIGATION PLANS

mitigation and control measures that salt-cooled test reactor could implement to lessen potential adverse effects are discussed; CLI-23-5, 98 NRC 53 (2023)

mitigation of impacts to historic and cultural resources buried beneath the site of proposed test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

MOOTNESS

Commission's customary practice is to vacate a challenged licensing board decision when the proceeding becomes moot; CLI-23-4, 98 NRC 51 (2023)

NATIONAL ENVIRONMENTAL POLICY ACT

agencies must study, develop, and describe appropriate alternatives to recommended courses of action in any proposal involving unresolved conflicts in alternative uses of available resources; CLI-23-5, 98 NRC 53 (2023)

agencies must use a systematic, interdisciplinary approach ensuring the integrated use of natural and social sciences and environmental design arts in decision making that may impact the environment; CLI-23-5, 98 NRC 53 (2023)

alternatives analysis must include a discussion of the negative impacts of not implementing the proposed action; CLI-23-5, 98 NRC 53 (2023)

analysis of any irreversible and irretrievable commitment of federal resources is required; CLI-23-5, 98 NRC 53 (2023)

applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed

environmental findings that NRC must make to support issuance of the test reactor construction permit are described; CLI-23-5, 98 NRC 53 (2023)

federal agencies must describe unavoidable adverse environmental effects, range of alternatives, relationship between local short-term uses and long-term productivity of the environment, and irreversible and irretrievable commitments of federal resource; CLI-23-5, 98 NRC 53 (2023)

SUBJECT INDEX

NATIONAL HISTORIC PRESERVATION ACT

federal agencies must consider effects of their undertakings on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53 (2023)

NATIONAL REGISTER OF HISTORIC PLACES

NRC must consider effects of construction of test reactor on historic properties listed or eligible for listing on the National Register of Historic Places; CLI-23-5, 98 NRC 53 (2023)

NOTIFICATION

other agencies must be notified of construction authorization for salt-cooled test reactor; CLI-23-5, 98 NRC 53 (2023)

NRC STAFF REVIEW

Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53 (2023)

Commission will not second-guess NRC Staff's underlying technical or factual findings on test reactor construction permit application unless it finds Staff's review incomplete or inadequate or its findings insufficiently explained in the record; CLI-23-5, 98 NRC 53 (2023)

environmental findings that NRC must make to support issuance of the test reactor construction permit are described in 10 C.F.R. 51.105(a); CLI-23-5, 98 NRC 53 (2023)

NRC must determine whether the requirements of NEPA section 102(2)(A), (C), and (E) have been met and whether NRC Staff's environmental review has been adequate; CLI-23-5, 98 NRC 53 (2023)

NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

purpose of ER is to facilitate NRC Staff's preparation of its environmental assessment or environmental impact statement; CLI-23-3, 98 NRC 33 (2023)

reasonably close causal relationship must exist between a proposed action and a purported environmental effect to compel consideration in the agency's NEPA analysis; CLI-23-3, 98 NRC 33 (2023)

NUCLEAR NON-PROLIFERATION

NRC regulations and the Staff's safety review consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

NUCLEAR REGULATORY COMMISSION, AUTHORITY

whether some of the U-metal produced at an enrichment facility may be further processed by NNSA at a later date to be used in a nuclear weapon is not within the NRC's scope of authority; CLI-23-3, 98 NRC 33 (2023)

NUCLEAR WEAPONS

contention that new process will generate purified high-enriched uranium material for inclusion in nuclear weapons is inadmissible; CLI-23-3, 98 NRC 33 (2023)

NRC licensees are prohibited from using special nuclear material to construct nuclear weapons; CLI-23-3, 98 NRC 33 (2023)

whether some of the U-metal produced at an enrichment facility may be further processed by NNSA at a later date to be used in a nuclear weapon is not within NRC's scope of authority; CLI-23-3, 98 NRC 33 (2023)

NUCLEAR WEAPONS PROLIFERATION

contention seeking proliferation assessments under NEPA and the AEA is inadmissible; CLI-23-3, 98 NRC 33 (2023)

domestic licensing action's impact on nuclear nonproliferation concerns is speculative and lacks a proximate causal connection to the proposed facility; CLI-23-3, 98 NRC 33 (2023)

PERMIT CONDITIONS

construction permit condition directs licensee to confirm condition of bedrock supporting facility and provides for examination of excavations by NRC Staff; CLI-23-5, 98 NRC 53 (2023)

construction permit condition requires test reactor licensee to implement a quality assurance program for design, procurement, and construction of the Hermes test reactor; CLI-23-5, 98 NRC 53 (2023)

construction permit condition will allow licensee to make changes to the quality assurance program without prior NRC approval; CLI-23-5, 98 NRC 53 (2023)

SUBJECT INDEX

NRC Staff's proposed construction permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety; CLI-23-5, 98 NRC 53 (2023)
test reactor construction permit will be issued in such form and with such conditions and limitations that NRC deems appropriate and necessary; CLI-23-5, 98 NRC 53 (2023)

PHYSICAL SECURITY

NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

POLICY

safety-based contention that raises issues of international policy unrelated to the NRC's licensing criteria is beyond the scope of the proceeding; CLI-23-3, 98 NRC 33 (2023)

PRIMA FACIE SHOWING

showing that intervenor must make to establish the requisite special circumstances for a rule waiver is provided; CLI-23-3, 98 NRC 33 (2023)

PROOF

petitioner need not prove its contention at the pleading stage, but must show a genuine dispute on a material issue of law or fact warranting a hearing; LBP-23-7, 98 NRC 1 (2023)

PROXIMITY PRESUMPTION

licensing board finding of proximity-plus standing in ISFSI proceeding based on individual who lived 6 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)

licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual's operation of a ranch 3 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)

organization asserting representational standing in a materials licensing case can show a member has standing by demonstrating that the member satisfies the proximity-plus test; LBP-23-7, 98 NRC 1 (2023)

persons living within 17 miles of an ISFSI site had standing; LBP-23-7, 98 NRC 1 (2023)

presumption of proximity-plus standing requires a showing that the proposed licensing action involves a significant source of radiation that has an obvious potential for offsite consequences that will adversely affect the member; LBP-23-7, 98 NRC 1 (2023)

proximity-plus standing analysis is provided; LBP-23-7, 98 NRC 1 (2023)

QUALIFICATION

plan for metallic structural materials used in salt-cooled test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

QUALITY ASSURANCE

construction permit condition requires test reactor licensee to implement a quality assurance program for design, procurement, and construction of the Hermes test reactor; CLI-23-5, 98 NRC 53 (2023)

construction permit condition will allow licensee to make changes to the quality assurance program without prior NRC approval; CLI-23-5, 98 NRC 53 (2023)

RADIATION PROTECTION PROGRAM

NRC Staff assessed whether preliminary safety analysis report for test reactor provides an acceptable basis for development of radiation protection and waste management programs and reasonable assurance of compliance with Part 20 during operation; CLI-23-5, 98 NRC 53 (2023)

RADIATION SAFETY

applicability of Part 20 to test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

RADIOACTIVE WASTE MANAGEMENT

NRC Staff assessed whether preliminary safety analysis report for test reactor provides an acceptable basis for development of radiation protection and waste management programs and reasonable assurance of compliance with Part 20 during operation; CLI-23-5, 98 NRC 53 (2023)

RADIOLOGICAL CONTAMINATION

contention that materials license amendment applicant inadequately considered legacy contamination in cumulative effects analysis is inadmissible; CLI-23-3, 98 NRC 33 (2023)

REACTOR COOLANT

Hermes test reactor will be configured as a pebble bed with a chemically stable, low-pressure molten fluoride salt coolant known as Flibe; CLI-23-5, 98 NRC 53 (2023)

SUBJECT INDEX

molten salt coolant mixture of lithium fluoride-beryllium fluoride is discussed; CLI-23-5, 98 NRC 53 (2023)

pairing of high-temperature-tolerant TRISO fuel and low-pressure, single-phase, chemically stable reactor coolant reduces number of potential fuel-damage scenarios; CLI-23-5, 98 NRC 53 (2023)

passive decay heat removal does not require an emergency core cooling system for decay heat removal or replacement of coolant inventory; CLI-23-5, 98 NRC 53 (2023)

REACTOR DESIGN

Hermes test reactor will be configured as a pebble bed with a chemically stable, low-pressure molten fluoride salt coolant known as Flibe; CLI-23-5, 98 NRC 53 (2023)

high-temperature materials used in salt-cooled test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

issuance of a construction permit does not constitute approval of test reactor design; CLI-23-5, 98 NRC 53 (2023)

pairing of high-temperature-tolerant TRISO fuel and low-pressure, single-phase, chemically stable reactor coolant reduces number of potential fuel-damage scenarios; CLI-23-5, 98 NRC 53 (2023)

REGULATIONS

contention that fuel cycle facility regulations are inadequate because they lack stringent quality assurance requirements is inadmissible; CLI-23-3, 98 NRC 33 (2023)

licensing boards may not entertain challenges to the validity of Commission regulations in individual licensing proceedings except in certain special circumstances in which a waiver is requested and found to be appropriate; CLI-23-3, 98 NRC 33 (2023)

NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

See also Rules of Practice

REGULATIONS, INTERPRETATION

section 51.105(a)(5) applies only to contested proceedings; CLI-23-5, 98 NRC 53 (2023)

REVIEW

See Appellate Review; Environmental Review; NRC Staff Review; Safety Review

RULE OF REASON

scope of environmental analyses in an environmental report is governed by a rule of reason; LBP-23-7, 98 NRC 1 (2023)

RULES OF PRACTICE

admissible contention must set forth with particularity the matters to be raised, be within the scope of the hearing, be material to the findings the agency must make in taking the requested action, be factually supported, and show that a genuine dispute exists with the application; CLI-23-3, 98 NRC 33 (2023)

contention admissibility rule is strict by design; LBP-23-7, 98 NRC 1 (2023)

contention admission criteria are necessary to ensure that hearings cover only genuine and pertinent issues of concern and that the issues are framed and supported concisely enough at the outset to ensure that the proceedings are effective and focused on real, concrete issues; CLI-23-3, 98 NRC 33 (2023)

contention seeking proliferation assessments under NEPA and the AEA is inadmissible; CLI-23-3, 98 NRC 33 (2023)

existing license will not be deemed to have expired until NRC Staff makes a final determination on a renewal application; LBP-23-7, 98 NRC 1 (2023)

generalized assertion without a specific tie to an NRC regulatory requirement does not provide adequate support to demonstrate a genuine dispute of law or fact; LBP-23-7, 98 NRC 1 (2023)

intervention petitioner must demonstrate standing; LBP-23-7, 98 NRC 1 (2023)

intervention petitioner must submit a timely contention that satisfies the admissibility criteria; LBP-23-7, 98 NRC 1 (2023)

petitioner must provide sufficient information to show a genuine dispute on a material issue of law or fact; CLI-23-3, 98 NRC 33 (2023)

petitioner whose hearing request has been wholly denied may appeal as of right; CLI-23-3, 98 NRC 33 (2023)

standards for establishing standing are described; LBP-23-7, 98 NRC 1 (2023)

timely-filed contentions must satisfy each of the regulatory criteria to be admissible; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

while hearings resolve substantive merits of a contention, the contention admissibility stage is the proper time to examine whether the issue raised should be subject to a hearing; CLI-23-3, 98 NRC 33 (2023)

SABOTAGE
NRC regulations and the Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

SAFETY
TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53 (2023)
See also Radiation Safety

SAFETY ANALYSIS REPORT
NRC Staff assessed whether preliminary SAR for test reactor provides an acceptable basis for development of radiation protection and waste management programs and reasonable assurance of compliance with Part 20 during operation; CLI-23-5, 98 NRC 53 (2023)

SAFETY ISSUES
pairing of high-temperature-tolerant TRISO fuel and low-pressure, single-phase, chemically stable reactor coolant reduces number of potential fuel-damage scenarios; CLI-23-5, 98 NRC 53 (2023)
safety-based contention that raises issues of international policy unrelated to the NRC's licensing criteria is beyond the scope of the proceeding; CLI-23-3, 98 NRC 33 (2023)

SAFETY-RELATED
definition of safety-related structures, systems, and components is not applicable to test reactor; CLI-23-5, 98 NRC 53 (2023)

SAFETY REVIEW
Commission does not review test reactor construction permit application de novo, but rather considers sufficiency of NRC Staff's review of the application on both safety and environmental matters; CLI-23-5, 98 NRC 53 (2023)
NRC regulations and NRC Staff's safety reviews consider issues such as physical security and protection against radiological sabotage, theft, and diversion, which are relevant to nonproliferation; CLI-23-3, 98 NRC 33 (2023)

SECURITY
health, safety, and security protections are designed to prevent nuclear equipment and material and classified information and sensitive technologies from becoming available to unauthorized foreign or domestic individuals or entities; CLI-23-3, 98 NRC 33 (2023)
See also Physical Security

SITE SUITABILITY
site characteristics for Hermes test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

SPECIAL CIRCUMSTANCES
prima facie showing that intervenor must make to establish the requisite special circumstances for a rule waiver is provided; CLI-23-3, 98 NRC 33 (2023)

SPECIAL NUCLEAR MATERIALS
NRC licensees are prohibited from using special nuclear material to construct nuclear weapons; CLI-23-3, 98 NRC 33 (2023)

SPENT FUEL STORAGE
applicant could elect to develop spent fuel storage capacity in a separate spent fuel storage facility under its general license; LBP-23-7, 98 NRC 1 (2023)

STANDING TO INTERVENE
intervention petitioner must demonstrate standing; LBP-23-7, 98 NRC 1 (2023)
licensing board construes arguments on standing in favor of petitioner; LBP-23-7, 98 NRC 1 (2023)
licensing board finding of proximity-plus standing in ISFSI proceeding based on individual who lived 6 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)
licensing board has an independent obligation to determine whether standing requirements are met even though no litigant disputes standing; LBP-23-7, 98 NRC 1 (2023)
licensing board's finding of proximity-plus standing in ISFSI proceeding based on individual's operation of a ranch 3 miles from the site was affirmed; LBP-23-7, 98 NRC 1 (2023)
persons living within 17 miles of an ISFSI site had standing; LBP-23-7, 98 NRC 1 (2023)

SUBJECT INDEX

petitioner bears the burden of setting forth a clear and coherent argument for standing; LBP-23-7, 98 NRC 1 (2023)

presumption of proximity-plus standing requires a showing that the proposed licensing action involves a significant source of radiation that has an obvious potential for offsite consequences that will adversely affect the member; LBP-23-7, 98 NRC 1 (2023)

proximity-plus standing analysis is provided; LBP-23-7, 98 NRC 1 (2023)

standards for establishing standing are described; LBP-23-7, 98 NRC 1 (2023)

STANDING TO INTERVENE, ORGANIZATIONAL

interests that an organization seeks to protect on behalf of its members must be germane to its own purpose; LBP-23-7, 98 NRC 1 (2023)

organization that cannot satisfy the proximity-plus test must establish standing according to traditional standing principles; LBP-23-7, 98 NRC 1 (2023)

STANDING TO INTERVENE, REPRESENTATIONAL

neither an organization's asserted claim nor its requested relief requires an individual member to participate in the proceeding; LBP-23-7, 98 NRC 1 (2023)

organization asserting representational standing in a materials licensing case can show a member has standing by demonstrating that the member satisfies the proximity-plus test; LBP-23-7, 98 NRC 1 (2023)

organization demonstrates that it has members who have standing and have authorized it to represent them and request a hearing on their behalf; LBP-23-7, 98 NRC 1 (2023)

standards for representational standing by an organization on behalf of its membership are described; LBP-23-7, 98 NRC 1 (2023)

STATE STATUTES

contention that environmental report improperly fails to reconcile the ISFSI license renewal with California law and policies regarding the creation and storage of spent fuel is inadmissible; LBP-23-7, 98 NRC 1 (2023)

STRUCTURAL INTEGRITY

concern relating to historic groundwater plumes and the possibility of sinkholes in the uranium enrichment facility area is inadmissible; CLI-23-3, 98 NRC 33 (2023)

high-temperature materials used in salt-cooled test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

qualification plan for metallic structural materials used in salt-cooled test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

safety-related portion of test reactor building will be designed to withstand impact of general aviation aircraft associated with operations at proposed airport; CLI-23-5, 98 NRC 53 (2023)

TECHNICAL QUALIFICATIONS

test reactor applicant must be technically and financially qualified to engage in the proposed activities; CLI-23-5, 98 NRC 53 (2023)

TEST REACTOR

additional considerations for grant of test facility construction permit are described in 10 C.F.R. 50.40(a)-(d); CLI-23-5, 98 NRC 53 (2023)

applicability of amendments to National Environmental Policy Act to test reactor construction permit is discussed; CLI-23-5, 98 NRC 53 (2023)

applicability of Part 20 to test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

applicable requirements of Subpart A of 10 C.F.R. Part 51 to test reactor must be satisfied; CLI-23-5, 98 NRC 53 (2023)

applicant must be technically and financially qualified to engage in the proposed activities; CLI-23-5, 98 NRC 53 (2023)

Commission must reach its own independent determination on certain environmental findings on test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

Commission will not second-guess NRC Staff's underlying technical or factual findings on test reactor construction permit application unless it finds Staff's review incomplete or inadequate or its findings insufficiently explained in the record; CLI-23-5, 98 NRC 53 (2023)

construction permit condition directs licensee to confirm condition of bedrock supporting facility and provides for examination of excavations by NRC Staff; CLI-23-5, 98 NRC 53 (2023)

SUBJECT INDEX

construction permit condition requires test reactor licensee to implement its quality assurance program for design, procurement, and construction of the Hermes reactor; CLI-23-5, 98 NRC 53 (2023)

construction permit condition will allow licensee to make changes to the quality assurance program without prior NRC approval; CLI-23-5, 98 NRC 53 (2023)

construction permit will be issued in such form and with such conditions and limitations that NRC deems appropriate and necessary; CLI-23-5, 98 NRC 53 (2023)

costs and benefits of proposed test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

definition of safety-related structures, systems, and components is not applicable to test reactor; CLI-23-5, 98 NRC 53 (2023)

environmental findings that NRC must make to support issuance of the test reactor construction permit are described in 10 C.F.R. 51.105(a); CLI-23-5, 98 NRC 53 (2023)

findings that NRC must make that proposed test facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public are in section 50.35(a); CLI-23-5, 98 NRC 53 (2023)

functional containment concept of Hermes test reactor is described; CLI-23-5, 98 NRC 53 (2023)

Hermes test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

Hermes test reactor emergency planning zone size is appropriate and consistent with guidance based on preliminary maximum hypothetical accident calculations; CLI-23-5, 98 NRC 53 (2023)

Hermes test reactor will be configured as a pebble bed with a chemically stable, low-pressure molten fluoride salt coolant known as Flibe; CLI-23-5, 98 NRC 53 (2023)

high-temperature materials used in salt-cooled test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

issuance of a construction permit does not constitute approval of test reactor design; CLI-23-5, 98 NRC 53 (2023)

issuance of test reactor construction permit must not be inimical to the common defense and security or to health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

low-leakage, pressure-retaining containment structures are not necessary; CLI-23-5, 98 NRC 53 (2023)

mitigation and control measures that salt-cooled test reactor could implement to lessen potential adverse effects are discussed; CLI-23-5, 98 NRC 53 (2023)

molten salt coolant mixture of lithium fluoride-beryllium fluoride is discussed; CLI-23-5, 98 NRC 53 (2023)

NRC Staff assessed whether preliminary safety analysis report for test reactor provides an acceptable basis for development of radiation protection and waste management programs and reasonable assurance of compliance with Part 20 during operation; CLI-23-5, 98 NRC 53 (2023)

NRC Staff must prepare an environmental impact statement for test reactor construction permit application; CLI-23-5, 98 NRC 53 (2023)

NRC Staff's proposed construction permit conditions are appropriately drawn and sufficient to provide reasonable assurance of adequate protection of public health and safety; CLI-23-5, 98 NRC 53 (2023)

other agencies must be notified of construction authorization for salt-cooled test reactor; CLI-23-5, 98 NRC 53 (2023)

passive decay heat removal does not require an emergency core cooling system for decay heat removal or replacement of coolant inventory; CLI-23-5, 98 NRC 53 (2023)

proposed salt-cooled test reactor can be constructed and operated at the proposed location without undue risk to the health and safety of the public; CLI-23-5, 98 NRC 53 (2023)

qualification plan for metallic structural materials used in salt-cooled test reactor is discussed; CLI-23-5, 98 NRC 53 (2023)

safety-related portion of test reactor building will be designed to withstand impact of general aviation aircraft associated with operations at proposed airport; CLI-23-5, 98 NRC 53 (2023)

site characteristics for Hermes test reactor are discussed; CLI-23-5, 98 NRC 53 (2023)

TRISO fuel particles embedded in a carbon matrix pebble will be used in test reactor; CLI-23-5, 98 NRC 53 (2023)

TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53 (2023)

SUBJECT INDEX

TESTIMONY

expert opinions that state a conclusion without explaining the basis for that conclusion do not fulfill the requirement that the contention have adequate support; CLI-23-3, 98 NRC 33 (2023)

expert who does not provide an explanation for his assertion does not identify an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

TRANSIENTS

TRISO particle and corresponding fuel element (pebble) safety during normal operations and transient conditions is discussed; CLI-23-5, 98 NRC 53 (2023)

UNCONTESTED LICENSE APPLICATIONS

section 51.105(a)(5) applies only to contested proceedings; CLI-23-5, 98 NRC 53 (2023)

URANIUM ENRICHMENT

contention that new process will generate purified high-enriched uranium material for inclusion in nuclear weapons is inadmissible; CLI-23-3, 98 NRC 33 (2023)

URANIUM ENRICHMENT FACILITIES

concern relating to historic groundwater plumes and the possibility of sinkholes in the uranium enrichment facility area is inadmissible; CLI-23-3, 98 NRC 33 (2023)

contention that air emissions from the U-Metal activity would double if the license amendment request were granted was inadmissible; CLI-23-3, 98 NRC 33 (2023)

NRC licensees are prohibited from using special nuclear material to construct nuclear weapons; CLI-23-3, 98 NRC 33 (2023)

VACATUR

Commission's customary practice is to vacate a challenged licensing board decision when the proceeding becomes moot; CLI-23-4, 98 NRC 51 (2023)

WAIVER OF RULE

licensing boards may not entertain challenges to the validity of Commission regulations in individual licensing proceedings except in certain special circumstances in which a waiver is requested and found to be appropriate; CLI-23-3, 98 NRC 33 (2023)

prima facie showing that intervenor must make to establish the requisite special circumstances for a rule waiver is provided; CLI-23-3, 98 NRC 33 (2023)

without a rule waiver determination by the Commission, a contention that challenges a rule is outside the scope of the proceeding and may not be given further consideration by a licensing board; CLI-23-3, 98 NRC 33 (2023)

WITNESSES, EXPERT

expert who does not provide an explanation for his assertion does not identify an error of law or abuse of discretion; CLI-23-3, 98 NRC 33 (2023)

FACILITY INDEX

DIABLO CANYON INDEPENDENT SPENT FUEL STORAGE INSTALLATION; Docket No. 72-26-ISFSI-MLR
MATERIALS LICENSE RENEWAL; July 19, 2023; MEMORANDUM AND ORDER (Granting the Hearing Request of San Luis Obispo Mothers for Peace); LBP-23-7, 98 NRC 1 (2023)
MATERIALS LICENSE RENEWAL; September 15, 2023; MEMORANDUM AND ORDER (Dismissing Contention and Terminating Proceeding); LBP-23-8, 98 NRC 29 (2023)
MATERIALS LICENSE RENEWAL; October 19, 2023; MEMORANDUM AND ORDER; CLI-23-4, 98 NRC 51 (2023)
HERMES TEST REACTOR; Docket No. 50-7513-CP
CONSTRUCTION PERMIT; December 12, 2023; MEMORANDUM AND ORDER; CLI-23-5, 98 NRC 53 (2023)