Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 1 of 91

No. 20-70899

### UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

#### PUBLIC WATCHDOGS, *Petitioner*,

v.

### UNITED STATES NUCLEAR REGULATORY COMMISSION and UNITED STATES OF AMERICA, *Respondents*,

SOUTHERN CALIFORNIA EDISON COMPANY, *Intervenor*.

On Petition for Review of an Order of the U.S. Nuclear Regulatory Commission

### FEDERAL RESPONDENTS' RESPONSE IN OPPOSITION TO PETITIONER'S MOTION FOR TEMPORARY INJUNCTIVE RELIEF PENDING JUDICIAL REVIEW OF AGENCY ACTION

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## TABLE OF CONTENTS

TABI	LE OF	AUTHORITIES ii				
GLOS	SSARY	Yv				
INTRODUCTION1						
BACKGROUND						
I.	NRC's authority and oversight					
II.	NRC's regulation of spent nuclear fuel					
III.	. Factual and procedural background					
	A.	Certification and Deployment of the Holtec System				
	B.	SONGS Litigation				
ARGUMENT						
I.	Publi	c Watchdogs is not likely to succeed on the merits11				
	A.	NRC's denial of the 2.206 petition is committed to agency discretion by law				
	В.	NRC has acted consistently with its statutory obligation to protect the public health and safety14				
II.	Public Watchdogs has not shown it is likely to suffer imminent irreparable harm					
III.	Public Watchdogs has not shown that the balance of equities or the public interest favors an injunction					
CERTIFICATE OF COMPLIANCE						

ADDENDUM

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 3 of 91

# TABLE OF AUTHORITIES

# **Judicial Decisions**

Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87 (1983)21
Caribbean Marine Servs. v. Baldrige, 844 F.2d 668 (9th Cir. 1988)21
Center for Food Safety v. Vilsack, 636 F.3d 1166 (9th Cir. 2011)
<i>Florida Power &amp; Light Co. v. Lorion</i> , 470 U.S. 729 (1985)13
<i>Garcia v. Google, Inc.</i> , 786 F.3d 733 (9th Cir. 2015)11
<i>Heckler v. Chaney</i> , 470 U.S. 821 (1985)12
Massachusetts Public Interest Research Group v. NRC, 852 F.2d 9 (1st Cir. 1988)12, 13
<i>Michigan v. United States</i> , 994 F.2d 1197 (6th Cir. 1993)14
<i>New York v. NRC</i> , 681 F.3d 471 (D.C. Cir. 2012)
<i>New York v. NRC</i> , 824 F.3d 1012 (D.C. Cir. 2016)
<i>Nken v. Holder,</i> 556 U.S. 418 (2009)21
<i>Public Citizen v. NRC</i> , 573 F.3d 916 (9th Cir. 2009)13

#### (4 of 314)

Public Watchdogs v. NRC, No. 19-72670 (9th Cir. Dec. 20, 2019)9
Public Watchdogs v. Southern California Edison Co., No. 19-cv-1635-JLS-MSB, 2019 WL 6497886 (S.D. Cal. Dec. 3, 2019)
Public Watchdogs v. United States, No. 17-cv-2323-JLS-MSB (S.D. Cal. July 3, 2019)
<i>Riverkeeper, Inc. v. Collins</i> , 359 F.3d 156 (2d Cir. 2004)12, 13
Rockford League of Women Voters v. NRC, 679 F.2d 1218 (7th Cir. 1982)
Safe Energy Coalition of Michigan v. NRC, 866 F.2d 1473 (D.C. Cir. 1989)
Southern California Edison Co. v. United States, 655 F.3d 1319 (Fed. Cir. 2011)
<i>Tanner Motor Livery, Ltd. v. Avis, Inc.,</i> 316 F.2d 804 (9th Cir. 1963)
<i>Winter v. Natural Resources Defense Council,</i> 555 U.S. 7 (2008)1, 11, 18, 19
Administrative Decisions
DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3), CLI-15-4, 81 N.R.C. 221 (2015)
Statutes and Regulations
28 U.S.C. § 23441
28 U.S.C. § 23481
42 U.S.C. § 2133

42 U.S.C. § 2239
42 U.S.C. § 5841
42 U.S.C. § 101345
42 U.S.C. § 101534
10 C.F.R. § 2.202
10 C.F.R. § 2.206
10 C.F.R. § 50.54
10 C.F.R.§ 50.824, 18
10 C.F.R. § 51.23
10 C.F.R. pt. 72, subpart K
10 C.F.R. § 72.2127
10 C.F.R. § 72.2364
Federal Register Notices
Direct Final Rule, Certificate of Compliance No. 1040, 80 Fed. Reg. 12,073 (Mar. 6, 2015)7
Direct Final Rule, Certificate of Compliance No. 1040, Amendment No. 1, 80 Fed. Reg. 35,829 (June 23, 2015)7
Final Rule, Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,238 (Sep. 19, 2014)
Final Rule, Decommissioning of Nuclear Power Reactors, 61 Fed. Reg. 39,278 (July 29, 1996)4

(6 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 6 of 91

# GLOSSARY

DOE	Department of Energy
EIS	Environmental Impact Statement
NRC	Nuclear Regulatory Commission
SCE	Southern California Edison
SONGS	San Onofre Nuclear Generating Station

(7 of 314)

### INTRODUCTION<sup>1</sup>

The U.S. Nuclear Regulatory Commission (NRC) performs extensive oversight of activities at the San Onofre Nuclear Generating Station (SONGS) pursuant to its statutory mandate to ensure nuclear safety under the Atomic Energy Act. Although Petitioner Public Watchdogs failed to timely challenge the agency rulemaking order certifying the spent nuclear fuel storage system at issue in this case, it has since submitted a citizen administrative petition to NRC, pursuant to 10 C.F.R. § 2.206, requesting that NRC suspend ongoing decommissioning operations at SONGS, including spent fuel transfer activities. NRC declined to take the action that Public Watchdogs requested, and Public Watchdogs filed a petition for review of that decision. And it now asks this Court to intervene in the operations at SONGS and issue an order compelling NRC "to suspend all spent nuclear fuel transfer operations" pending this Court's review of the agency's decision.

Public Watchdogs falls far short of demonstrating entitlement to the "extraordinary relief" of an injunction. *Winter v. Natural Resources Defense Council*, 555 U.S. 7, 22 (2008). Most significantly, Public Watchdogs has not shown a likelihood of success on its claims. Indeed, Public Watchdogs *concedes* that the NRC decision is presumptively unreviewable because it is committed to

<sup>&</sup>lt;sup>1</sup> A challenge to a final order of the NRC is "against the United States." 28 U.S.C. § 2344. The Department of Justice represents the United States, and the NRC has appeared as a matter of right. *Id.* § 2348.

agency discretion by law. To rebut this presumption, Public Watchdogs contends that NRC has expressly adopted a general policy so extreme as to amount to an abdication of its statutory responsibilities, but Public Watchdogs fails to meet this demanding standard. The record demonstrates that NRC has been employing a range of regulatory tools—including licensing reviews, rulemakings, inspections, and enforcement—to ensure that spent fuel is stored safely at SONGS. And, contrary to Public Watchdogs' assertions, NRC has *expressly considered* the timing of removal of spent fuel from reactor sites to a permanent repository, finding that longer-term or even indefinite onsite storage of spent fuel would be safe if it becomes necessary. Public Watchdogs simply ignores this.

Public Watchdogs also fails to satisfy the other injunction factors. Public Watchdogs' conclusory statements and speculative claims of possible injury decades from now do not establish imminent irreparable harm. And Public Watchdogs fails to demonstrate that the balance of the equities or the public interest favors an injunction based on speculation and the substitution of its own judgment for that of the expert agency entrusted by Congress with the responsibility for nuclear safety.

2

#### BACKGROUND

### I. NRC's authority and oversight

NRC is an independent regulatory commission created by Congress. 42 U.S.C. § 5841. The agency licenses and regulates the Nation's civilian use of radioactive materials to protect public health and safety, promote the common defense and security, and protect the environment. *Id.* § 2133; *see also* Exhibit 1, NRC 2019-2020 Information Digest (excerpted), at 2. NRC can issue and amend licenses, as well as issue or modify its rules and regulations, only after providing the public with an opportunity for a hearing. *See* 42 U.S.C. § 2239(a).

NRC conducts oversight of its licensees through inspection of licensed activities and enforcement of applicable requirements. *See* Exhibit 1 at 5. NRC also has the authority to issue orders amending, suspending, or revoking a license, 10 C.F.R. § 2.202, and it has created a process whereby the public can make requests, pursuant to 10 C.F.R. § 2.206, that the agency take such action. The procedures guiding the agency's disposition of such requests are set forth in NRC Management Directive 8.11 (Exhibit 2).

### II. NRC's regulation of spent nuclear fuel

Every nuclear reactor in the United States generates fuel that is no longer useful for producing electricity (and thus "spent") that reactor operators must manage and store. When spent fuel is removed from a reactor, it is first placed in

3

pools of continuously circulating water for cooling. Exhibit 1 at 70-71. It remains there until it is transferred to dry storage, either in casks or canister-based systems. Exhibit 3, Safety of Spent Fuel Storage (Apr. 2017), at 2. "[C]anister-based systems," such as the one at SONGS, "feature an inner steel canister that contains the fuel surrounded by 3 feet or more of steel and concrete." *Id.* at 2.

NRC authorizes the onsite storage of spent fuel in one of two ways: (1) it grants a site-specific license for a dry-storage facility; or (2) it issues a certificate of compliance, after public scrutiny via notice-and-comment rulemaking, for a specific dry-storage system, which reactor licensees may then use under a so-called "general license" established by NRC regulations. Exhibit 1 at 68-69; 10 C.F.R. pt. 72, subpart K; *see also* 42 U.S.C. § 10153 (directing NRC to establish rules for licensing technology for dry storage).

NRC approves only those systems that meet its stringent requirements for safely storing spent fuel. Exhibit 3 at 3; *see also* 10 C.F.R. § 72.236. The licensee can incorporate the methods for spent fuel storage it has chosen to employ into its decommissioning and spent fuel management plans, which address how the licensee plans to continue to manage its spent fuel after the reactor has ceased operations. *See* 10 C.F.R. § 50.54(bb); *id.* § 50.82(a)(4); Final Rule, Decommissioning of Nuclear Power Reactors, 61 Fed. Reg. 39,278, 39,279-80 (July 29, 1996).

By statute, the Department of Energy (DOE) is required to apply for an NRC license to construct a repository for the ultimate disposal of spent nuclear fuel. 42 U.S.C. § 10134. However, because of delays in repository availability, NRC has repeatedly grappled with the uncertainties regarding the timing of removal of fuel from reactor sites in connection with its licensing activities. Most recently, a decision by the D.C. Circuit in New York v. NRC, 681 F.3d 471 (D.C. Cir. 2012), prompted NRC to consider the issues related to the continued storage of spent fuel at nuclear reactor sites in a more comprehensive manner than it had previously. As a result, NRC developed its "Continued Storage Rule," 10 C.F.R. § 51.23, supported by a Generic Environmental Impact Statement (EIS) that analyzed the environmental impacts of continued storage after reactors cease power-generation operations under three possible timeframes: short-term storage of 60 years, longerterm storage of 160 years, and indefinite-duration storage to address the possibility that a repository never becomes available. See Final Rule, Continued Storage of Spent Nuclear Fuel, 79 Fed. Reg. 56,238 (Sep. 19, 2014); Exhibit 4, Generic EIS for Continued Storage of Spent Nuclear Fuel (Excerpts), at xxx-xxxi.<sup>2</sup>

The Rule and Generic EIS documented NRC's reasons for expecting that spent fuel could be safety stored at reactor sites, even in the event such storage

<sup>&</sup>lt;sup>2</sup> The complete Generic EIS can be found at <u>https://www.nrc.gov/reading-rm/doc-</u> <u>collections/nuregs/staff/sr2157/</u>.

must last indefinitely, and that spent fuel could be safely transferred through use of a dry transfer system if it became necessary to do so. *See* Exhibit 4 at 1-13 to 1-15, 2-20 to 2-24, 4-43, 4-56, D-160 to D-161.<sup>3</sup> And in 2015 the Commission documented its conclusion that licensing nuclear power plants with the expectation that fuel would be placed in dry storage "w[ould] not endanger the public health and safety" and therefore would be in compliance with the agency's obligations under the Atomic Energy Act because "spent fuel can be safely stored until a repository is available, or indefinitely should such storage become necessary." *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3), CLI-15-4, 81 N.R.C. 221, 240-42 (2015) (relying on its technical judgment and extended experience ensuring safe storage through regulatory tools) (decision included in addendum).

## III. Factual and procedural background

## A. Certification and Deployment of the Holtec System

The SONGS nuclear plant permanently shut down in 2013. The allegations in this case relate to the ongoing efforts of Southern California Edison Company and its co-licensees (collectively "SCE") to transfer the remainder of its spent fuel

<sup>&</sup>lt;sup>3</sup> Several states and environmental organizations challenged the assumptions underlying the Rule and Generic EIS in the D.C. Circuit. *New York v. NRC*, 824 F.3d 1012 (D.C. Cir. 2016). That court rejected the challenges, finding that NRC had adequately considered both the probability and consequences of failure to site a permanent repository, and that the agency's assumptions concerning the replacement of dry storage systems were reasonable. *Id.* at 1020, 1022-23.

into the HI-STORM UMAX Canister Storage System manufactured by Holtec International, Inc. ("Holtec System"). After a rigorous approval process, NRC issued a Certificate of Compliance for this system through notice-and-comment rulemaking, including an amendment to require enhanced protections against seismic risks for facilities such as SONGS. *See* Certificate of Compliance No. 1040, 80 Fed. Reg. 12,073 (Mar. 6, 2015) (direct final rule certifying Holtec System, codified at 10 C.F.R. § 72.214); Certificate of Compliance No. 1040, Amendment No. 1, 80 Fed. Reg. 35,829 (June 23, 2015) (direct final rule reflecting enhanced seismic analysis).

NRC has directed the full arsenal of its regulatory tools, including licensing reviews, rulemakings, inspections, and enforcement, to ensuring that spent fuel is stored safely at SONGS, in accordance with the Certificate of Compliance for the Holtec System. *See, e.g.*, Exhibit 5 (letter to SCE providing summary of six inspections performed between June 2017 and January 2018 concluding that fuel storage facility accorded with Holtec Certificate of Compliance); *id.*, Enclosure at 5, 28 (confirming conclusion that "the environmental conditions were bounded by the Holtec storage system's design parameters"); *see also* 10 C.F.R. § 72.212 (providing conditions for licensee's deployment of fuel storage system under general license). At present, many, but not all, of the canisters have been loaded with spent fuel and transferred to the dry-storage facility. NRC continues to

monitor the decommissioning activities, including taking enforcement actions as needed to address any noncompliance with regulatory requirements and to ensure that spent fuel is stored safely at SONGS.<sup>4</sup>

### **B.** SONGS Litigation

The present case is the fourth lawsuit filed in federal court by Public Watchdogs relating to spent fuel storage operations at SONGS:

1. *Watchdogs I*: Public Watchdogs first filed suit in district court in November 2017, raising concerns about the safety of the Holtec System. Public Watchdogs voluntarily dismissed its action while a motion to dismiss by the federal defendants was pending. *Public Watchdogs v. United States,* ECF No. 50, No. 17-cv-2323-JLS-MSB (S.D. Cal. July 3, 2019).

2. *Watchdogs II*: In August 2019, Public Watchdogs filed a second lawsuit challenging the decommissioning operations at SONGS and moved for a preliminary injunction seeking a temporary cessation of those activities. The district court dismissed Public Watchdogs' amended complaint for lack of jurisdiction and denied the motion for an injunction. The district court's dismissal is now before this Court on appeal. *Public Watchdogs v. Southern California* 

<sup>&</sup>lt;sup>4</sup> NRC's public website has a comprehensive catalog of NRC's ongoing efforts to ensure the safety of spent fuel storage at SONGS and contains links to documents evidencing its work. *See* <u>https://www.nrc.gov/reactors/operating/ops-experience/songs-spec-insp-activities-cask-loading-misalignment.html</u> (last visited April 27, 2020).

*Edison Co.*, No. 19-cv-1635-JLS-MSB, 2019 WL 6497886 (S.D. Cal. Dec. 3, 2019), on appeal, Case No. 19-56531 (9th Cir.).<sup>5</sup>

3. *Watchdogs III*: Public Watchdogs filed a petition under 10 C.F.R. § 2.206 with NRC on September 24, 2019, requesting that NRC suspend spent fuel transfer activities at SONGS in light of various alleged safety concerns. Fewer than thirty days later, Public Watchdogs filed a mandamus action in this Court, asserting that the agency had unreasonably delayed responding to its 2.206 petition. This Court denied mandamus. *Public Watchdogs v. NRC*, No. 19-72670, Docket No. 19 (9th Cir. Dec. 20, 2019).

4. *Watchdogs IV*: Currently before this Court is Public Watchdogs' petition for review challenging NRC's decision on the 2.206 petition. The petition raised concerns regarding two 2018 canister-transfer incidents; the funding set aside to support decommissioning activities; the retrievability of spent fuel after

<sup>&</sup>lt;sup>5</sup> In *Watchdogs II*, the district court dismissed the action insofar as it purported to challenge a license amendment issued in 2015 or the Certificate of Compliance governing the Holtec System, reasoning that such challenges were properly raised in the courts of appeals pursuant to the Hobbs Act and were untimely. 2019 WL 6497886 at \*9. Public Watchdogs does not challenge that aspect of the decision on appeal in 19-56531. But it does challenge the district court's conclusion, *id.* at \*10, that certain acts that Public Watchdogs identified in its amended complaint (many of which are referenced in the 2.206 Petition and the current Motion) constituted a failure to take enforcement action that was presumptively unreviewable, and that Public Watchdogs had failed to rebut this presumption. *See* Appellant's Opening Br., No. 19-56531, Docket No. 18-1 (Feb. 10, 2020), at 38-39.

emplacement in the dry-storage facility; and the environmental impacts of the decommissioning activities and flood risks. *See* Motion APP000013-000037 (2.206 Petition), APP002540-002547 (Supplement to 2.206 Petition). The petition also contended that NRC's approval of dry storage at SONGS relied upon false assumptions about when fuel would be removed from the site. *See, e.g.,* APP000016-000018.

After informing Public Watchdogs on October 25, 2019, that the petition did "not warrant immediate action" and affording it an opportunity to be heard at a public meeting, NRC issued a decision by letter dated February 26, 2020. See Exhibit 6 (2.206 Decision). NRC declined to take the requested enforcement action. Id. at 3-4. The decision summarized and referenced NRC's extensive oversight at SONGS, which included analysis of the canister-transfer incidents to which the petition referred and the corrective actions taken to address the identified causes. Id. at 2. The decision also explained that the agency had assessed and found the SONGS decommissioning funding sufficient to meet regulatory financial assurance requirements, while also explaining that NRC reassesses annually the adequacy of such funding. And the decision summarized NRC's basis for finding that spent fuel canisters can be safely retrieved from the dry-storage facility at SONGS and explained why Public Watchdogs' concerns regarding flooding and

potential environmental impacts did not identify any risks that had not already been considered. *Id.* at 3.

### ARGUMENT

To obtain the "extraordinary remedy" of a preliminary injunction, a movant must establish: (1) it is likely to succeed on the merits; (2) it is likely to suffer irreparable injury absent an injunction; (3) the balance of equities tips in its favor; and (4) an injunction is in the public interest. *Winter*, 555 U.S. at 20; *Garcia v. Google, Inc.*, 786 F.3d 733, 740 (9th Cir. 2015). Public Watchdogs also cites this Court's sliding-scale test for preliminary injunctions, which is inconsistent with *Winter*, under which the movant need only show it has raised "serious questions" as to the merits if the movant also shows that equities tip "sharply" in its favor (while still requiring the usual showings regarding the other two *Winter* elements). Motion 15-16. Under either test, Public Watchdogs has failed to make a "clear showing" that it satisfies all four requirements for obtaining such "extraordinary" relief. *Winter*, 555 U.S. at 22.

#### I. Public Watchdogs is not likely to succeed on the merits.

"The first factor under *Winter* is the most important—likely success on the merits." *Garcia*, 786 F.3d at 740. "Because it is a threshold inquiry, when a plaintiff has failed to show the likelihood of success on the merits," the Court "need not consider the remaining three *Winter* elements." *Id*. (internal quotation

11

marks and alterations omitted). Public Watchdogs is not likely to prevail on the merits, and it has not raised serious questions as to the merits, because NRC's consideration of the 2.206 petition to take an enforcement action to suspend decommissioning activities is committed to agency discretion by law and therefore not subject to judicial review. NRC, as the agency created by Congress to apply its scientific expertise in connection with decisions pertaining to nuclear safety, acted consistently with its statutory and regulatory obligation to ensure the storage of spent fuel at SONGS does not pose a threat to public health and safety. Moreover, its decision denying the 2.206 petition was not arbitrary or capricious.

# A. NRC's denial of the 2.206 petition is committed to agency discretion by law.

Public Watchdogs has seemingly conceded that the NRC decision here is a presumptively unreviewable exercise of NRC's enforcement discretion under *Heckler v. Chaney*, 470 U.S. 821 (1985). Motion 17. As Public Watchdogs acknowledges, federal courts of appeals have consistently applied the *Heckler v. Chaney* presumption of unreviewability to judicial review of NRC's consideration of 2.206 petitions. *See, e.g., Riverkeeper, Inc. v. Collins*, 359 F.3d 156, 166 (2d Cir. 2004); *Safe Energy Coalition of Michigan v. NRC*, 866 F.2d 1473, 1477 (D.C. Cir. 1989); *Massachusetts Public Interest Research Group v. NRC*, 852 F.2d 9, 19 (1st Cir. 1988); *cf. Rockford League of Women Voters v. NRC*, 679 F.2d 1218, 1223 (7th Cir. 1982).

Public Watchdogs offers only one purported basis for rebutting the presumption: that "NRC 'has consciously and expressly adopted a general policy that is so extreme as to amount to an abdication of its statutory responsibilities." Motion 16-21 (quoting Heckler, 470 U.S. at 833 n.4); see also Florida Power & Light Co. v. Lorion, 470 U.S. 729, 735 n.8 (1985). This standard presents an exceedingly high bar, reserved only for those decisions reflecting a general policy of willful indifference to legal obligations. See, e.g., Riverkeeper, 359 F.3d at 168 ("If the NRC had indisputable proof before it that nuclear power plants are not adequately secure from terrorist attack and nonetheless decided that it would do nothing to address the situation, Riverkeeper might then plausibly charge that the NRC had 'abdicated' its statutory responsibility."); Massachusetts Public Interest Research Group, 852 F.2d at 19 (review of agency decision only appropriate where court is "strongly convinced" that NRC is "inexcusably defaulting on its fundamental responsibility to protect the public safety from nuclear accidents"). NRC does not abdicate its statutory responsibility merely because it has declined to take a specific enforcement action, see Public Citizen v. NRC, 573 F.3d 916, 925 (9th Cir. 2009), or because it has adopted a different approach to a problem than that proposed by a petitioner, see Riverkeeper, 359 F.3d at 169.

# **B.** NRC has acted consistently with its statutory obligation to protect the public health and safety.

Both NRC's regulatory oversight of spent fuel storage at SONGS and the agency's response to specific claims made by Public Watchdogs demonstrate that the agency has not "abdicated" its statutory obligations.

Public Watchdogs peppers its "likelihood of success" argument with references to a "dire threat to public health and safety" resulting from the emplacement of fuel into "thin-walled canisters" from which it cannot be retrieved, all "within a tsunami inundation zone surrounded by active fault lines," Motion 18-19; *see also id.* at 3, 10-11, and it suggests that NRC has deliberately ignored these concerns. Yet Public Watchdogs fails to address the agency's conclusion, reached after years of regulatory oversight and summarized in the 2.206 Decision, that the storage of spent fuel at SONGS in an NRC-certified storage system does not pose a threat to public health and safety.<sup>6</sup>

Indeed, NRC determined that the enforcement action that Public Watchdogs requested was not warranted because of the agency's prior "review of the fuel storage facility design, inspections encompassing the physical facility as well as

<sup>&</sup>lt;sup>6</sup> To the extent Public Watchdogs' motion could be read as a collateral attack on NRC's decision, reached through notice-and-comment rulemaking, to certify the Holtec System in 2015, any such challenge should have been raised in a court of appeals exclusively under the Hobbs Act and is now time-barred. *See Michigan v. United States*, 994 F.2d 1197, 1204 (6th Cir. 1993).

the licensee's operational performance, and appropriate enforcement actions." Exhibit 6 at 2-3 (citing NRC's notice-and-comment rulemaking for the Holtec System; the agency's thorough evaluation following inspections of possible "scratching" of canisters during the canister loading process; NRC's confirmation that, as a result of corrective actions required by the agency and undertaken by the licensee, canisters were in fact readily retrievable in accordance with applicable requirements; and the NRC staff's verification of evaluations of the potential for flooding at the site). The agency referenced, among other documents, the series of inspections and reviews that the agency performed to verify that the Holtec System could be safely deployed for use at SONGS. *Id.* at 2 (citing Exhibit 5 (referenced in letter as ML18200A400)). The record thus belies any assertion that the agency has abdicated its safety mission.

Public Watchdogs further contends that NRC has a "general policy of willful ignorance" related to the timing of DOE's removal of spent fuel for permanent disposal. Motion 17-21. Public Watchdogs asserts that, in the course of reviewing the SONGS decommissioning plan in 2014, the agency improperly relied on the assumption that DOE would begin accepting spent fuel for permanent disposal in 2024 and would remove all spent fuel from SONGS by 2049, and it contends that NRC failed to address this issue in responding to its 2.206 Petition. *Id.* at 7, 20.

To be sure, there are unresolved questions concerning the ultimate disposal of spent fuel. Yet, NRC has extensively considered the consequences of continued storage of spent fuel at reactor sites across a variety of scenarios, including a scenario in which a permanent repository is never available, and it has expressly determined that spent fuel can be stored safely, under NRC's regulatory regime, even if a repository is not constructed and existing storage systems need to be replaced. See supra at 5-6 & n.2; see also New York, 824 F.3d at 1019-23 (upholding legal challenge to Continued Storage Rule and Generic EIS); DTE Electric Co., CLI-15-4, 81 N.R.C. at 240-42 (explaining NRC's determination that it can issue reactor licenses in the absence of a repository in light of licensees' ability to store spent fuel safely under regulatory oversight). And NRC's safety evaluation—cited in the 2.206 Decision—addressing the SONGS Irradiated Fuel Management Plan specifically referenced the Generic EIS findings that short-term, long-term, and indefinite on-site storage would all be technically feasible. Exhibit 7 (referenced in 2.206 Decision as ML15182A256).

Public Watchdogs' arguments that NRC has authorized the long-term storage of spent fuel at SONGS with no means to order its retrieval thus ignores the agency's thoughtful and express consideration of this issue. Although NRC may permit licensees to plan for a future wherein DOE removes fuel from sites within the next several decades, that does not show NRC has a general policy

16

amounting to abdication of its responsibilities.<sup>7</sup> Rather, NRC has already assessed the implications of longer-term, and even indefinite, on-site storage, and it has found that safety can be maintained under either scenario. The NRC has thoroughly considered this issue, both generically and in connection with the 2.206 Decision, and Public Watchdogs' attempt (Motion 20) to paint the agency as somehow inattentive to its concerns or as having acted arbitrarily and capriciously (on the novel theory that an alleged deficiency in a written document explaining the agency's decision *not* to take enforcement action in a particular instance somehow constitutes an "abdication") is unpersuasive.

Public Watchdogs also contends that NRC has failed to require SCE to set aside adequate funds for decommissioning at SONGS if longer-term storage of spent fuel were required on site. Motion 19-20. However, as NRC explained, the funds held in trust to complete radiological decommissioning of SONGS—in excess of \$3.2 *billion*—satisfy the applicable regulatory funding assurance requirements. Exhibit 6 at 3 (referencing ML19346E375, a publicly available

<sup>&</sup>lt;sup>7</sup> We note that two private entities are currently seeking licenses for the construction of consolidated interim spent fuel storage facilities for use by the industry, and one had already obtained a license in 2006. *See* Exhibits 8-10. More importantly, the assumption that all spent fuel can be removed from SONGS by 2049 is fully consistent with NRC's assessment of when a repository could become available. *See* Exhibit 4 at B-8 to B-9. Thus, contrary to Public Watchdog's assertions, it was not unreasonable for NRC to permit SCE to assume for planning purposes that fuel acceptance could begin in time to allow completion by 2049.

NRC memorandum on reactor decommissioning funding status as of 2019 (Exhibit 11)). Moreover, projections are "reviewed annually by the NRC staff to ensure continued compliance with the decommissioning financial assurance requirements." Id.; see 10 C.F.R. § 50.82(a)(8)(v)-(vi) (requiring licensees to annually update financial assurance reports and to provide additional financial assurance in the event of a shortfall). And as to Public Watchdogs' concerns about the costs of longer-term storage, Public Watchdogs fails to establish that SCE would not be able to cure a shortfall if one existed and ignores that SCE is entitled to seek compensation from the United States for any costs resulting from DOE's failure to accept spent fuel in accordance with its contractual obligations. See, e.g., Southern California Edison Co. v. United States, 655 F.3d 1319 (Fed. Cir. 2011) (affirming judgment of \$142 million for spent fuel storage expenditures incurred through 2005 and permitting recoveries covering expenditures in subsequent periods).

# II. Public Watchdogs has not shown it is likely to suffer imminent irreparable harm.

To obtain injunctive relief, Public Watchdogs must make a "clear showing" that it is likely to suffer irreparable harm. *Winter*, 555 U.S. at 22. Public Watchdogs devotes a scant two pages of its motion to its irreparable-harm argument, Motion 21-22, and it fails to carry its burden. As an initial matter, Public Watchdogs contends (Motion 21) that the "specter" of a nuclear disaster from a tsunami or an earthquake renders the SONGS site unsafe to store spent fuel, but the mere "possibility" of harm does not demonstrate a likelihood of injury to its members. *Winter*, 555 U.S. at 22. Aside from its apocalyptic hyperbole, Public Watchdogs fails to offer concrete evidence that establishes a "clear showing" of irreparable harm. *Id*. In any event, NRC has concluded that the storage of spent fuel in the Holtec System at SONGS is safe after evaluating the worst-case scenarios that Public Watchdogs has identified (both generically and on a site-specific basis), *see, e.g.*, Exhibit 5, Enclosure at 28, and Public Watchdogs supplies no reason to question NRC's analysis. *See Center for Food Safety v. Vilsack*, 636 F.3d 1166, 1173 (9th Cir. 2011) (deferring to agency's harm assessment).

Similarly unavailing are Public Watchdogs' conclusory allegations of imminent harm stemming from the potential demolition of the spent fuel pools. Public Watchdogs speculates that if transfer of spent fuel continues to completion "by July or August 2020," the existing pools at SONGS "will be demolished shortly thereafter." Motion 12. Public Watchdogs then suggests that if dry storage at SONGS extends beyond the lifespan of the current storage canisters, the pools' absence will render any necessary fuel repackaging into new containers impossible. *Id.* at 13, 21. Public Watchdogs accordingly contends that if DOE does not take the SONGS spent fuel by 2049, the fuel will be stuck, potentially forever, in the current limited-lifespan dry-storage canisters, thereby leading to sure disaster.

These concerns do not establish imminent irreparable harm. NRC's determinations regarding the safety of onsite storage, including potential long-term storage, do not depend on the retention of the spent fuel pools. And NRC expects that dry transfer systems could and would be safely constructed if and when repackaging of fuel from the current canisters to new containers becomes necessary at reactor sites. *See supra* at 5-6. Public Watchdogs fails to demonstrate that such an eventuality, even if it becomes necessary, creates any safety issue or to refute NRC's determination that it does not.<sup>8</sup>

Moreover, the SONGS decommissioning plans already contemplate eventual removal of SONGS fuel for repository disposal elsewhere, and NRC has confirmed the ability to retrieve canisters from the spent fuel storage facility after

<sup>&</sup>lt;sup>8</sup> In fact, Public Watchdogs identifies no prior instances of dry storage causing *any* harm. Although it refers to "at least two" instances of past mishandling of canisters at SONGS, Motion 21, it fails to acknowledge that NRC has already investigated these matters, taken enforcement actions, and reviewed and found sufficient the subsequent licensee corrective actions. *See* Exhibit 6 at 2; Exhibit 12, NRC Supplemental Inspection Report (referenced in 2.206 Decision as ML19190A217). Relatedly, while Public Watchdogs casts as an apparent truism that continued pool storage at SONGS is safer than dry storage, Motion 3-4, 12, 21, 24, Public Watchdogs never attempts to support this with any meaningful risk comparison. In actuality, dry storage is widely used at U.S. reactor sites and has a long track record of safety. *See, e.g.*, Exhibit 4 at B-15; Exhibit 3 at 2.

emplacement. Exhibit 6 at 3. Accordingly, even if some reason emerged by 2049 why continued fuel storage at SONGS was not advisable, and a repository were not available in time, Public Watchdogs has not established that the fuel would be left irreparably stuck at SONGS, rather than being transferred elsewhere. And given the time frames at issue here, Public Watchdogs' claimed harms are hardly "immediate." *Caribbean Marine Servs. v. Baldrige*, 844 F.2d 668, 674 (9th Cir. 1988). Public Watchdogs merely speculates about harm its members *might* experience far into the future, if certain alleged "predicates" and "assumptions" about what will occur *by 2049* prove incorrect.

# **III.** Public Watchdogs has not shown that the balance of equities or the public interest favors an injunction.

The two final factors "merge when the government is the opposing party." *Nken v. Holder*, 556 U.S. 418, 435 (2009). Neither the balance of equities nor the public interest supports the relief requested.

First, deference to NRC concerning questions of nuclear safety is in the public interest. As the Supreme Court has stated, NRC "is making predictions, within its area of special expertise, at the frontiers of science. When examining this kind of scientific determination, as opposed to simple findings of fact, a reviewing court must generally be at its most deferential." *Baltimore Gas & Electric Co. v. Natural Resources Defense Council*, 462 U.S. 87, 103 (1983). The public interest and equities do not favor an injunction to suspend NRC-authorized

activities, effectively thwarting Congress's intent in delegating broad regulatory discretion to the expert agency charged with overseeing nuclear safety and protecting the public.

Second, the typical purpose of a preliminary injunction is to preserve the status quo, not alter it. Tanner Motor Livery, Ltd. v. Avis, Inc., 316 F.2d 804, 808-09 (9th Cir. 1963). Here, Public Watchdogs seeks review of a 2.206 decision by NRC denying petitioner's request for a discretionary enforcement action against SCE. Even if Public Watchdogs should prevail on its petition, the most extreme relief that this Court may award would be to vacate the decision and remand the matter to NRC to reconsider the request. Moreover, Public Watchdogs asks this Court to order NRC to order a halt to decommissioning activities at SONGS, activities that have been occurring in accordance with an NRC license and Certificate of Compliance that were in place well before Public Watchdogs lodged its 2.206 petition, based on uncertainties related to the long-term fate of spent nuclear fuel that are hardly new. What Public Watchdogs requests goes far beyond the usual function and purpose of a preliminary injunction to preserve the status quo and would neither serve the public interest nor be warranted in light of the equities of this case.

(29 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 29 of 91

### CONCLUSION

This Court should deny Public Watchdogs' motion for a temporary

injunction.

Respectfully submitted,

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April 27, 2020 DJ 90-13-3-16007

## **CERTIFICATE OF COMPLIANCE WITH FEDERAL RULE OF APPELLATE PROCEDURE 27(d) AND CIRCUIT RULE 27-1.(1)(d)**

I certify that this filing complies with the requirements of Fed. R. App. P. 27(d)(1)(E) because it has been prepared in 14-point Times New Roman, a proportionally spaced font.

I certify that this filing complies with the length limit of Fed. R. App. P. 27(d)(2)(A) because it contains 5,199 words, according to the word count of Microsoft Word, excluding the parts of the filing exempted under Fed. R. App. P. 27(a)(2)(B) and 32(f).

/s/ Andrew P. Averbach Solicitor U.S. Nuclear Regulatory Commission

#### (31 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 31 of 91

# ADDENDUM

28 U.S.C. § 2344	.1a
28 U.S.C. § 2348	.1a
42 U.S.C. § 2133	.2a
42 U.S.C. § 2239	.4a
42 U.S.C. § 5841	.7a
42 U.S.C. § 101341	l0a
42 U.S.C. § 101531	l4a
10 C.F.R. § 2.202	l5a
10 C.F.R. § 2.206	l8a
10 C.F.R. § 50.54 (excerpted)2	20a
10 C.F.R. § 50.82	21a
10 C.F.R. § 51.23	24a
10 C.F.R. pt. 72, subpart K (10 C.F.R. § 72.210, 72.212)2	25a
10 C.F.R. § 72.236	30a
DTE Electric Co. (Fermi Nuclear Power Plant, Unit 3), CLI-15-4, 81 N.R.C. 221 (2015)	32a

## 28 U.S.C. § 2344

**Review of orders; time; notice; contents of petition; service** On the entry of a final order reviewable under this chapter, the agency shall promptly give notice thereof by service or publication in accordance with its rules. Any party aggrieved by the final order may, within 60 days after its entry, file a petition to review the order in the court of appeals wherein venue lies. The action shall be against the United States. The petition shall contain a concise statement of—

(1) the nature of the proceedings as to which review is sought;

(2) the facts on which venue is based;

(3) the grounds on which relief is sought; and

(4) the relief prayed.

The petitioner shall attach to the petition, as exhibits, copies of the order, report, or decision of the agency. The clerk shall serve a true copy of the petition on the agency and on the Attorney General by registered mail, with request for a return receipt.

## 28 U.S.C. § 2348

## **Representation in proceeding; intervention**

The Attorney General is responsible for and has control of the interests of the Government in all court proceedings under this chapter. The agency, and any party in interest in the proceeding before the agency whose interests will be affected if an order of the agency is or is not enjoined, set aside, or suspended, may appear as parties thereto of their own motion and as of right, and be represented by counsel in any proceeding to review the order. Communities, associations, corporations, firms, and individuals, whose interests are affected by the order of the agency, may intervene in any proceeding to review the order. The Attorney General may not dispose of or discontinue the proceeding to review over the objection of any party or intervenor, but any intervenor may prosecute, defend, or continue the proceeding unaffected by the action or inaction of the Attorney General.

### 42 U.S.C. § 2133 Commercial licenses (a) Conditions

The Commission is authorized to issue licenses to persons applying therefor to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export under the terms of an agreement for cooperation arranged pursuant to section 2153 of this title, utilization or production facilities for industrial or commercial purposes. Such licenses shall be issued in accordance with the provisions of subchapter XV and subject to such conditions as the Commission may by rule or regulation establish to effectuate the purposes and provisions of this chapter.

### (b) Nonexclusive basis

The Commission shall issue such licenses on a nonexclusive basis to persons applying therefor (1) whose proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized; (2) who are equipped to observe and who agree to observe such safety standards to protect health and to minimize danger to life or property as the Commission may by rule establish; and (3) who agree to make available to the Commission such technical information and data concerning activities under such licenses as the Commission may determine necessary to promote the common defense and security and to protect the health and safety of the public. All such information may be used by the Commission only for the purposes of the common defense and security and to protect the health and safety of the public.

### (c) License period

Each such license shall be issued for a specified period, as determined by the Commission, depending on the type of activity to be licensed, but not exceeding forty years from the authorization to commence operations, and may be renewed upon the expiration of such period.

## (d) Limitations

No license under this section may be given to any person for activities which are not under or within the jurisdiction of the United States, except for the export of production or utilization facilities under terms of an agreement for cooperation arranged pursuant to section 2153 of this title, or except under the provisions of section 2139 of this title. No license may be issued to an alien or any any [1] corporation or other entity if the Commission knows or has reason to believe it is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In any event, no license may be issued to any person within the United States if, in the opinion of the Commission, the issuance of a license to such person would be inimical to the common defense and security or to the health and safety of the public.

# (f) Accident notification condition; license revocation; license amendment to include condition

Each license issued for a utilization facility under this section or section 2134(b) of this title shall require as a condition thereof that in case of any accident which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission, the licensee shall immediately so notify the Commission. Violation of the condition prescribed by this subsection may, in the Commission's discretion, constitute grounds for license revocation. In accordance with section 2237 of this title, the Commission shall promptly amend each license for a utilization facility issued under this section or section 2134(b) of this title which is in effect on June 30, 1980, to include the provisions required under this subsection.

## 42 U.S.C. § 2239

## Hearings and Judicial Review

(a)(1)(A) In any proceeding under this chapter, for the granting, suspending, revoking, or amending of any license or construction permit, or application to transfer control, and in any proceeding for the issuance or modification of rules and regulations dealing with the activities of licensees, and in any proceeding for the payment of compensation, an award or royalties under sections 2183, 2187, 2236(c) or 2238 of this title, the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding. The Commission shall hold a hearing after thirty days' notice and publication once in the Federal Register, on each application under section 2133 or 2134(b) of this title for a construction permit for a facility, and on any application under section 2134(c) of this title for a construction permit for a testing facility. In cases where such a construction permit has been issued following the holding of such a hearing, the Commission may, in the absence of a request therefor by any person whose interest may be affected, issue an operating license or an amendment to a construction permit or an amendment to an operating license without a hearing, but upon thirty days' notice and publication once in the Federal Register of its intent to do so. The Commission may dispense with such thirty days' notice and publication with respect to any application for an amendment to a construction permit or an amendment to an operating license upon a determination by the Commission that the amendment involves no significant hazards consideration.

(B)(i) Not less than 180 days before the date scheduled for initial loading of fuel into a plant by a licensee that has been issued a combined construction permit and operating license under section 2235(b) of this title, the Commission shall publish in the Federal Register notice of intended operation. That notice shall provide that any person whose interest may be affected by operation of the plant, may within 60 days request the Commission to hold a hearing on whether the facility as constructed complies, or on completion will comply, with the acceptance criteria of the license.

(ii) A request for hearing under clause (i) shall show, prima facie, that one or more of the acceptance criteria in the combined license have not been, or will not be met, and the specific operational consequences of nonconformance that would be contrary to providing reasonable assurance of adequate protection of the public health and safety.
(iii) After receiving a request for a hearing under clause (i), the Commission expeditiously shall either deny or grant the request. If the request is granted, the Commission shall determine, after considering petitioners' prima facie showing and any answers thereto, whether during a period of interim operation, there will be reasonable assurance of adequate protection of the public health and safety. If the Commission determines that there is such reasonable assurance, it shall allow operation during an interim period under the combined license.

(iv) The Commission, in its discretion, shall determine appropriate hearing procedures, whether informal or formal adjudicatory, for any hearing under clause (i), and shall state its reasons therefor.

(v) The Commission shall, to the maximum possible extent, render a decision on issues raised by the hearing request within 180 days of the publication of the notice provided by clause (i) or the anticipated date for initial loading of fuel into the reactor, whichever is later. Commencement of operation under a combined license is not subject to subparagraph (A).

(2)(A) The Commission may issue and make immediately effective any amendment to an operating license or any amendment to a combined construction and operating license, upon a determination by the Commission that such amendment involves no significant hazards consideration, notwithstanding the pendency before the Commission of a request for a hearing from any person. Such amendment may be issued and made immediately effective in advance of the holding and completion of any required hearing. In determining under this section whether such amendment involves no significant hazards consideration, the Commission shall consult with the State in which the facility involved is located. In all other respects such amendment shall meet the requirements of this chapter. (B) The Commission shall periodically (but not less frequently than once every thirty days) publish notice of any amendments issued, or proposed to be issued, as provided in subparagraph (A). Each such notice shall include all amendments issued, or proposed to be issued, since the date of publication of the last such periodic notice. Such notice shall, with respect to each amendment or proposed amendment (i) identify the facility involved; and (ii) provide a brief description of such amendment. Nothing in this subsection shall be construed to delay the effective date of any amendment.

(C) The Commission shall, during the ninety-day period following the effective date of this paragraph, promulgate regulations establishing (i) standards for determining whether any amendment to an operating license or any amendment to a combined construction and operating license involves no significant hazards consideration; (ii) criteria for providing or, in emergency situations, dispensing with prior notice and reasonable opportunity for public comment on any such determination, which criteria shall take into account the exigency of the need for the amendment involved; and (iii) procedures for consultation on any such determination with the State in which the facility involved is located.

(b) The following Commission actions shall be subject to judicial review in the manner prescribed in chapter 158 of title 28 and chapter 7 of title 5:

(1) Any final order entered in any proceeding of the kind specified in subsection (a).

(2) Any final order allowing or prohibiting a facility to begin operating under a combined construction and operating license.

(3) Any final order establishing by regulation standards to govern the Department of Energy's gaseous diffusion uranium enrichment plants, including any such facilities leased to a corporation established under the USEC Privatization Act [42 U.S.C. 2297h et seq.].

(4) Any final determination under section 2297f<sup>©</sup> of this title relating to whether the gaseous diffusion plants, including any such facilities leased to a corporation established under the USEC Privatization Act [42 U.S.C. 2297h et seq.], are in compliance with the Commission's standards governing the gaseous diffusion plants and all applicable laws.

#### 42 U.S.C. § 5841

#### Establishment and transfers (a) Composition; Chairman; Acting Chairman; quorum; official spokesman; seal; functions of Chairman and Commission

(1) There is established an independent regulatory commission to be known as the Nuclear Regulatory Commission which shall be composed of five members, each of whom shall be a citizen of the United States. The President shall designate one member of the Commission as Chairman thereof to serve as such during the pleasure of the President. The Chairman may from time to time designate any other member of the Commission as Acting Chairman to act in the place and stead of the Chairman during his absence. The Chairman (or the Acting Chairman in the absence of the Chairman) shall preside at all meetings of the Commission and a quorum for the transaction of business shall consist of at least three members present. Each member of the Commission, including the Chairman, shall have equal responsibility and authority in all decisions and actions of the Commission, shall have full access to all information relating to the performance of his duties or responsibilities, and shall have one vote. Action of the Commission shall be determined by a majority vote of the members present. The Chairman (or Acting Chairman in the absence of the Chairman) shall be the official spokesman of the Commission in its relations with the Congress, Government agencies, persons, or the public, and, on behalf of the Commission, shall see to the faithful execution of the policies and decisions of the Commission, and shall report thereon to the Commission from time to time or as the Commission may direct. The Commission shall have an official seal which shall be judicially noticed.

(2) The Chairman of the Commission shall be the principal executive officer of the Commission, and he shall exercise all of the executive and administrative functions of the Commission, including functions of the Commission with respect to (a) the appointment and supervision of personnel employed under the Commission (other than personnel employed regularly and full time in the immediate offices of commissioners other than the Chairman, and except as otherwise provided in this chapter), (b) the distribution of business among such personnel and among administrative units of the Commission, and (c) the use and expenditure of funds. (3) In carrying out any of his functions under the provisions of this section the Chairman shall be governed by general policies of the Commission and by such regulatory decisions, findings, and determinations as the Commission may by law be authorized to make.

(4) The appointment by the Chairman of the heads of major administrative units under the Commission shall be subject to the approval of the Commission.

(5) There are hereby reserved to the Commission its functions with respect to revising budget estimates and with respect to determining upon the distribution of appropriated funds according to major programs and purposes.

#### (b) Appointment of members

(1) Members of the Commission shall be appointed by the President, by and with the advice and consent of the Senate.

(2) Appointments of members pursuant to this subsection shall be made in such a manner that not more than three members of the Commission shall be members of the same political party.

#### (c) Term of office

Each member shall serve for a term of five years, each such term to commence on July 1, except that of the five members first appointed to the Commission, one shall serve for one year, one for two years, one for three years, one for four years, and one for five years, to be designated by the President at the time of appointment; and except that any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed, shall be appointed for the remainder of such term. For the purpose of determining the expiration date of the terms of office of the five members first appointed to the Nuclear Regulatory Commission, each such term shall be deemed to have begun July 1, 1975.

#### (d) Submission of appointments to Senate

Such initial appointments shall be submitted to the Senate within sixty days of October 11, 1974. Any individual who is serving as a member of the Atomic Energy Commission on October 11, 1974, and who may be appointed by the President to the Commission, shall be appointed for a term designated by the President, but which term shall terminate not later than the end of his present term as a member of the Atomic Energy Commission, without regard to the requirements of subsection (b)(2) of this section. Any subsequent appointment of such individuals shall be subject to the provisions of this section.

# (e) Removal of members; prohibition against engagement in business or other employment

Any member of the Commission may be removed by the President for inefficiency, neglect of duty, or malfeasance in office. No member of the Commission shall engage in any business, vocation, or employment other than that of serving as a member of the Commission.

#### (f) Transfer of licensing and regulatory functions of Atomic Energy Commission

There are hereby transferred to the Commission all the licensing and related regulatory functions of the Atomic Energy Commission, the Chairman and members of the Commission, the General Counsel, and other officers and components of the Commission—which functions officers, components, and personnel are excepted from the transfer to the Administrator by section 5814(c) of this title.

#### (g) Additional transfers

In addition to other functions and personnel transferred to the Commission, there are also transferred to the Commission—

(1) the functions of the Atomic Safety and Licensing Board Panel and the Atomic Safety and Licensing Appeal Board;

(2) such personnel as the Director of the Office of Management and Budget determines are necessary for exercising responsibilities under section 5845 of this title, relating to, research, for the purpose of confirmatory assessment relating to licensing and other regulation under the provisions of the Atomic Energy Act of 1954, as amended [42 U.S.C. 2011 et seq.], and of this chapter.

#### 42 U.S.C. § 10134

## Site approval and construction authorization

(a) Hearings and Presidential recommendation

(1) The Secretary shall hold public hearings in the vicinity of the Yucca Mountain site, for the purposes of informing the residents of the area of such consideration and receiving their comments regarding the possible recommendation of such site. If, upon completion of such hearings and completion of site characterization activities at the Yucca Mountain site, under section 10133 of this title, the Secretary decides to recommend approval of such site to the President, the Secretary shall notify the Governor and legislature of the State of Nevada, of such decision. No sooner than the expiration of the 30-day period following such notification, the Secretary shall submit to the President a recommendation that the President approve such site for the development of a repository. Any such recommendation by the Secretary shall be based on the record of information developed by the Secretary under section 10133 of this title and this section, including the information described in subparagraph (A) through subparagraph (G). Together with any recommendation of a site under this paragraph, the Secretary shall make available to the public, and submit to the President, a comprehensive statement of the basis of such recommendation, including the following:

(A) a description of the proposed repository, including preliminary engineering specifications for the facility;

(B) a description of the waste form or packaging proposed for use at such repository, and an explanation of the relationship between such waste form or packaging and the geologic medium of such site;

(C) a discussion of data, obtained in site characterization activities, relating to the safety of such site;

(D) a final environmental impact statement prepared for the Yucca Mountain site pursuant to subsection (f) and the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), together with comments made concerning such environmental impact statement by the Secretary of the Interior, the Council on Environmental Quality, the Administrator, and the Commission, except that the Secretary shall not be required in any such environmental impact statement to consider the need for a repository, the alternatives to geological disposal, or alternative sites to the Yucca Mountain site;

(E) preliminary comments of the Commission concerning the extent to which the at-depth site characterization analysis and the waste form proposal for such site seem to be sufficient for inclusion in any application to be submitted by the Secretary for licensing of such site as a repository;

(F) the views and comments of the Governor and legislature of any State, or the governing body of any affected Indian tribe, as determined by the Secretary, together with the response of the Secretary to such views;

(G) such other information as the Secretary considers appropriate; and

(H) any impact report submitted under section 10136(c)(2)(B) of this title by the State of Nevada.

(2)(A) If, after recommendation by the Secretary, the President considers the Yucca Mountain site qualified for application for a construction authorization for a repository, the President shall submit a recommendation of such site to Congress.

(B) The President shall submit with such recommendation a copy of the statement for such site prepared by the Secretary under paragraph (1).

(3)(A) The President may not recommend the approval of the Yucca Mountain site unless the Secretary has recommended to the President under paragraph (1) approval of such site and has submitted to the President a statement for such site as required under such paragraph.

(B) No recommendation of a site by the President under this subsection shall require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)), or to [1] require any environmental review under subparagraph (E) or (F) of section 102(2) of such Act.

#### (b) Submission of application

If the President recommends to the Congress the Yucca Mountain site under subsection (a) and the site designation is permitted to take effect under section 10135 of this title, the Secretary shall submit to the Commission an application for a construction authorization for a repository at such site not later than 90 days after the date on which the recommendation of the site designation is effective under such section and shall provide to the Governor and legislature of the State of Nevada a copy of such application.

#### (c) Status report on application

Not later than 1 year after the date on which an application for a construction authorization is submitted under subsection (b), and annually thereafter until the date on which such authorization is granted, the Commission shall submit a report to the Congress describing the proceedings undertaken through the date of such report with regard to such application, including a description of—

(1) any major unresolved safety issues, and the explanation of the Secretary with respect to design and operation plans for resolving such issues;

(2) any matters of contention regarding such application; and

(3) any Commission actions regarding the granting or denial of such authorization.

#### (d) Commission action

The Commission shall consider an application for a construction authorization for all or part of a repository in accordance with the laws applicable to such applications, except that the Commission shall issue a final decision approving or disapproving the issuance of a construction authorization not later than the expiration of 3 years after the date of the submission of such application, except that the Commission may extend such deadline by not more than 12 months if, not less than 30 days before such deadline, the Commission complies with the reporting requirements established in subsection (e)(2). The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to part C of this subchapter, shall be located, or is planned to be located, within 50 miles of the first repository, then the Commission decision approving the first such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository

is in operation.

#### (e) Project decision schedule

(1) The Secretary shall prepare and update, as appropriate, in cooperation with all affected Federal agencies, a project decision schedule that portrays the optimum way to attain the operation of the repository, within the time periods specified in this part. Such schedule shall include a description of objectives and a sequence of deadlines for all Federal agencies required to take action, including an identification of the activities in which a delay in the start, or completion, of such activities will cause a delay in beginning repository operation.

(2) Any Federal agency that determines that it cannot comply with any deadline in the project decision schedule, or fails to so comply, shall submit to the Secretary and to the Congress a written report explaining the reason for its failure or expected failure to meet such deadline, the reason why such agency could not reach an agreement with the Secretary, the estimated time for completion of the activity or activities involved, the associated effect on its other deadlines in the project decision schedule, and any recommendations it may have or actions it intends to take regarding any improvements in its operation or organization, or changes to its statutory directives or authority, so that it will be able to mitigate the delay involved. The Secretary, within 30 days after receiving any such report, shall file with the Congress his response to such report, including the reasons why the Secretary could not amend the project decision schedule to accommodate the Federal agency involved.

#### (f) Environmental impact statement

(1) Any recommendation made by the Secretary under this section shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.). A final environmental impact statement prepared by the Secretary under such Act shall accompany any recommendation to the President to approve a site for a repository.

(2) With respect to the requirements imposed by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), compliance with the procedures and requirements of this chapter shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to the isolation of high-level radioactive waste and spent nuclear fuel in a repository.

(3) For purposes of complying with the requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and this section, the Secretary need not consider alternate sites to the Yucca Mountain site for the repository to be developed under this part.

(4) Any environmental impact statement prepared in connection with a repository proposed to be constructed by the Secretary under this part shall, to the extent practicable, be adopted by the Commission in connection with the issuance by the Commission of a construction authorization and license for such repository. To the extent such statement is adopted by the Commission, such adoption shall be deemed to also satisfy the responsibilities of the Commission under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and no further consideration shall be required, except that nothing in this subsection shall affect any independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.).

(5) Nothing in this chapter shall be construed to amend or otherwise detract from the licensing requirements of the Nuclear Regulatory Commission established in title II of the Energy Reorganization Act of 1974 (42 U.S.C. 5841 et seq.).

(6) In any such statement prepared with respect to the repository to be constructed under this part, the Nuclear Regulatory Commission need not consider the need for a repository, the time of initial availability of a repository, alternate sites to the Yucca Mountain site, or nongeologic alternatives to such site.

## 42 U.S.C. § 10153

## Interim at-reactor storage

The Commission shall, by rule, establish procedures for the licensing of any technology approved by the Commission under section 10198(a) [1] of this title for use at the site of any civilian nuclear power reactor. The establishment of such procedures shall not preclude the licensing, under any applicable procedures or rules of the Commission in effect prior to such establishment, of any technology for the storage of civilian spent nuclear fuel at the site of any civilian nuclear power reactor.

## 10 C.F.R. § 2.202

#### Orders.

(a) The Commission may institute a proceeding to modify, suspend, or revoke a license or to take such other action as may be proper by serving on the licensee or other person subject to the jurisdiction of the Commission an order that will:

(1) Allege the violations with which the licensee or other person subject to the Commission's jurisdiction is charged, or the potentially hazardous conditions or other facts deemed to be sufficient ground for the proposed action, and specify the action proposed;

(2) Provide that the licensee or other person must file a written answer to the order under oath or affirmation within twenty (20) days of its date, or such other time as may be specified in the order;

(3) Inform the licensee or any other person adversely affected by the order of his or her right, within twenty (20) days of the date of the order, or such other time as may be specified in the order, to demand a hearing on all or part of the order, except in a case where the licensee or other person has consented in writing to the order;

(4) Specify the issues for hearing; and

(5) State the effective date of the order; if the Commission finds that the public health, safety, or interest so requires or that the violation or conduct causing the violation is willful, the order may provide, for stated reasons, that the proposed action be immediately effective pending further order.

(b) A licensee or other person to whom the Commission has issued an order under this section must respond to the order by filing a written answer under oath or affirmation. The answer shall specifically admit or deny each allegation or charge made in the order, and shall set forth the matters of fact and law on which the licensee or other person relies, and, if the order is not consented to, the reasons as to why the order should not have been issued. Except as provided in paragraph (d) of this section, the answer may demand a hearing.

(c) If the answer demands a hearing, the Commission will issue an order designating the time and place of hearing.

(1) If the answer demands a hearing with respect to an immediately effective order, the hearing will be conducted expeditiously, giving due consideration to the rights of the parties.

(2)(i) The licensee or other person to whom the Commission has issued an immediately effective order in accordance with paragraph (a)(5) of this section, may, in addition to demanding a hearing, at the time the answer is filed or sooner, file a motion with the presiding officer to set aside the immediate effectiveness of the order on the ground that the order, including the need for immediate effectiveness, is not based on adequate evidence but on mere suspicion, unfounded allegations, or error. The motion must state with particularity the reasons why the order is not based on adequate evidence relied on.

(ii) Any party may file a motion with the presiding officer requesting that the presiding officer order live testimony. Any motion for live testimony must be made in conjunction with the motion to set aside the immediate effectiveness of the order or any party's response thereto. The presiding officer may, on its own motion, order live testimony. The presiding officer's basis for approving any motion for, or ordering on its own motion, live testimony shall be that taking live testimony would assist in its decision on the motion to set aside the immediate effectiveness of the order.

(iii) The NRC staff shall respond in writing within 5 days of the receipt of either a motion to set aside the immediate effectiveness of the order or the presiding officer's order denying a motion for live testimony. In cases in which the presiding officer orders live testimony, the staff may present its response through live testimony rather than a written response.

(iv) The presiding officer shall conduct any live testimony pursuant to its powers in § 2.319 of this part, except that no subpoenas, discovery, or referred rulings or certified questions to the Commission shall be permitted for this purpose.

(v) The presiding officer may, on motion by the staff or any other party to the proceeding, where good cause exists, delay the hearing on the immediately effective order at any time for such periods as are consistent with the due process rights of the licensee or other person and other affected parties. (vi) The licensee or other person challenging the immediate effectiveness of an order bears the burden of going forward with evidence that the immediately effective order is not based on adequate evidence, but on mere suspicion, unfounded allegations, or error. The NRC staff bears the burden of persuading the presiding officer that adequate evidence supports the grounds for the immediately effective order and immediate effectiveness is warranted.

(vii) The presiding officer shall issue a decision on the motion to set aside the immediate effectiveness of the order expeditiously. During the pendency of the motion to set aside the immediate effectiveness of the order or at any other time, the presiding officer may not stay the immediate effectiveness of the order, either on its own motion, or upon motion of the licensee or other person.

(viii) The presiding officer shall uphold the immediate effectiveness of the order if it finds that there is adequate evidence to support immediate effectiveness. An order upholding immediate effectiveness will constitute the final agency action on immediate effectiveness. The presiding officer will promptly refer an order setting aside immediate effectiveness to the Commission and such order setting aside immediate effectiveness will not be effective pending further order of the Commission.

(d) An answer may consent to the entry of an order in substantially the form proposed in the order with respect to all or some of the actions proposed in the order. The consent, in the answer or other written document, of the licensee or other person to whom the order has been issued to the entry of an order shall constitute a waiver by the licensee or other person of a hearing, findings of fact and conclusions of law, and of all right to seek Commission and judicial review or to contest the validity of the order in any forum as to those matters which have been consented to or agreed to or on which a hearing has not been requested. An order that has been consented to shall have the same force and effect as an order made after hearing by a presiding officer or the Commission, and shall be effective as provided in the order.

(e)(1) If the order involves the modification of a part 50 license and is a backfit, the requirements of § 50.109 of this chapter shall be followed, unless the licensee has consented to the action required.

(2) If the order involves the modification of combined license under subpart C of part 52 of this chapter, the requirements of § 52.98 of this chapter shall be followed unless the licensee has consented to the action required.

(3) If the order involves a change to an early site permit under subpart A of part 52 of this chapter, the requirements of § 52.39 of this chapter must be followed, unless the applicant or licensee has consented to the action required.

(4) If the order involves a change to a standard design certification rule referenced by that plant's application, the requirements, if any, in the referenced design certification rule with respect to changes must be followed, or, in the absence of these requirements, the requirements of § 52.63 of this chapter must be followed, unless the applicant or licensee has consented to follow the action required.

(5) If the order involves a change to a standard design approval referenced by that plant's application, the requirements of § 52.145 of this chapter must be followed unless the applicant or licensee has consented to follow the action required.

(6) If the order involves a modification of a manufacturing license under subpart F of part 52, the requirements of § 52.171 of this chapter must be followed, unless the applicant or licensee has consented to the action required.

#### 10 C.F.R. § 2.206

#### **Requests for action under this subpart.**

(a) Any person may file a request to institute a proceeding pursuant to § 2.202 to modify, suspend, or revoke a license, or for any other action as may be proper. Requests must be addressed to the Executive Director for Operations and must be filed either by hand delivery to the NRC's Offices at 11555 Rockville Pike, Rockville, Maryland; by mail or telegram addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; or by electronic submissions, for example, via facsimile, Electronic Information Exchange, e-mail, or CD-ROM. Electronic submissions must be made in a manner that enables the NRC to receive, read, authenticate, distribute, and archive the submission, and process and retrieve it a single page at a time. Detailed guidance on making electronic submissions can be obtained by visiting the NRC's Web

site at *http://www.nrc.gov/site-help/e-submittals.html*; by e-mail to *MSHD.Resource@nrc.gov*; or by writing the Office of the Chief Information Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The request must specify the action requested and set forth the facts that constitute the basis for the request. The Executive Director for Operations will refer the request to the Director of the NRC office with responsibility for the subject matter of the request for appropriate action in accordance with paragraph (b) of this section.

(b) Within a reasonable time after a request pursuant to paragraph (a) of this section has been received, the Director of the NRC office with responsibility for the subject matter of the request shall either institute the requested proceeding in accordance with this subpart or shall advise the person who made the request in writing that no proceeding will be instituted in whole or in part, with respect to the request, and the reasons for the decision.

(c)(1) Director's decisions under this section will be filed with the Office of the Secretary. Within twenty-five (25) days after the date of the Director's decision under this section that no proceeding will be instituted or other action taken in whole or in part, the Commission may on its own motion review that decision, in whole or in part, to determine if the Director has abused his discretion. This review power does not limit in any way either the Commission's supervisory power over delegated staff actions or the Commission's power to consult with the staff on a formal or informal basis regarding institution of proceedings under this section.

(2) No petition or other request for Commission review of a Director's decision under this section will be entertained by the Commission.

(3) The Secretary is authorized to extend the time for Commission review on its own motion of a Director's denial under paragraph (c) of this section.

#### 10 C.F.R. § 50.54 (excerpted) Conditions of licenses.

The following paragraphs of this section, with the exception of paragraphs (r) and (gg), and the applicable requirements of 10 CFR 50.55a, are conditions in every nuclear power reactor operating license issued under this part. The following paragraphs with the exception of paragraph (r), (s), and (u) of this section are conditions in every combined license issued under part 52 of this chapter, provided, however, that paragraphs (i) introductory text, (i)(1), (j), (k), (l), (m), (n), (w), (x), (y), (z), and (hh) of this section are only applicable after the Commission makes the finding under § 52.103(g) of this chapter.

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(bb) For nuclear power reactors licensed by the NRC, the licensee shall, within 2 years following permanent cessation of operation of the reactor or 5 years before expiration of the reactor operating license, whichever occurs first, submit written notification to the Commission for its review and preliminary approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor following permanent cessation of operation of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository. Licensees of nuclear power reactors that have permanently ceased operation by April 4, 1994 are required to submit such written notification by April 4, 1996. Final Commission review will be undertaken as part of any proceeding for continued licensing under part 50 or part 72 of this chapter. The licensee must demonstrate to NRC that the elected actions will be consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that the actions will be implemented on a timely basis. Where implementation of such actions requires NRC authorizations, the licensee shall verify in the notification that submittals for such actions have been or will be made to NRC and shall identify them. A copy of the notification shall be retained by the licensee as a record until expiration of the reactor operating license. The licensee shall notify the NRC of any significant changes in the proposed waste management program as described in the initial notification.

## 10 C.F.R. § 50.82 (excerpted)

#### Termination of license.

For power reactor licensees who, before the effective date of this rule, either submitted a decommissioning plan for approval or possess an approved decommissioning plan, the plan is considered to be the PSDAR submittal required under paragraph (a)(4) of this section and the provisions of this section apply accordingly. For power reactor licensees whose decommissioning plan approval activities have been relegated to notice of opportunity for a hearing under subpart G of 10 CFR part 2, the public meeting convened and 90-day delay of major decommissioning activities required in paragraphs (a)(4)(ii) and (a)(5) of this section shall not apply, and any orders arising from proceedings under subpart G of 10 CFR part 2 shall continue and remain in effect absent any orders from the Commission.

(a) For power reactor licensees—

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(4) (i) Prior to or within 2 years following permanent cessation of operations, the licensee shall submit a post-shutdown decommissioning activities report (PSDAR) to the NRC, and a copy to the affected State(s). The PSDAR must contain a description of the planned decommissioning activities along with a schedule for their accomplishment, a discussion that provides the reasons for concluding that the environmental impacts associated with site-specific decommissioning activities will be bounded by appropriate previously issued environmental impact statements, and a site-specific DCE, including the projected cost of managing irradiated fuel.

(ii) The NRC shall notice receipt of the PSDAR and make the PSDAR available for public comment. The NRC shall also schedule a public meeting in the vicinity of the licensee's facility upon receipt of the PSDAR. The NRC shall publish a notice in the Federal Register and in a forum, such as local newspapers, that is readily accessible to individuals in the vicinity of the site, announcing the date, time and location of the meeting, along with a brief description of the purpose of the meeting.

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(8)(i) Decommissioning trust funds may be used by licensees if-

(A) The withdrawals are for expenses for legitimate decommissioning activities consistent with the definition of decommissioning in § 50.2;

(B) The expenditure would not reduce the value of the decommissioning trust below an amount necessary to place and maintain the reactor in a safe storage condition if unforeseen conditions or expenses arise and;

(C) The withdrawals would not inhibit the ability of the licensee to complete funding of any shortfalls in the decommissioning trust needed to ensure the availability of funds to ultimately release the site and terminate the license.

(ii) Initially, 3 percent of the generic amount specified in § 50.75 may be used for decommissioning planning. For licensees that have submitted the certifications required under § 50.82(a)(1) and commencing 90 days after the NRC has received the PSDAR, an additional 20 percent may be used. A sitespecific decommissioning cost estimate must be submitted to the NRC prior to the licensee using any funding in excess of these amounts.

(iii) Within 2 years following permanent cessation of operations, if not already submitted, the licensee shall submit a site-specific decommissioning cost estimate.

(iv) For decommissioning activities that delay completion of decommissioning by including a period of storage or surveillance, the licensee shall provide a means of adjusting cost estimates and associated funding levels over the storage or surveillance period.

(v) After submitting its site-specific DCE required by paragraph (a)(4)(i) of this section, and until the licensee has completed its final radiation survey and demonstrated that residual radioactivity has been reduced to a level that permits termination of its license, the licensee must annually submit to the NRC, by March 31, a financial assurance status report. The report must include the following information, current through the end of the previous calendar year:

(A) The amount spent on decommissioning, both cumulative and over the previous calendar year, the remaining balance of any decommissioning funds, and the amount provided by other financial assurance methods being

relied upon;

(B) An estimate of the costs to complete decommissioning, reflecting any difference between actual and estimated costs for work performed during the year, and the decommissioning criteria upon which the estimate is based;

(C) Any modifications occurring to a licensee's current method of providing financial assurance since the last submitted report; and

(D) Any material changes to trust agreements or financial assurance contracts.

(vi) If the sum of the balance of any remaining decommissioning funds, plus earnings on such funds calculated at not greater than a 2 percent real rate of return, together with the amount provided by other financial assurance methods being relied upon, does not cover the estimated cost to complete the decommissioning, the financial assurance status report must include additional financial assurance to cover the estimated cost of completion.

(vii) After submitting its site-specific DCE required by paragraph (a)(4)(i) of this section, the licensee must annually submit to the NRC, by March 31, a report on the status of its funding for managing irradiated fuel. The report must include the following information, current through the end of the previous calendar year:

(A) The amount of funds accumulated to cover the cost of managing the irradiated fuel;

(B) The projected cost of managing irradiated fuel until title to the fuel and possession of the fuel is transferred to the Secretary of Energy; and

(C) If the funds accumulated do not cover the projected cost, a plan to obtain additional funds to cover the cost.

### 10 C.F.R. § 51.23

#### Environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor.

(a) The Commission has generically determined that the environmental impacts of continued storage of spent nuclear fuel beyond the licensed life for operation of a reactor are those impacts identified in NUREG–2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel."

(b) The environmental reports described in §§ 51.50, 51.53, and 51.61 are not required to discuss the environmental impacts of spent nuclear fuel storage in a reactor facility storage pool or an ISFSI for the period following the term of the reactor operating license, reactor combined license, or ISFSI license. The impact determinations in NUREG–2157 regarding continued storage shall be deemed incorporated into the environmental impact statements described in §§ 51.75, 51.80(b), 51.95, and 51.97(a). The impact determinations in NUREG–2157 regarding continued storage shall be considered in the environmental assessments described in §§ 51.30(b) and 51.95(d), if the impacts of continued storage of spent fuel are relevant to the proposed action.

(c) This section does not alter any requirements to consider the environmental impacts of spent fuel storage during the term of a reactor operating license or combined license, or a license for an ISFSI in a licensing proceeding.

#### 10 C.F.R. pt. 72, subpart K (excerpted) 10 C.F.R. § 72.210 General license issued.

A general license is hereby issued for the storage of spent fuel in an independent spent fuel storage installation at power reactor sites to persons authorized to possess or operate nuclear power reactors under 10 CFR part 50 or 10 CFR part 52.

### 10 C.F.R. § 72.212 Conditions of general license issued under § 72.210.

(a)(1) The general license is limited to that spent fuel which the general licensee is authorized to possess at the site under the specific license for the site.

(2) This general license is limited to storage of spent fuel in casks approved under the provisions of this part.

(3) The general license for the storage of spent fuel in each cask fabricated under a Certificate of Compliance shall commence upon the date that the particular cask is first used by the general licensee to store spent fuel, shall continue through any renewals of the Certificate of Compliance, unless otherwise specified in the Certificate of Compliance, and shall terminate when the cask's Certificate of Compliance expires. For any cask placed into service during the final renewal term of a Certificate of Compliance, or during the term of a Certificate of Compliance that was not renewed, the general license for that cask shall terminate after a storage period not to exceed the length of the term certified by the cask's Certificate of Compliance. Upon expiration of the general license, all casks subject to that general license must be removed from service.

(b) The general licensee must:

(1) Notify the Nuclear Regulatory Commission using instructions in § 72.4 at least 90 days before first storage of spent fuel under this general license. The notice may be in the form of a letter, but must contain the licensee's name, address, reactor license and docket numbers, and the name and means of contacting a person responsible for providing additional information concerning spent fuel under this general license. A copy of the submittal must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office listed in appendix D to part 20 of this chapter.

(2) Register use of each cask with the Nuclear Regulatory Commission no later than 30 days after using that cask to store spent fuel. This registration may be accomplished by submitting a letter using instructions in § 72.4 containing the following information: the licensee's name and address, the licensee's reactor license and docket numbers, the name and title of a person responsible for providing additional information concerning spent fuel storage under this general license, the cask certificate number, the CoC amendment number to which the cask conforms, unless loaded under the initial certificate, cask model number, and the cask identification number. A copy of each submittal must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office listed in appendix D to part 20 of this chapter.

(3) Ensure that each cask used by the general licensee conforms to the terms, conditions, and specifications of a CoC or an amended CoC listed in § 72.214.

(4) In applying the changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC, register each such cask with the Nuclear Regulatory Commission no later than 30 days after applying the changes authorized by the amended CoC. This registration may be accomplished by submitting a letter using instructions in § 72.4 containing the following information: the licensee's name and address, the licensee's reactor license and docket numbers, the name and title of a person responsible for providing additional information concerning spent fuel storage under this general license, the cask certificate number, the CoC amendment number to which the cask conforms, cask model number, and the cask identification number. A copy of each submittal must be sent to the administrator of the appropriate Nuclear Regulatory Commission regional office listed in appendix D to part 20 of this chapter.

(5) Perform written evaluations, before use and before applying the changes authorized by an amended CoC to a cask loaded under the initial CoC or an earlier amended CoC, which establish that: (i) The cask, once loaded with spent fuel or once the changes authorized by an amended CoC have been applied, will conform to the terms, conditions, and specifications of a CoC or an amended CoC listed in § 72.214;

(ii) Cask storage pads and areas have been designed to adequately support the static and dynamic loads of the stored casks, considering potential amplification of earthquakes through soil-structure interaction, and soil liquefaction potential or other soil instability due to vibratory ground motion; and

(iii) The requirements of § 72.104 have been met. A copy of this record shall be retained until spent fuel is no longer stored under the general license issued under § 72.210.

(6) Review the Safety Analysis Report referenced in the CoC or amended CoC and the related NRC Safety Evaluation Report, prior to use of the general license, to determine whether or not the reactor site parameters, including analyses of earthquake intensity and tornado missiles, are enveloped by the cask design bases considered in these reports. The results of this review must be documented in the evaluation made in paragraph (b)(5) of this section.

(7) Evaluate any changes to the written evaluations required by paragraphs (b)(5) and (b)(6) of this section using the requirements of § 72.48(c). A copy of this record shall be retained until spent fuel is no longer stored under the general license issued under § 72.210.

(8) Before use of the general license, determine whether activities related to storage of spent fuel under this general license involve a change in the facility Technical Specifications or require a license amendment for the facility pursuant to § 50.59(c) of this chapter. Results of this determination must be documented in the evaluations made in paragraph (b)(5) of this section.

(9) Protect the spent fuel against the design basis threat of radiological sabotage in accordance with the same provisions and requirements as are set forth in the licensee's physical security plan pursuant to § 73.55 of this chapter with the following additional conditions and exceptions:

(i) The physical security organization and program for the facility must be modified as necessary to assure that activities conducted under this general license do not decrease the effectiveness of the protection of vital equipment in accordance with § 73.55 of this chapter;

(ii) Storage of spent fuel must be within a protected area, in accordance with § 73.55(e) of this chapter, but need not be within a separate vital area. Existing protected areas may be expanded or new protected areas added for the purpose of storage of spent fuel in accordance with this general license;

(iii) For the purpose of this general license, personnel searches required by § 73.55(h) of this chapter before admission to a new protected area may be performed by physical pat-down searches of persons in lieu of firearms and explosives detection equipment;

(iv) The observational capability required by § 73.55(i)(3) of this chapter as applied to a new protected area may be provided by a guard or watchman on patrol in lieu of video surveillance technology;

(v) For the purpose of this general license, the licensee is exempt from requirements to interdict and neutralize threats in § 73.55 of this chapter; and

(vi) Each general licensee that receives and possesses power reactor spent fuel and other radioactive materials associated with spent fuel storage shall protect Safeguards Information against unauthorized disclosure in accordance with the requirements of § 73.21 and the requirements of § 73.22 or § 73.23 of this chapter, as applicable.

(10) Review the reactor emergency plan, quality assurance program, training program, and radiation protection program to determine if their effectiveness is decreased and, if so, prepare the necessary changes and seek and obtain the necessary approvals.

(11) Maintain a copy of the CoC and, for those casks to which the licensee has applied the changes of an amended CoC, the amended CoC, and the documents referenced in such Certificates, for each cask model used for storage of spent fuel, until use of the cask model is discontinued. The licensee shall comply with the terms, conditions, and specifications of the CoC and, for those casks to which the licensee has applied the changes of an amended CoC, the terms, conditions, and specifications of the amended CoC, including but not limited to, the requirements of any AMP put into effect as a condition of the NRC approval of a CoC renewal application in accordance with § 72.240.

(12) Accurately maintain the record provided by the CoC holder for each cask that shows, in addition to the information provided by the CoC holder, the following:

(i) The name and address of the CoC holder or lessor;

(ii) The listing of spent fuel stored in the cask; and

(iii) Any maintenance performed on the cask.

(13) Conduct activities related to storage of spent fuel under this general license only in accordance with written procedures.

(14) Make records and casks available to the Commission for inspection.

(c) The record described in paragraph (b)(12) of this section must include sufficient information to furnish documentary evidence that any testing and maintenance of the cask has been conducted under an NRC-approved quality assurance program.

(d) In the event that a cask is sold, leased, loaned, or otherwise transferred to another registered user, the record described in paragraph (b)(12) of this section must also be transferred to and must be accurately maintained by the new registered user. This record must be maintained by the current cask user during the period that the cask is used for storage of spent fuel and retained by the last user until decommissioning of the cask is complete.

(e) Fees for inspections related to spent fuel storage under this general license are those shown in § 170.31 of this chapter.

## 10 C.F.R. § 72.236 Specific requirements for spent fuel storage cask approval and fabrication.

The certificate holder and applicant for a CoC shall ensure that the requirements of this section are met.

(a) Specifications must be provided for the spent fuel to be stored in the spent fuel storage cask, such as, but not limited to, type of spent fuel (*i.e.*, BWR, PWR, both), maximum allowable enrichment of the fuel prior to any irradiation, burn-up (*i.e.*, megawatt-days/MTU), minimum acceptable cooling time of the spent fuel prior to storage in the spent fuel storage cask, maximum heat designed to be dissipated, maximum spent fuel loading limit, condition of the spent fuel (*i.e.*, intact assembly or consolidated fuel rods), the inerting atmosphere requirements.

(b) Design bases and design criteria must be provided for structures, systems, and components important to safety.

(c) The spent fuel storage cask must be designed and fabricated so that the spent fuel is maintained in a subcritical condition under credible conditions.

(d) Radiation shielding and confinement features must be provided sufficient to meet the requirements in §§ 72.104 and 72.106.

(e) The spent fuel storage cask must be designed to provide redundant sealing of confinement systems.

(f) The spent fuel storage cask must be designed to provide adequate heat removal capacity without active cooling systems.

(g) The spent fuel storage cask must be designed to store the spent fuel safely for the term proposed in the application, and permit maintenance as required.

(h) The spent fuel storage cask must be compatible with wet or dry spent fuel loading and unloading facilities.

(i) The spent fuel storage cask must be designed to facilitate decontamination to the extent practicable.

(j) The spent fuel storage cask must be inspected to ascertain that there are no cracks, pinholes, uncontrolled voids, or other defects that could significantly reduce its confinement effectiveness.

(k) The spent fuel storage cask must be conspicuously and durably marked with--

- (1) A model number;
- (2) A unique identification number; and
- (3) An empty weight.

(1) The spent fuel storage cask and its systems important to safety must be evaluated, by appropriate tests or by other means acceptable to the NRC, to demonstrate that they will reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

(m) To the extent practicable in the design of spent fuel storage casks, consideration should be given to compatibility with removal of the stored spent fuel from a reactor site, transportation, and ultimate disposition by the Department of Energy.

(n) Safeguards Information shall be protected against unauthorized disclosure in accordance with the requirements of § 73.21 and the requirements of § 73.22 or § 73.23 of this chapter, as applicable.

(64 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 64 of 91

Cite as 81 NRC 221 (2015)

CLI-15-4

#### UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

#### COMMISSIONERS:

Stephen G. Burns, Chairman Kristine L. Svinicki William C. Ostendorff Jeff Baran

DTE ELECTRIC COMPANY (Fermi Nuclear Power Plant, Unit 3)	Docket No. 52-033-COL
DTE ELECTRIC COMPANY (Fermi Nuclear Power Plant, Unit 2)	Docket No. 50-341-LR
DUKE ENERGY CAROLINAS, LLC	Docket Nos. 52-018-COL
(William States Lee III Nuclear Station, Units 1 and 2)	52-019-COL
ENTERGY NUCLEAR	Docket Nos. 50-247-LR
OPERATIONS, INC.	50-286-LR
(Indian Point, Units 2 and 3)	
FIRSTENERGY NUCLEAR OPERATING COMPANY	Docket No. 50-346-LR
(Davis-Besse Nuclear Power	
Station, Unit 1)	
FLORIDA POWER & LIGHT	Docket Nos. 52-040-COL
COMPANY	52-041-COL
(Turkey Point Nuclear Generating Plant, Units 6 and 7)	

221

#### (65 of 314)

## Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 65 of 91

LUMINANT GENERATION COMPANY, LLC (Comanche Peak Nuclear Power Plant, Units 3 and 4)	Docket Nos. 52-034-COL 52-035-COL
NEXTERA ENERGY SEABROOK, LLC (Seabrook Station, Unit 1)	Docket No. 50-443-LR
NUCLEAR INNOVATION NORTH AMERICA LLC (South Texas Project, Units 3 and 4)	Docket Nos. 52-012-COL 52-013-COL
PACIFIC GAS AND ELECTRIC COMPANY (Diablo Canyon Nuclear Power Plant, Units 1 and 2)	Docket Nos. 50-275-LR 50-323-LR
PROGRESS ENERGY FLORIDA, INC. (Levy County Nuclear Power Plant, Units 1 and 2)	Docket Nos. 52-029-COL 52-030-COL
STP NUCLEAR OPERATING COMPANY (South Texas Project, Units 1 and 2)	Docket Nos. 50-498-LR 50-499-LR
TENNESSEE VALLEY AUTHORITY (Bellefonte Nuclear Power Plant, Units 3 and 4)	Docket Nos. 52-014-COL 52-015-COL
TENNESSEE VALLEY AUTHORITY (Sequoyah Nuclear Plant, Units 1 and 2)	Docket Nos. 50-327-LR 50-328-LR
TENNESSEE VALLEY AUTHORITY (Watts Bar Nuclear Plant, Unit 2)	Docket No. 50-391-OL
UNION ELECTRIC COMPANY (Callaway Plant, Unit 1)	Docket No. 50-483-LR

222

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-1, Page 66 of 91

VIRGINIA ELECTRIC AND POWER COMPANY d/b/a DOMINION VIRGINIA POWER and OLD DOMINION ELECTRIC COOPERATIVE (North Anna Power Station, Unit 3) Docket No. 52-017-COL

February 26, 2015

#### ATOMIC ENERGY ACT: CONTINUED STORAGE RULE; LICENSING; NUCLEAR REGULATORY COMMISSION AUTHORITY

The Commission is not required, under the Atomic Energy Act of 1954, as amended, to make predictive findings regarding the technical feasibility of spent fuel disposal as part of its reactor licensing decisions.

#### **MEMORANDUM AND ORDER**

Several environmental organizations in the captioned matters (collectively, Petitioners) have requested that we suspend final reactor licensing decisions pending our issuance of a "waste confidence safety decision."<sup>1</sup> Petitioners also have submitted companion filings proposing a new or amended waste confidence safety contention, together with related procedural motions to reopen the record in several of the captioned proceedings.<sup>2</sup> For the reasons set forth below, we deny

<sup>&</sup>lt;sup>1</sup> See, e.g., Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings (Sept. 29, 2014) (errata Oct. 1, 2014; amended and corrected petition Oct. 6, 2014 (Petition). Citations to the Petition in today's decision will reference the corrected Petition filed in the *Callaway* license renewal matter. A full list of the filings associated with this decision is set forth in the Appendix.

<sup>&</sup>lt;sup>2</sup> See, e.g., Missouri Coalition for the Environment's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Relicensing Proceeding at Callaway 1 Nuclear Power Plant (Sept. 29, 2014) (Motion; filed in the Callaway license renewal docket). In some proceedings, petitioners also filed motions to reopen the record. *See, e.g.,* Motion to Reopen the Record for Callaway Nuclear Power Plant (Sept. 29, 2014) (Motion to Reopen; filed in the Callaway license renewal docket). Intervenors in the *Levy County* combined license proceeding filed a motion to reopen, but subsequently withdrew their motion. *See* Intervenors' Unopposed Motion to Withdraw Their Motion to Reopen the Record (Oct. 2, 2014); Order (Dismissing Environmental Waste Confidence Contention) (Oct. 1, 2014) (unpublished). With the withdrawal of this motion, nine motions to reopen remain pending before us. In the *Indian Point* license renewal proceeding, *(Continued)* 

the suspension petitions, decline to admit the related contention, and deny the motions to reopen.

Petitioners primarily assert that the Atomic Energy Act of 1954, as amended (the Act), requires the NRC, as a precondition to issuing or renewing operating licenses for nuclear power plants, to make definitive findings concerning the technical feasibility of a repository for the disposal of spent nuclear fuel. We rejected a nearly identical argument in 1977 and, though much of the regulatory framework has changed in the intervening years, our reading of the Act has not.<sup>3</sup>

Our conclusion that a suspension is not warranted finds support not only in our interpretation of the Act itself, but also in the regulatory authority that Congress has provided to the agency to protect public health and safety. Indeed, our confidence in the safety and technical feasibility of systems for the storage and disposal of spent fuel has only increased since the late 1970s, as demonstrated by our expanded regulatory scheme and the ongoing licensing of such systems, as well as the efforts that are under way — both in the United States and abroad — to develop repositories for the disposal of spent fuel. Thus, today we not only address Petitioners' concerns, but we also take the opportunity to confirm the continued validity of our determinations regarding the technical feasibility of safe spent fuel storage and ultimate disposal in a repository.

#### I. BACKGROUND

Recently, we approved a final rule and generic environmental impact statement, issued in accordance with the National Environmental Policy Act (NEPA) and the Administrative Procedure Act, to address the environmental impacts associated with the storage of spent nuclear fuel after the end of a reactor's license term (the Continued Storage Rule).<sup>4</sup> Following the publication of the Continued Storage Rule and supporting generic environmental impact statement (Continued Storage

Riverkeeper filed a substantively identical suspension petition together with a motion transmitting a new contention a few days after the initial suspension petitions were filed. Petition to Suspend Final Decision in Indian Point Relicensing Proceeding Pending Issuance of Waste Confidence Safety Findings (Oct. 3, 2014); Riverkeeper Consolidated Motion for Leave to File a New Contention and New Contention RK-10 Concerning the Absence of Required Waste Confidence Safety Findings (Oct. 3, 2014).

<sup>&</sup>lt;sup>3</sup> See Natural Resources Defense Council, Denial of Petition for Rulemaking, 42 Fed. Reg. 34,391, 34,393 (July 5, 1977), *aff'd, Natural Resources Defense Council, Inc. v. NRC*, 582 F.2d 166 (2d Cir. 1978) (NRDC PRM Denial).

<sup>&</sup>lt;sup>4</sup> Final Rule: "Continued Storage of Spent Nuclear Fuel," 79 Fed. Reg. 56,238 (Sept. 19, 2014) (Continued Storage Rule); NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel," Vols. 1 & 2 (Sept. 2014) (ADAMS Accession Nos. ML14196A105 and ML14196A107) (Continued Storage GEIS).

GEIS), Petitioners filed substantively identical petitions to suspend final licensing decisions, related motions requesting the admission of new — or, in one instance, amended — contentions in the captioned matters, and, in several proceedings, motions to reopen the proceedings to consider the proposed contentions.<sup>5</sup>

Exercising our inherent supervisory authority over agency proceedings, we took review of the petitions and motions ourselves and set a briefing schedule.<sup>6</sup> All answers oppose the suspension petitions and admission of the accompanying contention.<sup>7</sup> Petitioners filed a consolidated reply.<sup>8</sup>

Petitioners claim that we cannot satisfy our statutory responsibilities under the Atomic Energy Act and that we no longer have a lawful basis for issuing initial and renewed licenses for nuclear power reactors.<sup>9</sup> They assert that we must, therefore, suspend final licensing decisions unless and until we make a "safety finding" associated with disposal.<sup>10</sup> Petitioners ask us to admit the following contention:

The NRC lacks a lawful basis under the Atomic Energy Act . . . for issuing or renewing an operating license in this proceeding because it has not made currently valid findings of confidence or reasonable assurance that the hundreds of tons of highly radioactive spent fuel that will be generated during any reactor's 40-year license term or 20-year license renewal term can be safely disposed of in a repository. The NRC must make these predictive safety findings in every reactor

<sup>8</sup> Petitioners' and Intervenors' Consolidated Reply to Answers to Petitions to Suspend Final Reactor Licensing Decisions, Motions to Admit a New Contention, and Motions to Reopen the Record (Nov. 7, 2014) (Reply). In addition, the Nuclear Energy Institute filed an unopposed motion for leave to file a brief *amicus curiae* opposing the Petition. Nuclear Energy Institute, Inc.'s Motion for Leave to File Amicus Curiae Brief (Oct. 31, 2014); Amicus Curiae Brief of the Nuclear Energy Institute, Inc. in Response to Suspension Petitions and Waste Confidence Safety Contentions (Oct. 31, 2014). Our rule governing *amicus curiae* participation does not contemplate a brief under the current circumstances. *See* 10 C.F.R. § 2.315(d) (providing for *amicus* filings at our discretion under 10 C.F.R. § 2.341 or *sua sponte*). We, nonetheless, have considered the Nuclear Energy Institute's views as a matter of discretion. *See, e.g., Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-13-9, 78 NRC 551, 556 n.17 (2013).

<sup>&</sup>lt;sup>5</sup> See, e.g., Petition, and Motion to Reopen.

<sup>&</sup>lt;sup>6</sup>CLI-14-9, 80 NRC 147 (2014).

<sup>&</sup>lt;sup>7</sup> See, e.g., NRC Staff Consolidated Answer to Petitions to Suspend Final Reactor Licensing Decisions, Motions to Admit a New Contention, and Motions to Reopen the Record (Oct. 31, 2014); Entergy's Combined Answer to Riverkeeper's Proposed New Contention RK-10 and Petition to Suspend Final License Renewal Decision Pending Issuance of Waste Confidence "Safety" Findings (Oct. 31, 2014); Tennessee Valley Authority's Answer Opposing Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings and Motions for Leave to File New Contention (Oct. 31, 2014); Tennessee Valley Authority's Answer to Motion to Reopen the Record for Sequoyah Nuclear Power Plant and Motion to Reopen the Record for Bellefonte Nuclear Power Plant (Oct. 31, 2014) (TVA Answer to Motions to Reopen).

<sup>&</sup>lt;sup>9</sup>See, e.g., Motion at 3.

<sup>&</sup>lt;sup>10</sup> See, e.g., Petition at 8 (unnumbered).

licensing decision in order to fulfill its statutory obligation under the [Act] to protect public health and safety from the risks posed by irradiated reactor fuel generated during the reactor's license term.<sup>11</sup>

Petitioners' contention, which comes on the heels of our issuance of the Continued Storage Rule, relies in large part on the fact that, unlike prior versions of the Rule, the Continued Storage Rule is no longer supported by specific "findings" concerning, among other things, reasonable assurance of the feasibility of a repository. To provide a more complete understanding of the context of Petitioners' argument, we provide a brief history of our "waste confidence" proceedings.<sup>12</sup>

In 1976, the Natural Resources Defense Council (NRDC) filed a petition requesting that we conduct a rulemaking to determine whether spent fuel "can be generated in nuclear power reactors and subsequently disposed of without undue risk to the public health and safety."<sup>13</sup> NRDC argued that, without this determination, we should refrain from making final decisions on "pending or future requests for operating licenses."14 We denied NRDC's petition and found that, as a matter of statutory interpretation, the Atomic Energy Act did not require us to make the requested finding.<sup>15</sup> In the denial, we noted the NRC's obligations with respect to spent fuel storage and disposal at the time of a reactor licensing decision. Specifically, we explained that, at the time a license is issued, we must "be assured that the wastes generated by licensed power reactors can be safely handled and stored as they are generated."<sup>16</sup> As part of the reactor licensing process, we noted, an applicant must submit information to allow the NRC to "assure that the design provides for safe methods for interim storage of spent nuclear fuel."17 Given the focus during the licensing process on the safety of licensed operations, we determined that the text of the Atomic Energy Act (combined with Congress's understanding of the state of the development of a repository) did not require us to make, as a precondition to licensing, an express

<sup>&</sup>lt;sup>11</sup> Motion at 3-4 (citations omitted).

<sup>&</sup>lt;sup>12</sup> A complete history of the prior waste confidence proceedings can be found in Chapter 1 of the Continued Storage GEIS.

<sup>&</sup>lt;sup>13</sup>NRDC PRM Denial, 42 Fed. Reg. at 34,391.

<sup>&</sup>lt;sup>14</sup> Id.

<sup>&</sup>lt;sup>15</sup> Id.

<sup>&</sup>lt;sup>16</sup> *Id.* Today, this assurance is demonstrated by compliance with our regulations that govern the safe storage of spent fuel. *See, e.g.,* Domestic Licensing of Production and Utilization Facilities, 10 C.F.R. Part 50 (2014) and General License for Storage of Spent Fuel at Power Reactor Sites, 10 C.F.R. Part 72, Subpart K (2014), which grants a general license to all Part 50 and Part 52 reactor licensees to store spent fuel in an independent spent fuel storage installation.

<sup>&</sup>lt;sup>17</sup>NRDC PRM Denial, 42 Fed. Reg. at 34,391.

determination that spent fuel generated during operation could be disposed of safely.<sup>18</sup>

The denial also included a separate statement of policy.<sup>19</sup> In that discussion, which Petitioners reference throughout their filings, we stated that we would not continue to license reactors if we "did not have reasonable confidence that . . . [spent fuel] can and will in due course be disposed of safely."<sup>20</sup> We explained that our "implicit" finding that methods of safe permanent storage were available could be "readily distinguished" from the type of safety findings that the agency is called upon to make during the course of reactor licensing under the Atomic Energy Act and that any finding in this regard "would not have to be a definitive conclusion that permanent disposal of high-level wastes can be accomplished safely at the present time."<sup>21</sup>

NRDC sought judicial review of the petition denial. The Court of Appeals for the Second Circuit affirmed the denial and endorsed our conclusion that the Atomic Energy Act does not, as a prerequisite to licensing, require a finding of reasonable assurance that "highly hazardous and long-lived radioactive materials can be disposed of safely."<sup>22</sup> The court concluded that, by seeking to require an express finding concerning safe disposal prior to licensing, "NRDC simply reads too much into the [Atomic Energy Act] . . . . We are satisfied that Congress did not intend such a condition."<sup>23</sup>

In addition to recognizing that the text of the Atomic Energy Act does not mandate such a specific finding, the court relied on Congress's decades-long tacit approval of nuclear power plant licensing even in the absence of a disposal site.<sup>24</sup> Further, the court explained, if NRDC's view of the Atomic Energy Act were correct, it would be "incredible that AEC and its successor NRC would have been violating the [Act] for almost twenty years with no criticism or statutory amendment by Congress, which has been kept well informed of [disposal] developments."<sup>25</sup> Accordingly, the court quoted favorably that it was "fair to read this history as a *[d]e facto* acquiescence in and ratification of the Commission's licensing procedure by Congress."<sup>26</sup>

 $^{21}$  *Id*.

 $^{23}$  Id.

 $^{24}$  Id. at 173-74. The court found Congress's silence in the face of ongoing reactor licensing "deafening," Id. at 171.

<sup>25</sup> Id.

227

<sup>&</sup>lt;sup>18</sup> Id. at 34,391-93.

<sup>&</sup>lt;sup>19</sup> *Id.* at 34,393-94.

<sup>&</sup>lt;sup>20</sup> *Id.* at 34,393.

<sup>&</sup>lt;sup>22</sup>NRDC, 582 F.2d at 171.

<sup>&</sup>lt;sup>26</sup> Id. at 172 (quoting Power Reactor Development Co. v. International Union of Electrical, Radio & Machine Workers, 367 U.S. 396, 409 (1961)).

The court did not rest its decision solely on the legislative history of the Act or on tacit congressional approval of reactor licensing absent safety findings for a repository. "[I]f there were any doubt over the intent of Congress" not to require a safety finding on spent fuel disposal, explained the court, it was "persuaded that the matter was laid to rest by enactment of the Energy Reorganization Act of 1974."<sup>27</sup> The court noted that, in that act, "Congress expressly recognized and impliedly approved NRC's regulatory scheme and practice under which the safety of interim storage of [spent fuel] at commercial nuclear power reactor sites has been determined separately from the safety of . . . permanent storage facilities which have not, as yet, been established."<sup>28</sup> Since the passage of the Energy Reorganization Act of 1974 as well as the Second Circuit's decision in *NRDC v. NRC*, Congress has had numerous opportunities to consider our interpretation of the Atomic Energy Act with respect to a disposal safety finding at the time of reactor licensing. But in each case, Congress has left intact both this agency's and the court's interpretation.<sup>29</sup>

Since 1984, we have completed four rulemaking proceedings that analyzed the environmental impacts of the continued storage of spent fuel after the end of a reactor's license term (the "waste confidence" and "continued storage" proceedings).<sup>30</sup> The first rulemaking, the 1984 waste confidence proceeding, was prompted by a remand from the Court of Appeals for the District of Columbia Circuit in *Minnesota v. NRC*.<sup>31</sup> In that case, the petitioners challenged the NRC's approval of amendments to the Prairie Island and Vermont Yankee nuclear power plant operating licenses to allow for the use of higher-density spent-fuel-storage racks in the reactors' spent fuel pools.<sup>32</sup> The court observed that the Second Circuit

<sup>&</sup>lt;sup>27</sup> Id. at 174 (citations omitted).

 $<sup>^{28}</sup>$  *Id.* The court observed that, in considering passage of the 1974 legislation, Congress heard testimony from scientists and other representatives of groups "urg[ing] Congress, unsuccessfully, to halt further commercial power plant licensing pending resolution of the waste disposal issue." *Id.* at 171 n.9, 174-75 (citations omitted).

<sup>&</sup>lt;sup>29</sup> See, e.g., Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201 (1982); Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 594 (2005).

<sup>&</sup>lt;sup>30</sup> Final Waste Confidence Decision, 49 Fed. Reg. 34,658 (Aug. 31, 1984 (1984 Waste Confidence Decision); Requirements for Licensee Actions Regarding the Disposition of Spent Fuel upon Expiration of Reactor Operating Licenses, 49 Fed. Reg. 34,688 (Aug. 31, 1984) (1984 Temporary Storage Rule); Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 55 Fed. Reg. 38,472 (Sept. 18, 1990) (1990 Temporary Storage Rule); Waste Confidence Decision Review, 55 Fed. Reg. 38,474 (Sept. 18, 1990) (1990 Waste Confidence Decision); Consideration of Environmental Impacts of Temporary Storage of Spent Fuel After Cessation of Reactor Operation, 75 Fed. Reg. 81,032 (Dec. 23, 2010) (2010 Temporary Storage Rule); Waste Confidence Decision Update, 75 Fed. Reg. 81,037 (Dec. 23, 2010) (2010 Waste Confidence Decision); Continued Storage GEIS; and Continued Storage Rule.

<sup>&</sup>lt;sup>31</sup> Minnesota v. NRC, 602 F.2d 412 (D.C. Cir. 1979).

<sup>&</sup>lt;sup>32</sup> *Id.* at 412.

had recently ruled in *NRDC v. NRC* that "Congress did not intend in enacting the Atomic Energy Act to require a demonstration that nuclear wastes could safely be disposed of before licensing of nuclear plants was permitted," and it did not disagree with that result.<sup>33</sup> Referring to the language in the policy statement accompanying the denial of the petition for rulemaking, the court directed the NRC to determine "whether there is reasonable assurance that an off-site storage solution will be available by [the end of a reactor's license term], and if not, whether there is reasonable assurance that the fuel can be stored safely at the sites beyond those dates."<sup>34</sup>

In 1984, we published our first Waste Confidence Decision and Temporary Storage Rule. The Waste Confidence Decision included "findings," expressed in terms of "reasonable assurance," that, among other things, a repository was technically feasible, one could be open by 2007-2009, and the spent fuel could be safely stored for 30 years after the end of a reactor's license term.<sup>35</sup> In 1990, we revisited the Decision and Temporary Storage Rule and updated the findings to reflect a new expected date for a repository to become available ("the first quarter of the twenty-first century") and to include a 30-year license renewal term in our safe-storage analysis.<sup>36</sup> In 2010, we issued another update that removed the anticipated date for repository availability (explaining instead that a repository would be available "when necessary") and expanded the safe-storage analysis time frame from 30 years after the end of the reactor's license term to 60 years after the end of the reactor's license term.<sup>37</sup>

Several states, an Indian Tribe, and environmental organizations (some of whom are Petitioners here) filed suit before the Court of Appeals for the District of Columbia Circuit challenging the 2010 update to the Decision and Temporary Storage Rule. In 2012, in *New York v. NRC*, the court vacated and remanded the decision and rule, and found that we had not satisfied our obligations under NEPA with respect to three issues: (1) we did not consider the environmental impacts of a repository never becoming available; (2) our analysis of spent fuel

<sup>&</sup>lt;sup>33</sup> Id. at 417 (citing NRDC, 582 F.2d at 166).

 $<sup>^{34}</sup>$  *Id.* at 418. In reaching this decision, the court recognized the long-term nature of the concerns associated with spent fuel storage and disposal when it declined to vacate the license amendments that were the subject of the case, noting that doing so "would effectively shut down the plants." *Id.* Moreover, its decision was predicated on the context of the particular license amendments at issue — to allow high-density spent fuel storage; in fact, the court acknowledged the Second Circuit's ruling in *NRDC v. NRC* and did not disagree with that result. *See id.* at 417.

<sup>&</sup>lt;sup>35</sup> 1984 Waste Confidence Decision, 49 Fed. Reg. at 34,659-60; 1984 Temporary Storage Rule, 49 Fed. Reg. at 34,688.

<sup>&</sup>lt;sup>36</sup> See, e.g., 1990 Temporary Storage Rule, 55 Fed. Reg. at 38,473; 1990 Waste Confidence Decision, 55 Fed. Reg. at 38,503-04.

<sup>&</sup>lt;sup>37</sup> See, e.g., 2010 Temporary Storage Rule, 75 Fed. Reg. at 81,037; 2010 Waste Confidence Decision, 75 Fed. Reg. at 81,038.
pool leaks was not forward-looking; and (3) we had not sufficiently considered the consequences of spent fuel pool fires.<sup>38</sup> The court did not specifically address any issues arising under the Atomic Energy Act.

Following the court's decision in *New York*, we suspended all final decisions for licenses that relied on the Waste Confidence Decision and Temporary Storage Rule.<sup>39</sup> Shortly thereafter we directed the NRC Staff to prepare a generic environmental impact statement to support an updated rule and address the deficiencies that the court identified.<sup>40</sup> We approved the final Continued Storage GEIS and Rule, now known as the Continued Storage Rule, in September 2014.<sup>41</sup> Although it did not include the discrete findings made in the waste confidence proceedings, and although it did not express our conclusions in terms of "reasonable assurance," the Continued Storage GEIS contains a comprehensive discussion supporting our unqualified conclusion that both safe storage and disposal in a repository are technically feasible.<sup>42</sup>

Thus, while much has changed since we last addressed the specific issue raised in Petitioners' contention, much has stayed the same. In each of our waste confidence proceedings, as well as in the recently concluded continued storage proceeding, we determined that deep geologic disposal of spent nuclear fuel is technically feasible.<sup>43</sup> Similarly, throughout our rulemakings conducted over the past 30 years, neither we nor the courts have questioned our initial conclusion that the Atomic Energy Act does not require the explicit "reasonable assurance" finding requested by Petitioners. And of course, our licensing has proceeded on the basis of these well-settled premises.

#### II. DISCUSSION

With this background in mind, we turn to the petitions at hand. Petitioners claim a deficiency in our ability to satisfy our basic licensing responsibilities under the Atomic Energy Act, which Petitioners believe results in the loss of

<sup>&</sup>lt;sup>38</sup> New York v. NRC, 681 F.3d 471, 473, 481-82 (D.C. Cir. 2012).

<sup>&</sup>lt;sup>39</sup> Calvert Cliffs 3 Nuclear Project, LLC (Calvert Cliffs Nuclear Power Plant, Unit 3), CLI-12-16, 76 NRC 63, 66-67 (2011).

<sup>&</sup>lt;sup>40</sup>Staff Requirements — COMSECY-12-0016 — Approach for Addressing Policy Issues Resulting from Court Decision to Vacate Waste Confidence Decision and Rule (Sept. 6, 2012) (ADAMS Accession No. ML12250A032).

<sup>&</sup>lt;sup>41</sup> Staff Requirements — Affirmation Session 10:00 a.m., Tuesday, August 26, 2014, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance) (Aug. 26, 2014) (ADAMS Accession No. ML14237A092).

<sup>&</sup>lt;sup>42</sup> See generally Continued Storage GEIS, App. B.

<sup>&</sup>lt;sup>43</sup> Compare 1984 Waste Confidence Decision, 49 Fed. Reg. at 34,659, with 1990 Temporary Storage Rule, 55 Fed. Reg. at 38,472, and with Continued Storage GEIS § B.2.1.

our "lawful basis for licensing or relicensing nuclear reactors."<sup>44</sup> This claim is distinguishable from those raised in the suspension petitions that we have considered in recent years. Following the events of September 11, 2001, and again following the accident at Fukushima Dai-ichi, petitioners asserted that our actions were insufficient to satisfy our general obligation under the Atomic Energy Act to protect public health and safety.<sup>45</sup> Here, on the other hand, Petitioners claim that we have an obligation under the Atomic Energy Act to make explicit findings regarding the safety of spent fuel disposal as a prerequisite to our reactor licensing decisions.<sup>46</sup> As such, our usual framework for considering suspension requests is not applicable to the case at hand. Instead, exercising our inherent supervisory authority over agency proceedings, we consider Petitioners' claims regarding the scope of our obligations under the Atomic Energy Act. As discussed below, we find Petitioners' Atomic Energy Act claims to be without merit, and we therefore deny the petitions and the companion proposed contention and motions to reopen.<sup>47</sup>

Together with the Energy Reorganization Act of 1974, the Atomic Energy Act provides the basis for our authority to regulate the use of special nuclear material in facilities like nuclear power reactors.<sup>48</sup> We can issue nuclear power reactor licenses to applicants only upon a finding that "the utilization . . . of special nuclear material will be in accord with the common defense and security and will provide adequate protection to the health and safety of the public."<sup>49</sup> An applicant

<sup>&</sup>lt;sup>44</sup> Reply at 11.

<sup>&</sup>lt;sup>45</sup> See, e.g., Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-01-26,
54 NRC 376, 380 (2001); Union Electric Co. (Callaway Plant, Unit 2), CLI-11-5, 74 NRC 141, 151 (2011).

<sup>&</sup>lt;sup>46</sup> Reply at 11. As Petitioners acknowledge, "the Petition is *not* a motion for a stay of the effectiveness of a decision pursuant to 10 C.F.R. § 2.342 or any other kind of request for equitable relief." *Id.* (emphasis in original). *See generally* 10 C.F.R. § 2.342 (governing stays of the actions or decisions of a presiding officer pending filing of a petition for review).

<sup>&</sup>lt;sup>47</sup> Because Petitioners' Atomic Energy Act claim fails, they have not raised an issue material to findings that the NRC must make to support final decisions in the captioned matters and they are unable to satisfy our contention admissibility standards or meet the criteria to reopen a closed record. *See* 10 C.F.R. §§ 2.309(f)(1) and 2.326. We therefore decline to admit Petitioners' proposed contention and deny their motions to reopen. Moreover, we deny as moot Blue Ridge Environmental Defense League's motions to reopen in the *Sequoyah* and *Bellefonte* proceedings because those proceedings remain open. *See* TVA Answer to Motion to Reopen at 1.

<sup>&</sup>lt;sup>48</sup> Atomic Energy Act of 1954, 42 U.S.C. §§ 2011-2297h-13 (2012) and Energy Reorganization Act of 1974, 42 U.S.C. §§ 5801-5891 (2012).

<sup>&</sup>lt;sup>49</sup> Atomic Energy Act § 182a, 42 U.S.C. § 2232 (2012).

As we noted in the Continued Storage GEIS, Congress "authorized and directed the NRC to issue regulations establishing requirements for providing adequate protection to public health and safety and common defense and security (see Atomic Energy Act [§] 161b) . . . . [U]nder current law, the (Continued)

demonstrates its ability to meet these standards, and thus its entitlement to a license, by submitting a license application that satisfies our licensing criteria.<sup>50</sup> If a power reactor license applicant is unable to meet our regulatory requirements or if we find that the proposed use of special nuclear material will not be in accord with the common defense and security or will not provide adequate protection of public health and safety, then we will not issue a license.<sup>51</sup>

Petitioners argue that part of this analysis must include a "safety" or "waste confidence" finding regarding the technical feasibility of a deep geologic repository for the disposal of spent fuel generated at nuclear power plants.<sup>52</sup> Petitioners contend that without such a finding we are unable to make the required finding of adequate protection under the Atomic Energy Act and must, therefore, refrain from issuing licenses until this finding is made.<sup>53</sup> Further, Petitioners argue, this safety finding must be supported by a separate NEPA analysis of the environmental impacts of spent fuel disposal — either in the form of an environmental impact statement or an environmental assessment.<sup>54</sup>

#### A. Petitioners' Atomic Energy Act Claims

Petitioners argue that the NRC's historic practice, the plain language of the Atomic Energy Act, and relevant case law support their claims. We disagree. At no time have we, Congress, or the courts articulated the view that the Atomic Energy Act requires a "finding" or "predictive safety findings" regarding the disposal of spent fuel in a repository as a prerequisite to issuing a nuclear reactor license. We see no reason to alter our long-standing interpretation of the Atomic Energy Act.

Our interpretation of the agency's obligations under the Atomic Energy Act with respect to spent fuel disposal began with our 1977 denial of NRDC's petition for rulemaking.<sup>55</sup> We found then that the Atomic Energy Act does not require us

NRC will issue a nuclear power plant or materials license (including a license authorizing storage of spent fuel) when the NRC determines that a license applicant has met the NRC's regulatory standards for issuance of a license, addressing adequate protection of public health and safety and common defense and security, and the NRC has no reason to doubt that issuance of the license would provide adequate protection." Continued Storage GEIS § 1.6.2.1.

<sup>&</sup>lt;sup>50</sup> See, e.g., 10 C.F.R. Parts 50, 52, and 54.

<sup>&</sup>lt;sup>51</sup> See, e.g., Maine Yankee Atomic Power Co. (Maine Yankee Atomic Power Station), ALAB-161, 6 AEC 1003, 1007 (1973) ("Unless the safety findings prescribed by the Atomic Energy Act and the regulations can be made, the reactor does not obtain a license — no matter how badly it is needed.").

<sup>&</sup>lt;sup>52</sup> Motion at 3-4.

<sup>&</sup>lt;sup>53</sup> Petition at 2-3 (unnumbered).

<sup>&</sup>lt;sup>54</sup>Motion to Reopen at 4. Among other things, Petitioners argue that this NEPA analysis must consider the costs of spent fuel storage and disposal. *Id.* 

<sup>&</sup>lt;sup>55</sup>NRDC PRM Denial, 42 Fed. Reg. at 34,391-92.

to make a finding regarding spent fuel disposal as part of our reactor licensing decisions.<sup>56</sup> And the Second Circuit endorsed our construction of the Act:

[W]e hold that NRC is not required to conduct the rulemaking proceeding requested by NRDC or to withhold action on pending or future applications for nuclear power reactor operating licenses until it makes a determination that high-level radioactive wastes can be permanently disposed of safely.<sup>57</sup>

Both our denial of the petition for rulemaking and the court's affirmance of this decision were grounded in the language of Atomic Energy Act sections 103, 161, and 182 — the very sections relied upon here by Petitioners. As the court expressly concluded in *NRDC*, we find that Petitioners read "too much into the [Act]."<sup>58</sup>

Section 103d prohibits the agency from issuing a license if doing so "would be inimical to the common defense and security or the health and safety of the public."<sup>59</sup> Petitioners claim that the "plain language" of this section conflicts with the interpretation of the Atomic Energy Act that we adopted in the denial of NRDC's petition for rulemaking. Specifically, they take issue with our conclusion that "the statutory findings required by section 103 apply specifically to the 'proposed activities' and 'activities under such licenses'" but do not apply to disposal activities that might result from the operation of a licensed facility.<sup>60</sup> Section 103 does not contemplate consideration of spent fuel disposal in the NRC's licensing decisions, and we decline to infer from Congress's silence an affirmative obligation to the contrary.<sup>61</sup>

The same is true of the other Atomic Energy Act provisions upon which Petitioners rely. Section 161 establishes the general scope of the NRC's authority, yet nowhere does it discuss spent fuel disposal.<sup>62</sup> Similarly, section 182 specifies

<sup>&</sup>lt;sup>56</sup> Id.

<sup>&</sup>lt;sup>57</sup> NRDC, 582 F.2d at 175.

<sup>&</sup>lt;sup>58</sup> *Id.* at 171.

<sup>&</sup>lt;sup>59</sup> Atomic Energy Act, § 103, 42 U.S.C. § 2133 (2012).

<sup>&</sup>lt;sup>60</sup> Motion at 6-7; NRDC PRM Denial, 42 Fed. Reg. at 34,391.

<sup>&</sup>lt;sup>61</sup> See NRDC, 582 F.2d at 170-71. Petitioners also rely on the concurring opinion of Judge Tamm from *Minnesota v. NRC.* In his concurrence, Judge Tamm noted his "belief that section 102(2)(C) of [NEPA] and section 103(d) [of the Act] . . . mandate the determination that the Commission identified in" the NRDC PRM Denial. *Minnesota*, 602 F.2d at 419 (Tamm, J., concurring). But the majority did not express this view, and a concurring opinion, by its nature, does not carry the force of law, except in very narrow circumstances not applicable here. *See generally United States v. Duvall*, 740 F.3d 604, 605 (D.C. Cir. 2013). Had a majority of the Court in *Minnesota* agreed with Judge Tamm's expansive view of our Atomic Energy Act obligations, these views would have been reflected in the majority opinion.

<sup>&</sup>lt;sup>62</sup> Atomic Energy Act, § 161, 42 U.S.C. § 2201 (2012).

the information that must be provided by an applicant for a license with no reference to spent fuel disposal.<sup>63</sup> Thus, the text of the Atomic Energy Act does not compel the conclusion that we are required to include "findings" regarding spent fuel disposal in our reactor licensing decisions, and we decline to interpret it otherwise. And, in light of our interpretation, the related NRC regulations do not require information about the eventual disposal of the spent fuel that would be generated by the reactor.<sup>64</sup>

Moreover, as the Second Circuit explained in NRDC, the conclusion that the Atomic Energy Act does not require "safety findings" is further supported by the legislative history of the Act and subsequent congressional action. For example, in 1959, Congress held hearings regarding the disposal of spent nuclear fuel and, at that time, Congress "was made aware of the fact that the problem of permanent disposal of high-level waste had not been solved."65 But Congress did not restrict or modify the NRC's licensing authority. Further, Congress later approved a continuation of the licensing approach in the Atomic Energy Act when it transferred the licensing functions of the Atomic Energy Commission to us via the Energy Reorganization Act of 1974.66 Had Congress believed that our licensing activities required the finding sought by Petitioners, it could have enacted legislation consistent with this understanding at any time between 1954 and today.<sup>67</sup> That Congress has maintained this course despite our rejection of NRDC's interpretation of the Atomic Energy Act in the denial of the petition for rulemaking, the Second Circuit's endorsement of our construction of the Act in *NRDC*, and the numerous opportunities for legislative clarification provides further confirmation of the propriety of our interpretation of the Act.68

Petitioners rely heavily upon our statement, expressed as part of the policy discussion included in the denial of NRDC's petition for rulemaking, that we would not continue to license reactors if we "did not have reasonable confidence that . . . [spent fuel] can and will in due course be disposed of safely."<sup>69</sup> They assert that this statement should guide our interpretation of the Act and that any

<sup>&</sup>lt;sup>63</sup> Atomic Energy Act, § 182, 42 U.S.C. § 2232 (2012).

<sup>64</sup> See, e.g., id.; 10 C.F.R. Parts 50, 52, and 54 (2014).

<sup>&</sup>lt;sup>65</sup>NRDC PRM Denial, 42 Fed. Reg. at 34,392 (citing "Industrial Radioactive Waste Disposal," Hearings Before the JCAE Special Subcommittee on Radiation, Jan. 29-30, Feb. 2-3, and July 29, 1959, 86th Cong., 1st Sess. (1959)).

<sup>&</sup>lt;sup>66</sup> Energy Reorganization Act of 1974, Pub. L. 93-438, 88 Stat. 1233 (1974).

<sup>&</sup>lt;sup>67</sup> See, e.g., Nuclear Waste Policy Act of 1982, Pub. L. No. 97-425, 96 Stat. 2201 (1982); Energy Policy Act of 2005, Pub. L. 109-58, 119 Stat. 594 (2005).

<sup>&</sup>lt;sup>68</sup> Indeed, in recent years, numerous congressional hearings over the funding of the Yucca Mountain repository have highlighted the absence of a national consensus on siting a repository.

<sup>&</sup>lt;sup>69</sup> NRDC PRM Denial, 42 Fed. Reg. at 34,393.

acquiescence by Congress in our interpretation was conditioned on its existence.<sup>70</sup> But in the NRDC PRM Denial we expressly distinguished findings of the kind contemplated by the Atomic Energy Act and the NRC's licensing regulations from the more generalized conclusion in the policy statement.<sup>71</sup> As we explained at the time:

Even if, contrary to the Commission's view, some kind of prior finding on waste disposal safety were required under the statutory scheme, such a finding would not have to be a definitive conclusion that permanent disposal of high-level wastes can be accomplished safely at the present time. There is no question that prior to authorizing operation of a reactor the Commission must find pursuant to section 182 that hazards which become fully mature with start-up will be dealt with safely from the beginning. But the quality of this reactor safety finding can be readily distinguished from the quality of findings regarding impacts on public health and safety which will not mature until much later, if ever. The hazards associated with permanent disposal will become acute only at some relatively distant time when it might be no longer feasible to store radioactive wastes in facilities subject to surveillance.<sup>72</sup>

It was only after this discussion that we added: "The Commission would not continue to license reactors if it did not have reasonable confidence that the wastes can and will in due course be disposed of safely."<sup>73</sup> Moreover, we pointed out that the program for siting and developing a geologic repository was not within the NRC's statutory responsibilities under the Atomic Energy Act, another reason rendering an explicit safety finding on spent fuel disposal inappropriate.<sup>74</sup>

When considered within the context of our denial of the petition for rulemaking, it is clear that the statement at issue was nothing more than what it purported to be: a statement of our policy regarding the licensing of nuclear power plants and our confidence in the availability of a disposal solution.<sup>75</sup> This policy has always existed independent of our legal conclusion that no obligation exists under the Atomic Energy Act to make predictive findings regarding spent fuel disposal as part of our reactor licensing decisions.

<sup>&</sup>lt;sup>70</sup> See, e.g., Reply at 7.

<sup>&</sup>lt;sup>71</sup> NRDC PRM Denial, 42 Fed. Reg. at 34,393.

<sup>&</sup>lt;sup>72</sup>*Id.* (emphasis added).

<sup>&</sup>lt;sup>73</sup> Id.

 $<sup>^{74}</sup>$  In this regard, we observed that the Energy Research and Development Administration (the Department of Energy's predecessor agency) was responsible for the development of a high-level waste repository; the NRC's statutory responsibilities "to insure that permanent disposal of high-level radioactive wastes will be accomplished safely" were, and still are, limited to licensing the repository. *Id.* 

<sup>&</sup>lt;sup>75</sup> Id.

Petitioners also misapprehend the relevant case law. Specifically, Petitioners misread the Second Circuit's opinion in NRDC v. NRC, the only court decision to have directly addressed the issue. Overlooking the express holding that endorsed our interpretation of the Act,<sup>76</sup> Petitioners instead quote the court's characterization of our policy and practice: "[The] NRC maintains that . . . its long-continued regulatory practice of issuing operating licenses, with an implied finding of reasonable assurance that safe permanent disposal of [spent nuclear fuel] can be available when needed, is in accord with the intent of Congress underlying the [Atomic Energy Act] and [Energy Reorganization Act]."77 But that description neither constitutes the court's holding nor reflects an admission concerning our interpretation of our statutory obligations. Rather, it reflects our view that our practice was consistent with the conclusion that a specific finding of repository feasibility was not a prerequisite under the Atomic Energy Act to reactor licensing. And the court agreed: "Congress expressly recognized and impliedly approved NRC's regulatory scheme and practice under which the safety of interim storage of high-level wastes at commercial nuclear power reactor sites has been determined separately from the safety of Government-owned permanent storage [disposal] facilities which have not, as yet, been established."78

Petitioners also rely on two subsequent decisions by the D.C. Circuit, *New York v. NRC* and *Minnesota v. NRC*. But in neither of these cases did the court find a statutory obligation on the part of the NRC to prepare "waste confidence" safety findings prior to or as part of our reactor licensing decisions. In *New York,* the court did not consider Atomic Energy Act issues. Instead, the remand was based solely on the court's finding that we did not satisfy our obligations under NEPA.<sup>79</sup>

In *Minnesota*, the court remanded for our consideration the question "whether there is reasonable assurance that an off-site storage solution will be available by . . . the expiration of the plants' operating licenses, and if not, whether there is reasonable assurance that the [spent] fuel can be stored safely at the sites beyond those dates."<sup>80</sup> Further, as distinct from the concurrence, the court majority refrained from identifying an obligation to make findings under the Atomic Energy Act. In that regard, the court expressly declined to "set aside or

<sup>&</sup>lt;sup>76</sup>*NRDC*, 582 F.2d at 175 ("[W]e hold that NRC is not required to conduct the rulemaking proceeding requested by NRDC or to withhold action on pending or future applications for nuclear power reactor operating licenses until it makes a determination that high-level radioactive wastes can be permanently disposed of safely.").

<sup>&</sup>lt;sup>77</sup> Id. at 170.

<sup>&</sup>lt;sup>78</sup> Id. at 174.

<sup>&</sup>lt;sup>79</sup>New York, 681 F.3d at 471, 483.

<sup>&</sup>lt;sup>80</sup> Minnesota, 602 F.2d at 418.

stay the challenged license amendments,"<sup>81</sup> thus confirming that the court did not view the amendments to be contingent upon any additional safety determination under the Atomic Energy Act.

To be sure, our "findings" in the initial waste confidence proceeding likely caused some confusion. We understand that because of how they were framed, they could have been, and likely were, interpreted by some as safety findings made under and compelled by the Atomic Energy Act. That we responded to the Minnesota remand as we did, however, does not mean that the particular form of our response was compelled by the Atomic Energy Act. Rather, the formal "findings" in the initial waste confidence proceeding resulted from our use of a hybrid rulemaking proceeding, which combined elements of a formal "on the record" proceeding with the more common "notice and comment" rulemaking widely used today.<sup>82</sup> Formal rulemakings often result in "findings," such as the ones we made in our first waste confidence proceeding.83 Moreover, that approach made sense at the time, which was long before our framework for regulating the safe storage and disposal of spent fuel had matured into its current state, and long before we had comprehensively evaluated the environmental impacts of the storage of spent nuclear fuel for an extended time frame - a task we now have completed in the Continued Storage GEIS.

Throughout their motions, Petitioners ascribe significance to our failure to use the term "reasonable assurance" to describe the extent of our consideration of the technical feasibility of disposal.<sup>84</sup> But as the technical agency entrusted by Congress to make determinations of this sort, we have concluded — without qualification — that a geologic repository is technically feasible.<sup>85</sup> As we acknowledged in the Continued Storage GEIS, the uncertainty in spent fuel disposal lies not with the technical feasibility of long-term storage and disposal, but with the political and societal factors that continue to delay the construction of a repository.<sup>86</sup> We recognized this uncertainty in the Continued Storage GEIS by analyzing the possibility that a repository will never become available.<sup>87</sup> Our decision today is consistent with our long-standing conclusion.

Finally, it bears repeating that our recently completed Continued Storage GEIS considers the issues raised by Petitioners. Many of the groups petitioning us now provided essentially identical comments as part of our recently completed

85 Continued Storage GEIS § B.2.1.

<sup>&</sup>lt;sup>81</sup>*Id.* at 413.

<sup>&</sup>lt;sup>82</sup> See 1984 Waste Confidence Decision, 49 Fed. Reg. at 34,658-60.

<sup>&</sup>lt;sup>83</sup> See id.

<sup>&</sup>lt;sup>84</sup> See, e.g., Reply at 9-10.

<sup>&</sup>lt;sup>86</sup> Id.

<sup>&</sup>lt;sup>87</sup> See, e.g., id. § 1.8.2.

Continued Storage proceeding.<sup>88</sup> We responded to Petitioners' comments in the final GEIS and nothing has changed since then that would cause us to question the technical feasibility of disposal in a repository — safe geologic disposal is achievable with currently available technology.<sup>89</sup> Our analysis in the Continued Storage GEIS builds on decades of experience and multiple rulemaking proceedings.<sup>90</sup> Specifically, our conclusion finds support in ongoing research in the United States and abroad, along with the ability to characterize and quantitatively assess the capabilities of geologic and engineered barriers, experience gained from the Staff's review of the Department of Energy's construction authorization application for a repository at Yucca Mountain, disposal activities at the Waste Isolation Pilot Plant, and continued progress toward a repository in other countries.<sup>91</sup> Indeed, contrary to the situation that accompanied the issuance of the initial Waste Confidence Decision, our regulatory framework now includes specific standards and requirements for licensing the storage of spent fuel and, in the case of Yucca Mountain, standards for licensing a repository.<sup>92</sup>

Since we deny Petitioners' petition to suspend and related motions, we need not address the related NEPA issue raised in the motions.<sup>93</sup> Nevertheless, we do so to provide additional clarity regarding the scope of our NEPA responsibilities. NEPA requires us to consider the environmental impacts of major agency actions, such as the issuance of an initial or renewed nuclear power reactor license. In some cases, we have addressed environmental impacts generically.<sup>94</sup> The courts have consistently found generic analyses of the environmental impacts of continued storage and disposal in the context of our reactor licensing proceedings to be acceptable.<sup>95</sup>

Petitioners contend that their requested "safety decision" regarding the feasibility of a repository would constitute a federal action that would require us to prepare a separate NEPA analysis to support our conclusion that spent fuel dis-

<sup>&</sup>lt;sup>88</sup> See, e.g., Corrected comments of "Environmental Organizations on Draft Waste Confidence Generic Environmental Impact Statement and Proposed Waste Confidence Rule and Petition to Revise and Integrate All Safety and Environmental Regulations Related to Spent Fuel Storage and Disposal," at 14, 16 (Jan. 7, 2014) (ADAMS Accession No. ML14024A297).

<sup>&</sup>lt;sup>89</sup> We responded to the concerns raised by Petitioners in Appendix D of the Continued Storage GEIS. *See, e.g.*, Continued Storage GEIS §§ D.2.1.2, D.2.4.1, and B.2 (discussing the technical feasibility of disposal in a repository).

<sup>&</sup>lt;sup>90</sup>*Id.* § B.2.

<sup>&</sup>lt;sup>91</sup> See generally id. at B-2 to B-5.

<sup>&</sup>lt;sup>92</sup> See, e.g., 10 C.F.R. Parts 60, 63, and 72.

<sup>&</sup>lt;sup>93</sup> Motion at 12-14.

<sup>&</sup>lt;sup>94</sup> See, e.g., NUREG-1437, Revision 1, Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants — Final Report (June 2013) (ADAMS Accession No. ML13107A023).

<sup>&</sup>lt;sup>95</sup> See, e.g., New York, 681 F.3d at 480 (citing Baltimore Gas & Electric Co. v. Natural Resources Defense Council, Inc., 462 U.S. 87, 100, 103 (1983)) and Minnesota, 602 F.2d at 416-17.

posal is technically feasible.<sup>96</sup> Petitioners further assert that this separate analysis was "required by the Court of Appeals in *New York*."<sup>97</sup> We disagree. We find nothing in the court's decision to support Petitioners' assertion. Nonetheless, any finding we have made, whether express or implied, does not require its own environmental analysis; it is simply a confirmation of what Congress and the courts have previously understood — that we believe it is safe to proceed with reactor licensing because it is ultimately possible to dispose of spent nuclear fuel safely.<sup>98</sup> And of course, each reactor licensing decision will have to be made in light of the full panoply of reasonably foreseeable environmental impacts that can fairly be attributed to the proposed action.<sup>99</sup>

In light of the foregoing, we find that Petitioners have not demonstrated a legal basis for their contention. It follows that Petitioners have not stated a valid contention that satisfies our contention admissibility criteria in 10 C.F.R. § 2.309, nor have they satisfied the criteria to reopen a closed record in 10 C.F.R. § 2.326.<sup>100</sup>

<sup>96</sup> Motion at 13.

<sup>98</sup> In this vein, Petitioners misapprehend our statement in the Continued Storage GEIS that "in this GEIS and Rule, the NRC is not making a safety determination under the Atomic Energy Act . . . to allow for the continued storage of spent fuel. [The Atomic Energy Act] safety determinations would be made as part of individual licensing actions." *See* Motion at 14 n.54 (citing Continued Storage GEIS at D-9). This commitment does not deviate from our long-held view that the [Act] does not require findings regarding spent fuel disposal at the time of reactor or storage facility licensing. We intended only to correct the misimpression that safety findings for the purposes of making final licensing decisions were to be found in our NEPA rulemaking. We therefore noted that these safety findings would be made in future licensing actions as necessary — for example, in the licensing of spent fuel storage facilities after the end of a reactor's license term. The Atomic Energy Act "safety determinations" to which we referred in the Continued Storage GEIS and Rule were not those that Petitioners claim to be required here for spent fuel disposal — they were our well-known determinations that are made as part of final licensing decisions. Continued Storage GEIS at D-9.

<sup>99</sup> Petitioners additionally argue that we must prepare a cost-benefit analysis that considers the "costs of spent fuel storage and disposal" as part of their requested NEPA analysis. Motion to Reopen at 4. In response to comments on the draft Continued Storage GEIS and Rule regarding the cost of continued storage, the Staff added additional information to the Continued Storage GEIS to ensure that NRC decisionmakers, applicants, licensees, and the public would have sufficient information to appropriately consider the costs of continued storage in NEPA analyses for future licensing actions. *See generally* Continued Storage GEIS. To the extent required by NEPA, the Staff will, as appropriate, consider the cost information contained in Chapter 2 of the GEIS as part of the cost-benefit analyses prepared in conjunction with NEPA reviews for individual licensing proceedings.

<sup>100</sup> Petitioners, Applicants, and the Staff present numerous arguments regarding the procedural propriety of the petition and motions now before us. Because we find that the suspension petition and new contention fail on the merits, and we consider — and take action on — the petition and motions in our supervisory capacity, we need not address these procedural issues. *See, e.g., Callaway,* CLI-11-5, 74 NRC at 158 n.65.

<sup>&</sup>lt;sup>97</sup> Id. at 14.

#### B. Additional Considerations Concerning the Issuance of Licenses

For the reasons discussed above, we do not interpret the Atomic Energy Act to require us to make safety findings regarding the technical feasibility of a repository as a prerequisite to our reactor licensing decisions. We are nonetheless aware of the public's concerns about the safety issues associated with the waste generated by the facilities that we license. For this reason, we stress that our ongoing efforts to ensure adequate protection of the public health and safety are not circumscribed by a narrow conception of what the law requires or a stagnant approach to regulation. Accordingly, we set forth below the considerations that guide our analysis of these issues and our conclusion that licensing nuclear plants will not endanger the public health and safety.

As an initial matter, the disposal question is inextricably linked to the question of the technical feasibility of safe storage pending disposal. As we acknowledged in the Continued Storage GEIS, the time frames we considered, including one that contemplates indefinite storage, depend on the continued technical feasibility of safely storing spent fuel as it ages.<sup>101</sup> Our regulations, including those in 10 C.F.R. Parts 50, 52, and 72, establish stringent safety requirements that apply to the construction and operation of reactor spent fuel pools and independent spent fuel storage installations.<sup>102</sup> Even after the end of a reactor's license term, these storage facilities will continue to be subject to our regulations governing spent fuel storage, which ensure that these safety requirements remain in place for as long as the fuel is stored.<sup>103</sup> For example, 10 C.F.R. § 50.54(bb), which requires licensees to submit for NRC approval their plans to manage spent fuel after the permanent cessation of reactor operation; and 10 C.F.R. Part 50, Appendix A, Criterion 61, which requires that spent fuel storage systems be designed to assure adequate safety under normal and postulated accident conditions, directly relate to the safe storage of spent fuel after a reactor has stopped operating.

Spent fuel can be stored safely in spent fuel pools or independent spent fuel storage installations licensed under the Atomic Energy Act. Indeed, we recently concluded in our Continued Storage rulemaking that the indefinite storage of spent fuel in dry casks, if it becomes necessary, is technically feasible.<sup>104</sup> As reflected in the Continued Storage GEIS, several characteristics of dry cask storage systems

<sup>&</sup>lt;sup>101</sup>Continued Storage GEIS §§ B.2 and B.3.

<sup>&</sup>lt;sup>102</sup> See, e.g., id. § D.2.4.1, at D-28 to D-32.

<sup>&</sup>lt;sup>103</sup> Id.

<sup>&</sup>lt;sup>104</sup> In accordance with the direction of the court of appeals, we analyzed a scenario where a repository never becomes available. *New York*, 681 F.3d at 479. As part of this analysis, we determined that it is technically feasible to store spent fuel indefinitely, should it become necessary to do so. Continued Storage GEIS § B.3.

ensure that these systems can safely store spent fuel; among others, these systems are massive, passive, and inherently robust.<sup>105</sup>

Further, our regulatory process is dynamic: we continue to revise and refine our regulatory regime as our technical knowledge and experience grow.<sup>106</sup> Thus, we rely both upon our ability to ensure that licensees conform to existing regulations and upon our comprehensive regulatory scheme that takes into account the length of time during which, and the conditions under which, the storage of spent fuel will occur. For example, in our waste confidence proceedings, we assessed the technical feasibility of geologic disposal, along with the continued storage of spent fuel pending the availability of a repository. As early as 1990, however, we recognized that the length of the continued storage period could be significantly longer than the specific time periods originally reflected in the Temporary Storage Rule.<sup>107</sup> But we did not examine the safety or environmental consequences of storing fuel for longer time frames because we assumed that the Department of Energy would have a deep geologic repository available within those time frames.<sup>108</sup> We revisited this assumption as a consequence of the remand in New York v. NRC, and we now have analyzed the impacts of spent fuel storage over much longer time frames.<sup>109</sup> We expect that our regulatory process will not be static and will continue to evolve in the future.

Disposal in a deep geologic repository remains the option that Congress has selected for addressing the problem of spent nuclear fuel, and we have neither a mandate nor a reason to question this determination. For the reasons stated in the Continued Storage GEIS, we believe that a geologic repository is technically feasible and that, with sufficient political and societal commitment, a repository can become available within 25-35 years.<sup>110</sup> But we have no crystal ball. We recognize, as we did in 1977, that the hazards associated with spent fuel could become acute at some distant time. We also recognize, as we must, that our statutory mission only confers upon us the authority to license, and not to construct, a permanent repository.<sup>111</sup> Thus, our statutory obligation to ensure

<sup>&</sup>lt;sup>105</sup> Id.

<sup>&</sup>lt;sup>106</sup> See, e.g., Final Rule: "License and Certificate of Compliance Terms," 76 Fed. Reg. 8873 (Feb. 16, 2011) (extending the maximum possible length of licenses issued under 10 C.F.R. Part 72 from 20 years to 40 years).

<sup>&</sup>lt;sup>107</sup> In our 1990 Waste Confidence Decision, we noted that "[a]lthough the Commission does not dispute the statement that dry spent fuel storage is safe and environmentally acceptable for a period of 100 years, the Commission does not find it necessary to make that specific finding in this proceeding." 1990 Waste Confidence Decision, 55 Fed. Reg. at 38,473.

<sup>&</sup>lt;sup>108</sup> See id. at 38,482.

<sup>&</sup>lt;sup>109</sup> See, e.g., Continued Storage GEIS, Chs. 4 and 5.

<sup>&</sup>lt;sup>110</sup>*Id.* § B.2.

<sup>&</sup>lt;sup>111</sup> The Nuclear Waste Policy Act assigned the responsibility for constructing and operating a *(Continued)* 

the adequate protection of public health and safety encompasses an ongoing responsibility to regulate the continued storage of spent fuel, with or without a repository. Our long history with these issues (including our ability to adapt our regulatory processes based upon changing circumstances) continues to support our conclusion that safe, permanent disposal of spent nuclear fuel is technically feasible and that spent fuel can be safely stored until a repository is available, or indefinitely should such storage become necessary.

Congress has entrusted this agency to ensure adequate protection of public health and safety by granting us the authority to condition licenses and to enforce our regulations. In our view, licensing production and utilization facilities now and relying upon our overall regulatory regime to address both ongoing safe storage and the construction of a repository in the future do not constitute an abdication of our statutory obligations. Rather, we understand these actions to be precisely what Congress intended when it both authorized the NRC to issue licenses for nuclear power plants and granted the agency broad regulatory and enforcement authority to protect the public health and safety and common defense and security.

#### **III. CONCLUSION**

In light of these considerations, and in light of our determination that the Atomic Energy Act does not require us to make the "waste confidence safety finding" that Petitioners propose, we decline to suspend final licensing decisions in the captioned proceedings. We therefore *deny* Petitioners' suspension requests and *deny* Petitioners' associated motions for leave to file new contentions and to reopen the record.

IT IS SO ORDERED.

For the Commission

ANNETTE L. VIETTI-COOK Secretary of the Commission

Dated at Rockville, Maryland, this 26th day of February 2015.

repository to the Department of Energy, not the NRC. See, e.g., Nuclear Waste Policy Act of 1982, § 114, 42 U.S.C. § 10134 (2012).

#### APPENDIX

#### PETITIONS AND MOTIONS

- Served in all captioned proceedings except *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3): Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings (Sept. 29, 2014); Errata to Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings (Oct. 1, 2014); and Petition to Suspend Final Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings — Amended and Corrected (Oct. 6, 2014).
- 2. *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3): Intervenors' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Combined Operating Licensing Proceeding for Fermi 3 Nuclear Power Plant (Sept. 29, 2014).
- 3. *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 2): Petitioners' Motion for Leave to Amend and Supplement Contention 3 Concerning the Absence of Required Waste Confidence Safety Findings in the Relicensing Proceeding for Fermi 2 Nuclear Power Plant (Sept. 29, 2014).
- Duke Energy Carolinas, LLC (William States Lee III Nuclear Station, Units 1 and 2): Petitioner's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at William States Lee III Nuclear Power Plant (Sept. 29, 2014).
- Duke Energy Carolinas, LLC (William States Lee III Nuclear Station, Units 1 and 2): Motion to Reopen the Record for William States Lee III Nuclear Power Plant (Sept. 29, 2014).
- 6. *Entergy Nuclear Operations, Inc.* (Indian Point Nuclear Generating Units 2 and 3): Petition to Suspend Final Decision in Indian Point Relicensing Proceeding Pending Issuance of Waste Confidence Safety Findings (Oct. 3, 2014).
- Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3): Riverkeeper Consolidated Motion for Leave to File a New Contention and New Contention RK-10 Concerning the Absence of Required Waste Confidence Safety Findings (Oct. 3, 2014).
- 8. FirstEnergy Nuclear Operating Co. (Davis-Besse Nuclear Power Station,

Unit 1): Intervenors' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Relicensing Proceeding for Davis-Besse Nuclear Power Station (Sept. 29, 2014).

- Florida Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 6 and 7): Intervenors' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at Turkey Point Nuclear Power Plant (Sept. 29, 2014).
- 10. *Luminant Generation Co., LLC* (Comanche Peak Nuclear Power Plant, Units 3 and 4): Motion to Reopen the Record for Comanche Peak Units 3 & 4 Nuclear Power Plant (Sept. 29, 2014).
- Luminant Generation Co., LLC (Comanche Peak Nuclear Power Plant, Units 3 and 4): Petitioners' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at Comanche Peak Units 3 & 4 (Sept. 29, 2014).
- 12. *NextEra Energy Seabrook, LLC* (Seabrook Station, Unit 1): Shadis, Raymond, Friends of the Coast and New England Coalition, Letter to Administrative Judges (Sept. 29, 2014).
- Nuclear Innovation North America LLC (South Texas Project, Units 3 and 4): Motion to Reopen the Record for South Texas Project 3 & 4 Nuclear Power Plant (Sept. 29, 2014).
- 14. Nuclear Innovation North America LLC (South Texas Project, Units 3 and 4): Petitioners' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at South Texas Project Units 3 & 4 Nuclear Power Plant (Sept. 29, 2014).
- 15. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2): San Luis Obispo Mothers for Peace Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings (Sept. 29, 2014).
- 16. *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2): Ecology Party of Florida and Nuclear Information and Resource Services' Motion to Reopen the Record (Sept. 29, 2014).
- 17. *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2): Ecology Party of Florida and Nuclear Information and Resource Services' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings (Sept. 29, 2014).

- 18. *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2): Intervenors' Unopposed Motion to Withdraw Their Motion to Reopen the Record (Oct. 2, 2014).
- 19. *STP Nuclear Operating Co.* (South Texas Project, Units 1 and 2): Motion to Reopen the Record for South Texas Project Units 1 & 2 Nuclear Power Plant (Sept. 29, 2014).
- 20. *STP Nuclear Operating Co.* (South Texas Project, Units 1 and 2): Petitioners' Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Relicensing Proceeding at South Texas Project Electric Generating Statio[sic] Units 1 and 2 (Sept. 29, 2014).
- 21. *Tennessee Valley Authority* (Bellefonte Nuclear Power Plant, Units 3 and 4): Motion to Reopen the Record for Bellefonte Nuclear Power Plant (Sept. 29, 2014).
- 22. *Tennessee Valley Authority* (Bellefonte Nuclear Power Plant, Units 3 and 4): Intervenor's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at Bellefonte Nuclear Power Plant (Sept. 29, 2014).
- 23. *Tennessee Valley Authority* (Sequoyah Nuclear Plant, Units 1 and 2): Motion to Reopen the Record for Sequoyah Nuclear Power Plant (Sept. 29, 2014).
- 24. *Tennessee Valley Authority* (Sequoyah Nuclear Plant, Units 1 and 2): Intervenor's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Re-Licensing Proceeding at Sequoyah Nuclear Power Plant (Sept. 29, 2014).
- 25. *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 2): Southern Alliance for Clean Energy's Motion to Reopen the Record (Sept. 29, 2014).
- 26. *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 2): Southern Alliance for Clean Energy's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings (Sept. 29, 2014).
- 27. *Union Electric Co.* (Callaway Plant, Unit 1): Motion to Reopen the Record for Callaway Nuclear Power Plant (Sept. 29, 2014).
- 28. Union Electric Co. (Callaway Plant, Unit 1): Missouri Coalition for the Environment's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Relicensing Proceeding at Callaway 1 Nuclear Power Plant (Sept. 29, 2014).

- 29. Virginia Electric and Power Co. d/b/a Dominion Virginia Power and Old Dominion Electric Cooperative (North Anna Power Station, Unit 3): Motion to Reopen the Record for North Anna Nuclear Power Plant (Sept. 29, 2014).
- 30. Virginia Electric and Power Co. d/b/a Dominion Virginia Power and Old Dominion Electric Cooperative (North Anna Power Station, Unit 3): Petitioner's Motion for Leave to File a New Contention Concerning the Absence of Required Waste Confidence Safety Findings in the Licensing Proceeding at North Anna Nuclear Power Plant (Sept. 29, 2014).

#### **RESPONSIVE PLEADINGS**

- 1. Served in all captioned proceedings: NRC Staff Consolidated Answer to Petitions to Suspend Final Reactor Licensing Decisions, Motions to Admit a New Contention, and Motions to Reopen the Record (Oct. 31, 2014).
- 2. Served in all captioned proceedings: Nuclear Energy Institute, Inc.'s Motion for Leave to File Amicus Curiae Brief; Amicus Curiae Brief of the Nuclear Energy Institute, Inc. in Response to Suspension Petitions and Waste Confidence Safety Contentions (Oct. 31, 2014).
- 3. Served in all captioned proceedings: Petitioners' and Intervenors' Consolidated Reply to Answers to Petitions to Suspend Final Reactor Licensing Decisions, Motions to Admit a New Contention, and Motions to Reopen the Record (Nov. 7, 2014).
- 4. *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 3): Applicant's Opposition to Petition to Suspend Final Decisions and Proposed New Continued Storage Contention (Oct. 31, 2014).
- 5. *DTE Electric Co.* (Fermi Nuclear Power Plant, Unit 2): Applicant's Opposition to Petition to Suspend Final Decisions and Proposed New Continued Storage Contention (Oct. 31, 2014).
- 6. *Duke Energy Carolinas, LLC* (William States Lee III Nuclear Station, Units 1 and 2): Duke Energy's Answer Opposing Petition to Suspend Licensing Proceedings, Related Contention and Motion to Reopen (Oct. 31, 2014).
- Entergy Nuclear Operations, Inc. (Indian Point Nuclear Generating Units 2 and 3): Entergy's Combined Answer to Riverkeeper's Proposed New Contention RK-10 and Petition to Suspend Final License Renewal Decision Pending Issuance of Waste Confidence "Safety" Findings (Oct. 31, 2014).
- 8. *FirstEnergy Nuclear Operating Co.* (Davis-Besse Nuclear Power Station, Unit 1): FirstEnergy Nuclear Operating Company Combined Response to

Proposed Contention and Petition to Suspend Related to Alleged Need for Issuance of Waste Confidence Safety Findings (Oct. 31, 2014).

- 9. *Florida Power & Light Co.* (Turkey Point Nuclear Generating Plant, Units 6 and 7): FPL's Answer Opposing Petition to Suspend Licensing Proceedings and Related Contention (Oct. 31, 2014).
- Luminant Generation Co., LLC (Comanche Peak Nuclear Power Plant, Units 3 and 4): Luminant Combined Response to Proposed Contention and Petition to Suspend Related to Alleged Need for Issuance of Waste Confidence Safety Findings (Oct. 31, 2014).
- 11. NextEra Energy Seabrook, LLC (Seabrook Station, Unit 1): NextEra's Answer Opposing Petition to Suspend Licensing Proceedings (Oct. 31, 2014).
- 12. *Nuclear Innovation North America LLC* (South Texas Project, Units 3 and 4): Nuclear Innovation North America LLC Combined Response to Proposed Contention and Petition to Suspend Related to Alleged Need for Issuance of Waste Confidence Safety Findings (Oct. 31, 2014).
- 13. *Pacific Gas and Electric Co.* (Diablo Canyon Nuclear Power Plant, Units 1 and 2): Applicant's Opposition to Petition to Suspend Final Decisions and Proposed New Continued Storage Contention (Oct. 31, 2014).
- 14. *Progress Energy Florida, Inc.* (Levy County Nuclear Power Plant, Units 1 and 2): Answer of Progress Energy Florida, Inc. Opposing Petition to Suspend Licensing Proceedings and Related Contention (Oct. 31, 2014).
- 15. *STP Nuclear Operating Co.* (South Texas Project, Units 1 and 2): STP Nuclear Operating Company Combined Response to Proposed Contention and Petition to Suspend Related to Alleged Need for Issuance of Waste Confidence Safety Findings (Oct. 31, 2014).
- 16. *Tennessee Valley Authority* (Bellefonte Nuclear Power Plant, Units 3 and 4; Sequoyah Nuclear Plant, Units 1 and 2): Tennessee Valley Authority's Answer to Motion to Reopen the Record for Sequoyah Nuclear Power Plant and Motion to Reopen the Record for Bellefonte Nuclear Power Plant (Oct. 31, 2014).
- 17. *Tennessee Valley Authority* (Watts Bar Nuclear Plant, Unit 2): Tennessee Valley Authority's Answer Opposing Southern Alliance for Clean Energy's Motion to Reopen the Record (Oct. 31, 2014).
- Tennessee Valley Authority (Bellefonte Nuclear Power Plant, Units 3 and 4; Sequoyah Nuclear Plant, Units 1 and 2; Watts Bar Nuclear Plant, Unit 2): Tennessee Valley Authority's Answer Opposing Petition to Suspend Final

Decisions in All Pending Reactor Licensing Proceedings Pending Issuance of Waste Confidence Safety Findings and Motions for Leave to File New Contention (Oct. 31, 2014).

- 19. *Union Electric Co.* (Callaway Plant, Unit 1): Ameren's Answer Opposing Petition to Suspend Licensing Proceedings, Related Contention and Motion to Reopen (Oct. 31, 2014).
- 20. Virginia Electric and Power Co. d/b/a Dominion Virginia Power and Old Dominion Electric Cooperative (North Anna Power Station, Unit 3): Dominion's Answer Opposing Petition to Suspend Licensing Proceedings, Related Contention and Motion to Reopen (Oct. 31, 2014).

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-2, Page 1 of 9



# 2019 - 202INFORMATION DIGEST NRC

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-2, Page 2 of 9

NRC

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# 2019-2020 INFORMATION DIGEST

#### SO: 20, 70899, 04/27/2020, D: 11672824, DKENTRY, 18, 2, DA NRC: AN INDEPENDENT REGULATORY AGENCY

94 of 314

## About the NRC

The U.S. Nuclear Regulatory Commission (NRC) is an independent agency created by Congress. The NRC regulates the Nation's civilian commercial, industrial, academic, and medical uses of nuclear materials.

The NRC's scope of responsibility includes regulating commercial nuclear power plants; research and test reactors (RTRs); nuclear fuel cycle facilities; medical, academic, and industrial uses of radioactive materials; the decommissioning of licensed facilities and sites; and the transport, storage, and disposal of radioactive materials and wastes. The agency issues licenses for and oversees the use of radioactive materials and certifies nuclear reactor designs, spent fuel storage casks, and transportation packages. The agency also licenses the import and export of radioactive materials and works closely with its international counterparts to enhance nuclear safety and security worldwide. To fulfill its responsibilities, the NRC performs five principal regulatory functions, as seen in Figure 1. How the NRC Regulates.

# **Mission Statement**

The NRC licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety to promote the common defense and security and to protect the environment.

#### Vision

Demonstrate the Principles of Good Regulation in performing the agency's mission.

To be successful, the NRC must not only excel in carrying out its mission but must do so in a manner that engenders the trust of the public and stakeholders. The Principles of Good Regulation—independence, openness, efficiency, clarity, and reliability—guide the agency. They affect how the NRC reaches decisions on safety, security, and the environment; how the NRC performs administrative tasks; and how its employees interact with each other as well as with external stakeholders. By adhering to these principles, the NRC maintains its regulatory competence, conveys that competence to stakeholders, and promotes trust in the agency. The agency puts these principles into practice with effective, realistic, and timely actions.

#### Strategic Goals

**Safety:** Ensure the safe use of radioactive materials. **Security:** Ensure the secure use of radioactive materials.

## **Major Activities**

The NRC fulfills its responsibilities by doing the following:

 licensing the design, construction, operation, and decommissioning of commercial nuclear power plants and other nuclear facilities

Case: 20.70800.04/27/2020. ID: 11672824, DktEntry: 18-2, Page

- licensing the possession, use, processing, handling, exporting, and importing of nuclear materials
- establishing national policy and standards for the safe disposal of low-level radioactive waste
- certifying the design, construction, and operation of commercial transportation casks for radioactive materials and waste
- licensing the design, construction, and operation of spent fuel storage casks and interim storage facilities for spent fuel and high-level radioactive waste
- licensing nuclear reactor operators
- licensing uranium enrichment facilities
- conducting research to develop regulations and to anticipate potential reactor and other nuclear facility safety issues
- collecting, analyzing, and disseminating information about the safe operation of commercial nuclear power reactors and certain nonreactor activities
- issuing safety and security regulations, policies, goals, and orders that govern nuclear activities
- interacting with other Federal agencies, foreign governments, and international organizations on safety and security issues
- conducting criminal, civil, and administrative investigations of alleged violations by NRC licensees
- inspecting NRC licensees to ensure adequate performance of safety and security programs
- enforcing NRC regulations and the conditions of NRC licenses and imposing, when necessary, civil sanctions and penalties
- conducting public hearings on nuclear and radiological safety and security and on environmental concerns
- implementing international legal commitments made by the U.S. Government in treaties and conventions

(95 of 314)

#### NRC: AN INDEPENDENT REGULATORY AGENCY

(96 of 314)

- developing working relationships with State and Tribal governments
- maintaining an incident response program and overseeing required emergency response activities at NRC-licensed facilities
- implementing lessons learned from the March 2011 nuclear accident in Japan to enhance safety at U.S. commercial nuclear facilities
- transforming the agency one decision at a time into a modern, risk-informed regulator that promotes and embraces innovative approaches to achieve the agency mission (see Figure 2. Transforming the NRC)
- involving the public in the regulatory process through meetings, conferences, and workshops; providing opportunities for commenting on proposed new regulations, petitions, guidance documents, and technical reports; providing ways to report safety concerns; and providing documents under the Freedom of Information Act and through the NRC's Web site (see Figure 3. A Typical Rulemaking Process)
- engaging and informing the public through social media platforms and by providing interactive, high-value data sets (data in a form that allows members of the public to search, filter, or repackage information)



Regional State Liaison Officer for Region III, Allan Barker, leads a panel discussion on government communications during the NRC National State Liaison Officers Conference in Rockville, MD.

### High-Level Radioactive Waste Management

#### Spent Nuclear Fuel Storage

Commercial spent nuclear fuel, although highly radioactive, is stored safely and securely throughout the United States. Spent fuel is stored in pools and in dry casks at sites with operating nuclear power reactors. Several storage facilities do not have operating power reactors but are safely and securely storing spent fuel. Waste can

be stored safely in pools or casks for 100 years or more. The NRC licenses and regulates the storage of spent fuel, both at commercial nuclear power plants and at separate storage facilities.

Most reactor facilities were not designed to store the full amount of spent fuel that the reactors See Appendices N and O for information about dry spent fuel storage and licensees.

would generate during their operational lives. Facilities originally planned to store spent fuel temporarily in deep pools of continuously circulating water, which cools the spent fuel assemblies. After a few years, the facilities were expected to send the spent fuel to a reprocessing plant. However, in 1977, the U.S. Government declared a moratorium on reprocessing spent fuel in the United States. Although the Government later lifted the restriction, reprocessing has not resumed in the United States.



See Glossary for information on fuel reprocessing (recycling).

As a result, facilities expanded their storage capacity by using high-density storage racks in their spent fuel pools. To provide supplemental storage, some fuel assemblies are stored in dry casks on site (see Figure 34. Spent Fuel Generation and Storage After Use). These facilities are called independent spent fuel storage installations (ISFSIs) and are licensed by the NRC. These large casks are typically made of leak-tight, welded, and bolted steel and concrete surrounded by another layer of steel or concrete. The spent fuel sits in the center of the cask in an inert gas. Dry cask storage shields people and the environment from radiation and keeps the spent fuel inside dry and nonreactive (see Figure 35. Dry Storage of Spent Nuclear Fuel).

Another type of ISFSI is called a Consolidated Interim Storage Facility (CISF). A CISF would store spent fuel from multiple commercial reactors, including those that have ceased operation, on a interim basis until a permanent disposal option is available. Additional information on consolidated interim storage is available on the NRC's Web site (see the Web Link Index).

The NRC regulates facilities that store spent fuel in two different ways. The NRC may grant site-specific licenses after a safety review of the technical requirements and operating conditions for an ISFSI. The NRC has issued a general license authorizing nuclear power reactor licensees to store spent fuel on site in dry storage casks

that the NRC has certified. Following a similar safety review, the NRC may issue a Certificate of Compliance and add the cask to a list of approved systems through a rulemaking. The agency issues licenses and certificates for terms not to exceed 40 years, but they can be renewed for up to an additional 40 years (see Figure 36. Licensed and Operating Independent Spent Fuel Storage Installations by State).

#### **Public Involvement**

The public can participate in decisions about spent nuclear fuel storage, as it can in many licensing and rulemaking decisions. The Atomic Energy Act of 1954, as amended, and the NRC's own regulations call for public meetings about site-specific licensing actions and allow the public to comment on Certificate of Compliance rulemakings. Members of the public may also file petitions for rulemaking. Additional information on ISFSIs is available on the NRC's Web site (see the Web Link Index).



NRC Senior Resident Inspector James McGhee (right) takes time to discuss topics of interest at a public meeting held to discuss the performance of area nuclear power plants and their future decommissioning process.

#### Spent Nuclear Fuel Disposal

The current U.S. policy governing permanent disposal of high-level radioactive waste is defined by the Nuclear Waste Policy Act of 1982, as amended, and the Energy Policy Act of 1992. These acts specify that high-level radioactive waste will be disposed of underground in a deep geologic repository licensed by the NRC. Because the timing of repository availability is uncertain, the NRC looked at potential environmental impacts of storing spent fuel over three possible timeframes: the short term, which includes 60 years of continued storage after a reactor's operating license has expired; the medium term, or 160 years after license expiration; and indefinite, which assumes a repository never becomes available. The NRC's findings—that any environmental impacts can be managed—appear in the 2014 report NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel."

#### Figure 34. Spent Fuel Generation and Storage After Use

04/27/2020 ID: 11672924 DktEntry

A nuclear reactor is powered by enriched uranium-235 fuel. Fission (splitting of atoms) generates heat, which produces steam that turns turbines to produce electricity. A reactor rated at several hundred megawatts may contain 100 or more tons of fuel in the form of bullet-sized pellets loaded into long metal rods that are bundled together into fuel assemblies. Pressurized-water reactors (PWRs) contain between 120 and 200 fuel assemblies. **Boiling-water reactors** (BWRs) contain between 370 and 800 fuel assemblies.

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RADIOACTIVE WASTE



(99 of 314)

10 0



2 After 5-6 years, spent fuel assemblies (which are typically 14 feet [4.3 meters] long and which contain nearly 200 fuel rods for PWRs and 80-100 fuel rods for BWRs) are removed from the reactor and allowed to cool in storage pools. At this point, the 900-pound (409-kilogram) assemblies contain only about one-fifth the original amount of uranium-235. (100 of 314) Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-2, Page and 9





Commercial light-water nuclear reactors store spent radioactive fuel in a steel-lined, seismically designed concrete pool under about 40 feet [12.2 meters] of water that provides shielding from radiation. Pumps supply continuously flowing water to cool the spent fuel. Extra water for the pool is provided by other pumps that can be powered from an onsite emergency diesel generator. Support features, such as water-level monitors and radiation detectors, are also in the pool. Spent fuel is stored in the pool until it is transferred to dry casks on site or transported off site for interim storage or disposal.



Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-3, Page 1 of 36

#### U.S. NUCLEAR REGULATORY COMMISSION MANAGEMENT DIRECTIVE (MD)

MD 8.11	REVIEW PROCESS FOR 10 CFR 2.206 DT-19-01 PETITIONS
Volume 8:	Licensee Oversight Programs
Approved By:	Margaret M. Doane, Executive Director for Operations
Date Approved:	March 1, 2019
Cert. Date:	N/A, for the latest version of any NRC directive or handbook, see the <u>online MD Catalog</u>
Issuing Office:	Office of Nuclear Reactor Regulation Division of Operating Reactor Licensing
Contact Name:	Perry Buckberg

#### **EXECUTIVE SUMMARY**

Management Directive (MD) 8.11, "Review Process for 10 CFR 2.206 Petitions," is being revised to—

- Clarify the initial screening and acceptance criteria for evaluating petitions,
- Clarify guidance regarding coordination and referral of allegations,
- Clarify and update roles and organizational responsibilities,
- Clarify and add guidance regarding referrals from adjudicatory boards and the Commission,
- Clarify guidance on public meeting and teleconference interactions,
- Clarify guidance for a streamlined director's decision in certain cases,
- Correct the addressee of the periodic 2.206 status report from the Commission to the Director of the Office of Nuclear Reactor Regulation,
- Revise the process to accelerate the PRB initial assessment prior to meeting with the petitioner,
- Add a timeliness goal for issuing the acknowledgment or closure letter,
- Add criteria for holding a petition in abeyance,
- Clarify that the PRB chairperson is the final decision maker for the PRB,
- Add guidance on requests to impose requirements outside of NRC jurisdiction,
- Add the Office of International Programs to the offices responsible for petitions, and
- Relocate detailed procedural staff guidance to "<u>Desktop Guide: Review Process for</u> <u>10 CFR 2.206 Petitions</u>," to clarify and facilitate future updates, as needed.

For updates or revisions to policies contained in this MD that were issued after the MD was signed, please see the Yellow Announcement to Management Directive index (<u>YA-to-MD index</u>).

#### TABLE OF CONTENTS

Ι.	POLICY		
II.	OBJECTIVES		
III.	OF	GANIZATIONAL RESPONSIBILITIES AND DELEGATIONS OF AUTHORITY	.3
	A.	Executive Director for Operations (EDO)	.3
	В.	Office of the General Counsel (OGC)	.3
	C.	Director, Office of Enforcement (OE)	.3
	D.	Director, Office of Investigations (OI) and Inspector General (IG)	.3
	E.	Director, Office of Nuclear Reactor Regulation (NRR)	.4
	F.	Directors, Office of Nuclear Reactor Regulation (NRR), Office of New Reactors (NRO), Office of Nuclear Material Safety and Safeguards (NMSS), and Office of International Programs (OIP)	.4
	G.	Regional Administrators	.5
	H.	Deputy Office Directors, Office of Nuclear Reactor Regulation (NRR), Office of New Reactors (NRO), Office of Nuclear Material Safety and Safeguards (NMSS), and Office of International Programs (OIP)	.5
	I.	Director, Division of Operating Reactor Licensing (DORL), NRR	.5
	J.	2.206 Petition Review Board (PRB) Chairperson	.5
	K.	Agency 2.206 Petition Coordinator	.6
	L.	Office 2.206 Petition Coordinator	.6
	Μ.	2.206 Petition Manager	.7
IV.	AP	PLICABILITY	.7
V.	DIRECTIVE HANDBOOK		.7
VI.	DEFINITIONS		.8
VII.	REFERENCES		

#### I. POLICY

It is the policy of the U.S. Nuclear Regulatory Commission (NRC) to provide any person with the means to request that the NRC institute a proceeding pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 2.202, "Orders," to modify, suspend, or revoke a license, or for other action as may be proper (hereinafter referred to in this directive as to take enforcement-related action). This policy is codified in 10 CFR 2.206, "Requests for Action Under This Subpart." The NRC may grant a request for action, in whole or in part, take other action that satisfies the concerns raised by the requester, or deny the request. Requests

that raise health and safety and other concerns without requesting enforcement-related action will be reviewed by means other than the 10 CFR 2.206 process.

#### **II. OBJECTIVES**

- Ensure public health and safety through the prompt and thorough evaluation of any potential problem addressed by a petition filed under 10 CFR 2.206.
- Provide for appropriate participation by a petitioner in the NRC's decisionmaking activities related to a 10 CFR 2.206 petition.
- Ensure effective communication with the petitioner and other stakeholders on the status of a petition, including providing relevant documents and notification of interactions between NRC staff and a licensee or certificate holder relevant to the petition.

#### **III. ORGANIZATIONAL RESPONSIBILITIES AND DELEGATIONS OF AUTHORITY**

#### A. Executive Director for Operations (EDO)

Receives and assigns action for all petitions filed under 10 CFR 2.206.

#### B. Office of the General Counsel (OGC)

- 1. Provide legal advice to the Commission, EDO, office directors, and staff on matters related to the 10 CFR 2.206 process.
- 2. Provide legal counsel on matters related to the 10 CFR 2.206 petition process, upon specific request from the staff in a special case or where a petition raises legal issues. Reviews written correspondence between the staff and the petitioner(s) such as letters and staff decisions (e.g., proposed and final director's decisions).

#### C. Director, Office of Enforcement (OE)

- 1. Provides enforcement and allegation program advice to the Commission, EDO, office directors, and staff on matters related to the 10 CFR 2.206 process
- 2. Provides enforcement and allegation program advice on a 10 CFR 2.206 petition submittal and, upon specific request from the staff, reviews written correspondence between the staff and the petitioner(s) such as letters and staff decisions (e.g., proposed and final director's decisions).

#### D. Director, Office of Investigations (OI) and Inspector General (IG)

 The Office of Investigations (OI) provides advice on a 10 CFR 2.206 petition submittal upon specific request from the staff in a special case or where a petition raises any allegation of wrongdoing by a licensee or certificate holder, applicant for a licensee or certificate, their contractor, or their vendor.

- 2. The Office of the Inspector General (OIG) addresses suspected wrongdoing by NRC employees and contractors such as mismanagement of agency programs that could adversely impact matters related to public health and safety.
- 3. Any mention outside the NRC of an ongoing OI or OIG investigation requires the approval of the Director of OI or the IG, respectively.

#### E. Director, Office of Nuclear Reactor Regulation (NRR)

- 1. Responsible for the development and implementation of agencywide policy and procedures regarding the processing of 10 CFR 2.206 petitions.
- 2. For assigned petitions, see additional roles and responsibilities in Section III.F of this directive.

# F. Directors, Office of Nuclear Reactor Regulation (NRR), Office of New Reactors (NRO), Office of Nuclear Material Safety and Safeguards (NMSS), and Office of International Programs (OIP)

- Responsible for an assigned petition. Because 10 CFR 2.206 petitions request enforcement-related action against entities licensed or otherwise regulated by the NRC, petitions are assigned to the Office of Nuclear Reactor Regulation (NRR), Office of New Reactors (NRO), Office of Nuclear Material Safety and Safeguards (NMSS), and Office of International Programs (OIP).
- 2. Designate an office 2.206 petition coordinator.
- 3. Approve or deny staff decisions to take immediate action on issues raised in a 2.206 petition.
- 4. Concur on closure letters and letters transmitting proposed director's decisions for comment.
- 5. Sign acknowledgment letters and associated *Federal Register* notices of receipt.
- 6. Sign director's decisions.
- 7. For each petition, establish a process to appoint or re-delegate to the appropriate staff the following:
  - (a) Provide up-to-date information on all assigned petitions.
  - (b) Designate the organization and staff responsible for an assigned petition, including,
    - (i) A petition review board (PRB) chairperson;
    - (ii) Petition manager; and
    - (iii) The signature authority, typically a senior executive service (SES) manager, for letters transmitting proposed director's decisions for comments.

- (c) Request OGC involvement, where appropriate, through the Assistant General Counsel for Materials Litigation and Enforcement.
- (d) Request OE involvement, where appropriate.
- 8. Promptly notify—
  - (a) OI when a petition contains any allegation of wrongdoing by a licensee or certificate holder, applicant for a license or certificate, their contractor, or their vendor; and
  - (b) OIG when a petition contains any allegation of wrongdoing by an NRC employee or NRC contractor.

#### G. Regional Administrators

- 1. As needed, provide support and information for the preparation of an acknowledgment letter and a director's decision on a 2.206 petition.
- 2. Make the petition manager aware of information that is received or that is the subject of any correspondence relating to a pending petition.
- 3. Participate, as necessary, in meetings with the petitioner and public, in technical review of petitions and in deliberations of the PRB.
- H. Deputy Office Directors, Office of Nuclear Reactor Regulation (NRR), Office of New Reactors (NRO), Office of Nuclear Material Safety and Safeguards (NMSS), and Office of International Programs (OIP)
  - 1. Concur on PRB final recommendations.
  - 2. Concur on PRB decisions to consolidate similar petitions or to hold a petition in abeyance.
- I. Director, Division of Operating Reactor Licensing (DORL), NRR
  - 1. Appoints the agency 2.206 petition coordinator, normally a project manager from NRR/DORL.
  - 2. Signs the 2.206 status reports.

#### J. 2.206 Petition Review Board (PRB) Chairperson

Each office that is assigned a petition will appoint a PRB chairperson, generally a SES manager, who—

- 1. Convenes PRB meetings.
- 2. Is the decision maker for the PRB.

- 3. Ensures appropriate review of a petition in a timely manner.
- 4. Ensures appropriate documentation of PRB meetings.
- 5. Signs closure letters.

#### K. Agency 2.206 Petition Coordinator

- 1. Provides support to each office 2.206 petition coordinator to ensure consistency in implementing the 2.206 process throughout the agency.
- 2. Prepares a 2.206 status report, which is posted to the NRC public Web site.
- 3. Serves as office 2.206 petition coordinator for NRR and performs the duties listed in Section III.L of this directive.
- 4. Responsible for coordinating with the Office of the Secretary (SECY) in assigning director's decision numbers and informing SECY when a director's decision is signed.
- 5. Ensures that a periodic 2.206 program self-assessment is performed.
- 6. Responsible for developing and maintaining agency guidance for implementing the policy documented in MD 8.11.

#### L. Office 2.206 Petition Coordinator

Each office that is assigned petitions will assign an office 2.206 petition coordinator. The office 2.206 petition coordinator for each office—

- 1. Tracks the status of each petition within the office.
- 2. Coordinates the office-specific implementation of the policy documented in MD 8.11.
- 3. Serves on the PRB and provides advice to the PRB on implementing the 2.206 process in accordance with MD 8.11 and guidance for timely resolution.
- 4. Provides support to assigned 2.206 petition managers.
- 5. Provides the current status of petitions assigned to the office, upon request, to the agency 2.206 petition coordinator.
- 6. Provides guidance to staff who receive requests for enforcement-related action that are not explicitly identified as petitions under 10 CFR 2.206.
- 7. Convenes periodic PRB meetings with petition managers to discuss the status of open petitions and to provide guidance for timely resolution.

#### M. 2.206 Petition Manager

Each office that is assigned a petition assigns a 2.206 petition manager. The assigned petition manager—

- 1. If necessary, informs his or her office 2.206 petition coordinator of receipt of a 10 CFR 2.206 petition.
- 2. Performs initial screening of 10 CFR 2.206 petitions in accordance with Section II of this directive handbook.
- 3. Informs the office allegations coordinator and the appropriate regional allegations coordinator of a petition that involves a potential allegation.
- 4. Serves as the NRC point of contact for the petitioner.
- 5. Contacts the petitioner to determine if he or she wants the request processed as a 10 CFR 2.206 petition and determines the correct process for any petition.
- 6. Identifies staff members to serve on the PRB.
- 7. Schedules PRB meetings.
- 8. Prepares a written summary of the internal PRB meetings for the PRB members' review, if requested by the PRB chairperson.
- 9. Prepares all PRB and agency decisions and notices on 2.206 petitions in accordance with this directive handbook.
- 10. Provides the current status of a petition, upon request, to the office and/or agency 2.206 petition coordinator.
- 11. Provides any comments received on a proposed director's decision to the office 2.206 petition coordinator.
- 12. Prepares extension requests for review and approval in accordance with office or OEDO procedures.
- 13. Coordinates with the office 2.206 petition coordinator and the agency 2.206 petition coordinator when a director's decision number is needed and when the director's decision is signed.

#### **IV. APPLICABILITY**

The policy and guidance in this directive and handbook apply to all NRC employees.

#### **V. DIRECTIVE HANDBOOK**

Directive Handbook 8.11 details the procedures for staff review and disposition of a petition submitted in accordance with 10 CFR 2.206.

#### **VI. DEFINITIONS**

#### 10 CFR 2.206 Petition

A written request filed by any person to institute a proceeding pursuant to Section 2.202 to modify, suspend, or revoke a license, or for other action as may be proper (hereinafter referred to in this directive as to take enforcement-related action). The request must meet the criteria for accepting petitions for review under 10 CFR 2.206 (see Section III.C, "Criteria for Petition Evaluation," of this directive handbook).

#### Licensee

Throughout this MD, any references to a licensee shall be interpreted to include all licensees, certificate holders, and permit holders; applicants for licenses, certificates or permits; or other persons subject to the jurisdiction of the Commission.

#### VII. REFERENCES

#### **Code of Federal Regulations**

10 CFR 2.201, "Notice of Violation."

10 CFR 2.202, "Orders."

10 CFR 2.206, "Requests for Action Under This Subpart."

10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

10 CFR 2.802, "Petition for Rulemaking."

#### Nuclear Regulatory Commission Documents

Allegation Manual:

https://www.nrc.gov/about-nrc/regulatory/allegations-resp.html.

Management Directives—

3.5, "Attendance at NRC Staff-Sponsored Meetings."

- 7.4, "Reporting Suspected Wrongdoing and Processing OIG Referrals."
- 8.4, "Management of Facility-Specific Backfitting and Information Collection."
- 8.8, "Management of Allegations."

Guidance for Electronic Submissions to the NRC: <u>https://www.nrc.gov/site-help/electronic-sub-ref-mat.html</u>.

Desktop Guide: Review Process for 10 CFR 2.206 Petitions https://www.nrc.gov/about-nrc/regulatory/enforcement/petition.html
#### NUREG-Series Publications—

NUREG-0750, "Nuclear Regulatory Commission Issuances," published semi-annually: available at <u>http://www.nrc.gov/reading-rm/doc-</u>collections/nuregs/staff/sr0750/.

NUREG/BR-0200, Revision 5, "Public Petition Process," available at <a href="http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0200/">http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0200/</a>.

## **United States Code**

Freedom of Information Act (5 U.S.C. 552).



Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-3, Page 10 of 36

# U.S. NUCLEAR REGULATORY COMMISSION DIRECTIVE HANDBOOK (DH)

DH 8.11	REVIEW PROCESS FOR 10 CFR 2.206 DT-19-01 PETITIONS
Volume 8:	Licensee Oversight Programs
Approved By:	Margaret M. Doane, Executive Director for Operations
Date Approved:	March 1, 2019
Cert. Date:	N/A, for the latest version of any NRC directive or handbook, see the <u>online MD Catalog</u>
Issuing Office:	Office of Nuclear Reactor Regulation Division of Operating Reactor Licensing
Contact Name:	Perry Buckberg

# **EXECUTIVE SUMMARY**

Management Directive (MD) 8.11, "Review Process for 10 CFR 2.206 Petitions," is being revised to—

- Clarify the initial screening and acceptance criteria for evaluating petitions,
- Clarify guidance regarding coordination and referral of allegations,
- Clarify and update roles and organizational responsibilities,
- Clarify and add guidance regarding referrals from adjudicatory boards and the Commission,
- Clarify guidance on public meeting and teleconference interactions,
- Clarify guidance for a streamlined director's decision in certain cases,
- Correct the addressee of the periodic 2.206 status report from the Commission to the Director of the Office of Nuclear Reactor Regulation,
- Revise the process to accelerate the PRB initial assessment prior to meeting with the petitioner,
- Add a timeliness goal for issuing the acknowledgment or closure letter,
- Add criteria for holding a petition in abeyance,
- Clarify that the PRB chairperson is the final decision maker for the PRB,
- Add guidance on requests to impose requirements outside of NRC jurisdiction,
- Add the Office of International Programs to the offices responsible for petitions, and
- Relocate detailed procedural staff guidance to "<u>Desktop Guide: Review Process for</u> <u>10 CFR 2.206 Petitions</u>," to clarify and facilitate future updates, as needed.

For updates or revisions to policies contained in this MD that were issued after the MD was signed, please see the Yellow Announcement to Management Directive index (<u>YA-to-MD index</u>).



Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-3, Page 11 of 36

# DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS Date Approved: 03/01/2019

# TABLE OF CONTENTS

I.	INTRODUCTION			
	A.	Title 10 of the Code of Federal Regulations, Section 2.206	3	
	В.	Petitions Containing Allegations of Wrongdoing	3	
II.	IN	INITIAL STAFF ACTIONS		
	Α.	NRC's Receipt of a Petition	4	
	В.	Petition Manager Initial Action	8	
III.	PE	PETITION REVIEW BOARD (PRB)		
	A.	Petition Review Board Composition	8	
	В.	Schedule for PRB Meeting	9	
	C.	Criteria for Petition Evaluation	9	
	D.	PRB Initial Assessment	.11	
	E.	Informing the Petitioner of the Results of the Initial PRB Assessment	.12	
	F.	Meeting With the Petitioner	.13	
	G.	Response to the Petitioner	.15	
	Η.	Providing Documents to the Petitioner	.17	
	I.	Supplements to the Petition	.17	
IV.	PE	PETITION REVIEW ACTIVITIES		
	Α.	Reviewing the Petition	.19	
	В.	Schedule	.20	
	C.	Keeping the Petitioner Informed	.20	
	D.	Updating NRC Management and the Public	.21	
V.	ΤH	E DIRECTOR'S DECISION	.21	
	Α.	Content and Format	.21	
	В.	Granting the Petition	.21	
	C.	Denying the Petition	.22	
	D.	Final Versus Partial Director's Decision	.22	
	E.	Issuing the Proposed Director's Decision for Comment	.22	
	F.	Comment Disposition – Proposed Director's Decision	.23	
	G.	Issuing the Director's Decision	.23	
	Η.	Coordination with SECY	.24	

# EXHIBIT

#### I. INTRODUCTION

#### A. Title 10 of the Code of Federal Regulations, Section 2.206

- Section 2.206 of Title 10 of the Code of Federal Regulations (10 CFR 2.206) has been a part of the U.S. Nuclear Regulatory Commission's (NRC's) regulatory framework since the NRC was established in 1975. Section 2.206 permits any person to file a request to institute a proceeding pursuant to Section 2.202 of 10 CFR to modify, suspend, or revoke a license, or for other action as may be proper (hereinafter referred to in this directive as to take enforcement-related action). Such a request is referred to as a 2.206 petition.
- 2. Section 2.206 requires that a request be submitted in writing, specify the action requested, and set forth the facts that constitute the basis for the request.
- The NRC staff will not treat general opposition to nuclear power or a general assertion of a safety problem, without supporting facts, as a formal request under 10 CFR 2.206. The staff will treat general requests as allegations or routine correspondence.
- 4. In addition to receiving petitions as described in 10 CFR 2.206, the Commission or a licensing board may refer issues to the staff for consideration in the 2.206 process.

## **B.** Petitions Containing Allegations of Wrongdoing

- 1. The NRC defines wrongdoing by NRC licensees or other regulated entities as a willful violation of regulatory requirements (i.e., a violation involving either deliberate misconduct or careless disregard).
- 2. If a petition alleges wrongdoing on the part of a licensee or other regulated entity, the NRC staff will coordinate with the appropriate office allegation coordinator to enter the petition (or relevant portion thereof) in the allegation program.
- The Office of the Inspector General (OIG) addresses suspected wrongdoing by NRC employees and contractors such as mismanagement of agency programs that could adversely impact matters related to public health and safety.
- If the petition contains information of suspected wrongdoing involving an NRC employee, contractor, or vendor, the NRC staff will follow the procedures in Management Directive (MD) 7.4, "Reporting Suspected Wrongdoing and Processing OIG Referrals," for reporting to the OIG.

#### **REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS** DH 8.11 Date Approved: 03/01/2019

- 5. The Director of the Office of Investigations (OI) or the Inspector General (IG). respectively, must approve any mention outside of the NRC of an ongoing OI or OIG investigation.

## **II. INITIAL STAFF ACTIONS**

#### A. NRC's Receipt of a Petition

1. Process Summary

After the NRC receives a request under 10 CFR 2.206, the Executive Director for Operations (EDO) assigns it to the director of the appropriate office for evaluation and response. After the EDO assigns the petition to the appropriate office, the assigned staff will perform an initial screening of the petition to determine whether it should be entered into the 2.206 process. If the petition is entered into the 2.206 process, a petition review board (PRB) will perform an initial assessment to determine whether it should be accepted for review. If the NRC accepts the petition for review, the official response is the office director's written decision addressing the issues raised in the petition. In that decision, the office director may grant, partially grant, or deny the petitioner's requested action. The NRC provides the petitioner opportunities to address and provide feedback to the PRB. The Commission may, on its own initiative, review the office director's decision within 25 days of the date of the decision, although it will not entertain a request for review of the office director's decision.

Assignment of Staff Action and Initial Screening

The assigned staff should perform initial screening of the submittal to determine if the petition, or portions of the petition, should be entered into the 2.206 process. The initial screening criteria are described below:

- (a) Issues referred to the staff for consideration as a 2.206 petition by the Commission or a presiding officer in an NRC adjudicatory proceeding will be entered into the 2.206 process as described in Section II.A.2(g) of this handbook.
- (b) Petitions may be in the form of requests for an enforcement-related action that may or may not cite 10 CFR 2.206 and may initially be directed to staff other than the EDO. Upon receipt of a written request for an enforcement-related action, regardless of how received, the staff will screen the request to determine if it is within the scope of the 10 CFR 2.206 process.
- (c) The staff will promptly review the petition to determine if it requests short-term immediate action (e.g., a request to shut down an operating facility or prevent restart of a facility that is ready to restart) or if an issue raised in the petition may warrant immediate action (even if not requested). See Section III.B.1 of this handbook for more information.

#### DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS

Date Approved: 03/01/2019

- (d) The staff may screen out a request from the 10 CFR 2.206 process and, instead, respond using another appropriate process, such as general correspondence or referral to the allegations process, in the following cases:
  - (i) Verbal Requests

A verbal request for enforcement-related action under 10 CFR 2.206 (e.g., by telephone or orally in person) will not be considered under the 2.206 petition process. The staff should inform a person who makes a verbal request that the request must be submitted to the NRC in writing using one of the methods described in 10 CFR 2.206. For electronic submissions, "Guidance for Electronic Submissions to the NRC" is available at <a href="https://www.nrc.gov/site-help/electronic-sub-ref-mat.html">https://www.nrc.gov/site-help/electronic-sub-ref-mat.html</a>.

(ii) General Assertions and Duplicative Requests for Action under 10 CFR 2.206

The petition is simply (1) a general statement of opposition to licensed activities, nuclear facilities or materials or (2) a general assertion without supporting facts. Examples include conclusory statements without support (e.g., a claim that the quality assurance at a facility is inadequate, with no further explanation), letters submitted to the NRC as a result of mass mailing campaigns, or letters of support for a 10 CFR 2.206 petition that is already under NRC consideration. The staff will not address general assertions with no supporting facts or duplicative requests for action under the 2.206 petition process.

#### (iii) Allegations

- If the petition alleges wrongdoing (see Section I.B of this handbook), the staff should refer to the allegation program guidance found in MD 8.8, "Management of Allegations" and the Allegation Manual. Referrals to the allegation program should be completed in a timely manner in accordance with MD 8.8.
- The assigned staff should coordinate with the office allegation coordinator and office 2.206 petition coordinator to ensure they reach agreement on any request for action (or portion thereof) that will be referred to the allegation program, including how the submitter will be informed and how the referral will be documented.
- If the staff determines that a petition (or portions thereof) should be referred to the allegation program, those portions of the petition and any correspondence related to the allegation should be handled as prescribed in MD 8.8. In addition, the identity of the petitioner should be protected to the extent practicable with respect to those portions of the petition.

- Once agreement is reached that all or part of a request will be referred to the allegation program, the staff will inform the submitter which parts of the request have been screened out of the 2.206 process, and how the remaining portions will be handled.
- The staff will review any portion of the request that does not involve allegations against the screening criteria in Section II.A.2(d) of this handbook, and will create a public version of the document (with information pertaining to allegations redacted).
- The NRC will redact any information related to allegations contained in the petition from documents sent to the licensee or made available to the public.
- (iv) Requests for Non-Public Process or Identity Protection

If a petitioner requests that the petition remain non-public, and/or requests identity protection as part of the process, the staff should explain to the petitioner that the 2.206 process is a public process and, therefore, the petition and petitioner's identity must remain public. The staff should inform any petitioner who does not agree to these terms that the petition will be screened out of the 2.206 process and will be addressed through the appropriate NRC process, such as an allegation or as general correspondence. If the request is transferred to the allegation program, the assigned NRC staff will coordinate with the office allegation coordinator, consistent with MD 8.8.

(v) Requests That Would Not Reasonably Lead to an Enforcement Action

NRC regulations state that a 2.206 petition is a request "to institute a proceeding pursuant to 10 CFR 2.202 to modify, suspend, or revoke a license, or for any other action as may be proper." The regulations also require that the request "specify the action requested and set forth the facts that constitute the basis for the request."

 A petition should be screened out if it does not request a specific enforcement-related action (e.g., issuing an order modifying, suspending, or revoking a license pursuant to 10 CFR 2.202, issuing a notice of violation pursuant to 10 CFR 2.201, etc.) and does not identify a specific safety or security concern (e.g., a technical deficiency or potential violation). A petition must provide information that could reasonably lead the NRC to take an enforcement action (not necessarily the action requested).

- A petition that identifies a valid safety or security concern will not be screened out solely because the action requested is inappropriate for the circumstances.
- A petition that does not request a specific enforcement-related action should be evaluated to determine if it contains an implied request for action. If a petition does not contain an explicit or implied request for enforcement-related action, the request should be screened out of the 2.206 process and be considered for referral to an appropriate NRC process (e.g. allegations, rulemaking, or general correspondence).
- (vi) Requests to Impose a Requirement that is Outside of NRC Jurisdiction

A request to impose a requirement that is outside the jurisdiction of the Commission (e.g., a state or local ordinance or a requirement of another federal agency) will not be considered under the 2.206 process, but may be referred to the appropriate regulatory authority.

(vii) Requests for Rulemaking

A petition that alleges deficiencies in existing NRC rules, and/or requests changes to existing NRC rules, will not be considered under the 2.206 process, but may be referred to the appropriate rulemaking branch for consideration as a petition for rulemaking under 10 CFR 2.802. The petition manager will consult with the appropriate rulemaking branch within the NRC, and will incorporate the rulemaking branch's input into the NRC's response to the petitioner.

(viii) Requests for Information

If a petition contains a request for public records regarding NRC licensed activities, nuclear facilities or materials licensees, that request will not be considered under the 2.206 process. In such cases, the petitioner should be referred to the NRC Freedom of Information Act (FOIA) Guide. The FOIA generally provides any person the right to obtain access to Federal agency records.

(ix) Issue(s) Under Review in an Adjudicatory Proceeding

If the issue(s) raised in a petition (or portions thereof) are the subject of a proffered or admitted contention in an ongoing NRC adjudicatory proceeding regarding the same licensee and facility, those issues generally will not be considered in the 2.206 process (regardless of whether the 2.206 petitioner proffered the contention or is a party to the proceeding).



- (e) Notwithstanding the screen-out criteria above, the staff, upon its own determination, may consider an issue for immediate action and/or inclusion in the 2.206 process.
- (f) For requests that are screened out, the staff should inform the submitter of the reasons why, referring back to the screen-out criteria above, and explain that the concern(s) raised will be transferred to another process (e.g., petition for rulemaking, or general correspondence). The communication of the staff's decision to screen out a request and refer it to another process should be documented as an official agency record (e.g., e-mail added in ADAMS, or record of a phone call).
- (g) A request for an enforcement-related action that is not screened out under Section II.A.2 will be entered into the 2.206 petition process and evaluated for acceptance as described in Section III.C of this handbook.

#### B. Petition Manager Initial Action

- The petition manager will promptly review the petition to determine if it requests short-term immediate action (e.g., a request to shut down an operating facility or prevent restart of a facility that is ready to restart) or if an issue raised in the petition may warrant immediate action (even if not requested). See Section III.B.1 of this handbook for more information on immediate requests.
- 2. Before the petition is released to the public and before the PRB meeting, the petition manager will informally inform the petitioner the petition was received and, because the 2.206 petition process is a public process, the petition and all the information in it, including the petitioner's identity, will be made public.
- 3. After the initial contact with the petitioner, the petition manager will promptly advise relevant licensee(s) of the petition, and send the appropriate licensee(s) a copy of the petition for information.
- See the "Desktop Guide: Review Process for 10 CFR 2.206 Petitions," for further information on petition manager actions. The <u>Desktop Guide</u> is available on the NRC public webpage).

#### **III. PETITION REVIEW BOARD (PRB)**

#### A. Petition Review Board Composition

The PRB consists of—

- 1. A PRB chairperson (generally a Senior Executive Service manager).
- 2. The office 2.206 petition coordinator.
- 3. A 2.206 petition manager.

- 4. Cognizant management and staff, as necessary.
- 5. A cognizant regional representative (a regional branch chief or higher if there is a concern involving a potential violation).
- 6. A representative from OI, if recommended by the petition manager.
- 7. A representative from the Office of Enforcement (OE). The OE representative should address both the enforcement and allegation programs and inform the PRB if the petition involves an issue that is already in, or was previously addressed in, the allegation or enforcement programs.
- 8. The petition manager may also recommend that the office enforcement coordinator be included in the PRB.
- 9. A representative from the Office of the General Counsel, as necessary.

#### **B. Schedule for PRB Meeting**

- 1. If the petition requests immediate action or the petition manager determines that immediate action may be necessary, the petition manager will convene an initial PRB meeting as soon as possible to decide whether immediate action is warranted. The petition manager may hold an in-person meeting of the PRB or use other means (e-mail, teleconference) to obtain the PRB's recommendation on immediate actions. In such cases, a subsequent PRB meeting (see Section III.D of this handbook) will be held to evaluate the petition for acceptance. In extremely urgent cases that do not enable formation of a PRB, the petition manager will consult with office management to ensure the petition is appropriately addressed. Immediate actions are approved or denied by the assigned office director.
- 2. After addressing any requests for immediate action (see Section III.B.1 above), the assigned office will convene a PRB meeting to evaluate the petition for acceptance. The PRB meeting should be held as quickly as possible, but no later than 3 weeks after EDO assignment of the petition. See Section IV.B of this handbook for more information on establishing a schedule for the PRB's review.

#### C. Criteria for Petition Evaluation

The staff will use the criteria in this section to determine whether to accept a petition for review, whether to consolidate two or more petitions, and whether to hold a petition in abeyance.

1. Criteria for Accepting Petitions Under 10 CFR 2.206

The staff will accept a petition, or a portion of the petition, for review under 10 CFR 2.206 if the request meets the criteria in Section III.C.1(a) and (b) below:

- (a) The petition specifies the facts that constitute the basis for taking the requested action, and those facts are sufficient to provide support for the requested action. The petitioner must provide more than a bare assertion that the NRC should take action. The supporting facts must be sufficient to warrant further inquiry.
- (b) The petition falls within one of the following categories:
  - (i) The issues raised by the petitioner have not previously been the subject of a facility-specific or generic NRC staff review, or
  - (ii) The issues raised have previously been the subject of a facility-specific or generic NRC staff review, and at least one of the following circumstances applies:
    - The prior review did not resolve the issues raised by the petitioner, or
    - The resolution of the issues in the prior review does not apply to the facts provided by the petitioner to support the requested action, or
    - The petition provides significant new information that the staff did not consider in the prior review.
- (c) For the criterion in Section III.C.1(b)(ii) above:
  - (i) If the prior review occurred in the allegation process, the petition (or portion thereof) will not be accepted in the 2.206 process. Rather, the staff's prior conclusion will be shared publicly without reference to the related allegation.
  - (ii) In other cases involving prior reviews, the staff should determine, in its technical judgment, whether or not the listed circumstances in Section III.C.1(b)(ii) apply. In most cases, if the staff determines that an issue has been resolved, the staff should identify its supporting documentation.
- (d) If the petition raises multiple issues, the staff should accept the petition only with respect to those issues that satisfy the criteria in Section III.C.1(a) and (b) above.
- 2. Criteria for Consolidating Petitions

Generally, all requests submitted by different individuals will be treated and evaluated separately. When two or more petitions request action against the same licensee, specify essentially the same bases, provide adequate supporting information, and are submitted at about the same time, the PRB must weigh the benefit of consolidating the petitions against the potential for minimizing the importance of any single petition. The PRB will recommend whether consolidation is or is not appropriate, and the assigned office director or deputy office director will make the final determination.

3. Criteria for Holding a Petition in Abeyance

If a petition meets the acceptance criteria in Section III.C.1 of this handbook, there may be circumstances in which it would be appropriate to hold the petition in abeyance pending the outcome of a related staff review outside of the 2.206 process.

- (a) The PRB may hold a petition in abeyance if-
  - (i) The issues raised in the petition are the subject of ongoing or imminent review,
  - (ii) The review is not expected to be completed in the near future, and
  - (iii) The staff needs the results of the review in order to reach an informed decision on the issues raised in the petition.
- (b) If the petition raises multiple issues, the PRB should hold in abeyance only those portions of the petition that meet the criteria in Section III.C.3(a) above.
- (c) The staff should not hold a petition in abeyance solely to allow a petitioner to develop additional supporting information not provided with the original petition.
- (d) When the PRB decides to hold all or part of a petition in abeyance-
  - (i) The PRB chairperson will ensure that the office director, or designee, is informed of the PRB's decision and concurs with the decision.
  - (ii) The petition manager will then inform the petitioner of the PRB decision and its basis.
  - (iii) The petition manager will also inform the petitioner when the PRB expects to resume its assessment of the 2.206 petition.
  - (iv) If a petition is held in abeyance, the petition manager will notify the petitioner by telephone and/or e-mail that status updates will occur at least every 120 days (unless another time period is agreed upon with the petitioner) as described in Section IV.C of this handbook.
  - (v) When the staff completes its review of the related issue, the petition manager will notify the petitioner that the petition is no longer being held in abeyance and the PRB is resuming its review.

# D. PRB Initial Assessment

- 1. The PRB ensures that the staff follows an appropriate process in evaluating a petition. The PRB—
  - (a) Determines whether the petitioner's request meets the criteria for accepting petitions for review (see Section III.C.1 of this handbook).

- (b) Determines whether there is a need for immediate action (whether requested or not).
- (c) Establishes a schedule for responding to the petitioner in a timely manner (see Section IV.B of this handbook for guidance regarding schedules).
- (d) Determines whether the petition should be consolidated with another petition.
- (e) Confirms whether any referrals to the allegation program or OIG made during initial screening are appropriate.
- (f) Determines whether the licensee should be asked to respond to the petition.
- (g) Addresses the possibility of issuing a streamlined director's decision concurrently with the acknowledgment letter for cases where the basis of the petition is well known to the NRC staff and existing regulatory framework is in place to address the concerns raised. See Section III.G.2(f) of this handbook for information on when a streamlined response could be appropriate.
- The PRB meetings to consider immediate actions, evaluate the petition against the acceptance criteria, or to review the petition are closed to the public and separate from the PRB meetings with the petitioner and the licensee described in Section III.F of this handbook.
  - (a) At the meeting, the petition manager briefs the PRB on the petitioner's request(s), any background information, the need for an independent technical review, and a proposed plan for resolution, including target completion dates.
  - (b) The petition manager, with the assistance of the office 2.206 petition coordinator, ensures appropriate documentation of all PRB recommendations in the summary of the PRB meeting.

## E. Informing the Petitioner of the Results of the Initial PRB Assessment

- After the PRB performs the initial assessment of the petition against the evaluation criteria in Section III.C of this handbook, and before meeting with the petitioner, the PRB chairperson will inform the office director, or designee, of the results of the PRB's initial assessment.
- 2. The petition manager will then inform the petitioner of the following:
  - (a) Whether or not the petition, as submitted, meets the criteria for acceptance in Section II.C.1 of this handbook.
  - (b) The disposition of any request for immediate action.
  - (c) If the petition is accepted for review, the process the PRB will follow to review the petition.

- (d) The opportunity to meet with the PRB to discuss the initial assessment, as described in Section III.F of this handbook.
- (e) If the petitioner chooses to meet with the PRB, any questions or comments on the petition that the PRB would like the petitioner to address.
- 3. If the staff plans to take an action that is contrary to an immediate action requested in the petition before issuing either the closure letter or acknowledgment letter, the petition manager should informally notify the petitioner promptly by telephone and/or e-mail of the pending staff action. Reasons for the staff's action will be documented in the closure or acknowledgment letter.
- 4. The petitioner will not be advised of an ongoing investigation of wrongdoing being conducted by OI, but should be informed if the petition contained an assertion of wrongdoing that is being referred to the allegation program for possible investigation.

#### F. Meeting With the Petitioner

- After informing the petitioner of the results of the PRB's initial assessment, the petition manager will offer the petitioner an opportunity for a public meeting with the PRB to clarify or supplement the petition based on the results of the PRB's initial assessment. The meeting between the PRB and the petitioner, if accepted, will be held as a public meeting, either in-person at NRC headquarters in Rockville, Maryland, or by another agreed-upon arrangement (e.g., public teleconference or virtual public meeting). This public meeting should be scheduled so as not to adversely affect the established petition review schedule.
  - (a) If the petitioner chooses to address the PRB by teleconference, the petition manager will establish a mutually agreeable time and date and arrange to conduct the teleconference on a moderated and recorded bridge line. The petition manager will arrange for transcription service and the transcript will become a supplement to the petition.
  - (b) If the petitioner accepts the offered meeting with the PRB, the petition manager will establish a mutually agreeable time and date for the meeting with the petitioner. The petition manager will follow the public notice period and other provisions of MD 3.5, "Attendance at NRC Staff-Sponsored Meetings." The meeting should be referred to as a meeting between the NRC staff, the petitioner, and the licensee (unless the licensee chooses not to participate). The meeting will be available through a moderated and recorded bridge line and a transcript will be created and distributed to the same distribution list as the original petition.
- 2. This meeting with the PRB, if held, is an opportunity for the petitioner to provide any relevant additional explanation and support for the request in light of the PRB's initial assessment. The PRB will consider the petitioner's statements made at the meeting,

along with the original petition, in making its final recommendation on whether to accept the petition according to the criteria in Section III.C.1 of this handbook.

- 3. If the petitioner presents significant new information to the NRC staff that is unrelated to the concerns raised in the petition, the PRB may determine that the new information constitutes a new petition.
- 4. The petition manager will invite the licensee to participate in the meeting with the petitioner to ensure that the licensee understands the concerns about its facility or activities.
- 5. During the meeting with the petitioner, the PRB members may ask questions of the petitioner or the licensee to clarify their understanding of the issues raised in the petition. After the petitioner's presentation, the PRB will give the licensee an opportunity to ask the PRB members questions related to the issues raised in the petition. Also, the PRB will give the petitioner and the licensee an opportunity to ask the PRB will give the process for evaluating and reviewing 2.206 petitions. Although the intent is that the PRB members would respond to such questions, the licensee or petitioner may also voluntarily respond. If detailed information is needed from the licensee, the PRB should ask the licensee to provide a voluntary response as discussed in Section IV.A.1 of this handbook.
- 6. The petition manager will ensure that all NRC staff at the meeting are aware of the need to protect sensitive information from disclosure.
- 7. The petitioner may request that a reasonable number of associates be permitted to assist in addressing the PRB at the meeting. The petition manager will—
  - (a) Discuss this request with the petitioner,
  - (b) Determine the number of speakers, and
  - (c) Allot a reasonable amount of time for the presentation so that the staff can acquire the information needed for its review in an efficient manner.
- 8. Prior to concluding the meeting, the petition manager will request feedback from attendees on the 2.206 review process. Such feedback may be provided during the meeting or after the meeting (using the public meeting feedback survey or by directly contacting the petition manager). Staff who receive feedback should discuss the input received with their office 2.206 petition coordinator and their management as appropriate.
- 9. The petition manager will review the meeting transcript, and where necessary, edit it to ensure it accurately reflects what was said in the meeting. Corrections are only necessary for errors that affect the meaning of the text of the transcript. The petition manager is not expected to correct inconsequential errors.

# DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS Date App

Date Approved: 03/01/2019

- 10. After editing, the petition manager will ensure that the transcript receives the same distribution (petitioner, licensee, publicly available in ADAMS, etc.) as the original petition.
- 11. After the meeting with the petitioner, the PRB will consider the supplemental information presented during the meeting together with the original petition in making its final recommendation on whether to accept the petition for review. Before issuing either an acknowledgment or closure letter, the PRB chairperson will ensure that the office director, or deputy office director, is informed of the PRB's recommendations (including a recommendation to issue a partial or streamlined director's decision) and concurs with the recommendations.

# G. Response to the Petitioner

- 1. The petition manager will promptly notify the petitioner by e-mail about NRC staff decisions regarding immediate action requests. Such notifications may occur before the PRB finalizes its recommendation on whether to accept the petition for review.
- 2. After the PRB finalizes its recommendations on whether to accept the petition for review, the petition manager will notify the petitioner of the PRB's determination by telephone and/or e-mail. If the petition is accepted, the petition manager will inform the petitioner of how the review will proceed. The PRB's recommendations will be documented in either a closure letter (which documents the reasons why the petition was not accepted for review) or an acknowledgment letter (if the petition is accepted for review). The closure letter or acknowledgment letter will address any supplemental information provided by the petitioner, any comments the petitioner made concerning the initial PRB assessment, and the NRC staff's response to those comments. Section IV.B, "Schedule," of this handbook describes planning the schedule specifying the goal for the acknowledgment or closure letter to be issued within 90 days of the EDO assigning the petition.
- 3. Requests That Do Not Meet the Criteria for Acceptance
  - (a) If the PRB, with office-level management concurrence, determines that the petition does not meet the criteria for acceptance as a 10 CFR 2.206 petition, the petition manager then prepares a closure letter that—
    - Explains why the request was not accepted for review under 10 CFR 2.206, referring back to the Criteria for Petition Evaluation in Section III.C of this handbook,
    - (ii) Acknowledges the petitioner's efforts in bringing issues to the staff's attention,
    - (iii) If applicable, explains the staff's response to the immediate action requested and the basis for that response,
    - (iv) Notifies the petitioner whether the request is being referred to another NRC program for action, and

#### DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS

Date Approved: 03/01/2019

- (v) Responds, to the extent possible at that time, to the issues in the petitioner's request and identifies supporting documents if applicable.
- (b) The assigned organization is responsible for ensuring the appropriate concurrence and distribution for the closure letter. At a minimum, each PRB member and the office director concurs on the closure letter. The PRB chairperson signs the closure letter.
- 4. Requests That Meet the Criteria for Acceptance
  - (a) If the PRB finds that the petition meets the criteria for acceptance as a 10 CFR 2.206 petition, the petition manager prepares an acknowledgment letter and associated *Federal Register* notice of receipt. See the "<u>Desktop Guide:</u> <u>Review Process for 10 CFR 2.206 Petitions</u>," available on the NRC public webpage at, for more details.
  - (b) The letter should acknowledge the petitioner's efforts in bringing issues to the staff's attention.
  - (c) If the petition contains a request for immediate action by the NRC, the acknowledgment letter will explain the staff's response to the immediate action requested and the basis for that response.
  - (d) The petition manager ensures that references MD 8.11 and NUREG/BR-0200, Revision 5, "Public Petition Process," are included with the acknowledgment letter. A copy of the acknowledgment letter must be sent to the appropriate licensee and the docket service list(s). See the "<u>Desktop Guide: Review Process</u> for 10 CFR 2.206 Petitions," available on the NRC public Web page.
  - (e) The assigned organization is responsible for ensuring the appropriate concurrence and distribution for the acknowledgment letter. At a minimum, each PRB member concurs on the acknowledgment letter. The office director signs the acknowledgment letter.
  - (f) Streamlined Director's Decisions
    - (i) If the petition meets the criteria for acceptance but raises issues that the staff has evaluated and is prepared to issue a decision on, the staff may respond immediately to the petition by issuing a streamlined director's decision. Issuing a streamlined director's decision allows the NRC to move forward with an imminent decision or action that appropriately considers the information in the petition and avoids unnecessary duplication of NRC resources by the PRB addressing the same issue. For example, a streamlined director's decision may be appropriate in a case where a petition's supporting information consists almost entirely of NRC-generated information (e.g., inspection reports, generic letters) or information well known to the NRC (e.g., news reports, licensee event reports). In these cases, a proposed director's

decision would not be issued, and the acknowledgment letter would be accompanied by the final director's decision.

- (ii) Before issuing a streamlined director's decision, the PRB will consider the need to contact the petitioner to determine if the petitioner possesses information relevant to the bases for the decision that is beyond what is currently available to the NRC. In most cases, a streamlined director's decision would be issued without this additional interaction with the petitioner, and the petitioner can provide feedback after issuance.
- (iii) The petition manager will inform the petitioner of plans to issue a streamlined director's decision.

# H. Providing Documents to the Petitioner

- 1. If the PRB determines that the 2.206 petition will be accepted for review, then the petition manager will—
  - (a) Add the petitioner to the service list(s) for the topic (if one exists). If a listserv is used, the petition manager will inform the petitioner how to join the listserv to receive electronic versions of the NRC's publicly available outgoing correspondence.
  - (b) Send copies electronically of any future correspondence from the licensee related to the petition to the petitioner, with due regard for proprietary, safeguards, and other sensitive information in accordance with established agency policies and procedures.
  - (c) Ensure that the petitioner is placed on distribution for other NRC correspondence relating to the issues raised in the petition, to the extent that the petition manager is aware of these documents, including relevant NRC generic communications (i.e., generic letters, regulatory issue summaries, information notices, or bulletins) that are issued while the NRC considers the petition. The petition manager will inform the petitioner how to join the listserv to receive electronic versions of publicly available NRC generic communications.
- 2. These three actions will remain in effect until 90 days after the director's decision is issued if the petitioner desires it.

# I. Supplements to the Petition

A petitioner will occasionally submit a written supplement to a petition.

1. When a supplement is provided, the petition manager will promptly review the supplement to determine whether or not it contains sensitive information, which must be handled according to appropriate information security policies and procedures.

#### DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS

Date Approved: 03/01/2019

- 2. The petition manager will then include the supplement in the ongoing acceptance review (if the supplement is received before the PRB makes its final determination) or petition review (if the petition has been accepted) by taking appropriate actions listed in Section II.B of this handbook. The petition manager will ensure that the supplement receives the same distribution as the petition and will forward a copy of the supplement to the PRB members. The PRB members will review the supplement and determine whether they need to meet formally to discuss it and, if so, whether or not to offer the petitioner an opportunity to discuss the supplement with the PRB. In deciding whether an additional PRB meeting is needed, the PRB members will consider the safety significance and complexity of the information in the supplement. Clarification of previous information will generally not require an additional PRB meeting.
- 3. When a supplement is received, the petition manager will inform the petitioner of the PRB's schedule and advise the petitioner that additional supplements could delay the evaluation of the petition for acceptance or the review of a petition that has been accepted. Supplements will be considered to the extent practical taking into account the petition review schedule. Any impacts to the petition review schedule should be kept to a minimum.
- 4. The PRB will review supplements for additional relevant explanation or clarification of the issues raised in the original petition or additional relevant facts supporting the petitioner's view of the issues. To the extent that supplemental information provided by the petitioner raises new issues, requests additional enforcement-related actions, or otherwise expands the scope of the original petition, the PRB may consider such information as amending the petition and decline to consider the supplemental information in the petition review process. If the petitioner presents significant new information to the NRC staff, the PRB may determine that the supplement constitutes a new petition that will be treated separately from the initial petition.
- 5. After receiving a supplement, the PRB will then determine whether-
  - (a) There is a need for any immediate actions based on the supplemental information (whether requested or not).
  - (b) The supplement should be consolidated with the existing petition.
  - (c) The petition, as supplemented, meets the criteria for acceptance in Section II.C.1 of this handbook (if the petition has not already been accepted for review).
  - (d) To issue a partial director's decision.
  - (e) To revise the review schedule for the petition based on the supplement (see Section IV, "Petition Review Activities," of this handbook for guidance regarding schedules).

- (f) To send a letter acknowledging receipt of the supplement. A letter should be sent if the supplement provides significant new information, causes the staff to reconsider a previous determination, or requires a schedule change beyond the original 120-day goal.
- (g) To offer the petitioner a meeting or teleconference with the PRB to discuss its recommendations with respect to the supplement. See Section III.F of this handbook for information on this type of meeting or teleconference.
- 6. For supplements received after an acknowledgment letter has been issued, the staff may determine that the schedule for the petition must be extended beyond the original goal as a result of the supplement. In this case, the assigned office should send an acknowledgment letter to the petitioner, reset the clock to the date of the new acknowledgment letter, and inform the OEDO.
- 7. If the PRB determines that the supplement will be treated as a new petition (i.e., not consolidated with the existing petition), the assigned office must contact OEDO for a new tracking number.

## **IV. PETITION REVIEW ACTIVITIES**

This section describes the activities that take place after a petition has been accepted for review.

## A. Reviewing the Petition

- 1. Request for Licensee Input
  - (a) If appropriate, the petition manager will request the licensee to provide a voluntary response to the NRC on the issues specified in the petition, usually within 30 days. This staff request usually will be made in writing. The petition manager will advise the licensee that the NRC will make the licensee's response publicly available and will provide a copy of the response to the petitioner. The licensee may also voluntarily submit information related to the petition, even if the NRC staff has not requested this information.
  - (b) Unless necessary for the NRC's proper evaluation of the petition, the licensee should avoid using proprietary or personal privacy information that requires protection from public disclosure. If this information is necessary to completely respond to the petition, the petition manager ensures the information is protected in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."
- 2. Technical Review Meeting With the Petitioner

The staff will hold a technical review meeting with the petitioner whenever it believes that a meeting (whether requested by the petitioner, the licensee, or the staff) would be beneficial to the staff's review of the petition. Meeting guidance is provided in

MD 3.5. The petition manager will ensure that the meeting does not compromise the protection of sensitive information. A meeting will not be held simply because the petitioner claims to have additional information and will not present it in any other forum.

3. Additional PRB Meetings

Additional PRB meetings may be scheduled for complex issues. Additional meetings also may be appropriate if the petition manager finds that significant changes must be made to the original plan for the resolution of the petition.

4. Conduct of PRB Meetings

The PRB chairperson makes the final decisions regarding recommendations proposed during the PRB meeting and provides final approval for requested actions. The petition manager prepares for and documents decisions made during the PRB meeting.

## B. Schedule

Planning the Schedule

- 1. The first goal is to issue the acknowledgment or closure letter within 90 days of the OEDO assigning the petition.
- 2. The second goal is to issue the proposed director's decision for comment within 120 days after issuing the acknowledgment letter. The proposed director's decision for uncomplicated petitions should be issued in less than 120 days.
- 3. The third goal is to issue the final director's decision within 45 days of the end of the comment period for the proposed director's decision. The actual schedule should be shorter if the number and complexity of the comments allow.

## C. Keeping the Petitioner Informed

The petition manager ensures that the petitioner is notified at least every 60 days of the status of the petition, or more frequently if a significant action occurs. In cases where a petition is being held in abeyance, the petition manager ensures that the petitioner is notified at least every 120 days (or other timeframe agreed upon with the petitioner) and when the staff is ready to resume its review of the petition. The petition manager provides updates to the petitioner by telephone and/or e-mail. The petition manager should speak directly to the petitioner if reasonably possible. The petition manager must monitor the status of the petition so that reasonable detail can be provided. However, the update to the petitioner will not identify or discuss—

- 1. An ongoing OI or OIG investigation, unless approved by the Director of OI or the IG;
- 2. The referral of the matter to the Department of Justice (DOJ); or

Date Approved: 03/01/2019

3. Enforcement action under consideration.

#### D. Updating NRC Management and the Public

- 1. On a quarterly basis, the Division of Operating Reactor Licensing, NRR, will issue a status report of 2.206 petitions to the Director of NRR. The agency 2.206 petition coordinator also ensures the status report is added to ADAMS and made publicly available.
- 2. The NRC Web site provides petitions filed, director's decisions issued, quarterly status reports, and other related information, available at <a href="https://www.nrc.gov/about-nrc/regulatory/enforcement/petition.html">https://www.nrc.gov/about-nrc/regulatory/enforcement/petition.html</a>.

## V. THE DIRECTOR'S DECISION

A director's decision is the official agency response to a 2.206 petition that is accepted for review. The director's decision may grant, partially grant, or deny the action requested by the petitioner. In most cases, the staff prepares a proposed director's decision, which is distributed to the petitioner and licensee for comment. After receiving any comments, the staff revises the director's decision as appropriate. The director's decision is then issued and a notice of issuance is subsequently published in the *Federal Register*.

#### A. Content and Format

- 1. The petition manager prepares a proposed director's decision on the petition for the office director's consideration. The petition manager also prepares letters to the petitioner and the licensee requesting comment on the proposed director's decision.
- 2. If the staff issues a streamlined director's decision, the steps related to a proposed director's decision may be omitted; see Section III.G.2(f) of this handbook for more information.
- 3. The proposed director's decision will clearly describe the issues raised by the petitioner, provide a discussion of the safety significance of the issues, and clearly explain the staff's disposition for each issue. If a partial director's decision was issued previously, the final director's decision will refer to, but does not have to repeat the content of, the partial director's decision.

## **B.** Granting the Petition

The NRC may grant a petition for enforcement-related action, either in whole or in part, and it also may take other action to address the concerns raised by the petitioner. Once the staff has determined that a petition will be granted, in whole or in part, the petition manager will prepare a "Director's Decision under 10 CFR 2.206" for the office director's signature. The decision will explain the bases upon which the petition has been granted and identify the actions that the NRC staff has taken, or will take, to grant all or that portion of the petition. The decision also should describe any actions the licensee took

# DH 8.11 REVIEW PROCESS FOR 10 CFR 2.206 PETITIONS

Date Approved: 03/01/2019

voluntarily that address aspects of the petition. A petition is characterized as being granted in part when the NRC grants only some of the actions requested and/or takes actions other than those requested to address the underlying problem. If the petition is granted in full, the director's decision will explain the bases for granting the petition and state that the NRC's action resulting from the director's decision is outlined in the NRC's order or other appropriate communication. If the petition is granted in part, the director's decision will clearly indicate the portions of the petition that are being denied and the staff's bases for the denial. When granting a petition, either in whole or in part, the PRB should consider guidance and policy in MD 8.4, "Management of Facility-Specific Backfitting and Information Collection."

# C. Denying the Petition

When the staff has determined that a petition will be denied, the petition manager will prepare a "Director's Decision under 10 CFR 2.206" for the office director's signature. The decision will explain the bases for the denial and discuss all matters raised by the petitioner in support of the request.

# D. Final Versus Partial Director's Decision

- If all of the issues in the petition can be resolved together in a reasonable amount of time, then the staff will issue one director's decision addressing all of the issues. The staff will consider preparing a partial director's decision when some of the issues associated with the 2.206 petition are resolved in advance of other issues and if significant schedule delays are anticipated before resolution of the entire petition.
- 2. The format, content, and method of processing a partial director's decision are the same as that of a proposed director's decision and an accompanying *Federal Register* notice of issuance would still be prepared. However, the partial director's decision should clearly indicate those portions of the petition that remain open, explain the reasons for the delay to the extent practical, and provide the staff's schedule for the final director's decision.
- 3. Once a partial director's decision has been issued, the petition manager will prepare an extension request to extend the due date to support the resolution of any remaining issues. After completing its review of the remaining issues, the staff will issue a final director's decision addressing those issues. The final director's decision will refer to, but does not have to repeat the content of, the partial director's decision.

# E. Issuing the Proposed Director's Decision for Comment

1. After the assigned office director has concurred on the transmittal letters and the proposed director's decision, the assigned division director signs the transmittal letters. The petition manager will issue letters to the petitioner and the licensee

Date Approved: 03/01/2019

requesting comments on the enclosed, fully concurred on but unsigned, proposed director's decision.

2. The intent of this step is to give the petitioner and the licensee an opportunity to share any concerns they may have with the decision. The letters will request comments within a set period of time, typically 2 weeks. The amount of time allowed for comments may be adjusted depending on circumstances. For example, for very complex technical issues, it may be appropriate to allow more time for the petitioner and licensee to develop their comments.

#### F. Comment Disposition – Proposed Director's Decision

- 1. After the comment period closes on the proposed director's decision, the assigned office will review the comments received and provide the schedule to issue the director's decision to the agency 2.206 petition coordinator. The petition manager will evaluate any comments received on the proposed decision, obtaining the assistance of the technical staff, as appropriate. Although the staff only requests comments from the petitioner and the licensee, comments from other sources (e.g., other members of the public) may be received. These additional comments should be addressed in the same manner as the comments from the petitioner and licensee. A copy of the comments received and the associated staff responses will be included in the director's decision. An attachment to the decision will generally be used for this purpose.
- 2. If no comments are received on the proposed decision, the petition manager will include in the director's decision a reference to the letters that requested comments and a statement that no comments were received.
- If the comments from the petitioner include new information, the PRB will reconvene to determine whether to treat the new information as part of the current petition or to treat it as a new petition which would be screened as described in Section II.A.2 of this handbook.

#### G. Issuing the Director's Decision

- 1. The petition manager prepares a transmittal letter to the petitioner and the director's decision (or partial director's decision) to be signed by the office director. In addition, the petition manager prepares a *Federal Register* notice of issuance.
- 2. If the director's decision grants the issuance of an order, the order will be issued prior to, or concurrent with, issuing the director's decision. The petition manager will include a copy of the order as an enclosure to the transmittal letter to the petitioner.
- 3. The assigned office is responsible for ensuring the appropriate concurrence and distribution on the transmittal letter to the petitioner.

- 4. Before providing a director's decision to the office director for signature, the assigned office will contact the agency 2.206 petition coordinator for a director's decision number.
- 5. The assigned office director will sign the director's decision and the transmittal letter to the petitioner.
- 6. When the director's decision has been signed, the petition manager will ensure that the agency 2.206 petition coordinator is immediately informed. On the day the director's decision is signed, the agency 2.206 coordinator is expected to inform the Office of the Secretary (SECY) that the director's decision has been issued.
- 7. The petition manager will promptly inform the petitioner that the director's decision has been signed and will send a courtesy copy of the signed director's decision, electronically if possible, to the petitioner.
- 8. Occasionally, a petitioner may submit comments on a final decision after it is issued. In this case, the petition manager should ensure that the PRB reviews the comments provided and that an appropriate response is provided within a reasonable amount of time. If the petitioner provides new information in the comments, the PRB should determine whether the decision should be revised or if the information should be treated as a new petition. The petition manager should ensure that the comments and any staff response are added to the ADAMS records associated with the final decision. Any staff receiving feedback should ensure that the respective office 2.206 petition coordinator and management are aware of the feedback to facilitate identification of areas for process improvement.
- 9. The "<u>Desktop Guide: Review Process for 2.206 Petitions</u>," is available on the NRC public Web page for more specific procedural details.

# H. Coordination with SECY

- The agency 2.206 petition coordinator is responsible for requesting a director's decision number from SECY, and for notifying SECY of the issuance of a director's decision on the day the decision is signed. On the day of signature, the staff should keep the agency 2.206 petitioner coordinator informed.
- 2. When the agency 2.206 petition coordinator provides SECY with the ADAMS accession number of the signed director's decision and the package accession number, SECY will inform the Commission of the availability of the decision. If the director's decision denies the requested action in whole or in part, the Commission, at its discretion, may decide to review the director's decision within 25 days of the date of the decision and, as a result of its review, may direct the staff to take action other than that described in the director's decision. If the Commission does not act on the director's decision within 25 days or decide to extend its review time, the director's decision becomes the final agency action on the petition, and SECY will

inform the petitioner by letter that the Commission has taken no further action on those portions of the petition addressed in the director's decision.

#### EXHIBIT Simplified 2.206 Process Flow Chart (1 of 2)



1. Parenthetical Information is associated Handbook paragraph number

#### EXHIBIT Simplified 2.206 Process Flow Chart (2 of 2)





Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-4, Page 1 of 16



# Safety of Spent Fuel Storage







(138 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-4, Page 2 of 16

# What Is Spent Fuel?

Nuclear reactors use uranium fuel rods bundled into fuel assemblies to generate the heat that turns generators. These generators produce electricity that powers people's homes.

As it burns in the reactor, this fuel becomes very hot and very radioactive. After about 5 years, the fuel is no longer useful and is removed. Reactor operators have to manage the heat and radioactivity that remains in this spent fuel.

In the United States, every reactor site has at least one pool on site for spent fuel storage. Plant personnel move the spent fuel underwater from the reactor to the pool. Over time, spent fuel in the pool cools as the radioactivity decays away.

These pools were intended to provide temporary storage. The idea was that after a few years, the spent fuel would be shipped



offsite to be reprocessed, or separated so usable portions could be recycled into new fuel. But reprocessing did not succeed in the United States, and the pools began to fill up.

In the early 1980s, reactor operators began to look for ways to increase the amount of spent fuel they could store onsite. They began to place fuel in dry casks that could be stored in specially built facilities on their sites. Most nuclear plants today use dry storage.





Spent fuel pool

# Dry Cask Storage—The Basics

A dry cask storage system is a cylinder that operators lower into the pool and fill with spent fuel. They raise the cylinder, drain, and dry it, before sealing and placing it outdoors on a concrete pad. There are many varieties of spent fuel storage casks. They all need to:

- Maintain confinement of the spent fuel
- Prevent nuclear fission (the chain reaction that allows a reactor to produce heat)
- Provide radiation shielding
- Maintain the ability to retrieve the spent fuel, if necessary



At least 23 feet of water covers the fuel assemblies in the spent fuel pool of Unit 2 at the Brunswick Nuclear Power Plant in Southport, NC. (Courtesy: Matt Born/Wilmington Star-News)

• Resist earthquakes, tornadoes, floods, temperature extremes, and other scenarios.

Casks come in different sizes. They are tall enough to hold spent fuel, which can be up to 14 feet long, and they can weigh up to 150 tons—as much as 50 midsize cars. Plants may need a special crane that can handle heavy loads to be able to lift a loaded cask full of water out of the pool for drying. After the casks are dried, robotic equipment is used to seal them closed to keep doses to workers as low as possible.

Two basic designs are in wide use today. Welded, canister-based systems feature an inner steel canister that contains the fuel surrounded by 3 feet or more of steel and concrete. The canisters may be oriented either vertically or horizontally. In bolted cask

systems, there is no inner canister. Bolted casks have thick steel shells, sometimes with several inches of radiation shielding inside.

Plants use special transporters to move the loaded cask outdoors to where it will be stored. At that point, the radioactivity from the cask must be less than 25 millirem per year at the site boundary. That means the highest dose allowed to someone standing at the fence for a full year is about the dose someone would receive going around the world in an airplane. The actual dose at the site boundary is typically much lower.

Dry cask storage has proven to be a safe technology over the 30 years it has been used. Since the first casks were loaded in 1986, dry storage has released no radiation that affected the public or contaminated the environment. As of January 2017, more than 2,400 casks have been loaded and are safely storing 100,000 spent fuel assemblies. Tests on spent fuel and cask components after years in dry storage confirm that the systems continue to provide safe storage.



Loading spent fuel cask under water. (Courtesy: Holtec International)

The U.S. Nuclear Regulatory Commission (NRC) analyzed the risks from loading and storing spent fuel in dry casks. Two separate studies found the potential health risks are very, very small. To ensure continued safe dry storage of spent fuel, the NRC is further studying how the fuel and storage systems perform over time. The NRC is also staying on top of related research planned by the Department of Energy and the nuclear industry.

# What We Regulate and Why

The NRC oversees the design, manufacturing, and use of dry casks. This oversight ensures licensees and designers are following safety and security requirements, meeting the terms of their licenses, and implementing quality assurance programs.

Cask designers must show that their systems meet the NRC's regulatory requirements. The NRC staff reviews cask applications in detail. The agency will only approve a system that meets NRC requirements and can perform safely. NRC inspectors visit cask designer offices, fabricators and spent fuel storage facilities to ensure they are meeting all our regulations. Cask design applications, the NRC's documentation of reviews, and NRC inspection reports are available to the public on the agency website at www.nrc.gov.

There are strict security requirements in place to protect the stored fuel. Security has multiple layers, including the ability to detect, assess, and respond to an intrusion. Our general security requirements for dry cask storage are in 10 CFR Part 73 (https://www.nrc.gov/reading-rm/doc-collections/cfr/part073/). The specific requirements in NRC orders and the licensee's security plans are not available to the public, as they could give an adversary the ability to defeat the security measures and compromise the safety systems. There have been no known or suspected attempts to sabotage cask storage facilities.

The NRC's requirements for dry cask storage can be found in 10 CFR Part 72 (https://www. nrc.gov/reading-rm/doc-collections/cfr/part072/), which requires all structures, systems, and components important to safety to meet quality standards for design, fabrication, and testing. Part 72 and related NRC guidance on casks and storage facilities also detail specific engineering requirements.

The NRC has dozens of experts in different scientific and engineering disciplines whose job is to review cask applications (which can be hundreds of pages long) and the detailed technical designs they contain. The agency will only approve a storage cask design if these experts are satisfied that all the specific safety requirements in each discipline have been met.

Cask transporter moves loaded spent fuel storage cask to storage pad.



Workers prepare to load an AREVA-TN NUHOMS canister into a concrete storage module at the Calvert Cliffs Nuclear Power Plant in Lusby, MD. (Courtesy: Exelon)

The NRC's regulations appear in Chapter 10 of the Code of Federal Regulations, also known as 10 CFR.







The following sections discuss technical evaluations the NRC conducts during technical reviews of dry cask storage.

# Materials

Materials—the stuff of which everything is made. In every case—the metal in a car door, the plastic used in airplane windows, or the steel used in elevator cables—the selection of appropriate materials is critical to safety.

Systems that transport and store spent



NUHOMS horizontal spent fuel storage system under construction at the Calvert Cliffs Nuclear Power Plant in Lusby, MD.

nuclear fuel and other radioactive substances are made of a variety of materials. All of them are reviewed to confirm that those systems can protect the public and environment from the effects of radiation. The NRC does not dictate what materials are used. Rather, the NRC evaluates the choice of materials proposed by applicants. What makes a material "appropriate" to transport and store radioactive substances depends on a number of factors.

First, materials must be adequate for the job. In other words, the mechanical and physical properties of the materials have to meet certain requirements. For example, the steel chosen for a storage cask has to withstand possible impacts such as from tornadoes or earthquakes.

Next, when making a complex metal system, parts often are welded together—that is, partially melted—in a way that ensures that the joints themselves are adequate. The welder actually creates a new material at the joint with its own unique properties. That is why the NRC looks at how this is done, including the selection of weld filler metals, how heat is controlled to ensure good welds, and the use of examinations and testing to verify that no defects are present.

Finally, the NRC considers how materials degrade over time. Reviewers must take into account a material's chemical properties, how it was manufactured, and how it reacts with its environment. Just as iron rusts and elastic materials become brittle over time, all materials can degrade. This degradation and its impact must be well understood. Materials must be selected based on their present condition and their projected condition throughout their lifetimes.



Loaded vertical HI-STORM 100 casks are storing spent fuel at the Diablo Canyon Power Plant in Avila Beach, CA.

Best practices for appropriately selecting materials and the processes used to join them often can be found in consensus codes and standards. These guidelines are typically developed over many years of operational experience, and through industrywide and government technical discussions and agreement. The NRC also relies on both historical operating experience and the latest materials performance and testing data.

# **Managing Heat**

Keeping the spent fuel from getting too hot is one way to ensure casks will be safe. The NRC requires the cask and fuel to remain within a certain temperature range. These requirements protect the cladding (the metal tube that holds the fuel pellets). As the fuel cools, heat is transferred from inside the cask to the outside. NRC experts examine how that heat will move through the cask and into the environment.

The method used to remove heat has to be reliable and provable. It must also be passive that is, without the need for electrical power or



Three different methods transfer heat.

mechanical device. Casks use conduction, convection, and radiation to transfer the heat to the outside.

Conduction transfers heat from a burner through a pot to the handle. The process of heat rising (and cold falling) is known as convection. The heat coming from a hot stove is known as radiant heat.

These methods work the same way in a storage cask. Where the structure containing the fuel touches the fuel assemblies, it conducts heat toward the outside of the cask. Most casks have vents that allow outside air to flow naturally into the cask and around the canister to cool it (convection). And most casks would feel warm to the touch from radiant heat, much like a home radiator.

The NRC also confirms that the pressure inside a cask is below the design limit so it will not impact the structure or operations. Technical experts review applications for cask designs carefully to verify that the fuel cladding and cask component temperatures and the internal pressure will remain below specified limits.

Each storage cask is designed to withstand the effects from a certain amount of heat. This amount is called the heat load. The NRC reviews whether the designer correctly considered how the heat load will affect cask component and fuel temperatures, and how this heat load was calculated. Cask designs must show that heat from spent fuel can be effectively transferred to the outside of the cask.

The NRC's review also verifies that the cask designer looked at all the environmental conditions that can be expected to affect cask components and fuel temperatures. These conditions may include windspeed and direction, temperature extremes, and a site's elevation. To make sure the right values are considered, the NRC verifies that they match the historical records for a site or region.

NRC reviewers consider all of the methods used to prove that the storage system can handle the specified heat loads. They verify computer codes, making sure they are the latest versions and have been endorsed by experts. They look at the values used in the codes, such as for material properties, and confirm calculations for temperature and pressure. The NRC might run its own analysis using a different computer code to see if those results match the application.

# Making Sure Casks Will Hold Up

In its application, the cask designer must provide an evaluation that shows the system will be strong and stable enough to perform its safety functions even after experiencing a load, such as if the cask were dropped. NRC reviewers examine the structural design and analysis of the system under all credible loads for normal conditions that is, planned operations and environmental conditions that can be expected to occur often during storage. They also look at accidents, natural events, and conditions that can be expected to occur from time to time, but not regularly.

The NRC review looks at whether the cask designer evaluated the proper loading conditions. It will also ensure the designer evaluated the system's response to those loads accurately and completely. Reviewers must verify whether the resulting stresses in the material meet the acceptance criteria in the appropriate code. The NRC's review also looks at several different realistic combinations of loads. These cases are analyzed to determine the stresses placed on the material used to construct the cask system. To be conservative, the NRC and the designers overestimate loads and underestimate material strength. Doing this enhances the NRC's assurance that the design is adequate.



Cutaway of spent fuel storage cask shows spent fuel assemblies surrounded by steel and thick concrete shielding.
## Confinement

The cask design must prevent the release of radioactive material. This role is performed by the confinement boundary, which usually includes a metal canister with a lid that has at least two closures. Some casks have two separate lids that are each welded closed. Others are bolted and have two separate seals. Having both closures provides an extra layer of protection to ensure the radioactive materials remain confined.



Loaded spent fuel storage casks are in place on storage pad at the Haddam Neck Plant in Meriden, CT. (Courtesy: Connecticut Yankee)

The design must also keep the fuel assemblies in a protected, or "inert," environment. This is important to keep the fuel cladding from degrading. Once the water is removed from inside the cask, it is filled with a gas such as helium that will not react with fuel cladding.

Cask users must monitor the confinement boundary. The monitoring requirements depend on whether a cask is bolted or welded. Bolted confinement boundaries with O-ring seals need to have alarms to alert the user if a seal starts to leak. In that case, the seal would need to be repaired or replaced to ensure the cask continues to have redundant confinement. Our experts review the proposed monitoring programs to make sure they are adequate. Welded closures do not need to be monitored in the same way. This is because the welds are examined closely after they are made to ensure they do not leak.

The NRC's review of a cask's confinement boundary looks at the "source term." This is the inventory of radioactive material inside the cask. While the redundant closures and other requirements ensure the material will remain safely confined, the NRC requires cask designers to look at the dose rates in case some material were to come out. They also need to analyze how those dose rates compare to the NRC's regulatory limits.



Loaded spent fuel storage cask on transporter is moved from the fuel handling building at the Surry Power Station in Surry, VA.

Finally, cask designers must provide an analysis of how the confinement boundary works. Casks must be designed and tested to meet criteria approved by the American National Standards Institute, or ANSI. The ANSI standard for leak tests on radioactive materials packages was put together by a committee of experts and went through a lengthy review and approval process before it was adopted.

## **Criticality Safety**

The nuclear chain reaction used to create heat in a reactor is known as fission. In this process, uranium atoms in the fuel break apart, or disintegrate, into smaller atoms. These atoms cause other atoms to split, and so on. Another word for this process is criticality.

The potential for criticality is an important thing to consider about reactor fuel throughout its life. Fuel is most likely to go critical when it is fresh. The longer the fuel is in the reactor, the less likely it is to go critical. This is why it is removed from the reactor after several years—it loses energy and will no longer easily



Neutrons cause uranium-235 atoms to split in a nuclear chain reaction.

support a self-sustaining chain reaction. Once fuel is removed from the reactor, the NRC requires licensees to ensure it will never again be critical. This state is referred to as "subcriticality."

Subcriticality is required whether the fuel is stored in a pool or a dry cask. It is required for both normal operating conditions and any accident that could occur at any time.

Many methods help to control criticality. The way spent fuel assemblies are positioned is an important one. How close they are to each other and the burnup of (or amount of energy extracted from) nearby assemblies all have an impact. This method of control is referred to as fuel geometry.

Certain chemicals, such as boron, can also slow down a chain reaction by absorbing neutrons released during fission, and keeping them from striking other uranium atoms.

Casks have strong baskets to maintain fuel geometry. They also have solid neutron absorbers, typically made of aluminum and boron, between fuel assemblies. A cask application must include an analysis of all the elements that contribute to criticality safety during both normal and accident conditions.

NRC technical experts review this analysis to verify several things:

- The factors that could affect criticality have been identified.
- The models address each of these factors in a realistic way.
- Any assumptions used in the models are conservative—they result in more challenging conditions than would actually be expected.



## **Radiation Shielding**

The fission process turns uranium into a number of other elements, many of which are radioactive. These elements continue to produce large amounts of radiation even when the fuel is no longer supporting a chain reaction. Shielding is necessary to block this radiation and protect workers and the public.

The four major types of radiation differ in mass, energy, and how deeply they penetrate people and objects. Alpha radiation—particles consisting of two protons and two neutrons—are the heaviest type. Beta particles—free electrons—have a small mass and a negative charge. Neither



Different types of radiation have different properties.

alpha nor beta particles will move outside the fuel itself.

But spent fuel also emits neutron radiation (particles from the nucleus that have no charge) and gamma radiation (a type of electromagnetic ray that carries a lot of energy). Both neutron and gamma radiation are highly penetrating and require shielding.

Shielding for the two main types of dry storage casks is configured in slightly different ways. For welded, canister-based systems, the thick steel-reinforced concrete vault that surrounds an inner canister provides shielding for both neutron and gamma radiation. Shielding in bolted cask systems comes from their thick steel shells that may have several inches of lead gamma shielding inside. These systems have a neutron shield on the outside consisting of low-density plastic material, typically mixed with boron to absorb neutrons.

The NRC's reviews ensure that dry cask designs meet regulatory limits on radiation doses at the site boundary, under both normal and accident conditions, and that dose rates in general



At right, a dry storage cask recently loaded with spent fuel is lifted from a horizontal transporter to be placed on a specially designed storage pad. (Courtesy: Sandia National Laboratories)

are kept as low as possible. Every applicant must provide a radiation shielding analysis. This analysis uses a computer model to simulate how radiation penetrates through the fuel and into thick shielding materials under normal operating and accident conditions. Reviewers ensure the analysis has identified all the important radiation-shielding parameters and models them conservatively, in a way that maximizes radiation sources and external dose rates.

## Inspections

As part of its oversight function, the NRC inspects the companies that design and fabricate dry storage casks and the facilities that use them. Inspectors from NRC headquarters and the four regional offices conduct these inspections and issue their findings in publicly available reports.

Cask designers are responsible for ensuring that the fabricated cask components comply with the design as approved by the NRC. To do this, they are required to have a quality assurance program that meets the 18 criteria described in NRC dry storage regulations. The NRC reviews and approves these programs.



Inspectors examine dry storage casks containing spent nuclear fuel.

The designers must make sure their quality assurance programs are properly implemented during both design and fabrication. The NRC conducts periodic safety inspections to independently assess and verify that the designers are doing so. Some inspections look at design activities carried out at corporate offices. At fabrication facilities, both in the United States and overseas, NRC inspectors look at controls for fabrication, the process for verifying that the fabricated components comply with the approved design, and how the designer ensures that the fabricator meets its quality assurance program.

Each licensee is responsible for ensuring that its storage facility meets NRC regulations during construction and operation. NRC inspectors verify that the licensees are properly implementing the regulations. These inspections cover the design and construction of the concrete pad or modules that support the storage casks, preoperational testing (also referred to as dry runs), cask loading, and routine monitoring of operating dry storage facilities.



Transportable spent fuel storage casks sit on a storage pad. (Courtesy: Holtec International)

## **Managing Aging**

Cutting-edge robotic technology is making it easier to inspect inside spent fuel dry cask storage systems. As these casks remain in use for longer time frames, the ability to inspect canister surfaces and welds will become an important aspect of the NRC's confidence in their safety.

The techniques for inspecting canister surfaces and welds have been used for decades. These techniques are collectively known as nondestructive examination (NDE) and include a variety of methods, such as visual, ultrasonic, eddy current, and guided wave examinations.





Cutaway mockup of NAC International MAGNASTOR cask system at Palo Verde Nuclear Generating Station in Wintersburg, AZ. (Courtesy: EPRI/APS)

Robots are being developed to apply these NDE techniques inside casks. These robots need to fit into small spaces and withstand the heat and radiation inside the cask. The state-of-the-art robot technology is evolving quickly.

The Electric Power Research Institute and cask manufacturers have successfully demonstrated robotic inspection techniques to NRC staff several times at different reactor sites. These demonstrations are helping to refine the robots' designs.

In one demonstration, a robot inside a spent fuel storage cask maneuvered a camera with a fiber optic probe, which meets the industry code for visual examinations. The robot was able to access the entire height of the canister, allowing the camera to capture images of the fabrication and closure welds. The welds showed no signs of degradation. The canister was intact and in good condition.



Prototype robotic delivery system. (Courtesy: EPRI/RTT)

The robot was also able to obtain samples from surfaces of the cask and canister. These samples were analyzed for atmospheric deposits that could cause corrosion.

If degradation is identified, cask users would select their preferred mitigation and repair option. They would have to meet the NRC's safety requirements before implementing it.

Cask inspections are important to ensure continued safe storage of spent nuclear fuel, and robots will continue to be a helpful tool in this important activity. For more information on spent fuel and dry cask storage, visit the NRC's website:

https://www.nrc.gov/waste/spent-fuel-storage.html

Cover Photos:

Top: Massive storage casks loaded with spent nuclear fuel sit on a concrete pad inside a secure storage facility.

Middle: A transportable spent fuel storage system is moved to a storage pad at the Peach Bottom Atomic Power Station in Delta, PA. (Courtesy: AREVA)

Bottom: A horizontal spent fuel storage system sits behind a secure fence at the Calvert Cliffs Nuclear Power Plant in Lusby, MD.

#### (151 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-4, Page 15 of 16



Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-4, Page 16 of 16

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U.S. Nuclear Regulatory Commission NUREG/BR-0528 April 2017



#### (153 of 314)

#### Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-5, Page 1 of 30



NUREG-2157 Volume 1

## Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel

**Final Report** 

Office of Nuclear Material Safety and Safeguards



Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-5, Page 2 of 30



NUREG-2157 Volume 1

## Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel

**Final Report** 

Manuscript Completed: August 2014 Date Published: September 2014

Waste Confidence Directorate Office of Nuclear Material Safety and Safeguards U.S. Nuclear Regulatory Commission Washington, D.C. 20555-0001 **Executive Summary** 

# ES.12 How did the NRC Evaluate the Continued Storage of Spent Fuel in this GEIS?

The NRC looked at potential environmental impacts of continued storage in three timeframes: short-term storage, long-term storage, and indefinite storage (see Figure ES-1). The short-term and long-term storage timeframes include an assumption that a permanent geologic repository becomes available by the end of those timeframes. The indefinite storage timeframe assumes that a repository never becomes available. For a detailed discussion of the three timeframes, see Section 1.8.2.

The NRC has analyzed three timeframes that represent various scenarios for the length of continued storage that may be needed before spent fuel is sent to a repository. The first, most likely, timeframe is the short-term timeframe, which analyzes 60 years of continued storage after the end of a reactor's licensed life for operation. The NRC acknowledges, however, that the short-term timeframe, although the most likely, is not certain. Accordingly, the GEIS also analyzed two additional timeframes. The long-term timeframe considers the environmental impacts of continued storage for an additional 100 years after the short-term timeframe for a total of 160 years after the end of a reactor's licensed life for operation. Finally, although the NRC considers it highly unlikely, the GEIS includes an analysis of an indefinite timeframe, which assumes that a repository does not become available.





Executive Summary

To guide its analysis, the NRC also relied on certain assumptions regarding the storage of spent fuel. A detailed discussion of these assumptions is contained in Section 1.8.3. Some of these assumptions are listed below:

- Institutional controls would remain in place.
- Spent fuel canisters and casks would be replaced approximately once every 100 years.
- Independent spent fuel storage installation (ISFSI) and dry transfer system (DTS) facilities would also be replaced approximately once every 100 years.
- A DTS would be built at each ISFSI location for fuel repackaging.
- All spent fuel would be moved from spent fuel pools to dry storage by the end of the short-term storage timeframe (60 years).

An *ISFSI* is a facility designed and constructed for the interim storage of spent fuel. Typically, spent fuel is stored in dry cask storage systems. NRC requirements state that dry cask storage must shield people and the environment from radiation and keep the spent fuel inside dry and nonreactive.

**DTSs** would be built at ISFSI sites (at-reactor or away-from-reactor) in the long-term storage timeframe. A DTS would enable retrieval of spent fuel for inspection or repackaging without the need to return the spent fuel to a spent fuel pool.

• In accordance with NEPA, the analyses in the GEIS are based on current technology and regulations.

The NRC used previous environmental evaluations and technical reports to help inform the impact determinations in this GEIS. Chapter 1 includes a list of NEPA documents used in the development of the GEIS, and the end of each chapter includes a complete list of references. References are publicly available, and most are available in ADAMS.

# ES.13 What Facilities and Activities are Addressed in the GEIS?

Chapter 2 describes typical facility characteristics and activities that the NRC used to assess the environmental impacts of continued storage of spent fuel. The GEIS looked at spent fuel storage at single- and multiple-reactor nuclear power plant sites, in spent fuel pools, at-reactor ISFSIs, and away-from-reactor ISFSIs. In addition to existing reactor designs and conventional spent fuel, the NRC also considered reactor and fuel technologies such as mixed oxide fuel (MOX) and small modular reactors.

Section 2.2 describes the activities related to the storage of spent fuel that are expected to occur during the three storage timeframes (short-term, long-term, and indefinite).

#### 1.7.2 Public Comments Received on the Draft GEIS and Proposed Rule

The EPA published a Notice of Availability in the *Federal Register* on September 13, 2013 (78 FR 56695), which started the 75-day public comment period on the draft GEIS. Due to the October 2013 government shutdown that caused the agency to reschedule several public meetings, the NRC extended the public comment period to December 20, 2013, for a total of 98 days (78 FR 66858). During the public comment period, the NRC hosted 13 public meetings throughout the United States to describe the results of the NRC's environmental review, answer questions, and accept comments on the draft GEIS and proposed Rule. Approximately 1,400 participants at those meetings provided nearly 500 oral comments. In addition, the NRC received over 33,000 written submittals. Summaries of the public comments received on the draft GEIS and proposed Rule and the NRC's responses are provided in Appendix D. Separately, the NRC published a document containing the text of all identified unique comments, *Comments on the Waste Confidence Draft Generic Environmental Impact Statement and Proposed Rule* (NRC 2014b).

This final GEIS—with the exception of Chapters 10 and 11 and Appendices D and I—uses "change bars," indicated by vertical lines in the page margins, to denote where information has been revised in response to public comments, or where changes, other than minor editorial changes, have been made.

#### 1.7.3 Cooperating Agencies

The NRC did not identify any cooperating agencies for the environmental review, nor did the NRC receive any formal requests for cooperating agency status.

## **1.8 Analytical Approach**

The NRC's methodology and approach to evaluating the environmental impacts of continued storage follows the guidance in NUREG–1748, *Environmental Review Guidance for Licensing Actions Associated with NMSS Programs: Final Report* (NRC 2003), where applicable.

This GEIS evaluates the potential environmental impacts of continued storage after the licensed life for reactor operations at reactor sites in Chapter 4, and at away-from-reactor sites in Chapter 5. The environmental impacts are evaluated for three timeframes based on when a repository would become available. This section outlines the approach, timeframes, assumptions, and previous NEPA assessments the NRC used in its evaluation.

#### 1.8.1 Approach to Impact Assessment

To evaluate the potential environmental impacts of continued storage at reactor sites (Chapter 4), the NRC assumes that spent fuel is stored in a pool and in an ISFSI, both of which

have already been constructed and are operating during reactor operations. Therefore, many of the impacts of at-reactor continued spent fuel storage can be determined by comparing onsite activities that occur during reactor operations to the reduced activities that occur during continued storage. Where appropriate, the environmental impacts during reactor operations are drawn from the License Renewal GEIS (NRC 2013d), which evaluates the impacts of continued reactor operation. In addition, this GEIS uses analyses in EAs prepared for ISFSIs and renewals of those ISFSI licenses.

For the impacts of continued storage at an-away-from-reactor ISFSI (Chapter 5), the NRC evaluated the impacts of an ISFSI of the same size as described in the *Final Environmental Impact Statement for the Construction and Operation of an Independent Spent Nuclear Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and Related Transportation Facility in Tooele County, Utah (NRC 2001). Chapter 5 contains a list of the assumptions used in that analysis. Unlike in Chapter 4, the generic analysis for away-from-reactor storage at an ISFSI includes a general discussion of the construction of the facility. However, the site-specific impacts of the construction and operation of any proposed away-from-reactor ISFSI would be evaluated by NRC as part of that ISFSI's licensing process.* 

For both the at-reactor and away-from-reactor storage sites, the NRC assumes that the construction, operation, and replacement of a dry transfer system (DTS) facility is necessary at some point to handle the transfer of fuel. The physical characteristics of a DTS, which is based on well-understood technology, are explained in more detail in Chapter 2 (see Section 2.1.4).

The GEIS accounts for the age of storage facilities in the evaluation of impacts. For example, a storage cask that was loaded with spent fuel 40 years prior to the end of the licensed life for reactor operations has already been in service for 40 years at the beginning of the short-term timeframe and is assumed to be replaced at the beginning of the long-term timeframe (40 years of service at the beginning of the short-term timeframe plus 60 years of service over the short-term timeframe results in a total service time of 100 years, which is the assumed replacement period for dry cask storage facilities).

#### 1.8.2 Timeframes Evaluated

The NRC evaluated the environmental impacts of continued storage in three timeframes that begin once the licensed life of the reactor ends—short-term storage, long-term storage, and indefinite storage (see Figure 1-1).



Figure 1-1. Continued Storage Timeframes

The first timeframe—*short-term storage*—lasts for 60 years and begins after the end of a reactor's licensed life for operations. The NRC evaluated the environmental impacts resulting from the following activities that occur during the short-term storage timeframe:

- continued storage of spent fuel in spent fuel pools (at-reactor only) and ISFSIs,
- routine maintenance of at-reactor spent fuel pools and ISFSIs (e.g., maintenance of concrete pads),
- construction and operation of an away-from-reactor ISFSI (including routine maintenance), and
- handling and transfer of spent fuel from spent fuel pools to ISFSIs.

The next timeframe—*long-term storage*—is 100 years and begins immediately after the short-term storage timeframe. The NRC evaluated the environmental impacts resulting from the following activities that occur during long-term storage:

- continued storage of spent fuel in ISFSIs, including routine maintenance,
- one-time replacement of ISFSIs and spent fuel canisters and casks, and
- construction and operation of a DTS (including replacement).

For the long-term storage timeframe, the NRC assumes that all spent fuel has already been moved from the spent fuel pool to dry cask storage by the end of the short-term storage timeframe. The spent fuel pool would be decommissioned within 60 years after permanent cessation of operation, as required by 10 CFR 50.82 or 10 CFR 52.110.

The third timeframe—*indefinite storage*—assumes that a geologic repository does not become available. In this timeframe, at-reactor and away-from-reactor ISFSIs would continue to store spent fuel in dry casks indefinitely. For the evaluation of environmental impacts if no repository becomes available, the following activities are considered:

- continued storage of spent fuel in ISFSIs, including routine maintenance,
- replacement of ISFSIs and spent fuel canisters and casks every 100 years,
- construction and operation of an away-from-reactor ISFSI (including replacement every 100 years), and
- construction and operation of a DTS (including replacement every 100 years).

These activities are the same as those that would occur for long-term storage, but without a repository, they would occur repeatedly.

#### 1.8.3 Analysis Assumptions

To evaluate the potential environmental impacts of continued storage, this GEIS makes several assumptions.

- Although the NRC recognizes that the precise time spent fuel is stored in pools and dry cask storage systems will vary from one reactor to another, this GEIS makes a number of reasonable assumptions regarding the length of time the fuel can be stored in a spent fuel pool and in a dry cask before the fuel needs to be moved or the facility needs to be replaced. With respect to spent fuel pool storage, the NRC assumes that all spent fuel is removed from the spent fuel pool and placed in dry cask storage in an ISFSI no later than 60 years after the end of the reactor's licensed life for operation. With respect to dry cask storage, the NRC assumes that the licensee uses a DTS during long-term and indefinite storage timeframes to move the spent fuel to a new dry cask every 100 years. Similarly, the NRC assumes that the DTS and the ISFSI pad are replaced every 100 years. For an ISFSI that reaches 100 years of age near the end of the short-term storage timeframe, the NRC assumes that the replacement would occur during the long-term storage timeframe.
- Based on its knowledge of and experience with the structure and operation of the various facilities that will provide continued storage, including the normal life of those facilities, the NRC believes that spent fuel pool storage could last for about 60 years beyond the licensed life for operation of the reactor where it is stored, and that each ISFSI will last about 100 years.

- The most reasonably foreseeable assumption is that institutional controls (i.e., the continued regulation of spent fuel) will continue. The assumption that institutional controls will continue enables an appropriate and reasonable evaluation of the environmental impacts of continued storage over an indefinite timeframe. Absent the stability and predictability that follows institutional controls, including but not limited to NRC licensing and regulatory controls, few impacts could be reliably forecast. For the purpose of the analyses in this GEIS, the NRC assumes that regulatory control of radiation safety will remain at the same level of regulatory control as currently exists today. Section B.3.4 of Appendix B provides further discussion regarding institutional controls.
- A DTS will be built at each ISFSI location during the long-term storage timeframe to facilitate spent fuel transfer and handling.
- The NRC assumes a 100-year replacement cycle for spent fuel canisters and casks. This assumption is consistent with assumptions made in the Yucca Mountain Final EIS (DOE 2008).
- The 100-year replacement cycle also assumes replacement of the ISFSI facility and DTS.
- Based on currently available information, the 100-year replacement cycle provides a reasonably conservative assumption for a storage facility that would require replacement at a future point in time. However, this assumption does not mean that dry cask storage systems and facilities *need* to be replaced every 100 years to maintain safe storage.
- Replacement of the entire ISFSI would occur over the course of each 100-year interval, starting at the beginning of the long-term storage timeframe (approximately 100 years after spent fuel would have first been transferred from the spent fuel pool into a dry cask storage system, which would occur about 35 years into a reactor's licensed life for operations).
- The NRC assumes that the land used for the ISFSI pads and DTS would be reclaimed after the facilities are demolished and, therefore, would be used again in the next 100-year replacement cycle. The NRC assumes the initial replacement ISFSI and DTS would be built near the existing facilities. The NRC believes this assumption is reasonable because the characteristics of the previously disturbed land are already known and are suitable for ISFSI and DTS design and construction.
- The NRC assumes that aging management, including routine maintenance activities and programs, occurs between replacements. These "routine" or planned maintenance activities are distinct from the "replacement" of facilities and equipment.
- The spent fuel is moved from the spent fuel pool to dry cask storage within the short-term storage timeframe.
- Under NRC regulations, a nuclear power plant that operates for the term specified in its license is required to complete decommissioning within 60 years after the licensed life for operations in accordance with 10 CFR 50.82 or 52.110. Under these regulations, a plant that permanently ceases operation before the term specified in its operating license is

required to complete decommissioning within 60 years after the permanent cessation of operation. Consistent with this requirement, the NRC assumes that, by the end of the short-term storage timeframe, a licensee will either terminate its Part 50 or Part 52 license and receive a specific Part 72 ISFSI license (see 10 CFR Part 72, Subpart C) or apply to receive Commission approval under 10 CFR 50.82(a)(3) or 52.110(c) to continue decommissioning under its Part 50 or Part 52 license. Accordingly, the NRC would conduct any appropriate site-specific NEPA analysis for either issuance of a Part 72 ISFSI license upon termination of the licensee's Part 50 or Part 52 license or approval to continue decommissioning beyond 60 years after ceasing operations in accordance with 10 CFR 50.82(a)(3) or 52.110(c). Further, the NRC assumes that replacing an ISFSI and licensing a DTS are licensing actions that would be subject to separate site-specific NEPA reviews. The ISFSI and DTS would be decommissioned separately.

- Construction, operation, and replacement of the DTS are assumed to occur within the long-term storage timeframe. If the DTS is built at the beginning of the long-term storage timeframe, it could be near the end of its useful life by the end of that storage timeframe. To be conservative, the NRC included the impacts of replacing the DTS one time during the long-term storage timeframe.
- Because an away-from-reactor ISFSI could store fuel from several different reactors, the earliest an away-from-reactor ISFSI would enter the short-term timeframe is when the first of these reactors reaches the end of its licensed life for operation.
- The amount of spent fuel generated is based on the assumption that the nuclear power plant operates for 80 years (40-year initial term plus two 20-year renewed terms).<sup>4</sup>
- A typical spent fuel pool of 700 metric tons of uranium storage capacity reaches its licensed capacity limit about 35 years into the licensed life for operation of a reactor. At that point, some of the spent fuel would need to be removed from the spent fuel pool and transferred to a dry cask storage system at either an at-reactor or away-from-reactor ISFSI.
- The environmental impacts of constructing a "spent fuel pool island," which allows the spent fuel pool to be isolated from other reactor plant systems to facilitate decommissioning, are considered within the analysis of cumulative effects in Chapter 6. Because a new spent fuel pool cooling system would be smaller in size and have fewer associated impacts than existing spent fuel pool cooling systems, the environmental impacts of operating the new spent fuel pool cooling system in support of continued storage in the spent fuel pool, would be bound by the impacts of operating the existing cooling system described in Chapter 4.
- It is assumed that an ISFSI of sufficient size to hold all spent fuel generated will be constructed during the licensed life for operation.

<sup>&</sup>lt;sup>4</sup> The Commission's regulations provide that renewed operating licenses may be subsequently renewed, although no licensee has yet submitted an application for such a subsequent renewal. This GEIS included two renewals as a conservative assumption in evaluating potential environmental impacts.

• Sufficient low-level waste (LLW) disposal capacity will be made available when needed. Historically, the demand for LLW disposal capacity has been met by private industry. The NRC expects that this trend will continue in the future. For example, in response to demand for LLW disposal capacity, Waste Control Specialists, LLC, opened a LLW disposal facility in Andrews County, Texas, on April 27, 2012.

The analyses in this GEIS are based on current technology and regulations. Appendix B provides further information supporting the analysis assumptions. These analyses are not intended to be, and should not be interpreted as, representative of any specific storage facility or site in the United States where spent fuel is currently stored or could be stored in the future.

#### 1.8.4 Other Environmental Analyses

Numerous NRC proceedings, regulations, or NEPA documents address the environmental impacts of other NRC-regulated activities: the licensed life for operation of a commercial nuclear power facility, the licensed life of an ISFSI, spent fuel transportation, the nuclear fuel cycle, license termination, and ultimate spent fuel disposal. This is depicted in Figure 1-2. A brief description of these other NEPA documents and regulations is presented below. NEPA documents used to support the analyses in this GEIS are listed in Table 1-1.

The storage of spent fuel *during* the initial licensed term for operation of a nuclear reactor is considered within the site-specific EIS for either a <u>10 CFR Part 50</u> or <u>10 CFR Part 52</u> licensing review.

The impacts from renewing the operating licenses for commercial nuclear power plants for up to an additional 20 years are evaluated in site-specific EISs, which tier off the License Renewal GEIS (NRC 2013d). The License Renewal GEIS addresses spent fuel storage *during* the license renewal term. The findings from the License Renewal GEIS with respect to environmental impacts of continued nuclear power plant operations have been codified in regulation (in <u>10 CFR Part 51, Table B-1 of Appendix B to Subpart A</u>).

The impacts from storage of spent fuel during the initial and renewed licensed terms of an ISFSI are addressed in site-specific NEPA reviews for licensees that elect to construct ISFSIs with specific licenses under 10 CFR Part 72. For those licensees that elect to construct an ISFSI under a general license, the environmental review has already been conducted and documented in an EA (NRC 1989).

The impacts from decommissioning nuclear power plants have previously been evaluated in *Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities Supplement 1 Regarding the Decommissioning of Nuclear Power Reactors Main Report* (Decommissioning GEIS) (NRC 2002).

Generic Facility Descriptions and Activities

from the Skull Valley Band's village. The proposed PFS ISFSI has not been constructed. Despite the PFS facility not having been constructed, issuance of the PFS license supports the assumption in this GEIS that an away-from-reactor ISFSI is feasible and that the NRC can license an away-from-reactor storage facility. Thus, the NRC's analysis of construction, operation, and decommissioning activities and impacts for an away-from-reactor ISFSI in NUREG–1714 are reflected in this GEIS (NRC 2001).

#### Consolidated Storage

On January 29, 2010, the President of the United States directed the Secretary of Energy to establish a "Blue Ribbon Commission on America's Nuclear Future." The Blue Ribbon Commission was tasked with conducting a comprehensive review of policies for managing the back end of the nuclear fuel cycle and recommending a new strategy. The Blue Ribbon Commission issued its findings and conclusions in January 2012 (BRC 2012). Among the findings and conclusions related to continued storage of spent fuel was a strategy for prompt efforts to develop one or more consolidated storage facilities.

In January 2013, DOE published its response to the Blue Ribbon Commission recommendations titled, *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* (DOE 2013). This strategy implements a program over the next 10 years that, with congressional authorization, will:

- site, design, construct, license, and begin operation of a pilot interim storage facility by 2021 with an initial focus on accepting spent fuel from shutdown reactor sites,
- advance toward the siting and licensing of a larger interim storage facility to be available by 2025 with sufficient capacity to provide flexibility in the waste-management system and allow for acceptance of enough spent fuel to reduce expected government liabilities, and
- make demonstrable progress on the siting and characterization of repository sites to facilitate the availability of a geologic repository by 2048.

The Federal government's support for interim storage supports the NRC's decision to consider this type of facility as one of the reasonably foreseeable interim solutions for spent fuel storage pending ultimate disposal at a repository.

#### 2.1.4 Dry Transfer System

Although there are no dry transfer systems (DTSs) at U.S. nuclear power plant sites today, the potential need for a DTS, or facility with equivalent capability, to enable retrieval of spent fuel from dry casks for inspection or repackaging will increase as the duration and quantity of fuel in dry storage increases. A DTS would enhance management of spent fuel inspection and repackaging at all ISFSI sites and provide additional flexibility at all dry storage sites by enabling

Generic Facility Descriptions and Activities

repackaging without the need to return the spent fuel to a pool. A DTS would also help reduce risks associated with unplanned events or unforeseen conditions and facilitate storage reconfiguration to meet future storage, transport, or disposal requirements (Carlsen and Raap 2012).

Several DTS designs and related concepts have been put forward over the past few decades. Among these designs is a design developed by Transnuclear, Inc. in the early 1990s under a cooperative agreement between DOE and EPRI. Although the conceptual design was based on transferring spent fuel from a 30-ton 4-assembly source cask to a 125-ton receiving cask, the DTS could be adapted to be suitable for any two casks (Carlsen and Raap 2012).

On September 30, 1996, the DOE submitted to the NRC for review a topical safety analysis report on the Transnuclear-EPRI DTS design (DOE 1996). In November 2000, the NRC issued an assessment report in which it found the DTS concept has merit. The NRC's assessment was based on the DTS meeting the applicable requirements of 10 CFR Part 72 for spent fuel storage and handling and 10 CFR Part 20 for radiation protection. However, the DOE has not yet requested a Part 72 license for the DTS (NRC 2000).

Construction of a DTS is considered a continued storage activity in the long-term and indefinite timeframes. Based on EPRI data (EPRI 1995), the NRC estimates a construction cost of \$8.58M for the development of a DTS to handle bare spent fuel that could accommodate repackaging, as needed, to replace casks. The NRC assumed that estimated construction costs for the DTS are the same for both the at-reactor and away-from-reactor facilities.

The reference DTS considered in this GEIS is a two-level concrete and steel structure with an attached single-level weather-resistant preengineered steel building. The concrete and steel structure provides both confinement and shielding during fuel transfer operations. The DTS was designed to enable loading of one receiving cask in 10 24-hour days and unloading one source cask in one 24-hour day.

The key facility parameters and characteristics described in the September 30, 1996, topical safety analysis report are summarized below.

The reference DTS is a reinforced-concrete rectangular box structure with internal floor dimensions of about 8 × 5.5 m (26 × 18 ft) and about 14 m (47 ft) tall. The system also includes an attached, prefabricated, aluminum Butler-type building referred to as the preparation area with dimensions of about 11.6 x 7.6 m (38 × 25 ft) wide and 11.6 m (38 ft) tall. The basemat for the facility measures 14.9 × 21.9 m (49 × 72 ft), and the security zone would be about 76 × 91 m (250 × 300 ft) (i.e., less than 0.7 ha [2 ac]).

As shown in Figure 2-3, the preparation area is located at ground level of the DTS. The lower access area is next to the preparation area and directly below the transfer confinement area.

September 2014

#### Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-5, Page 14 of 30

Generic Facility Descriptions and Activities



Figure 2-3. Conceptual Sketches of a Dry Transfer System (DOE 1996)



#### Generic Facility Descriptions and Activities

The lower access area provides shielding, confinement, and positioning for the open source and receiving casks during spent fuel transfers. An 18- to 23-cm (7- to 9-in.)-thick steel sliding door separates the lower access area from the preparation area. The transfer confinement area is the upper level of the DTS, directly above the lower access area. The transfer confinement area provides the physical confinement boundary and radiation shielding between spent fuel and the environment.

Transnuclear-EPRI found that radioactive waste generation from dry transfer activities could not be readily quantified, as it depends strongly on reactor-specific conditions, primarily the crud levels on the fuel assemblies. Table 6.1-1 of the topical safety analysis report (DOE 1996) showed the expected waste sources, including decontamination wastes, spalled material in a crud catcher, and prefilters and high-efficiency particulate air filters used in the heating ventilation and air conditioning system. Other wastes considered included mechanical lubricants and precipitation runoff. The DTS does not rely on water-supply lines. Water is brought to the facility in bottles and used for general purpose cleaning only.

The reference DTS, if licensed, would operate under the radiological protection requirements of 10 CFR Part 20, "Standards for Protection against Radiation." Occupational doses for various tasks performed in the DTS are provided in Table 7.4-1 of the topical safety analysis report (DOE 1996). Total estimated occupational doses from loading a single cask are about 0.5 person-rem.

Maximum offsite doses reported in Table 7.6-1 of the topical safety analysis report were estimated to range from 44 mrem per year at 100 m to 2 mrem per year at 500 m.

As with other facilities licensed under 10 CFR Part 72, the design events identified in ANSI/ANS 57.9 (ANSI/ANS 1992) form the basis for the accident analyses performed for the DTS. The bounding accident results for a distance of 100 m are a stuck fuel assembly (47 mrem) and a loss-of-confinement barrier (721 mrem).

This GEIS considers the environmental impacts of constructing a reference DTS to provide a complete picture of the environmental impacts of continued storage. This GEIS does not license or approve construction or operation of a DTS. A separate licensing action would be necessary before a licensee may construct and operate a site-specific DTS.

For the purposes of analysis in this GEIS, the NRC relies primarily on the facility description of the Transnuclear-EPRI DTS described above. However, for some impact assessments in this GEIS, the NRC has drawn from the *Environmental Impact Statement for the Proposed Idaho Spent Fuel Facility at the Idaho National Engineering and Environmental Laboratory in Butte County, Idaho* (NRC 2004b). The NRC licensed the Idaho Spent Fuel Facility in November 2004, but DOE has not constructed the facility. However, the proposed facility has the capability to handle bare spent fuel for the purposes of repackaging and storing spent fuel from

September 2014

Generic Facility Descriptions and Activities

Peach Bottom Unit 1; the Shippingport Atomic Power Station; and various training, research, and isotope reactors built by General Atomics. Because the Idaho Spent Fuel Facility, like the DTS, includes design features that allow bare fuel-handling operations to repackage spent fuel from DOE transfer casks to new storage containers, the NRC has concluded that some environmental impacts of the facility would be comparable to those of a DTS.

## 2.2 Generic Activity Descriptions

As described in Chapter 1, this GEIS analyzes environmental impacts of the continued storage of spent fuel in terms of three storage timeframes: short-term, long-term, and indefinite storage. As described below, the activities at spent fuel storage facilities during the short-term timeframe coincide with nuclear power plant decommissioning activities. By the beginning of the long-term timeframe, reactor licensees will have removed all spent fuel from the spent fuel pool and decommissioned all remaining nuclear power plant structures. At that point, all spent fuel will be stored in either an at-reactor or away-from-reactor ISFSI. During the long-term storage timeframe, the NRC has conservatively assumed for the purpose of analysis in this GEIS that the need will arise for the transfer of spent fuel assemblies from aged dry cask storage systems to newer systems of the same or newer design. In addition, the NRC assumes that storage pads and modules would need to be replaced periodically. Section 1.8.2 identifies the continued storage activities for which the NRC evaluated the environmental impacts in this GEIS. This section provides the costs for those activities, as well as costs for transporting spent fuel to an away-from-reactor ISFSI are analyzed in Chapter 5.

#### 2.2.1 Short-Term Storage Activities

As depicted in the generic timeline in Figure 2-4, after about 35 years of operation at low fuel burnups, or about 46 years of high-burnup operation, the spent fuel pool at a typical reactor reaches capacity and spent fuel must be removed from the pool to ensure full core offload capability. The inventory of spent fuel that exceeds spent fuel pool capacity may be transferred to dry cask storage at an at-reactor or away-from-reactor ISFSI. This GEIS focuses on the activities and impacts associated with continued storage in a spent fuel pool and dry cask. This section explains the activities that occur during short-term storage:

- decommissioning of the plant systems, structures, and components not required for continued storage of spent fuel,
- routine maintenance of the pool and ISFSI, and
- transfer of spent fuel from the pool to the at-reactor or away-from-reactor ISFSI.

and the facility would produce minimal gaseous or liquid effluents, impacts on aquatic resources from the operation of ISFSIs during short-term storage would not have noticeable impacts on aquatic resources.

#### 4.10.1.3 Conclusion

Given that the impacts associated with the operation of spent fuel pools would likely be bounded by the impacts analyzed in the License Renewal GEIS due to the lower withdrawal rates, lower discharge rate, smaller thermal plume, and lower heat content for a spent fuel pool compared to an operating reactor with closed-cycle cooling, the NRC concludes that impacts on aquatic resources from the operation of spent fuel pools during short-term storage would be minimal. In addition, the impacts from operation of at-reactor ISFSIs would be minimal because ISFSIs do not require water for cooling, produce minimal gaseous or liquid effluents, and ground-disturbing activities for ISFSI maintenance would have minimal impacts on aquatic ecology. Therefore the NRC concludes that the potential environmental impacts on aquatic resources would be SMALL during the short-term storage timeframe.

#### 4.10.2 Long-Term Storage

Routine maintenance and monitoring of the ISFSIs would continue during long-term storage. Likewise, the impacts from routine maintenance and monitoring of ISFSIs during the short-term storage timeframe would continue during the long-term storage timeframe and would remain the same.

Due to the relatively small construction footprint of a DTS, a DTS could likely be sited and constructed on land near existing facilities, on previously disturbed ground, and away from sensitive aquatic features. In addition, the replacement DTS and ISFSI facilities could likely be sited on previously disturbed ground away from sensitive aquatic features. For example, the NRC did not identify any significant impacts on aquatic resources from construction of the Humboldt Bay ISFSI in part due to the fact that ground-disturbing activities would be limited to 0.4 ha (1 ac) and the ISFSI was not located near any aquatic features (NRC 2005a). Similarly, the construction footprint for the Diablo Canyon ISFSI was limited to 2 ha (5 ac) and was sited in a previously disturbed area that did not contain any sensitive aquatic features (NRC 2003). In addition, the NRC (2003, 2005a) indicated that controls would be in place to minimize the flow of any site runoff, spillage, and leaks into sensitive aquatic features. For example, stormwater control measures, which would be required to comply with NPDES permitting, would minimize the flow of disturbed soils or other contaminates into aquatic features. The plant operator could also implement best management practices to minimize erosion and sedimentation.

ISFSIs and DTSs do not require water for cooling and produce minimal gaseous or liquid effluents. In addition, replacement ISFSIs and DTSs would be sited on previously disturbed

ground away from sensitive aquatic features. The older ISFSIs and DTSs would be demolished and the land reclaimed. Therefore, the NRC concludes that impacts on aquatic resources during long-term storage would be SMALL.

#### 4.10.3 Indefinite Storage

During indefinite storage, the activities that occur during long-term storage would continue and the ISFSIs and DTSs would be replaced every 100 years. Therefore the impacts that occurred during long-term storage would continue. The NRC concluded in Section 4.10.2 that impacts on aquatic resources would be SMALL because ISFSIs do not require water for cooling and would have minimal impacts on aquatic resources. In addition, replacement of the ISFSIs and DTSs would occur near existing facilities and would be sited on previously disturbed ground away from sensitive aquatic features. The older ISFSIs and DTSs would be demolished and the land reclaimed. Therefore, the NRC concludes that the impacts on aquatic resources from indefinite storage of spent fuel in at-reactor ISFSIs would be SMALL.

### 4.11 Special Status Species and Habitat

This section describes potential environmental impacts on special status species and their habitats caused by the continued storage of spent fuel in spent fuel pools and at-reactor ISFSIs. Special status species and habitats may include those identified in Section 4.9 for terrestrial resources and Section 4.10 for aquatic resources.

#### 4.11.1 Short-Term Storage

Impacts on Federally listed species, designated critical habitat, essential fish habitat, and other special status species and habitats during short-term storage may occur from spent fuel pool or ISFSI operations.

#### 4.11.1.1 Spent Fuel Pools

Given that Federally listed species, designated critical habitat, essential fish habitat, State-listed species, marine mammals, migratory birds, and bald and golden eagles may be affected by operation of cooling systems for nuclear power plants, special status species and habitats could also be affected by the operation of cooling systems for spent fuel pools during the short-term storage timeframe. Possible impacts on Federally listed species, designated critical habitat, essential fish habitat, State-listed species, marine mammals, migratory birds, and bald and golden eagles would be similar to those described in Sections 4.9.1 and 4.10.1 for terrestrial and aquatic resources.

The Endangered Species Act (ESA) forbids "take" of a listed species, where "take" means to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in

NUREG-2157

Even in rare cases where an independently operating spent fuel pool causes noise impacts that exceed the EPA-recommended threshold for outdoor noise, licensees are usually able to make engineering changes to address the problem. For example, at the Maine Yankee nuclear power plant the licensee set up the pool storage operations to operate independently from the reactor, which was being decommissioned. The fans used as part of the spent pool cooling-system generated noise levels up to 107 dB, which attenuated to 50 dB less than 1.6 km (1 mi) away (NRC 2002b). This noise level exceeded the 55 dB(A) threshold recommended by the EPA for protection against outdoor activity interference and annoyance. Nearby residents complained to the plant staff about the noise level, and the licensee made engineering changes to the fans that were causing the noise and the issue was resolved.

In conclusion, the operation noise levels, duration, and distance between the noise sources and receptors generally do not produce noise impacts noticeable to the surrounding community. In certain cases, such as the Maine Yankee spent fuel pool island, potential noise impacts on receptors closest to the site property line can experience unmitigated noise levels that exceed EPA-recommended noise levels. However, noticeable noise levels are generally not expected and would be limited to the nearest receptors. Therefore, the NRC concludes that the overall impact from noise during short-term storage would be SMALL.

#### 4.13.2 Long-Term Storage

In addition to routine maintenance and monitoring, the NRC assumes that long-term storage would include the construction, operation, and replacement of a DTS and the replacement of the ISFSI. Construction of a DTS would generate higher noise levels than DTS operations. The NRC assumes that DTS construction would take 1–2 years. Construction equipment would be used to grade and level the site, excavate the facility foundation, handle building materials, and build the facility. Construction equipment generates noise levels over 90 dB(A) (at a reference distance of 15 m [50 ft] from the source) (NRC 2002b). At distances greater than about 1.6 km (1 mi), expected maximum noise levels from construction equipment would be reduced to about 55 dB(A), which is the EPA-recommended level for protection in residential areas against outdoor activity interference and annoyance (NRC 2002b).

During operation of the DTS, some activities would be conducted inside the building, which functions as a noise barrier. Spent fuel transfer between the storage pad and the DTS would be infrequent. The NRC expects noise levels from this transfer of spent fuel to be no more than the noise level generated transferring spent fuel from the pool to the dry pad, as described in Section 4.13.1. In addition, some of the reactor and spent fuel pool storage noise sources present during short-term storage (such as the cooling towers and associated equipment) would not be present during long-term storage.

The NRC assumes that the at-reactor ISFSI (i.e., concrete storage casks and pads) and the DTS would be replaced within the 100-year timeframe. Similar to the DTS construction, ISFSI and DTS replacement uses construction equipment, which can generate noise levels over

NUREG-2157

90 dB(A). The noise levels exceed the EPA-recommended level for protection against outdoor activity interference and annoyance (NRC 2002b). However, distance from the source will eventually reduce the noise level to below the EPA-recommended level for protection against outdoor activity interference and annoyance.

Construction and replacement of the DTS, although temporary and representing a small portion of the overall long-term storage timeframe, would generate noise levels that exceed EPA-recommended noise levels. Operational noise levels would not produce noise impacts noticeable to the surrounding community. For some activities (e.g., replacement of the DTS and ISFSI facilities), potential noise impacts on receptors closest to the site property line can experience unmitigated noise levels that exceed EPA-recommended noise levels. However, these activities are temporary and noticeable noise levels would be limited to the nearest receptors. Therefore, the NRC concludes that the overall impact from noise during long-term storage would be SMALL.

#### 4.13.3 Indefinite Storage

This section describes the noise impacts in the event a repository is not available to accept spent fuel and the spent fuel must be stored indefinitely in ISFSIs. Impacts from indefinite storage would be similar to those described for the long-term storage timeframe. The NRC does not anticipate that indefinite storage in an ISFSI would generate any new or additional noise in comparison with the noise impacts described for the long-term storage timeframe. Therefore, the NRC concludes that the overall impact from noise during indefinite storage would be SMALL.

### 4.14 Aesthetics

This section describes potential impacts on aesthetic resources caused by continued storage of spent fuel in spent fuel pools and at-reactor ISFSIs.

#### 4.14.1 Short-Term Storage

No changes to nuclear power plant structures will be required for continued operation of the spent fuel pool during continued storage, including routine maintenance and monitoring.

In the License Renewal GEIS, the NRC determined that the aesthetic impacts associated with continued operation of a nuclear power plant, which included the continued operation of the spent fuel pool, were SMALL because the existing visual profiles of nuclear power plants were not expected to change during the license renewal term (NRC 2013a). Therefore, the NRC concludes that the potential impacts from the short-term continued operation of the spent fuel pool would be of minor significance to aesthetic resources.

a final repository that will hold spent fuel from Finland's nuclear reactors. In June 2014, the Radiation and Nuclear Safety Authority (STUK) in Finland estimated that it can complete its safety assessment report for the construction permit application in January 2015. Finland expects this facility to begin receipt of spent fuel for disposal in 2020, 34 years after the start of preliminary site investigations.

Between 1993 and 2000, Sweden conducted feasibility studies in eight municipalities. One site was found technically unsuitable, and two sites were eliminated by municipal referenda. Three of the remaining five sites were selected for detailed site investigations. Municipalities adjacent to two of these sites agreed to be potential hosts, and one refused. Since 2007, detailed site investigations were conducted at Östhammar and Oskarshamn, both of which already host nuclear power stations. On June 3, 2009, the Swedish Nuclear Fuel and Waste Management Company (SKB) selected the Forsmark site located in the Östhammar municipality for the Swedish spent fuel repository and, in spring 2011, SKB submitted a license application. At the request of the Swedish government, the Nuclear Energy Agency organized an international team to review the SKB license application. In June 2012, the international review team completed its review and report stating: "SKB's post-closure radiological safety analysis report, SR-Site, is sufficient and credible for the licensing decision at hand. SKB's spent fuel disposal programme is a mature programme—at the same time innovative and implementing best practice-capable in principle to fulfil the industrial and safety-related requirements that will be relevant for the next licensing steps" (NEA 2012). In April 2014, the Swedish Radiation Safety Authority, as part of its review process, circulated the license application for comment to other public authorities and environmental organizations. A government decision is expected in 2015. If Swedish authorities authorize construction, the repository could be available for disposal around 2025, about 30 years after feasibility studies began.

In the United States, the DOE is the agency responsible for carrying out the national policy to site and build a repository, which includes designing, constructing, operating, and decommissioning the repository. The time DOE will need to develop a repository site will depend upon a variety of factors, including Congressional action and funding. Public acceptance will also influence the time it will take to implement geologic disposal. The NRC, by contrast, is the agency responsible for reviewing, licensing, and overseeing the construction and operation of the repository.

In 2012, the Blue Ribbon Commission on America's Nuclear Future recommended "prompt efforts to develop one or more geologic disposal facilities" (BRC 2012). In response to the Blue Ribbon Commission's report, the DOE (2013) stated that its "...goal is to have a repository sited by 2026; the site characterized, and the repository designed and licensed by 2042; and the repository constructed and its operations started by 2048." Based on the evaluation of international experience with geologic repository programs—including the issues some countries have overcome—and the affirmation by the Blue Ribbon Commission of the geologic repository approach, the NRC continues to believe that 25 to 35 years is a reasonable period for

NUREG-2157

repository development (i.e., candidate site selection and characterization, final site selection, licensing review, and initial construction for acceptance of waste).

Although the NRC believes that 25 to 35 years is a reasonable timeframe for repository development, it acknowledges that there is sufficient uncertainty in this estimate that the possibility that more time will be needed cannot be ruled out. International and domestic experience have made it clear that technical knowledge and experience alone are not sufficient to bring about the broad social and political acceptance needed to construct a repository. The time needed to develop a societal and political consensus for a repository could add to the time to site and license a repository or overlap it to some degree.

Because the availability of a repository can be substantially affected by whatever process is employed to achieve a national consensus on repository site selection, and consistent with the decision of the Court of Appeals in *New York v. NRC*, this GEIS offers three timeframes for continued storage that reflect significant differences in the availability of the repository. The short-term timeframe assumes a repository is available 60 years after the end of a reactor's licensed life for operation. The long-term timeframe assumes a repository is not available for an additional 100 years beyond the short-term timeframe, which means a repository would be available 160 years after the end of a reactor's licensed life for operation. In recognition of the uncertainty in reaching a national consensus on repository site selection, the third timeframe assumes that a repository does not become available and the spent fuel continues to be stored indefinitely.

In the 2010 Waste Confidence decision, the Commission assessed the length of time that would be needed to site, license, construct, and open a repository. This analysis moved away from the Commission's historical practice of specifying a "target date" and instead concluded that a repository would be available "when necessary." The Commission's reluctance to select a target date was not indicative of an inability to predict the length of the process for siting, constructing, licensing, and opening a repository, but rather that identification of a specific year as a starting point was uncertain. In sum, based on experience in licensing similarly complex facilities in the United States and national and international experience with repositories already in progress, the NRC concludes a reasonable period of time for the development of a repository is approximately 25 to 35 years.

## **B.3 Technical Feasibility of Safe Storage**

Spent fuel removed from a reactor is initially placed in a spent fuel pool for cooling. After several years (about 5 years for low-burnup fuel and up to 20 years for high-burnup fuel), the spent fuel is sufficiently cooled that it can be placed in dry cask storage assuming current

accidents and thereby question the technical feasibility of continued safe storage of spent fuel in spent fuel pools for the short-term timeframe considered in the GEIS.

#### B.3.2 Technical Feasibility of Dry Cask Storage

The technical feasibility of dry cask storage is supported by years of experience and technical studies and NRC reviews that examined and confirmed the integrity of spent fuel and cladding under the controlled and benign environment within dry cask storage systems. The technical feasibility of these systems is further supported by the robustness of the structural design of the dry cask storage system against a variety of natural and human-induced challenges.

#### B.3.2.1 Low Degradation Rates of Spent Fuel in Dry Cask Storage

In the United States, spent fuel has been safely stored in dry casks for more than 25 years. In 1986, Virginia Power received a license for an at-reactor dry storage facility located at Surry Nuclear Power Plant. As of June 2014, there are operational ISFSIs at 64 sites in the United States. One operational ISFSI, at the GEH-Morris site, is a wet facility. The remaining ISFSIs are storing spent fuel in over 1,900 loaded dry casks. (see Section 2.1.2 in the GEIS for further details). As with wet storage, the overall experience with dry cask storage of similar fuel types, including the cladding, has been similar—slow degradation. In addition, spent fuel is cooled for a lengthy period in a spent fuel pool before being transferred into dry cask storage. NRC guidance regarding dry cask storage recommends a maximum cladding temperature of 400°C (752°F) and a dry, inert atmosphere to reduce the potential for significant degradation (NRC 2010c). Recent studies, including the following, have confirmed dry cask storage reliability:

- A dry cask storage characterization project (Bare et al. 2001) examined and tested a dry cask storage system, the CASTOR V/21, and found "there was no evidence of cask, shielding, or fuel rod degradation during long-term (14 years) storage that would affect cask performance or fuel integrity." The project examined zirconium-clad fuel applicable for spent fuel with a burnup of 35 GWd/MTU. A subsequent study (Einziger et al. 2003), which examined spent fuel from the Bare et al. (2001) project, suggests that the spent fuel cladding could remain a viable barrier to fission product release during extended storage up to 100 years in a dry cask environment.
- 2. The IAEA status report Understanding and Managing Ageing of Materials in Spent fuel Storage Facilities (IAEA 2006) stated "[P]ower reactor fuel with zirconium alloy cladding has been placed into dry storage in approximately a dozen countries. The technical basis for satisfactory dry storage of fuel clad with zirconium alloys includes hot cell tests on single rods, whole assembly tests, demonstrations using casks loaded with irradiated fuel assemblies and theoretical analysis."

3. The Electric Power Research Institute (EPRI 1998) evaluated the data needs for longterm storage and reported that during normal storage of low-burnup spent fuel, "the lower radiation fields and estimated temperatures of 100–125°C after 20 years favor acceptable fuel behavior for extended storage."

The NRC is aware that high-burnup and MOX fuel may be subject to increased degradation of the spent fuel and cladding that could cause further problems with handling, storing, and transporting spent fuel. With this increased usage, research has continued to improve understanding of degradation mechanisms affecting storage of spent fuel. Recent reports (e.g., NRC 2014; Hanson et al. 2012; IAEA 2011a; and Sindelar et al. 2011) have identified a variety of degradation mechanisms and discussed their potential effects on storage. For example, the mechanical integrity of the spent fuel cladding and assembly is important to ensure that handling and transportation of spent fuel can be conducted with relative ease. The mechanical designs of lower-burnup UOX and higher-burnup UOX or MOX fuel are very similar, but some of the after-irradiation properties of higher-burnup UOX and MOX are potentially significant in determining the rate of degradation or differences in performance. Differences in after-irradiation properties between lower-burnup UOX and higher-burnup UOX and MOX include higher fuel rod internal pressures and thinner cladding due to more cladding oxidation and hydride layer buildup causing higher cladding stress, higher decay heat, higher specific activity, and finer grain structure of the fuel pellet, potentially increasing the likelihood and consequences of an accident. Appendix I provides further discussion on the characteristics, storage, and transportation of high-burnup UOX and MOX spent fuel.

Although NRC regulations for dry cask storage allow for a licensing period of up to 40 years for both initial and renewed licenses, licensing periods approved for storage casks for high-burnup fuel have been limited to 20 years due to the more limited data available for high-burnup fuel. These storage times are sufficiently short and the degradation rates of spent fuel sufficiently slow that (1) significant storage, handling, and transportation issues are not expected to arise during a single license period and (2) should information collected during a license period identify any emerging issues and concerns, there would be sufficient time to develop regulatory solutions and incorporate them into future licensing periods.

Ongoing research into the extended storage of spent fuel is part of the NRC's effort to continuously evaluate and update its safety regulations. As part of this effort, the NRC is examining the technical needs and potential changes to the regulatory framework that may be needed to continue licensing of spent fuel storage facilities over periods beyond 120 years. In 2014, the NRC published *Identification and Prioritization of the Technical Information Needs Affecting Potential Regulation of Extended Storage and Transportation of Spent Nuclear Fuel* (NRC 2014). This report considered high-burnup UOX fuel and MOX fuel. Further, international efforts are evaluating degradation mechanisms affecting handling, storage, and transportation of spent fuel (e.g., IAEA 2011a). The NRC, the DOE, other regulators, and the commercial power

NUREG-2157



industry have formed the Extended Storage Collaboration Program. The goal of this program is to better understand the degradation processes that could impact the storage of spent fuel. As new information becomes available, it will be considered in the development of canister design criteria and aging management requirements for the safe storage of spent fuel. Currently, EPRI is leading a multi-year research project, the majority of which is funded by DOE, to evaluate the safe storage of spent fuel in dry storage casks. EPRI will design and demonstrate dry cask technology at full scale for evaluating the condition of "high-burnup" spent fuel during storage. As research continues, if the NRC were to identify a concern with the safe storage of spent fuel, the NRC would evaluate the issue and take whatever action or make whatever change in its regulatory program necessary to protect public health and safety.

Based on available information and operational experience, degradation of the spent fuel should be minimal over the short-term storage timeframe if conditions inside the canister are appropriately maintained (i.e., consistent with the technical specifications for storage). Thus, the NRC expects that only routine maintenance will be needed over the short-term storage timeframe. Repackaging of spent fuel may be needed if storage continues beyond the short-term storage timeframe. In the GEIS, the NRC assumes that the dry casks would need to be replaced if storage continues beyond the short-term storage timeframe. Accidents associated with repackaging spent fuel are evaluated in Section 4.18 and the environmental impacts are SMALL because the accident consequences would not exceed the NRC accident dose standard contained in 10 CFR 72.106.

Spent fuel transfer operations can present challenges to operators and, in part, because of these challenges, transfer operations are conducted in enclosed, heavily shielded buildings with filters to reduce any potential releases. Although transfer operations at a current reactor would be conducted in the spent fuel pool and the dry transfer system would involve dry transfer, spent fuel transfer operations in either facility would occur within an enclosed, shielded building. Therefore, releases to the environment from handling operations within the spent fuel pool and the dry transfer system are expected to be similar. These operations routinely maintain public and occupational doses well within existing requirements. This is done despite variations in the facilities and equipment and the characteristics of the spent fuel being transferred. While these characteristics may vary, the safety regulations do not. In addition, the NRC requires that facilities and equipment be maintained to ensure safety functions are not compromised. Further, the NRC inspects operating facilities to verify compliance with requirements. As described in Section B.3.3.3 of this appendix, after the end of the reactor's licensed life for operation, the licensee would continue to store spent fuel onsite under either its 10 CFR Part 72 general license granted to 10 CFR Part 50 or Part 52 reactor licensees or a specific 10 CFR Part 72 license. During this time, the licensee would remain under the NRC's regulatory control and NRC inspections and oversight of storage facilities would continue. The NRC monitors the performance of ISFSIs (at decommissioned and shutdown reactor sites and at operating reactor sites) by conducting periodic inspections.

September 2014

The opportunity to inspect spent fuel that has been placed into dry cask storage would occur during repackaging of the fuel. During the short-term timeframe, repackaging would occur, if needed, in the spent fuel pool, which would provide shielding and allow licensees to safely repackage the fuel. In the long-term and indefinite timeframes, repackaging would occur in the dry transfer system, which would be a shielded building. The NRC assumes replacement of dry casks after 100 years of service life; however, replacement times will depend on actual degradation observed during continued regulatory oversight for maintaining safety during continued storage. Studies and experience to date do not preclude a dry cask service life longer than 100 years. In addition, as described in Section 2.2.1.3 of the GEIS, in accordance with 10 CFR 72.42, ISFSI license renewal applications must include, among other things, (1) timelimited aging analyses that demonstrate that structures, systems, and components important to safety will continue to perform their intended safety function for the requested period of extended operation and (2) a description of the aging management program for management of issues associated with aging that could adversely affect structures, systems, and components important to safety. These requirements enhance confidence that spent fuel, including bare fuel, fuel in canisters, or damaged fuel that has been canned and stored in dry casks, could be retrieved for repackaging, if needed. Finally, regulatory experience shows that licensees have successfully dealt with damaged fuel. In the most extreme example, the damaged fuel from the core of Three Mile Island, Unit 2 (TMI-2), was removed and safely placed into storage. If this type of fuel can be successfully moved and managed, then it is reasonable to assume that damaged spent fuel in casks can be handled, if necessary. Although a commercial dry transfer system is currently not operating in the United States, construction and operation of a dry transfer system, including the handling of damaged fuel, can be accomplished with current technology (further information provided in Section 2.2.2.1 - Construction and Operation of a Dry Transfer System).

#### B.3.2.2 Robust Design of Dry Cask Storage Systems

Dry cask storage systems are passive systems (i.e., relying on natural air circulation for cooling) that are inherently robust, massive, and highly resistant to damage. To date, the NRC and licensee experience with ISFSIs and cask certification indicates that spent fuel can be safely and effectively stored using dry cask storage technology. There have not been any safety issues with dry cask storage.

In addition, the NRC's technical review supporting issuance of Materials License No. SNM–2513 for the Private Fuel Storage, LLC (PFS) facility has confirmed the technical feasibility of continuing storage at an away-from-reactor ISFSI under 10 CFR Part 72 (NRC 2006a). While issues extraneous to safety and protection of the environment have, to date,

(179 of 314)

prevented the licensee from going forward with the project,<sup>5</sup> the NRC's extensive review of safety and environmental issues associated with construction and operation of the PFS facility provides further information supporting the technical feasibility of safe spent fuel storage at an away-from-reactor ISFSI for long periods following storage at a reactor site (i.e., in a spent fuel pool or at-reactor ISFSI).

The NRC has renewed three specific ISFSI licenses for an extended 40-year period. Because at that time Part 72 only provided for a renewal period of 20 years, an exemption was granted as part of the NRC's review of the safety of renewing Part 72 license for 40 years. The NRC published a final rule on February 16, 2011, to clarify the processes for the renewal of ISFSIs operated under the general license provisions of 10 CFR Part 72, for renewal of the Certificate of Compliance for dry cask storage systems, and for extending the license and renewal terms to 40 years (76 FR 8872). In these cases, the NRC's technical review has encompassed the applicant's evaluation of aging effects on the structures, systems, and components important to safety, supplemented by the applicant's aging management program. These comprehensive reviews support the technical feasibility of safe, interim dry storage for an extended period. While these license renewal cases address storage at an ISFSI for a period of up to 80 years (i.e., up to 40-year initial license, plus 40-year renewal), studies performed to date (e.g., Einziger et al. 2003; EPRI 2002; 55 FR 38472) have not identified any issues that would call into question the technical feasibility of long-term use of dry storage for low-burnup spent fuel.

In 2007, the NRC published a pilot probabilistic risk assessment methodology (NRC 2007) that identified the dominant contributors to risk associated with a welded-canister dry-spent-fuel-storage system at a specific boiling water reactor site. The NRC study developed and assessed a comprehensive list of initiating events, including dropping the cask during handling and external events during onsite storage (e.g., earthquakes, floods, high winds, lightning strikes, accidental aircraft crashes, and pipeline explosions) and reported that the analysis indicates that the overall risk of dry cask storage was found to be extremely low. (The NRC determined that the estimated aggregate risk is an individual probability of a latent cancer fatality of  $1.8 \times 10^{-12}$  during the period encompassing the initial cask loading and first year of service and  $3.2 \times 10^{-14}$  per year during subsequent years of storage [NRC 2007]).

Several characteristics of dry cask storage contribute to the low risk determined by the NRC study. First, these systems are passive. Second, they rely on natural air circulation for cooling.

<sup>&</sup>lt;sup>5</sup> Although a license was issued, the PFSF has not yet been constructed. However, the NRC determined, based on its review of the application, that there is reasonable assurance that if the PFSF is constructed (1) the activities authorized by the license can be conducted without endangering the health and safety of the public and (2) these activities will be conducted in compliance with the applicable regulations of 10 CFR Part 72 (NRC 2006a).

Third, their inherently robust, massive concrete and steel structure is highly resistant to damage. The robustness of these dry cask storage systems has been tested by significant challenges (e.g., the August 23, 2011 Mineral, Virginia earthquake that affected the North Anna Nuclear power plant and the March 11, 2011 earthquake and subsequent tsunami that damaged the Fukushima Dai-ichi nuclear power plant). Neither event resulted in significant damage to the dry cask storage containers or the release of radionuclides (VEPCO 2011; INPO 2011).<sup>7</sup>

Thus, technical studies and practical operating experience to date confirm the physical integrity of dry cask storage structures and thereby demonstrate the technical feasibility of continued safe storage of spent fuel in dry cask storage systems for the time periods considered in the GEIS. Further, the NRC expects that only routine maintenance will be needed over the short-term storage timeframe. Repackaging of spent fuel may be needed if storage continues beyond the short-term storage timeframe. The NRC is not aware of any issue that would cause it to question the technical feasibility of continued safe storage of spent fuel in dry casks for the timeframes considered in the GEIS. Further, the NRC continued safe storage of spent fuel in dry casks for the timeframes and to monitor dry cask storage so that it can update its service life assumptions as necessary and consider any circumstances that might require repackaging of spent fuel earlier than anticipated.

#### **B.3.3** Regulatory Oversight of Wet and Dry Spent Fuel Storage

A strong regulatory framework that includes both regulatory oversight and licensee compliance is important to the continued safe storage of spent fuel. As part of its oversight, the NRC can issue orders and new or amended regulations to address emerging issues that could impact the safe storage of spent fuel. This section provides a discussion of how the NRC's regulatory program has addressed potential safety and security concerns and routine operations. The environmental impact analysis in the GEIS relies upon the current regulatory framework, which includes whatever license amendments, orders, and rulemaking becomes necessary to protect public health and safety. These ongoing improvements to the NRC's regulatory structure are reflected in the NRC's upgrade of safety, environmental, and security requirements following historic events, (e.g., the regulatory changes following the TMI-2 accident in 1979; safety and security upgrades following the September 11, 2001 terrorist attacks; and the Task Force recommendations and improvements to safety following the March 11, 2011 earthquake and subsequent tsunami that crippled the Fukushima Dai-ichi nuclear power plant). These regulatory changes demonstrate the NRC's capability for prompt and vigorous response to new developments that warrant increased regulatory attention. Thus, the vitality and evolution of the NRC's regulatory requirements support a reasonable conclusion that continued storage, even

<sup>&</sup>lt;sup>7</sup> Dry casks at the Fukushima Dai-ichi nuclear power plant are stored in a shared dry cask storage building.
# Appendix D

RESPONSE: The NRC agrees with the comment that there might be other options available in the future to meet the same objectives as having a DTS at each spent fuel storage installation. The GEIS assumed a DTS at each storage site as a conservative assumption for the purpose of evaluating potential environmental impacts of continued storage. As with all NEPA analyses, the assumptions in the GEIS in no way approve actions or constitute requirements. No changes were made to the GEIS or Rule as a result of this comment.

# (827-2-1)

**D.2.17.3** – COMMENT: Several commenters stated that there will be unspecified difficulties, costs, spills, and accidents stemming from transfers of spent fuel from spent fuel pools to dry casks, and from dry casks to other dry casks. One commenter stated that there may not be room on the existing sites to construct the necessary DTSs and ISFSIs. In addition, one commenter asserted that no generic environmental impacts assessment can be made because of site-specific variations in the condition of spent fuel pools, canisters, and casks; the existence of multiple types of dry storage systems; and the unverified performance of the reference DTS. Another commenter asserted that the GEIS discussion of effluent radiation monitoring is an admission that there will be radiological releases from the DTSs over time. One commenter expressed general skepticism about the reliability of the NRC's DTS and dry cask assumptions because the NRC's assessments of the technical capabilities of dry casks "keep expanding and improving as time progresses and the prospect of an available repository diminishes."

RESPONSE: The NRC disagrees with the comments. Because continued storage activities involving a DTS are assumed to occur in the long-term timeframe after the operating license of a power reactor expires, the DTS activities evaluated in the GEIS would occur many decades into the future (i.e., beyond 60 years past the term of the operating license). Therefore, some uncertainty exists regarding the specific methods and equipment that would be used. For the purpose of evaluating environmental impacts in the GEIS, the NRC conservatively assumed DTSs would be employed based on existing technology and regulations. This assumption is conservative because constructing, operating, and replacing DTS facilities would have greater environmental impacts than other plausible future options for addressing at-reactor transfer needs (e.g., use of overpacks that would not require bare fuel handling). In addition, industry has decades of operating experience with wet transfer of new fuel and spent fuel, which involves some spent fuel handling equipment and procedures similar to what would be used in a DTS. Based on these factors, the NRC considers the assumption regarding the future use of DTSs to be reasonable. Additional details about the design, operation, and safety of the DTS concept are provided in the supporting references in Sections 2.1.4 and 2.2.2.1 of the GEIS.

While spent fuel transfer operations can present challenges to operators (e.g., working with damaged fuel [see Section D.2.17.4 of this appendix for more information]), as described in Section 4.17.2 of the GEIS operation of a DTS would be similar to the operations conducted at current reactor sites with licensed ISFSIs where spent fuel is loaded in dry storage cask

NUREG-2157

Appendix D

systems. These operations routinely maintain public and occupational doses well within existing requirements. This is done despite variations in the facilities and equipment and the characteristics of the spent fuel being transferred. While these characteristics may vary, the safety regulations do not; therefore, the variation in equipment and fuel characteristics do not present insurmountable challenges or preclude a generic approach to analysis of impacts. In addition, the NRC requires that facilities and equipment are maintained to ensure safety functions and are not compromised. Further, the NRC inspects operating facilities to verify compliance with requirements.

The impacts from accidents, including those involving transfer operations, are evaluated in Sections 4.18, 5.18, and 6.4.17 of the GEIS. Although the consequences of an accident could be high, the impacts were found to be SMALL based on the low likelihood and, therefore, low risk (see Section D.2.35.27 of this appendix for more information). As described in Section 2.1.4 of the GEIS, a DTS would be licensed by NRC under the regulations in 10 CFR Part 72. Therefore, future licensing of site-specific DTSs would undergo thorough NRC safety and environmental reviews that would consider potential accidents and evaluate in detail how each proposed facility operator would maintain safety in transfer operations involving the specific fuel pool, transfer equipment, and type of dry storage system (including canisters and casks) for that facility.

Radiation monitoring is conducted at all NRC-licensed facilities to comply with the radiation protection program requirements in 10 CFR Part 20. Radiation monitoring verifies that licensees are maintaining control of radioactive materials and not exceeding worker and public dose limits. Any planned radioactive effluents from a DTS would be documented in detail during a site-specific licensing of a transfer facility. An applicant for an NRC license would need to demonstrate how applicable standards for worker and public safety would be met by proposed operations (see Section D.2.34.11 of this appendix for more information).

Regarding the availability of land area to accommodate the construction of a DTS or an ISFSI, as described in Section 3.1 of the GEIS, most U.S. power plants are sited on large tracts of land that have available areas where a DTS or ISFSI could be located. Table 3-1 of the GEIS provides a comparison of the small amount of land required for an ISFSI with the total site area at various power plant sites. If a power plant site with limited available land area did not have sufficient land area to construct a DTS or ISFSI then the licensee would have to pursue other options (e.g., arranging for storage at an away-from-reactor storage facility). The impacts of continued storage at an away-from-reactor storage facility were evaluated in Chapter 5 of the GEIS. No changes were made to the GEIS or Rule as a result of these comments.

(163-34-5) (328-7-4) (459-4) (553-14) (619-1-23) (805-14) (919-4-12)

**D.2.17.4** – COMMENT: Several commenters stated that NRC has not described how damaged spent fuel transfer operations can be carried out. The commenters believe significant

September 2014

(183 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-6, Page 1 of 39



#### UNITED STATES NUCLEAR REGULATORY COMMISSION REGION IV 1600 E. LAMAR BLVD ARLINGTON TX 76011-4511

August 24, 2018

Mr. Thomas J. Palmisano Vice President and Chief Nuclear Officer Southern California Edison Company San Onofre Nuclear Generating Station (SONGS) P.O. Box 128 San Clemente, CA 92674-012

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION – NRC INSPECTION REPORT 05000206/2017-003, 05000361/2017-003, 05000362/2017-003, AND 07200041/2017-001

Dear Mr. Palmisano:

This letter refers to routine U.S. Nuclear Regulatory Commission (NRC) team inspections conducted from June 2017 through June 2018. The purpose of the inspection was to observe your dry fuel storage preoperational testing activities, to independently assess your readiness to load spent fuel into the newly constructed UMAX Independent Spent Fuel Storage Installation (ISFSI), and to inspect initial fuel loading operations. The initial loading of the spent fuel into the first dry fuel storage cask of your UMAX ISFSI occurred between January 22-31, 2018. After continued in-office review of information following the loading of the first canister into the UMAX ISFSI, a final telephonic exit meeting was conducted on August 8, 2018, with Mr. Lou Bosch, Plant Manager, and other members of your staff.

The NRC inspection team examined activities conducted under your license as they relate to public health and safety, and to confirm compliance with the Commission's rules and regulations, and with the conditions of your license. The inspection reviewed compliance with the requirements specified in the Holtec HI-STORM UMAX storage system's Certificate of Compliance 72-1040, the associated Technical Specifications, the FW and UMAX Final Safety Analysis Reports, and the regulations in Title 10 of the *Code of Federal Regulations* (CFR) Parts 20, 50, and 72. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The inspection determined that you had completed all required activities identified in the Holtec Certificate of Compliance 72-1040 for use of the Holtec HI-STORM UMAX storage system at your site.

Based on the results of these inspections, the NRC has determined that one Severity Level IV violation of NRC requirements occurred. The violation was related to the design control of field changes made to important to safety equipment associated with your loading activities. Because the violation was of low safety significance and the licensee initiated a condition report with appropriate resolutions to address and correct the issue, this violation is being treated as a Noncited Violation (NCV), consistent with Section 2.3.2 of the NRC Enforcement Policy. The NCV is described in the subject inspection report.

T. Palmisano

Additionally, the NRC opened an Unresolved Item (URI) related to the methodology utilized in the licensee's 10 CFR 72.48 evaluation regarding a hypothetical transfer cask drop within the spent fuel pool during a seismic event. Additional information is needed to determine if the change could be performed through the 10 CFR 72.48 process. The URI is described in the subject inspection report.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: (1) the Regional Administrator, Region IV and (2) the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, accessible from the NRC Web site at <a href="http://www.nrc.gov/reading-rm/adams.html">http://www.nrc.gov/reading-rm/adams.html</a>. To the extent possible, your response should not include any personal, privacy, or proprietary information so that it can be made available to the public without redaction.

Should you have any questions concerning this inspection, please contact the undersigned at (817) 200-1151 or Mr. Lee Brookhart at (817) 200-1549.

Sincerely,

/RA/

Janine F. Katanic, PhD, CHP, Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety

Dockets: 50-206; 50-361; 50-362; 72-041 Licenses: DPR-12; NPF-10; NPF-15

Enclosure: Inspection Report 05000206/2017003, 05000361/2017003, 05000362/2017003, and 07200041/2017001

w/attachments: Supplemental Information

(185 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-6, Page 3 of 39

# U.S. NUCLEAR REGULATORY COMMISSION REGION IV

Dockets:	05000206; 05000361; 05000362; 07200041
Licenses:	DPR-13; NPF-10; NPF-15
Report Nos.:	05000206/2017-003; 05000361/2017-003; 05000362/2017-003; 07200041/2017-001
Licensee:	Southern California Edison Company (SCE)
Facility:	San Onofre Nuclear Generating Station, Units 1, 2, 3 and Independent Spent Fuel Storage Installation
Location:	5000 South Pacific Coast Highway, San Clemente, California
Inspection Dates:	June 26-30, 2017, Welding Dry Run Demonstration August 1-3, 2017, Fluid Operations Dry Run Demonstration September 25-28, 2017, Transporter Heavy Loads Demonstration October 9-13, 2017, Programs Review December 4-7, 2017, Fuel Building Heavy Loads Demonstration January 22-31, 2018, First Canister Loading Operation
Inspectors:	Lee Brookhart, Senior Inspector Fuel Cycle and Decommissioning Branch
	Eric Simpson, Inspector Fuel Cycle and Decommissioning Branch
	Marlone Davis, Senior Transportation and Safety Inspector Inspections and Operations Branch NMSS, Division of Spent Fuel Management
	Earl Love, Senior Transportation and Safety Inspector Inspections and Operations Branch NMSS, Division of Spent Fuel Management
Approved By:	Janine F. Katanic, PhD, CHP, Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety

# EXECUTIVE SUMMARY

## San Onofre Nuclear Generating Station, Units 1, 2, 3, and ISFSI NRC Inspection Report 05000206/2017003; 05000361/2017003; 05000362/2017003; 07200041/2017001

Between June 2017 and January 2018, the NRC conducted six separate on-site inspections related to the San Onofre Nuclear Generating Station's (SONGS) program for the safe handling and storage of spent fuel at their UMAX Independent Spent Fuel Storage Installation (ISFSI). The inspection teams observed five dry run pre-operational training demonstrations and the loading of the first spent fuel canister for the Holtec UMAX cask system. The licensee selected the Holtec Certificate of Compliance No. 72-1040, HI-STORM UMAX cask storage system to house the remaining fuel from Units 2 and 3 after the decision was made to cease power operations. The ISFSI was licensed by the NRC under the general license provisions of Title 10 *Code of Federal Regulations* (CFR) Part 72, Subpart K.

Topical areas reviewed during the inspections included overhead crane requirements, loading operations, fuel verification, radiation protection, quality assurance, nondestructive testing, training, welding, and fire protection. Between the site dry run inspections and continuing after the first loading inspection, an in-office review was performed by the NRC inspectors relating to additional documentation provided by the SONGS staff. This effort involved the review of licensee reports, procedures, calculations, training documentation, test results, personnel qualification records, safety evaluations, and condition reports. During the dry run inspections, the licensee completed the pre-operational demonstrations of equipment and the implementation of the procedures to verify all operations required by the conditions of the license and the technical specifications could be performed safely. The first cask was placed within the SONGS UMAX ISFSI on January 31, 2018.

# Preoperational Testing of an ISFSI (60854)

- Forced helium dehydration dryness limits, helium purity, and helium backfill requirements had been incorporated into the licensee's procedures. Operation of the forced helium dehydration system and backfill to the required dryness limits was demonstrated during the pre-operational dry run exercises and first loading activities. (Section 1.2.a)
- The cask loading cranes used in the spent fuel handling buildings to lift the spent fuel canisters had been previously accepted by the NRC as single failure proof cranes. The cranes were designed to retain control of and hold loads during design basis seismic events at the SONGS site. Calculations were reviewed by NRC's Division of Spent Fuel Management that demonstrated that the forces from a seismic event in the upward and horizontal directions would not exceed the strength of the crane's seismic restraints. Additional seismic evaluations were reviewed to ensure seismic stability during transfer operations. This review included the transfer cask (loaded with a canister) in the spent fuel building during decontamination and closure operations, on the low profile transporter, on the vertical cask transporter, and during transfer of the canister into the UMAX ISFSI. Based on the review of the design documents and calculations, the Division of Spent Fuel Management's staff concluded that there was reasonable

assurance that the cranes and other handling/restraining equipment were structurally adequate to withstand design basis earthquake loads during fuel loading operations. (Section 1.2.b)

- The 125-ton spent fuel building cranes were subjected to daily prior-to-use inspections that satisfied the requirements of American Society of Mechanical Engineers (ASME) B30.2, "Overhead and Gantry Cranes". On an annual basis the cranes were subjected to a more rigorous inspection that met the requirements of ASME B30.2 and the Ederer Generic Licensing Topical Report EDR-I(P) "Ederer's Nuclear Safety Related Extra Safety and Monitoring Cranes," Revision 3. (Section 1.2.c)
- The 125-ton spent fuel building cranes were properly load tested, as required by ASME B30.2, in the fall of 2017. The tests included a full performance test with 100 percent of the maximum critical load and a 125 percent static load test. The cranes' hooks were subjected to a 200 percent hook load test in 2003 by Ederer Inc. (Section 1.2.d)
- The NRC inspectors observed the licensee successfully complete all the required preoperational tests specified in the Certificate of Compliance. This included fuel assembly selection, welding, nondestructive testing, drying, helium backfilling, and the unloading of a sealed canister. A weighted canister was used to demonstrate heavy load activities inside the fuel handling building, transport between the fuel handling building and the ISFSI, and movement back into the fuel handling building for unloading purposes. (Section 1.2.e)
- The licensee's fuel loading characterization plan met the Certificate of Compliance limits for length, width, weight, irradiation cooling time, average burn-up, cladding, decay heat, and fuel enrichment. The licensee had established provisions for independent verification of the correct loading of spent fuel assemblies into the canister. (Section 1.2.f)
- The licensee had incorporated the requirements related to heavy loads for lift height limits, travel paths, and temperature restrictions during movement of the transfer cask into its procedures. The site's vertical cask transporters were load tested and maintained in accordance with NUREG-0612 criteria. (Section 1.2.g)
- The requirements for nondestructive testing of a spent fuel canister were incorporated into the licensee's procedures. The helium leak testing equipment used during the dry run demonstration and first loading was verified to meet the requirements listed in the technical specifications. The visual and liquid dye penetrant examination procedures implemented all the applicable requirements from ASME Boiler and Pressure Vessel Code Section III, Section IV, and the Final Safety Analysis Report regarding nondestructive examination of welds. (Section 1.2.h)
- The requirements for canister hydrostatic testing had been incorporated into the licensee's procedures and were consistent with the requirements of ASME Boiler and Pressure Vessel Code Section III Subsection NB, Article NB-6000. The hydrostatic testing sequence and criteria described in the Final Safety Analysis Report had been incorporated into the licensee's procedures. (Section 1.2.i)

- The licensee's special lifting device program complied with American National Standard Institute (ANSI) N14.6, "Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds or More," (1993) criteria for stress design, annual inspections, and 300 percent proof loadings for the MPC lift cleats, HI-TRAC lift lugs, HI-TRAC lift links, lift yokes, and the lift yoke extensions. (Section 1.2.j)
- The licensee had established procedures and work orders to perform the required daily monitoring surveillances required by the technical specifications, monthly vent inspections for damage, and monthly/annual/five year inspections of the ISFSI and Vertical Ventilated Module per Final Safety Analysis Report requirements. (Section 1.2.k)
- All welding procedures contained the required variables specified in ASME Boiler and Pressure Vessel Code Section IX for gas tungsten arc welding. Requirements for hydrogen monitoring during welding of the inner cask lid had been incorporated into the procedures. The welders had met the qualification testing requirements for manual and machine welding of the canister lid. (Section 1.2.I)

# Operations of an ISFSI (60855)

- The first loading inspection conducted in January 2018 included 24-hour observation of loading operations for the critical tasks associated with the licensee's first UMAX loading. Inspectors observed operations which included fuel loading, heavy lifts associated with the fuel building crane, welding and nondestructive testing of the canister lid-to-shell weld, hydrostatic pressure testing, forced helium dehydration, helium backfill, vent/drain port cover welding and nondestructive testing, helium leak testing, radiological surveying, and transport of the loaded transfer cask to the UMAX ISFSI pad. (Section 2.2.a)
- During the first loading operations, the NRC inspectors identified one violation • of 10 CFR 72.146 (c), "Design Control," requirements. The licensee had made modifications to Important to Safety components associated with the transfer cask seismic restraint system through the vendor's (Holtec) corrective action program and did not follow the SONGS Engineering Design Change Process. The licensee failed to ensure that design changes or field changes to Important to Safety components were subjected to design control measures commensurate with those applied to the original design. The original documentation for the changes did not contain a rigorous engineering analysis that demonstrated the changes were acceptable and those changes were not properly accepted for implementation through the Licensee's 10 CFR 50.59/72.48 program. This violation was determined to have a low safety significance since all the deviations or modifications from the original design were subsequently found to be acceptable and the changes did not affect the specific components' safety design function or bases. Because the licensee entered the issue into their corrective action program, the safety significance of the issue was low, the licensee restored compliance, and the issue was not found to be repetitive or willful, this Severity Level IV violation was treated as a Noncited Violation, consistent with the NRC Enforcement Policy. (Section 2.2.b)

# Review of 10 CFR 72.212(b) Evaluations (60856)

- Emergency planning provisions for the UMAX ISFSI had been incorporated into the site's emergency plan. This included adding a specific emergency action level for an event involving damage to a loaded UMAX casks. (Section 3.2.a)
- A fire and explosion hazards analysis had been performed specific to the SONGS UMAX ISFSI. Administrative controls were established to limit the quantity of combustible and flammable liquids around the ISFSI and near the transport path during movement of the canister. The licensee provided calculations demonstrating that the worst case postulated fire event during transportation would not result in a significant increase in the temperature of the spent fuel inside a loaded canister. (Section 3.2.b)
- The licensee evaluated the bounding environmental conditions specified in the Holtec Final Safety Analysis Report and Certificate of Compliance 72-1040 Technical Specifications against actual site conditions. These included: tornados/high winds, flood, seismic events, tsunamis, hurricanes, lightning, burial of the ISFSI under debris, normal and abnormal temperatures, collapse of nearby facilities, and fires/explosions. The site environmental conditions at SONGS were bounded by the Holtec storage system's design parameters. (Section 3.2.c)
- The licensee had implemented its approved reactor facility 10 CFR Part 50 quality assurance program and corrective action program for the activities associated with the UMAX ISFSI. Selected quality assurance activities were reviewed related to calibrations, audits, surveillances, and receipt inspections. (Section 3.2.d)
- The licensee had incorporated keeping radiation exposures As Low as Reasonably Achievable into planning for the cask loading program. Requirements for radiation surveys described in the Final Safety Analysis Report and technical specifications had been incorporated into the licensee's procedures for cask loading operations. Projected radiation levels at the ISFSI were calculated for an assumed individual located at the owner controlled area boundary. The analysis demonstrated the dose to this individual would meet the requirements of 10 CFR 72.104. (Section 3.2.e)
- The licensee was maintaining 10 CFR Part 72 records in their quality related records system. (Section 3.2.f)

# Review of 10 CFR 72.48 Evaluations (60857)

 Safety screenings had been performed in accordance with the licensee's procedures and 10 CFR 72.48 requirements. All screenings reviewed were determined to be adequately evaluated. One 10 CFR 72.48 evaluation identified three areas (fire hazards, tornado missiles, and transfer cask drop scenario) where implementation of the UMAX storage system at the SONGS site was identified to be different than the descriptions provided in the HI-STORM FW and UMAX Final Safety Analysis Reports. All three changes were evaluated by the licensee through the site's 10 CFR 72.48 process to demonstrate the evaluations continued to meet the system's original design basis acceptance criteria listed in the HI-STORM FW and UMAX Final Safety Analysis Reports. An Unresolved Item was opened to track the NRC's review of the methodology

#### (190 of 314)

utilized in the evaluation for the transfer cask drop within the spent fuel pool and determine if the change could be performed through the 10 CFR 72.48 process. (Section 4.2.a)

(191 of 314)

# Report Details

## Summary of Facility Status

The SONGS ISFSI consists of two ISFSI designs located adjacent to each other. The Transnuclear, (TN) Inc. Nuclear Horizontal Modular Storage (NUHOMS) ISFSI contained 51 loaded concrete advanced horizontal storage modules (AHSMs) which housed stainless steel dry shielded canisters (DSCs). Spent fuel from all three reactors were stored at the NUHOMS ISFSI in 50 of the canisters. Greater-than-Class-C (GTCC) waste from the Unit 1 reactor decommissioning project was stored in one canister. There were a total of 63 AHSMs on the NUHOMS ISFSI pad. The twelve empty AHSMs will be available for storage of additional GTCC waste. The NUHOMS ISFSI pad consisted of two adjacent pad areas designed to hold the AHSMs. The pads were both 293 feet in length. The first pad area was 43 feet 6 inches wide and held 31 canisters. The second pad area was 60 feet 6 inches wide and was designed to hold 62 AHSM in a double row, positioned back to back. The 63 AHSMs currently on the TN ISFSI pads were designed for the 24PT1-DSC (Unit 1 fuel) and 24PT4-DSC (Unit 2/3 fuel) canisters, which hold a maximum of 24 spent fuel assemblies. The 24PT1-DSCs were loaded and maintained under Amendment 0 of Certificate of Compliance (CoC) 72-1029 and the 24PT4-DSCs were loaded and maintained under Amendment 1 of the CoC 72-1029. Both systems were being maintained under Final Safety Analysis Report (FSAR) Revision 5.

The Holtec UMAX ISFSI portion was designed to hold 75 multi-purpose canisters (MPCs). The UMAX ISFSI is 231 feet long and 102 feet wide. However, its dimensions are not rectangular. The ISFSI is wider on its northern end than on its southern end. The support foundation pad was constructed below grade at the 8.5' Mean Lower Low Water (MLLW) elevation. The top of the ISFSI top pad was located at the 31.5' MLLW elevation. Approximately half of the UMAX ISFSI was located below grade while the other half had excavated common fill that sloped up to the top of the ISFSI top pad. The licensee has begun loading MPC-37s containing 37 pressurized water reactor fuel assemblies in accordance with UMAX CoC No. 72-1040 and Technical Specifications, Amendment 2, the HI-STORM UMAX FSAR, Revision 4, and the HI-STORM FW FSAR, Revision 5. The licensee plans to remove all the remaining fuel from the Units 2 and 3 spent fuel pools to the UMAX ISFSI.

# **1** Preoperational Testing of an ISFSI at Operating Plants (60854)

# 1.1 Inspection Scope

The NRC inspectors reviewed by direct observation and independent evaluation that the licensee has developed, implemented, demonstrated, and evaluated preoperational testing activities to safely load spent fuel into a dry cask storage system and transfer the loaded canister to the ISFSI. The inspections verified the licensee fulfilled all appropriate testing acceptance criteria and implemented all required changes to the appropriate plant programs and procedures to support ISFSI operations.

# 1.2 Observations and Findings

# a. Canister Drying

The licensee utilized forced helium dehydration (FHD) to achieve the dryness levels required by Technical Specification Appendix A, Table 3-1. The operation of the system

was described in procedure HPP-2464-300 "MPC Sealing at SONGS," Revision 0. The NRC inspectors verified that the licensee met the technical specifications required limits for dryness during the loading of the first canister in the January 2018 inspection. Helium meeting the Technical Specification, Appendix A, Table 3-1 requirement for a purity of 99.995 percent or greater was verified to be utilized during dry run demonstrations and first loading operations associated with MPC blowdown, drying, and backfill operations. Helium backfill pressure requirements were incorporated into licensee procedure HPP-2464-300. The NRC inspectors observed that the required backfill pressure was met during the loading of the first canister.

## b. Crane Design and Loading Operations Seismic Analysis

The licensee utilized 125-ton Ederer's Extra Safety and Monitoring (X-SAM) singlefailure-proof cranes in each of their Unit 2 and Unit 3 spent fuel buildings to transfer the MPC and transfer cask (HI-TRAC VW) out of the spent fuel pool to the cask washdown area and then onto the low-profile transporter (HI-PORT). The NRC had reviewed the safety features of the X-SAM crane and issued a Safety Evaluation Report on January 2, 1980, related to Ederer's Generic Licensing Topical Report EDR-I(P), "Ederer's Nuclear Safety Related Extra Safety and Monitoring (X-SAM) Cranes," Revision 1 and on August 26, 1983, related to Revision 3. In the 1980 letter, the NRC stated that the design features presented in the topical report for the Ederer X-SAM crane were acceptable for assuring that a single failure would not result in the loss of capability to safely retain a critical load. In the 1983 letter, the NRC Safety Evaluation Report discussed the features of the wire rope used for the X-SAM crane and noted the safety criteria for the wire rope was met and was found acceptable to the NRC.

The fuel building overhead crane used a dual rope reeving system with individual attaching points and a load balancing system to hold and transfer the critical load without excessive shock in case of failure of one of the rope systems. The X-SAM crane is equipped with an energy absorbing torque limiter (EATL) which allows the hoist to safely withstand two blocking, overloading, or load hang-up, and still retain the load even if the drive motor is de-energized. Not only are the loads controlled following a two-blocking, load hang-up, etc., but the hoist's components are also protected, throughout their life, from being overstressed by these incidents. To provide this protection, the EATL directly converts the hoists high speed kinetic energy to heat during an overloading incident. The crane also utilized a system of upper travel limit switches that were designed to shut the crane down before a two-blocking event could occur.

The hoist drum was provided with the structural and mechanical safety devices to limit its drop during a shaft or bearing failure. The devices would also prevent disengaging from the holding brake. Ederer Topical Report EDR-I (P)-A, Section III.B.1.b, stated "The emergency drum brake system provides an independent means for reliably and safely stopping and holding the load following a failure in the hoist machinery." Hoist machinery failures included shaft or bearing failures. The crane was designed to retain control of and hold loads during seismic events. The bridge and trolley were designed to remain in place on their respective runways with their wheels prevented from leaving the tracks during a seismic event.

All of the Licensee's 10 CFR Part 72 seismic evaluations, for use of the UMAX system, were reviewed by NRC Division of Spent Fuel Management (DSFM) during the

inspection period. This review included seismic loading analysis for cranes, as well as the seismic stability analysis of the transfer operations of the MPC to the ISFSI pad. The seismic stability during transfer operations included the HI-TRAC VW transfer cask (loaded with an MPC) in the spent fuel building during decontamination and closure operations, on the HI-PORT, on the vertical cask transporter (VCT), and during transfer of the MPC to the UMAX storage system ISFSI.

The rated load and seismic analysis was conducted using GT-STRUDL to analyze a three-dimensional model to create the mass and stiffness properties of the crane components using line elements and lumped masses. The response spectrum method from American Society of Mechanical Engineers (ASME) NOG-1, "Rules for Construction of Overhead and Gantry Cranes," was used in the analysis of the seismic loads. The load combinations applied to the model were consistent with those of Crane Manufacturers Association of America, Inc. (CMAA)-70 "Specification for Top Running Bridge and Gantry Type Multiple Girder Electric Overhead Traveling Cranes," (2000) which included Operational Basis Earthquake (OBE) and Design Basis Earthquake (DBE) loads as well as the 125-ton live load, which is the rated capacity of the crane. The three orthogonal components of the earthquake motion were combined using the square root sum of squares of the structural response and combined with the static load cases. A two percent critical damping was used for OBE case and a four percent critical damping was used for the DBE case. Hand calculations and the finite element software ANSYS were used to analyze the forces on the individual components to determine their acceptability. The codes, standards and regulations used for the analysis and acceptance criteria included ASME B30.2 (1996); CMAA-70; ASME NOG-1 (2000); American Society of Civil Engineers 4-86, "Seismic Analysis of Safety-Related Nuclear Structures" (1986); NUGREG-0554, "Single Failure Proof Cranes for Nuclear Power Plants," (1976); American Institute of Steel Construction (AISC) Manual of Steel Construction, 9th edition; American Welding Society (AWS) D1.1, "Structural Welding – Steel;" AWS D14.1, "Specification for Welding of Industrial and Mill Cranes and other Material Handling Equipment;" and American National Standards Institute (ANSI) N14.6, "Special Lifting Devices for Shipping Containers Weighing 10,000 Pounds or More." (1993).

As part of the analyses, members classified as non-compact according to the AISC, were checked for local buckling. Several upgrades were completed to satisfy the seismic qualification of the 125-ton crane, including a 12-wheel trolley option in lieu of the 4-wheel trolley. Other specific upgrades included: replacing bolts in connection between the girder and the truck, adding fillet welds between the lower connection plate and the bottom of the bridge truck, adding a shim plate to the inside face of the box girder top flange (the shim provided a contact surface for the X-SAM trolley uplift seismic restraints), adding longitudinal stiffeners below the top flange, and adding vertical/transverse stiffeners to limit the web panel size to 48-inches to satisfy CMAA-70 and ASME NOG-1 web buckling requirements.

Based on the review of the design documents and calculations, the DSFM staff concluded that there was reasonable assurance that the cranes were structurally adequate to withstand the earthquake loads during fuel loading operations. The HI-TRAC VW loaded with the MPC containing spent nuclear fuel was analyzed using a 1.20g zero period acceleration at the floor level of the cask wash down area. The HI-TRAC VW was prevented from tipping over by restraints at two levels that connect to the wall of the cask wash down area. The restraints consist of two slings that connect to the wall mounted attachments and wrapped around the cask in a crisscross fashion to prevent the cask from tipping over. The analysis included a concrete wall evaluation, a base plate and anchor bolt evaluation, and a transfer cask stop evaluation.

The concrete wall evaluation demonstrated that the wall had sufficient strength to withstand the added bending and shear forces caused by the seismic loads on the cask, to include impact with the wall. In addition, should the concrete cask impact the wall, the wall had sufficient thickness to prevent penetration or perforation, and sufficient strength to resist the punching shear that results from compression on the steel tubes that make up the cask stop.

The analysis of the seismic restraint anchor assembly demonstrated that the base plate, stiffener plates and associated welds, and anchor bolts had sufficient strength to withstand the seismic loads due to restraining the cask.

The transfer cask stop consisted of a steel tubes connected together with welded gusset plates. The analysis of the stop assembly determined that the steel tubes, gusset plates and associated welds were structurally adequate to resist the compressive, bending, and shear forces due to the seismic load. Additionally, the force generated from the seismic load was within the load capacity of the seismic restraints and shackle.

Based on a review of the design documents and calculations, the DSFM staff concluded that there was reasonable assurance that the seismic restraint system as well as the concrete wall to which it was attached, had adequate strength to maintain the HI-TRAC VW transfer cask, loaded with an MPC and spent nuclear fuel, stable in the cask washdown area under the DBE.

The HI-PORT, loaded with the HI-TRAC VW and MPC, during transit on the haul path at SONGS was analyzed for stability (tip-over and sliding) during a design basis seismic event. The HI-PORT was comprised of two trailers with a drop deck between them. The HI-TRAC VW bottom flange was bolted to a seismic restraining ring which was bolted to the drop deck of the HI-PORT.

Five time history sets were used to perform the stability analysis which was simulated with the computer code LS-DYNA. The mean values of peak axial and shear loads on the individual bolts were obtained from the dynamic analysis, as were the mean bending and shear loads in the trailers and drop-deck, and the mean loads at the connections between the trailers and the drop-deck. These loads were compared against the structural capacities of the respective components. All load bearing components were shown to have safety factors greater than 1.0 (structural capacity was greater than structural demand). The maximum rocking angle in the lateral direction was 0.035 degrees and the maximum sliding distance of the HI-PORT was 10.38 inches. Using a factor of safety of three, a minimum clearance of 32 inches to the outer edge of safety related structures was established and implemented in the licensee's transportation procedures. In addition, the HI-PORT was restricted to 3.1 miles per hour.

Based on a review of the design documents and calculations, the DSFM staff concluded that there was reasonable assurance that the HI-PORT, loaded with the HI-TRAC VW transportation cask, would not tip over, and that the HI-TRAC VW would remain attached to the HI-PORT during a DBE. Additionally, with the imposed transport limitations (distance and speed), the HI-PORT would not impact safety related structures while in transit during a potential DBE.

The seismic response of the VCT carrying the HI-TRAC VW was analyzed on the haul path, the transfer slab, the ISFSI ramp, the approach slab, and the ISFSI pad during the bounding DBE. The design basis response spectra and corresponding time histories at grade level were used in the stability evaluation to ensure the VCT did not tip over and remained on the respective path, transfer/approach slab, and ISFSI pad.

The ISFSI ramp was assumed to have a grade of seven percent. Based on Licensee UMAX design drawings, the maximum grade of six percent existed on the ISFSI ramp. Additionally, the VCT was assumed to tip in the lateral direction (shortest footprint dimension), which would require the VCT, loaded with a HI-TRAC VW, to travel across the path instead of up or down the path. The site specific zero period acceleration for SONGS was 0.67g horizontal and 0.45g vertical. The amplification from the HI-STORM UMAX soil structure interaction (SSI) analysis was 1.1, 1.0, and 1.08 in the E-W, N-S, and vertical directions for the top of the ISFSI pad. The zero period acceleration was amplified by 15 percent for the analysis on the ISFSI pad, approach slab, and ramp.

The center of gravity of the VCT loaded with the HI-TRAC VW was based on a maximum lift height of 11 inches on the haul path and 51 inches on the ISFSI pad. These lift height distances were controlled by the licensee's transfer operation procedures.

Upon review of the sliding analysis, it was determined that the VCT will slide under the bounding DBE. A minimum distance of 47 inches from the edge of the ISFSI ramp, approach slab, and ISFSI pad was recommended to ensure the VCT would not slide off of the structures. This limit was based on a safety factor of greater than 1.0. The licensee's transportation procedure contained the required standoff distance and a white line was painted around the edge of the ISFSI ramp, approach slab, and ISFSI pad to ensure workers would abide by the limitations from the evaluation.

Based on a review of the design documents and calculations, the DSFM staff concluded that there was reasonable assurance that the VCT, loaded with the HI-TRAC VW transfer cask, would not tip over on the transfer slab, ISFSI ramp, approach slab, or the ISFSI pad as a result of the DBE. Additionally, with the imposed transport limitations, the staff had reasonable assurance that the VCT, loaded with the HI-TRAC VW, would not slide off of the ISFSI ramp, approach slab, or the ISFSI pad as a result of the DBE.

The stack-up evolutions at the UMAX ISFSI pad consisted of the HI-TRAC VW transfer cask bolted to the Mating Device (MD), the MD bolted to the Mating Device Adapter (MDA), and the MDA bolted to the HI-STORM UMAX Cavity Enclosure Container (CEC). An evaluation was performed to determine the structural adequacy of

the HI-TRAC VW-to-MD, MD-to-MDA, and MDA-to-CEC connections as well as the ISFSI pad bearing capacity under the DBE.

A finite element model of the HI-TRAC VW, MD, and MDA on top of the ISFSI pad was built in LS-DYNA to determine the loading on the bolts, welds, and components, as well as the ISFSI pad. Hand calculations were then used to determine the structural adequacy of the connections and components in accordance with ASME Boiler and Pressure Vessel Code (BPVC), Section III, Division I, Subsection NF, and the structural adequacy of the ISFSI pad in accordance with American Concrete Institution (ACI) 318-05. A scale factor of 20 percent was applied to the at-grade DBE basis earthquake time history set in all directions to account for amplification at the top of the pad.

The peak axial and shear loads on the bolts that connected the HI-TRAC VW, MD, MDA and CEC were all less than the maximum allowable load for the bolts. The bolt interaction ratio (used to evaluate the combination of axial and shear forces on the bolts) were less than one, indicating the bolts were adequate under the combined axial and shear forces. Additionally, an analysis of the shear strength of the threads determined that the engagement lengths of the bolts were adequate for the connections.

The plate stresses in the MD were taken directly from the LS-DYNA analysis and compared with the allowable stress for that material. Components and welds that were not explicitly modeled were evaluated using bounding loads obtained from the analysis. All load bearing components and welds were determined to have safety factors greater than 1.0, meaning the calculated stress was less than the allowable stress for that material.

The tensile loads at the MD-to-MDA and MDA-to-CEC bolted connections were used to evaluate the supporting components and welds within the MDA. All bearing components and welds were determined to have safety factors greater than 1.0.

Finally, the ISFSI pad concrete bearing capacity was evaluated using the total load along each side of the MDA that was extracted from the LS-DYNA analysis. The safety factors against bearing on the ISFSI pad concrete due to the loads between the MDA and the CEC cover plate during stack-up were determined to be greater than 1.0.

Based on a review of the design documents and calculations, the DSFM staff concluded that there was reasonable assurance that the stack-up of the HI-TRAC VW, MD, and MDA on the CEC had adequate strength to sustain the DBE on the ISFSI pad. Additionally, the staff concluded that the ISFSI pad concrete strength was sufficient to withstand the DBE during stack-up operations.

# c. Crane Inspection and Operation

During the licensee's programs review, NRC inspectors reviewed SONGS crane maintenance program for the 125-ton single-failure-proof X-SAM cranes located in the Unit 2 and 3 spent fuel buildings. Frequent crane inspections were performed daily during use, on the X-SAM cranes as required by the ASME B30.2 code. The inspection criteria from the ASME B30.2 code was captured in the licensee's Procedure HPP-2464-010, "SONGS Cask Handling Crane Checkout and Operation," Revision 2. The NRC inspectors observed the licensee perform the daily inspection during dry run demonstrations and first canister loading operations.

The required annual testing of the overhead X-SAM cranes followed HPP-2464-009, "Maintenance and Inspection of Cranes," Revision 1. The latest annual inspection was completed during the recent load testing of the cranes on November 11, 2017, for Unit 2 and October 2, 2017, for Unit 3. The licensee's procedure contained all the required inspection criteria outlined in ASME B30.2 and ASME B30.10, "Hooks." Additionally, all the crane's safety devices were tested in accordance with the Ederer Topical Report, Revision 3. The safety devices tested included: overload sensing system, hydraulic load equalization system fluid level, EATL, emergency drum brake system, drive train continuity detector, and wire rope spooling monitor.

Crane operation requirements and crane operator qualification requirements from ASME B30.2 were reviewed during dry run demonstrations and the first loading operations by NRC inspectors. The NRC inspectors verified that the crane operators training and qualification program met the requirements of the ASME code. Documentation was provided that demonstrated the crane operators for the first loading operations were trained and qualified in accordance with the licensee's program. The NRC inspectors observed the operators perform the required ASME code brake test prior lifting a load that approached the rate load. This was accomplished by raising the load a short distance and applying the brakes to ensure the load would not lower unexpectedly. In accordance with the site's heavy load program and NUREG-0612, "Control of Heavy Loads and Critical Lifts," lift heights, load paths, special provisions, temperature restrictions, and rigging diagrams were placed in the appropriate procedures for the transfer operations that were occurring.

#### d. Crane Load Testing

The maximum calculated weight of the HI-TRAC VW with a MPC loaded with spent fuel and water raised out of the spent fuel pool was described in Holtec Report No. HI-2156458, "Cask Handling Weights at SONGS," Revision 3 as 246,537 pounds (123.3 tons). Both Units' 125-ton X-SAM cranes had recently completed a static load tested to 125 percent the rated capacity followed by a dynamic performance load test at 100 percent of the rated capacity. The Unit 2 crane's load testing was completed on November 20, 2017, and the Unit 3 crane's load testing was completed on October 2, 2017. The dynamic testing included movement in all directions and verifying all limiting and safety control devices. Additionally, the licensee provided documentation that demonstrated that each of the 125-ton hooks had been statically load tested to 200 percent the rated capacity in accordance with ASME B30.10 in 2003 by Ederer Inc.

#### e. Dry Run Demonstrations

The Holtec CoC 72-1040 Condition #8 required that dry run training exercises of the loading, closure, handling, unloading, and transfer of the HI-STORM UMAX Canister Storage System shall be conducted by the licensee prior to the first use of the system to load spent fuel assemblies. The dry runs shall include, but are not limited to the following: (a) Moving the MPC and the transfer cask into the spent fuel pool or cask loading pool; (b) Preparation of the HI-STORM UMAX Canister Storage System for fuel loading; (c) Selection and verification of specific fuel assemblies to ensure type

conformance; (d) Loading specific assemblies and placing assemblies into the MPC (using a dummy fuel assembly), including appropriate independent verification; (e) Remote installation of the MPC lid and removal of the MPC and transfer cask from the spent fuel pool or cask loading pool; (f) MPC welding, nondestructive examination (NDE) inspections, pressure testing, draining, moisture removal (by vacuum drying or forced helium dehydration, as applicable), and helium backfilling (A mockup may be used for this dry-run exercise); (g) Transfer of the MPC from the transfer cask to the HI-STORM UMAX Vertical Ventilated Module (VVM); and (h) HI-STORM UMAX Canister Storage System unloading, including flooding MPC cavity and removing MPC lid welds (A mockup may be used for these dry-run exercises).

On June 26-30, 2017, NRC inspectors observed SONGS perform dry run demonstrations listed in Condition #8 (f) and (h): MPC welding, NDE inspections, and removing MPC lid welds. The licensee utilized Holtec's welding vendor PCI Energy Services (PCI) to perform the welding on a mock-up canister. The welding demonstration included MPC lid to shell welding, welding of the vent and drain cover plates, welding of the plug on the cover plates, welding of the canister closure ring, and demonstration of the in-line hydrogen monitoring system. The visual NDE examinations and the liquid dye penetrant examinations were performed on all the welds. Additionally, helium leak testing of the vent and drain port covers was performed during the dry run by Leak Test Services (LTS). The licensee successfully demonstrated all required welding and the NDE examinations.

The removal of the canister lid welds was demonstrated by providing the NRC with a videotape of a welded MPC-37 lid being removed. The DSFM has accepted that if the cutting evolution had been successfully completed on the same model of MPC canister at one site, another general licensee can take credit for the demonstration, as long as the same equipment and procedures would be utilized. The demonstration to remove the welds from a MPC-37 canister was performed July 16-18, 2015, at the Holtec Manufacturing Division located in Turtle Creek, PA. Inspectors from NRC's DSFM observed the cutting dry run at the Holtec facility. The cutting activities included boring through the cover plate and the MPC vent/drain port covers. The lid cutting machine was then utilized to cut through the cover plate and the MPC lid-to-shell weld. During the cutting evolution, Holtec personnel purged the area under the lid with argon while monitoring for hydrogen as required by the FSAR. All cutting demonstrations were successful, and the MPC lid was removed from the shell. This inspection was documented in an NRC Inspection Report (ADAMS Accession No. ML15303A348). The procedures and arrangements to use the same cutting system had been adopted into the SONGS ISFSI program.

On August 1-3, 2017, NRC inspectors observed SONGS complete dry run demonstrations of Condition #8 (f) and (h). The specific operations included: pressure testing, draining, moisture removal (by forced helium dehydration), helium backfilling and the unloading portion of flooding the MPC cavity. The fluid operations demonstration included observing the licensee's implementation of their radiation protection and foreign material exclusion programs. All demonstrations were successfully performed on a mock-up canister.

On September 25-28, 2017, NRC inspectors observed SONGS complete dry run demonstrations of Condition #8 (b), (g), and (h). The specific operations included:

preparation of the UMAX for canister loading, transfer of the MPC/transfer cask from the spent fuel pool building to the UMAX ISFSI, downloading the MPC into the VVM, and unloading portions that included removing the MPC from the VVM and returning the MPC/transfer cask to the spent fuel building. The heavy loads demonstration included preparing the UMAX for the canister by installing the mating device, use of the HI-PORT and the VCT to move the canister from the spent fuel pool building to the UMAX ISFSI and back. All demonstrations were completed with a mock-up canister that was filled with concrete to simulate the weight of the MPC loaded with spent fuel. The licensee successfully completed all required movements associated with the required demonstration.

On October 9-13, 2017, during the programs review, the inspectors reviewed the licensee's fuel selection and verification procedure completing dry run demonstration Condition #8 (c). Additional information related to the fuel selection is contained in Section 1.2.f of this report. Additionally, a physical walk-through of the selection and verification process associated with the licensee's program was demonstrated during the final dry run when the licensee performed fuel loading operations of a dummy fuel assembly into several positions in the canister basket on December 4-7, 2017. The licensee successfully implemented an adequate process to select fuel and to verify the assemblies loaded.

On December 4-7, 2017, the NRC inspectors observed SONGS complete dry run demonstrations of Condition #8 (a), (c), (d), and (e). The specific operations included: moving the MPC and the transfer cask into the spent fuel pool, a walk-through of the independent verification process for fuel loading, loading a dummy fuel assembly into a number of positions in the MPC, remote installation of the MPC lid, and removal of the MPC and transfer cask from the spent fuel pool. These operations were completed in the Unit 3 spent fuel building using the licensee's 125-ton overhead cask handling crane and the Unit 3 bridge crane that moves fuel assemblies within the pool. This demonstration completed all the required dry run demonstrations from the CoC. The licensee successfully completed the above listed operations and demonstrated that the procedures, programs, and training related to the dry cask storage operations for the Holtec HI-STORM UMAX system had been successfully integrated into their site operations.

# f. Fuel Selection/Verification

Dry cask storage planning for the SONGS UMAX ISFSI included removing all fuel contents from the Unit 2 and 3 spent fuel pools (SFPs) to support decommissioning activities at the formerly operational nuclear plant. The items to be placed into the UMAX ISFSI included 2,668 spent fuel assemblies and associated hardware, Rod Storage Baskets, and other fuel associated debris from the two SFPs. The NRC inspectors reviewed Holtec Report HI-2167416, "Loading Plans for SONGS ISFSI Expansion," Revision 6. All of the SFP contents to be stored in the SONGS ISFSI met the HI-STORM UMAX CoC 72-1040, Appendix B requirements for storage of spent fuel assemblies, damaged fuel assemblies, and other associated fuel related items. The spent fuel planned for storage in the SONGS UMAX ISFSI also met the loading requirements of the proposed Holtec HI-STAR 190 transportable cask.

The licensee performed a full characterization of the spent fuel contents of their Unit 2 and 3 SFPs. The fuel assemblies selected for storage met all of the Holtec CoC 72-1040 requirements, including length, width, weight, cooling time, fuel utilization (burn-up), cladding types, decay heat, and fuel initial enrichment. The majority of the contents to be loaded into the Holtec UMAX ISFSI were intact spent fuel assemblies. There were, however, a number of a fuel assemblies that met the Holtec UMAX CoC Appendix B definition of damaged fuel assemblies. The items identified as damaged fuel or fuel debris can be stored in the UMAX ISFSI but can only be loaded into twelve peripheral locations of the MPC-37 canister in damaged fuel containers. Approximately 28 MPC-37s with damaged fuel containers will be loaded into the SONGS UMAX ISFSI.

In the event of an MPC misloading (violation of CoC 72-1040, Appendix B, Section 2.1), SONGS Procedure SO123-0-A7, "Notification and Reporting of Significant Events," Revision 44, required that SONGS notify the NRC Operations Center within 24 hours after the licensee or other entity discovers the violation.

Procedure HPP-2464-200, "MPC Loading at SONGS," Revision 0 included steps that address the requirements of Holtec CoC 72-1040, Appendix A, including meeting the proper boron concentrations for loading the intact and damaged spent fuel assemblies at SONGS. The procedure included steps for independent post loading verification of fuel assemblies by SONGS Reactor Engineering personnel by video. The post loading verification is required by the HI-STORM FW FSAR, Section 9.2.3.3. Site procedures provided provisions for controlling and tracking the stored spent fuel records in accordance with 10 CFR 72.72 and 10 CFR 72.174. In accordance with the requirements of 10 CFR Part 74, SONGS Procedure SO123-X-1.7, "Special Nuclear Material Accountability," Revision 22 controlled tracking spent fuel and special nuclear material.

# g. <u>Heavy Loads</u>

The licensee utilized two VCTs to lift the loaded HI-TRAC VW with MPC from the HI-PORT to the UMAX ISFSI pad for long term storage. The VCT was classified as an Important to Safety (ITS) component since the device provided the function of a crane to download the MPC from the HI-TRAC VW into the CEC. Each VCT was factory tested, statically to 125 percent and dynamically to 100 percent of the rated load. The VCTs were rated to 207.5 tons, in order to accommodate users that utilize the same VCT to carry a loaded HI-STORM FW overpack that weighs considerably more than a loaded HI-TRAC VW (118.5 tons). One VCT was tested on April 9, 2015, the other on April 7, 2016. All the weights utilized were verified to be slightly over the 125 percent and 100 percent weight requirements. During the dynamic load test, each VCT was traveled in all directions while testing the systems' safety devices.

The VCT's MPC downloader system was statically tested to 150 percent and dynamically to 100 percent of the rated load on the same dates as the VCT load testing described above. The MPC downloader system was rated to 128 tons. The weight of an MPC loaded with spent fuel and backfilled with helium weighed approximately 49 tons. After the testing of each downloader system, all accessible load bearing welds for the VCT that were designated as ITS, were subjected to visual and magnetic particle testing.

Technical Specification 5.2.c.2 required the VCTs to be inspected and maintained in accordance with NUREG-0612. Based on Holtec guidance, the licensee inspected the transporter in accordance with applicable sections of ASME B30.2 to meet the requirement. The daily inspection guidance was provided in HPP-2464-400, "MPC Transfer at SONGS," Attachment 8.8, "VCT Frequent Use Inspection Checklist." The annual inspection guidance was provided in HPP-2464-720, "Inspection and Maintenance for Vertical Cask Transporter," Revision 2 and was last completed on December 15, 2017 for each VCT. The inspection procedure met the applicable requirements of the ASME code.

The NRC inspectors verified that the transportation procedures associated with the VCT movements contained lift heights, load paths, special provisions, temperature restrictions, and rigging diagrams for all heavy lifts in accordance with the site's heavy load program and NUREG-0612 requirements.

# h. <u>Nondestructive Examination (NDE)</u>

The NDE program adopted by SONGS to perform NDE inspections on the MPC welds was reviewed by the NRC inspectors to ensure the program and implementing procedures met the applicable ASME codes required by the UMAX FSAR. The NDE inspections of welds were performed by PCI's personnel. The helium leak testing was performed by LTS. During the welding dry run inspection on June 26-30, 2017, NRC inspectors reviewed the qualification requirements for the Level II or Level III inspectors for each program, the procedures utilized for each type of inspection, the work process, and the qualification of materials utilized in the inspections to verify the ASME/ANSI code requirements and technical specifications of license were properly incorporated in to licensee's program.

The helium leak testing was performed in accordance with ANSI N14.5, "Leak Tests on Packages for Shipment for Radioactive Materials," Revision 1997, to the established leak tight criteria of a leakage less than  $2x10^{-7}$  atmosphere cubic centimeters per second (atm\*cc/sec) as required by CoC 72-1040 Technical Specification, Appendix A Surveillance Requirement 3.1.1.3. The leak testing was performed in accordance with Procedure MSLT-MPC-Holtec, "Helium Mass Spectrometer Leak Test Procedure for MPC," Revision 3665-00. The process utilized a helium leak rate detector with a sensitivity level well below the technical specification leak rate criteria. Additionally, a calibration standard traceable to the National Institute of Standards and Technology was utilized to calibrate the helium leak rate detector prior to use. Four LTS Level III inspectors' certificates of gualification were reviewed to verify their certifications met American Society for Nondestructive Testing Inc. (SNT-TC-1A), "Recommended Practices for Qualification and Certification of NDE testing Personnel," Revision 1992 criteria and were current for the dates of the dry run and first loading inspection. During the first loading inspection, the licensee successfully performed the leak testing of the first MPC and results were below the required helium leak rate limit.

The NDE visual testing of the MPC canister welds was performed in accordance with Procedure GQP-9.6, "Visual Examination of Welds," Revision 16. The NRC inspectors verified the procedure contained the required acceptance criteria listed in ASME BPVC, Section III, "Rules for Constructions of Nuclear Facility Components," Article NF-5360,

Revision 1995. The procedure's qualification record demonstrated that the examination process was adequate to identify the required standard reference indications.

The NDE liquid penetrant testing of the MPC canister welds was performed in accordance with Procedure GQP-9.2, "High Temperature Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding," Revision 9. The NRC inspectors verified the procedure contained the minimum elements from ASME BPVC Section V, "Nondestructive Examination," Article 6, T-621, and the acceptance criteria listed in ASME Section III, NB-5352. The procedure's qualification record was reviewed to verify the process was capable of detecting the required indications. Certified mill test reports with chemical analysis for the materials used in the high temperature liquid penetrant examinations (cleaner solvent, developer, and dye penetrant) met ASME Section V, Article 6, T-641 requirements. All cleaning, developing, and final interpretation time limits, based on the temperature of the component, were specified in the procedure and adhered to by the NDE personnel. The liquid penetrant examination was required by the procedure to be performed on the root pass weld, prior to any intermediate weld exceeding 3/8", and the final weld in accordance with CoC 72-1040 Appendix B Table 3-1 criteria. The NDE personnel complied with ASME code requirements regarding surface preparation and avoiding excess penetrant removal. Two PCI Level II inspectors certifications of qualification were reviewed to verify their training was current and in accordance with the SNT-TC-1A qualification requirements for visual and liquid dye penetrant examinations. During the first loading inspection, the licensee successfully performed the NDE examinations on first MPC with no indications identified.

# i. <u>Pressure Testing</u>

The Holtec HI-STORM UMAX FSAR states that the Holtec MPCs placed into the UMAX VVM for storage are pressure tested in accordance with Section III, Subsection NB-6000 of the ASME BPVC to meet structural requirements and to verify the confinement function of the UMAX dry fuel storage system. The UMAX FSAR established the MPC pressure testing requirements by making direct reference to the pressure testing requirements listed in the HI-STORM FW FSAR. Both HI-STORM FW and HI-STORM UMAX dry fuel storage systems utilize the MPC-37. In addition, the Holtec HI-TRAC VW water jacket was required to be hydrostatically pressure tested per the applicable ASME code after being manufactured and the test results documented.

Holtec HI-STORM FW FSAR, Section 10.1.2.2.2, "MPC Confinement Boundary," required that either a hydrostatic test to 125 percent of the design pressure or a pneumatic pressure test to 120 percent of the design pressure take place in accordance with the requirements of the 2007 ASME Code when field welding of the MPC lid-to-shell weld was completed. The design pressure of the MPC-37 canister is 100 psig.

The NRC inspectors reviewed Procedure HPP-2464-300, "MPC Sealing at SONGS," Revision 0, and found that the procedure described the hydrostatic testing of the MPC lid-to-shell weld, including holding the pressure between 125.5 to 129.5 psig for 10 minutes, and specified that the pressure be maintained. During the pressure test, the weld area was to be inspected for water leakage. After the test was completed, the canister was allowed to depressurize and a liquid dye penetrant test of the weld area was required. The steps of the procedure were aligned with the requirements of ASME code.

The NRC inspectors observed SONGS successfully perform the hydrostatic testing requirements of a mock-up MPC-37 canisters during the fluid operations dry run demonstration on August 1-3, 2017, and during the NRC inspection of loading activities for the first MPC-37 processed during the loading campaign on January 25, 2018. The hydrostatic test and the post visual and liquid penetrant examinations were performed satisfactorily on both occasions in accordance with ASME code requirements.

Procedure HPP-2464-300 controlled pressure gauge calibrations in accordance with ASME Code, Section III, Article NB-6413 to not exceed two weeks. The NRC inspectors verified that the pressure gauges used for the hydrostatic testing of the MPC had been calibrated within an acceptable date range during the first loading inspection.

# j. Special Lifting Devices and Slings

The special lifting devices utilized for the UMAX loading operations were reviewed by the NRC inspectors to verify compliance with ANSI N14.6 requirements. The list of special lifting devices included: MPC lift cleats, HI-TRAC lift lugs, HI-TRAC lift links, lift yoke, and lift yoke extension. Component purchase specifications or structural evaluations of selected devices were reviewed to verify the material used for fabrication met the six times yield strength and ten times ultimate strength in accordance with ANSI requirements. Dual path components were required to be capable of lifting three times the combined weight of the shipping container plus the weight of the intervening components of the special lifting device, without generating a combined shear stress or maximum tensile stress at any point in the device in excess of the corresponding minimum tensile yield strength of the material of construction. The devices were also required to be capable of lifting five times the weight without exceeding the ultimate tensile strength of the materials.

The required load testing documentation was provided for each special lifting device to verify the devices underwent 300 percent load testing at the manufacturer's facility. The test loads were held for ten minutes and then a visual, dimensional, and NDE inspection were conducted on the components. No NDE indications or issues were identified during the post load testing of the devices reviewed.

Annual inspection of the special lifting devices was established in the licensee's programs. Procedure HSP-355 "Annual Recertification of Special Lifting Devices," Revision 3, covered the annual inspection requirements for the MPC lift cleats, HI-TRAC lift lugs, HI-TRAC lift links, lift yoke, and the Holtec lift yoke extension. Procedure HPP-2464-030 "Testing and Inspection of Trans Nuclear Dry Fuel Storage Special Lifting Devices at SONGS," Revision 1, provided the instructions to perform the annual testing of the TN equipment. In accordance with ANSI requirements, the procedures required either a load test with a visual and dimensional test or a nondestructive test of the critical areas with a visual and dimensional test if the load test was omitted.

# k. Storage Operations

The licensee had established procedures and work orders to perform the required daily vent or air temperature monitoring surveillances required by the technical specifications, monthly vent inspections for damage, and monthly/annual/five year inspections of the ISFSI and VVMs per FSAR requirements. The daily vent or temperature monitoring inspections was implemented in licensee Procedure S023-3-2.37 "Advanced Horizontal Storage Modules/Vertical Ventilated Modules System," Revision 9 in accordance with CoC 72-1040, Appendix A, Technical Specification 3.1.2. The monthly vent inspection for damage was implemented in licensee Work Order Task Sheet 0917-77051-3 "HI-STORM UMAX ISFSI VVM Vent Screens," in accordance with UMAX FSAR Table 10.4.1 requirements. The monthly, annual, and five year inspections of UMAX ISFSI and VVMs was implemented in a number of work orders which met the requirements listed in UMAX FSAR Tables 10.4.1 and 10.4.2.

# I. <u>Welding</u>

The NRC inspectors reviewed the licensee's MPC closure procedure to ensure that the lid-to-shell weld, closure ring weld, and vent and drain cover welds met the requirements of CoC 72-1040, Appendix B, such that all applicable welds were subjected to liquid dye penetrant examination and helium leak testing, when applicable, and combustible gas monitoring was in place during the lid-to-shell welding. As required by CoC 72-1040 Condition 8.f (see Section 1.2.e, above), the licensee successfully demonstrated that their welding processes during the welding dry run demonstration on June 26-30, 2017. The NRC inspectors also verified that the CoC 72-1040, Appendix B requirements were satisfied during the processing of the first MPC-37 for SONGS' UMAX loading campaign.

During the welding dry run, the NRC inspectors verified that all of the applicable requirements of ASME BPVC Sections -II, -III, and -IX were being followed for welding materials, procedure qualification, and welding performance in the field. In specific, the NRC inspectors verified through procedure and document review that the appropriate weld qualification records were in place and that certain welding processes, such as tack welding, gas tungsten arc welding, and weld repairs, followed the appropriate guidance.

The NRC inspectors verified by records review that weld filler materials and electrodes met the minimum applicable requirements of ASME BPVC, Sections -II and -III, including delta ferrite content. The NRC inspectors also verified by procedure review and field verification that the licensee had procedures in place to direct the specification, control, and storage of purchased weld materials in accordance with 10 CFR 72.154.

The licensee had procedures in place to direct all welding activities, including weld repairs. The training and qualification records for the welders were provided for inspection. The welders performing the MPC closure operations during the dry runs and for the loading of the first MPC-37 met all of the required training and were qualified to perform all of the welds applicable to MPC-37 closure operations.

# 1.3 <u>Conclusions</u>

The FHD dryness limits, helium purity, and helium backfill requirements established in Technical Specification Appendix A Table 3-1 had been incorporated into the licensee's

procedures. The licensee planned to use the FHD system for drying all canisters loaded at the site. Operation of the FHD system and backfill to the required limits was demonstrated during the pre-operational dry run exercises and first loading activities.

The cask loading cranes used in the spent fuel handling buildings to lift the spent fuel canisters had been accepted by the NRC in 1980 as single failure proof cranes. The cranes were designed to retain control of and hold loads during a DBE at the SONGS site. Calculations were reviewed by NRC's DSFM that demonstrated that the forces from a seismic event in the upward and horizontal directions would not exceed the strength of the crane's seismic restraints. Additional seismic evaluations were reviewed to ensure seismic stability during transfer operations. This review included the transfer cask (loaded with a canister) in the spent fuel building during decontamination and closure operations, on the low profile transporter, on the vertical cask transporter, and during transfer of the MPC into the UMAX ISFSI. Based on the review of the design documents and calculations, the Division of Spent Fuel Management's staff concluded that there was reasonable assurance that the cranes and other handling/restraining equipment were structurally adequate to withstand DBE loads during fuel loading operations.

The 125-ton spent fuel building cranes were subjected to daily prior-to-use inspections that satisfied the requirements of ASME B30.2. On an annual basis the cranes were subjected to a more rigorous inspection that met the requirements of ASME B30.2 and the Ederer Generic Licensing Topical Report

The 125-ton spent fuel building cranes were properly load tested, as required by ASME B30.2, in the fall of 2017. The tests included a full performance test with 100 percent of the maximum critical load and a 125 percent static load test. The cranes' hooks were subjected to a 200 percent hook load test in 2003 by Ederer Inc.

The NRC inspectors observed the licensee successfully complete all the required preoperational tests specified by License Condition #8 of the CoC. This included fuel assembly selection, welding, nondestructive testing, drying, helium backfilling, and the unloading of a sealed canister. A weighted canister was used to demonstrate heavy load activities inside the fuel handling building, transport between the fuel handling building and the ISFSI, and movement back into the fuel handling building for unloading purposes.

The licensee's fuel loading characterization plan met the HI-STORM UMAX CoC 72-1040, Appendix B limits for length, width, weight, irradiation cooling time, average burn-up, cladding, decay heat, and fuel enrichment. The licensee had established provisions for independent verification of the correct loading of spent fuel assemblies into the canister by use of video.

The licensee had incorporated the requirements related to the ISFSI project into the site heavy loads programs and procedures. Lift height limits, travel paths, and temperature restrictions during movement of the transfer cask had been incorporated into the licensee's procedures consistent with the requirements in the FSAR. The site's VCT were load tested and maintained in accordance with NUREG-0612 criteria.

The requirements for nondestructive testing of a spent fuel canister were incorporated into the licensee's procedures. The helium leak testing equipment used during the dry run demonstration and first loading was verified to meet the requirements listed in the technical specifications. The visual and liquid dye penetrant examination procedures implemented all the applicable requirements from ASME BPVC Section III, Section IV, and the FSAR regarding nondestructive examination of welds. A review of the nondestructive testing personnel's qualifications revealed they were properly qualified as a Level III or Level II examiners.

The requirements for canister hydrostatic testing had been incorporated into the licensee's procedures and were consistent with the requirements of ASME BPVC Section III Subsection NB, Article NB-6000. The hydrostatic testing sequence and criteria described in the FSAR had been incorporated into the licensee's procedures.

The licensee's special lifting device program complied with ANSI N14.6 criteria for stress design, annual inspections, and 300 percent proof loadings for the MPC lift cleats, HI-TRAC lift lugs, HI-TRAC lift links, lift yokes, and the lift yoke extensions.

The licensee had established procedures and work orders to perform the required daily monitoring surveillances required by the technical specifications, monthly vent inspections for damage, and monthly/annual/five year inspections of the ISFSI and VVM per FSAR requirements.

All welding procedures contained the required variables specified in ASME BPVC Section IX for gas tungsten arc welding. Requirements for hydrogen monitoring during welding of the inner cask lid had been incorporated into the procedures. The welder's performance qualification test records were reviewed and documented that the welders had met the qualification testing requirements for manual and machine welding of the canister lid. Weld qualification test coupons satisfactorily passed the required tests.

# 2 Operations of an ISFSI (60855)

# 2.1 Inspection Scope

The inspection included 24-hour coverage of the loading operations for the critical tasks associated with the licensee's first UMAX loading. Inspectors from NRC Region IV observed operations which included fuel loading, heavy lifts associated with the fuel building crane, welding and nondestructive testing of the canister lid-to-shell weld, hydrostatic pressure testing, forced helium dehydration, helium backfill, vent/drain port welding and nondestructive testing, radiological surveys, and transport of the loaded HI-TRAC VW to the UMAX ISFSI pad. The inspectors reviewed selected procedures and records to verify ISFSI operations were in compliance with the Holtec CoC 72-1040 license technical specifications and Holtec FSARs.

# 2.2 Observations and Findings

# a. Loading Operations

On January 22-31, 2018, NRC inspectors were onsite to observe the first canister loading operations. Inspectors observed all fuel assemblies loaded into the canister.

The fuel assemblies were inspected for damage prior to placement in the canister by use of an underwater camera. No damage was observed on any of the fuel assemblies loaded and the assemblies were free of foreign material. The canister's contents were reviewed to verify that the licensee was loading fuel in accordance with the technical specifications for approved contents. Documents reviewed included MPC loading maps and fuel assembly specific information such as identification, decay heat, cooling time, average U-235 enrichment, burn-up values, and other information. All fuel documents reviewed documented that SONGS had met the requirements listed in Appendix B of the CoC.

Observations of heavy lifts included placement of the MPC lid, removal of the HI TRAC VW with a loaded MPC from the spent fuel pool, placement of the HI-TRAC/MPC onto the HI-PORT, and lifting of the HI-TRAC/MPC from the HI-PORT to the VCT. The smooth operation of the 125-ton single failure proof crane and VCT was due, in part, to the licensee's extensive preventative maintenance effort on the lifting equipment. Numerous crane components had been replaced or upgraded to ensure successful completion of the upcoming continuous loading campaign. All lifting operations observed were performed in accordance with the site's heavy loads program.

Welding of the canister lid-to-shell weld began on January 24, 2018. The licensee utilized a calibrated in-line hydrogen monitor throughout the welding operations to ensure hydrogen levels were well below the lower explosive limit. Following the lid-toshell welding, the required NDE (visual and dye penetrant testing) was performed to meet license requirements. No indications were identified during the NDE tests. Welding on the vent and drain port cover plates was completed after hydrostatic pressure testing, blowdown, FHD drying, and helium backfilling. The welds on the vent and drain port cover plates successfully passed all NDE examinations. After the vent/drain ports were helium leak tested, the closure ring was placed on the canister and properly welded.

The NRC inspectors observed the licensee successfully perform the hydrostatic pressure testing, blowdown, FHD drying, and helium backfill operations. The MPC was hydrostatically tested to the required pressure range, held for the required timeframe, and subsequently passed a second NDE exam. All water was then removed from the canister using the FHD and then successfully dried. The licensee met the time-to-boil time limit and had removed the water from the canister without having to initiate alternate cooling operations. The helium gas temperature exiting the freezer section of the dryer was below the required temperature and held for over 30 minutes in accordance with Technical Specification Appendix A Table 3-1, verifying the canister was adequately dried. The canister was then backfilled with helium of a purity greater than 99.995 percent, to the pressure range required in Technical Specification Appendix A Table 3-2.

Radiological coverage was provided throughout the loading campaign in accordance with the licensee's procedures. The radiation protection (RP) staff implemented adequate ALARA controls to minimize the overall collective dose during cask loading. The RP staff provided a sufficient amount of RP technician coverage during work activities, conducted detailed and comprehensive pre-job briefings on radiological conditions, effectively used portable radiation shielding, and effectively directed personnel to remain in low dosage areas when not actively working on the canister. The NRC inspectors observed the RP perform the required Technical Specification

Appendix A Section 5.3 surveys and verified the results were below the radiation and contamination limits specified.

During transportation operations to the ISFSI pad, NRC inspectors observed the licensee perform the required fire hazard walk-down of the haul path to ensure procedural requirements were met prior to transportation operations. The HI-PORT and VCT successfully transported the canister to the UMAX ISFSI without any malfunctions.

# b. Design Control

During the first canister loading inspection on Monday January 22, 2018, the NRC inspector observed that the HI-TRAC VW transfer cask's seismic restraint system had been modified from its original design in order to be installed the Unit 2 spent fuel building. A 16 inch by 2 inch section of the back support plate for the seismic restraint system had been removed to allow the base plate to be installed around the existing sling restraints associated with the overall seismic restraint system. Additionally, the lift yoke extension had been non-structurally modified to be stored in the Unit 2 Spent Fuel Building. These design changes had been performed after the last NRC dry run inspection. The NRC inspector requested from SONGS the design change packages and applicable 10 CFR 50.59/72.48 reviews that were performed to ensure the newly modified ITS equipment would still be able to perform their safety function in accordance with the system's original design basis.

The licensee determined that the modification to both ITS components were processed through Holtec's field condition report (FCR) process under FCR-2464-LOA-065 for the seismic restraint base plate modification and under FCR-2464-LOA-041 for the lift yoke extension. The FCR-2464-LOA-065 for the seismic restraint base plate stated the system would continue to perform as designed, but the document did not contain sufficient technical analysis to justify the modification. The lift yoke extension FCR-2464-LOA-041 did contain the sufficient technical analysis to support that ITS equipment would continue to adequately meet its designed safety function which was documented in Holtec response to request for technical information (RRTI) #2464-034. However, the licensee discovered that neither change had been fully processed in accordance with SONGS engineering design control process or fully accepted under the Licensee's 10 CFR 50.59/72.48 review process.

These NRC identified issues led to SONGS placing the conditions into their corrective action program (CAP) as action request (AR) 0118-14935. An apparent cause evaluation (ACE) was conducted which reviewed the extent of condition related to vendor changes made to ITS components. The ACE was completed on April 26, 2018. The ACE review documented SONGS's engineering review of 391 Holtec documents, which included 255 construction FCRs, 36 RRTIs, 10 supplier manufacturing deviation reports (SMDRs), and 90 loading FCRs. From that review, the NRC discovered four additional examples where ITS components were modified under Holtec's FCR process without fully following SONGS engineering design change process or SONGS's 10 CFR 50.59/72.48 review process. These items included accept-as-is deviations to one ITS divider shell, two deviations related to the ITS ISFSI top pad surface.

As necessary, the licensee's vendor completed additional calculations for all the components which did not contain rigorous analysis in the original FCR. All the revised calculations and justifications were reviewed by the NRC inspector and were found to contain sufficient engineering analysis to demonstrate the modified ITS components would still be capable of performing their design basis safety functions. Additionally, the design changes were subsequently accepted for implementation by SONGS in accordance with their 10 CFR 50.59/72.48 program.

Section 10 CFR 72.146 (c), "Design Control," states, in part, that the licensee shall subject design changes including field changes, to design control measures commensurate with those applied to the original design.

The licensee's Procedure SO123-XXIV-10.1 titled "Engineering Design Control Process – NECP" Attachment 8, Step 5.5.2, stated, "Design changes to the Dry Cask Storage system are required to be supported by calculations prepared in accordance with this procedure and the 72.48 program."

Contrary to the above, SONGS failed to ensure that design changes or field changes to ITS components were subjected to design control measures commensurate with those applied to the original design. Specifically, a number of field changes to ITS components were not processed in accordance with SONGS engineering design change process with rigorous engineering analysis that demonstrated the changes were acceptable and those changes were not properly accepted for implementation through the Licensee's 10 CFR 50.59/72.48 program.

Consistent with guidance in Section 2.2 of the NRC Enforcement Policy, this violation was dispositioned through the traditional enforcement process. The inspectors used the NRC Enforcement Policy to evaluate the significance of the violation. This violation was determined to have a low safety significance since all the deviations or modification from the original design were found to be acceptable and did not affect the specific components' safety design function or bases. This violation was found to be more than minor since if left uncorrected, it could have the potential to lead to a more significant safety concern. Specifically, failure to adequately control changes and modifications to ITS components could lead to a condition where the appropriate calculation and review was not performed to ensure the component would continue to meet its safety function in accordance with their design basis.

Because the licensee entered the issue into its CAP (AR 0118-14935), the safety significance of the issue was low, the licensee restored compliance, and the issue was not found to be repetitive or willful, this Severity Level IV violation was treated as a Noncited Violation (NCV), consistent with Section 2.3.2.a of the NRC Enforcement Policy (07200041/2017001-001).

# 2.3 <u>Conclusions</u>

The first loading inspection conducted in January 2018 included 24 hour coverage of the loading operations for the critical tasks associated with the licensee's UMAX loading. Inspectors from NRC Region IV observed operations which included fuel loading, heavy lifts associated with the fuel building crane, welding and nondestructive testing of the canister lid-to-shell weld, hydrostatic pressure testing, FHD drying, helium backfill,

vent/drain port cover welding and nondestructive testing, helium leak testing, radiological surveying, and transport of the loaded transfer cask to the UMAX ISFSI pad.

During the first loading operations, the NRC inspectors identified one violation of 10 CFR 72.146 (c), "Design Control" requirements. The licensee had made modifications to ITS components through the vendor's (Holtec) corrective action program and did not follow SONGS engineering design change process. The licensee failed to ensure that design changes or field changes to ITS components were subjected to design control measures commensurate with those applied to the original design. The original documentation for the changes was identified to not contain a rigorous engineering analysis that demonstrated the changes were subsequently found to be acceptable and those changes were not properly accepted for implementation through the Licensee's 10 CFR 50.59/72.48 program. This violation was determined to have a low safety significance since all the deviations or modifications from the original design were found to be acceptable and the changes did not affect the specific components' safety design function or bases. Because the licensee entered the issue into their corrective action program, the safety significance of the issue was low, the licensee restored compliance, and the issue was not found to be repetitive or willful, this Severity Level IV violation was treated as a NCV, consistent with the NRC Enforcement Policy.

# 3 Review of 10 CFR 72.212(b) Evaluations (60856)

## 3.1 Inspection Scope

The programs review inspection conducted on October 9-13, 2017, performed an in depth review of the programs, evaluations, and procedures established to demonstrate that the licensee had met the requirements listed in 10 CFR 72.212 before operation of the UMAX ISFSI.

# 3.2 Observations and Findings

# a. Emergency Planning

The NRC inspectors reviewed the licensee's Permanently Defueled Emergency Plan (PDEP) to verify and assess the following: (1) the licensee's emergency action levels (EAL) for accidents that affect the ISFSI; (2) the licensee's offsite emergency support; and (3) the licensee's training of employees and conducting periodic drills.

The licensee conducted an evaluation in accordance with 10 CFR 50.54(q) to incorporate the operation of the SONGS UMAX ISFSI into the existing SONGS PDEP. The licensee added definitions and EAL E-HU1.2, "Damage to a loaded canister CONFINEMENT BOUNDARY," to cover the Holtec spent fuel transport and storage system. The additional EAL threshold for the Holtec system is two times the HI-STORM UMAX technical specifications allowable radiation level on the surface of the VVM or the Holtec transfer cask. The revised PDEP and emergency plan implementing procedures described arrangements with offsite emergency organizations including provisions on how the licensee would conduct periodic drills and training of employees.

### b. Fire Protection

The licensee provided an analysis that demonstrated that the site-specific potential for fire and explosions was bounded by the conditions analyzed by the Holtec in accordance with license requirement CoC 72-1040 Appendix B Section 3.4.5. The fire and explosion hazards were analyzed along the haul path and at the UMAX ISFSI in Holtec Report HI-2156567 "Evaluation of Plant Hazards at SONGS," Revision 2. The explosion hazards analyzed systems and structures which included gasoline tanks, acetylene tanks, lube oil hazards, transformer oil hazards, buildings, and off-site explosions. The assumptions used for the explosion hazards in the report appeared reasonable. No credible explosion hazard was identified at SONGS that exceeded the allowable stress levels identified in the UMAX FSAR which included the overpressure needed to tip over the HI-TRAC VW during transport operations or the structural limits of the closure lids for the acceptable limits for the UMAX ISFSI or the HI-TRAC VW as long as the specified stand-off distances were met that were incorporated into licensee transportation Procedure HPP-2464-400 "MPC Transfer at SONGS," Revision 1.

The fire hazards which might affect the cask were identified and reviewed by the licensee. If a fire potential was credible, an evaluation was performed for each postulated hazard to determine if the hazard could exceed the allowable heat input to the cask. Site specific fire hazards included the trailer-mounted fire pump, fixed diesel fire pump, cold and dark standby diesel generator, miscellaneous acetylene tanks, a fuel buggy, and miscellaneous diesel tanks. The assumptions used for the fire hazards in the report appeared reasonable. No credible fire hazard was found to exceed the acceptable heat input to either the HI-TRAC VW or UMAX ISFSI as long as administrative actions included in the licensee Procedure HPP-2464-400 were followed.

During the review of the 10 CFR 72.212 report, the NRC inspectors reviewed the licensee's analyzed worst case fire during transportation operations to determine whether it was bounded by the analyzed fire in the UMAX FSAR of 50 gallons of diesel fuel from the cask transporter. This evaluation was documented in Holtec report HI-2167264 "Thermal Evaluation of HI-TRAC VW Fire." Revision 3. The HI-PORT was used to transport the HI-TRAC VW from the fuel handling building to the base area of the UMAX ISFSI. The most limiting scenario was identified to be when the HI-PORT and VCT were next to each other to allow the VCT to engage the HI-TRAC VW to continue transportation to the top of the UMAX ISFSI. Two telescoping man-lifts were also utilized during this transfer event. The combined fire hazard included both fuel tanks of the HI-PORT and VCT, hydraulic fluid from all four pieces of equipment, and the tire rubber associated with the HI-PORT. This fire loading exceeded the 50 gallons of diesel fuel described in the UMAX FSAR. The evaluation determined that the fuel temperature, MPC components, and MPC cavity pressure remained well below the limits established in the UMAX FSAR and the credible fire event did not exceed any FSAR fire accident acceptance criteria. The implementation of this change and associated evaluation was document in a SONGS 10 CFR 72.48 evaluation. Since all the predicted temperatures from the thermal analysis were below the specified temperature limits of short-term events reported in Section 4.5 of the UMAX FSAR, the safety conclusions remained unchanged. The 10 CFR 72.48 evaluation concluded the change did not require NRC approval. The inspectors determined that the 10 CFR 72.48 evaluation was performed adequately.

During the programs review inspection, NRC inspectors reviewed the licensee's Pre-Transport Haul Route Walkdown Checklist (Attachment 8.9) in Procedure HPP-2253-400 to ensure adequate controls were in place to limit combustibles along the haul path and that all fire and explosion hazards had been adequately identified in the reports. No issues were identified by the inspectors relating to the controls implemented to ensure the requirements of the licensee's fire and explosion hazards analyses were met.

# c. General License Requirements for 10 CFR 72.212

The SONGS 10 CFR 72.212 Report evaluated the terms, conditions, and specifications in Amendment 2 for the HI-STORM UMAX CoC 72-1040 and documented the conditions as set forth had been met at the SONGS site. Each section of the 10 CFR 72.212 report documented the licensee's compliance with a requirements specified in 10 CFR 72.212(a) through (e). The sections covered topics which included conditions of the license, technical specifications, pad design adequacy, direct radiation, reactor site parameters, written evaluations, physical security, document retention, records, procedures, and program effectiveness.

The NRC inspectors performed a comprehensive review of the Licensee's 10 CFR 72.212 report during the programs review inspection conducted on October 9-13, 2017, and continued the inspection throughout the inspection period with in-office review of the licensee's documentation.

Section 11.0 "Reactor Site Parameters," documented the required written evaluations to verify requirements specified in the Holtec UMAX and FW FSAR and the associated NRC safety evaluation reports were met. The NRC inspectors reviewed these evaluations which related to specific analyses for fires and explosions, tornados, floods, tsunamis and hurricanes, earthquakes, lightning, burial of the ISFSI under debris, environmental temperatures, snow, and collapse of nearby facilities.

The licensee performed a review of the reactor emergency plan, quality assurance program, training program, and radiation protection program and documented the review in Section 15.0, "Program Effectiveness," of the report. Since the TN storage system was already in use, the licensee performed the necessary changes to the programs to incorporate the use of the Holtec UMAX storage system. No issues were identified relating to the NRC's review of the topics discussed above.

# d. Quality Assurance

SONGS had a preexisting Generally Licensed 10 CFR Part 72, Subpart G Quality Assurance (QA) program in place for its TN CoC 72-1029 ISFSI. To address transitioning the site from power operations to decommissioning, SONGS developed a decommissioning quality assurance program (DQAP) to support decommissioning activities and to ensure continued oversight of the SONGS ISFSI. The DQAP was SONGS' NRC approved QA program that will be the basis for satisfying the QA requirements of the newly established Holtec HI-STORM UMAX ISFSI and the current TN ISFSI. The NRC inspectors reviewed selected QA activities related to calibrations, receipt inspections, surveillances, and audits. The Holtec HI-STORM UMAX and HI-STORM FW FSARs identified structures, systems, and components that were ITS and categorized each item into one of three levels (A, B, or C) based on safety significance. The NRC inspectors verified through a review of the SONGS Quality Component List, Rev. 11 that the licensee had incorporated the Holtec HI-STORM UMAX and HI-STORM FW safety designations into their classification scheme along with those of the TN Advanced NUHOMS<sup>®</sup> System.

The licensee also had a preexisting NRC approved CAP that included the TN Advanced NUHOMS<sup>®</sup> ISFSI. Holtec, their newest dry fuel storage vendor, also had an NRC-approved CAP. Holtec was handling all fuel loading and radiation protection duties for the pool-to-pad dry fuel storage project for the UMAX ISFSI. After the identification by the NRC of items discussed in Section 2.2.b, Design Control, the licensee made a number of additional changes to ensure that proper evaluation of Holtec condition reports would be performed by SONGS personnel.

## e. Radiation Protection

In accordance with 10 CFR 72.104, the licensee provided technical evaluations that demonstrated that the radiation dose from the TN and the UMAX ISFSIs would not exceed 25 mrem per year to the whole body or critical organ or 75 mrem per year to the thyroid of any individual located beyond the owner controlled area. The analyses reviewed by the NRC inspectors also included evaluations that demonstrated no individual would receive a dose greater than the limits specified in 10 CFR 72.106 during any design basis accident at the SONGS site. The UMAX ISFSI was assumed to be fully loaded with fuel characteristics that conservatively exceeded the fuel currently stored in the licensee's spent fuel pools. During loading operations personnel from the SONGS security force established control of public access in areas near the site seawall. The NRC inspectors reviewed site controlled area boundary dose projections in Holtec Report Nos.: HI-2177793, "On-Site and Off-Site Dose Calculations for the SONGS ISFSI," Revision 1, and HI-2156895, "Dose Versus Distance Calculations for the SONGS ISFSI for Compliance with 10 CFR 72," Revision 1. The UMAX accident scenarios were discussed in the Holtec HI-STORM UMAX FSAR.

The UMAX FSAR requires that the radiation protection concept of As Low as Reasonably Achievable (ALARA) be applied to all operations related to dry fuel storage at the SONGS ISFSI. The NRC inspectors verified that SONGS had ALARA policies in place in its radiation protection program through a review of site radiation protection policies and dry fuel loading procedures, including the SONGS Units 2 and 3 Spent Fuel Pool to Pad Project ALARA Plan, Revision 1.

The UMAX FSAR Section 10.3 requires that the shielding effectiveness of the UMAX VVM be assessed after the first MPC canister is placed into the ISFSI. The NRC inspector observed SONGS RP technicians make confirmatory neutron and gamma radiation measurements on the lid of the loaded VVM. The radiation levels present on the VVM lid were consistent with the licensee's site specific Technical Specification 5.3.3 requirements.

The licensee's RP group addressed the external gamma and neutron monitoring of personnel onsite by using electronic dosimeters. The electronic dosimeters used conservative neutron correction factors. This ensured that the real-time monitoring

would provide an over-estimate of actual neutron doses so that these exposures would be managed conservatively. Personnel dose of legal record was measured using thermo-luminescent dosimeters which contained elements sensitive to the presence of neutrons.

The CoC 72-1040 Appendix A Technical Specification 5.3, "Radiation Protection Programs," included numerous radiation measurement requirements, including the survey locations, and radiation limits. The licensee had incorporated all of the requirements of Section 5.3 in its site procedures and forms. In addition to radiation limits, the technical specification included removable contamination limits on the transfer cask and accessible portions of the MPC. The NRC inspectors verified that SONGS had incorporated those requirements into Procedure HPP-2464-031, "Pool to Pad Certificate of Compliance Radiological Surveys at SONGS," Revision 0.

## f. Records

The inspectors reviewed the licensee procedure SO123-VI-29, "Records Management," to verify that provisions were in place to maintain records for each cask.

The licensee maintained cask records in accordance with its quality "Procedure SO123-VI-29," "Records Management," such that the cask package contained the required information to meet 10 CFR Part 72 requirements for record retention. The inspectors also verified that the licensee incorporated the requirement to register with the NRC no later than 30 days after using the cask to store fuel in Section 7.8.14 of HPP-2464-400, "MPC Transfer."

#### 3.3 Conclusions

Emergency planning provisions for the UMAX ISFSI had been incorporated into the site's emergency plan. This included adding a specific EAL for an event damaging loaded UMAX casks.

A fire and explosion hazards analysis had been performed specific to the SONGS UMAX ISFSI. Administrative controls were established to limit the quantity of combustible and flammable liquids around the ISFSI and near the transport path during movement of the canister. The licensee provided calculations demonstrating that the worst case postulated fire event during transportation would not result in a significant increase in the temperature of the spent fuel inside a loaded canister.

The licensee evaluated the bounding environmental conditions specified in the Holtec FSAR and CoC 72-1040 technical specifications against actual site conditions. These included: tornados/high winds, flood, seismic events, tsunamis, hurricanes, lightning, burial of the ISFSI under debris, normal and abnormal temperatures, collapse of nearby facilities, and fires/explosions. The site environmental conditions at SONGS were bounded by the Holtec storage system's design parameters.

The licensee had implemented their approved reactor facility 10 CFR Part 50 DQAP and CAP for the activities associated with the UMAX ISFSI. Selected QA activities were reviewed related to calibrations, audits, surveillances, and receipt inspections.

The licensee had incorporated keeping radiation exposures ALARA into planning for the cask loading program. Requirements for radiation surveys described in the FSAR and technical specifications had been incorporated into the licensee's procedures for cask loading operations. Projected radiation levels at the ISFSI were calculated for an assumed individual located at the owner controlled area boundary. The analysis demonstrated the dose to this individual would meet the requirements of 10 CFR 72.104.

The licensee was maintaining the 10 CFR Part 72 records in their quality related records system. Records required for retention by 10 CFR 72.174, 10 CFR 72.212, 10 CFR 72.234, and the FSAR had been identified in the licensee's program and were required to be maintained for the life of the ISFSI.

# 4 Review of 10 CFR 72.48 Evaluations (60857)

# 4.1 Inspection Scope

The Licensee's 10 CFR 72.48 screenings and evaluations performed to incorporate the use of the UMAX ISFSI were reviewed to determine compliance with regulatory requirements.

# 4.2 Observations and Findings

# a. <u>Safety Evaluations</u>

The licensee had combined the 72.48 screening and evaluation process with the 10 CFR 50.59 process used at the site. Changes to the ISFSI and part 50 facility were processed in accordance with Procedure SO123-XV-4410 "CFR 50.59, 50.82, and 72.48 Program," Revision 21. As part of the programs review inspection, the NRC inspectors reviewed a number of 10 CFR 50.59/72.48 applicability determinations, screens, and one 10 CFR 72.48 evaluation that related to SONGS implementation of the UMAX Storage System.

The licensee completed four larger, nuclear engineering change packages (NECP) to encompass the use of the new UMAX ISFSI. A review was performed by the licensee for each NECP in accordance with 10 CFR 50.59 and 10 CFR 72.48 requirements. Construction of the UMAX ISFSI pad, approach slab, approach ramp, transfer pad, sump area berm, and ISFSI thermal monitoring system was performed under NECP 801372566. The new ISFSI security building was implemented under NECP 801372567 and 801372567. The umbrella NECP that supported implementation of the UMAX system operations for loading spent fuel into a MPC, use of HI-TRAC VW, drying and sealing, transfer of a loaded MPC, and placement at the ISFSI pad was implemented by NECP 801372564. Additionally, the NECP packages were reviewed for potential impacts against the existing TN ISFSI in accordance with 10 CFR 72.48. None of the 10 CFR 50.59/72.48 reviews identified a need for a Part 50 license amendment for the facility.

Section F of the 10 CFR 72.212 report contained a list of changes to the canister storage system licensing basis beyond UMAX FSAR Revision 4. The Holtec engineering change orders (ECO) and SMDRs were identified by the licensee as applicable to the storage system at SONGS. Additional changes to the storage system made by the

vendor would be captured in this list and processed in accordance with SONGS 10 CFR 50.59/72.48 program. Some of these changes were incorporated through the 10 CFR 50.59/72.48 under the previously reviewed NECPs conducted by the licensee. Other changes that occurred after the issuance of the NECPs were accepted by the licensee through standalone or combined screenings with exception of the FCRs previously discussed, for which corrective actions were taken.

The licensee performed one 10 CFR 72.48 evaluation for the implementation of the Licensee's 10 CFR 72.212 report. The 10 CFR 72.48 evaluation identified three areas where implementation of the UMAX storage system at the SONGS site was identified to be different than the descriptions provided in the HI-STORM FW and UMAX FSARs. The three areas related to the combined fire hazard loading (see discussion in Section 3.2.a. of this report), the site's tornado-borne missile differences, and the seismic lateral forces experienced during a DBE when a loaded HI-TRAC VW transfer cask contains a loaded canister in the spent fuel pool.

The SONGS design and licensing basis postulated tornado-borne missiles differed from the missiles addressed in the Holtec FSARs. The licensee's design basis values for rotational wind speed, translational speed, maximum wind speeds, and pressure drop were all less than the values listed in the FSARs. However, the SONGS missiles imparted slightly higher kinetic energy to the various targets for moderate and small missile scope than demonstrated in the FSARs. Since the generic tornado-borne missiles as defined by Holtec do not necessarily bound the site-specific missile parameters for several sites (including SONGS), Holtec prepared a generic report which evaluated the effect of a broader range of postulated site-specific tornado missiles based on the parameters from multiple sites. The generic Holtec Report HI-2135869, "Site-Specific Tornado Missile Analysis for the HI-STORM FW System", Revision 6, reevaluated the structural impact of the tornado driven missiles on the HI-TRAC and the potential for tip-over and penetration. The applicable tornado-borne missiles evaluated in the generic report bounded all of the SONGS design basis tornado-borne missiles and were summarized in Appendix D of HI-2156567, "Evaluation of Plant Hazards at San Onofre Nuclear Generating Station," Revision 3. The additional evaluations demonstrated that the hypothetical deformations of the UMAX closure lid and impacts to the HI-TRAC VW transfer cask did not compromise the containment boundary of the MPC, locally deform the lid or transfer cask such that the irretrievability of the MPC was threatened, or deform the equipment plastically such that the shielding effectiveness was affected. The evaluation concluded the impacted components had sufficient capacity to withstand the slightly higher loads imparted by the SONGS missiles.

During the site's 10 CFR 72.212 review, the licensee identified that when rigging equipment is being exchanged, for a short period of time, the HI-TRAC VW and loaded MPC is in an unconstrained condition on an intermediate shelf in the spent fuel pool. If a seismic event was to occur during that time frame, the HI-TRAC VW with a loaded MPC could hypothetically fall to the lower level of the spent fuel pool and experience a higher lateral force than previously analyzed by the HI-STORM FW and UMAX FSARs.

The Licensee's 10 CFR Part 50 license and Updated Final Safety Analysis Report had analyzed a potential cask drop from the intermediate shelf to the bottom of the pool as a credible accident. In the past, the licensee had utilized the TN NUHOMS storage system, which contained a lateral side drop evaluation of the TN transfer cask in the TN
FSAR that bounded the site's configuration. The Holtec HI-STORM FW and UMAX FSARs does not contain a side drop analysis for the HI-TRAC VW transfer cask. However, the HI-STORM FW FSAR does contain a tip-over analysis for an MPC inside the HI-STORM overpack storage container.

To evaluate the scenario for this hypothetical accident of the loaded HI-TRAC VW contacting the sides and bottom of the spent fuel pool, the licensee's vendor (Holtec) prepared report HI-2177713 "HI-TRAC Drop in Cask Storage Pool at SONGS", Revision 1. In the report, the licensee demonstrated acceptability of the peak impact deceleration for the HI-TRAC VW scenario at SONGS by comparing those lateral forces to the peak impact deceleration values used to support the 10 CFR Part 71 HI-STAR 190 transport package safety analyses which utilizes the same MPC canister. The licensee's evaluation concluded that the maximum peak lateral deceleration value of the HI-TRAC VW in the pool at SONGS to be 74g's, which was below the HI-STAR 190 side drop evaluation of 85.9g's. Additionally, the MPC and fuel basket evaluated stresses were identified by the licensee to be less than the design basis criteria described in the limiting values from HI-STORM FW FSAR Section 2.2.8. The licensee stated that the same computer software (LS-DYNA) was utilized in all three evaluations (SONGS site specific drop evaluation, HI-STORM FW/UMAX FSAR tip-over evaluation, and HI-STAR FSAR transportation cask drop evaluation).

To utilize this evaluation conducted for the Part 71 HI-STAR 190 transportation license to bound conditions for the storage operations under the 10 CFR Part 72 UMAX license, additional information will need to be submitted by the licensee and evaluated by the NRC to determine if the methodology and implementation of the evaluation through the 10 CFR 72.48 process was appropriate. This item will be tracked as an Unresolved Item (URI) (07200041/2018001-02) until the NRC completes its review of the additional information to determine if the issue of concern potentially constitutes a violation of 10 CFR 72.48 requirements.

## 4.3 <u>Conclusions</u>

Safety screenings had been performed in accordance with the licensee's procedures and 10 CFR 72.48 requirements. All screenings reviewed were determined to be adequately evaluated. One 10 CFR 72.48 evaluation identified three areas (fire hazards, tornado missiles, and transfer cask drop scenario) where implementation of the UMAX storage system at the SONGS site was identified to be different than the descriptions provided in the HI-STORM FW and UMAX FSARs. All three changes were evaluated by the licensee through the site's 10 CFR 72.48 process to demonstrate the evaluations continued to meet the system's original design basis acceptance criteria listed in the HI-STORM FW and UMAX FSARs. An URI was opened to track the NRC's review of the methodology utilized in the evaluation for a transfer cask drop within the spent fuel pool and determine if the change was acceptable to be performed through the Licensee's 10 CFR 72.48 process.

# 5 Exit Meeting

The inspectors reviewed the scope and findings of the inspection during a telephonic exit meeting conducted with Mr. Lou Bosch, Plant Manager, and other members of your staff on August 8, 2018.

# SUPPLEMENTAL INSPECTION INFORMATION PARTIAL LIST OF PERSONS CONTACTED

# Personnel

- A. Bates, Regulatory and Oversight Manager
- L. Bosch, Plant Manager
- G. Carter, Westinghouse Project Manager
- R. Granaas, Reactor Engineering
- L. Johnston, Holtec Cask Loading Supervisor
- J. Manso, ISFSI Sr. Project Manager
- R. McDonald, SCE QC/NDE Oversight
- M. Morgan, Regulatory and Oversight
- R. Munger, ISFSI Project Manager
- J. Smith, Holtec Site Manager
- S. Soler, Holtec Site Manager
- R. Wagley, Holtec Cask Loading Supervisor

# **INSPECTION PROCEDURES USED**

- IP 60854 Preoperational Testing of an ISFSI
- IP 60855 Operations of an ISFSI
- IP 60856 Review of 10 CFR 72.212(b) Evaluations
- IP 60857 Review of 10 CFR 72.48 Evaluations

# LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

## <u>Opened</u>

07200041/2017001-01 NCV Failure to Control Field Design Changes to ITS Components 07200041/2017001-02 URI 10 CFR 72.48 Methodology

## Discussed

None

## <u>Closed</u>

07200041/2017001-01 NCV Failure to Control Field Design Changes to ITS Components

(219 of 314)

# LIST OF ACRONYMS

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Documents Access and Management System
AHSM	Advanced Horizontal Storage Module
AISC	American Institute of Steel Construction
ALARA	As Low as Reasonably Achievable
ANSI	American National Standards Institute
AR	Action Request
ASME	American Society of Mechanical Engineers
AWS	American Welding Society
BPVC	Boiler and Pressure Vessel Code
CAP	Corrective Action Program
ĀR	Action Request
CEC	Cavity Enclosure Container
CFR	Code of Federal Regulations
СМАА	Crane Manufacturers Association of America Inc
CoC	Certificate of Compliance
DBF	Design Basis Farthquake
DNMS	Division of Nuclear Material Safety
DSC	Dry Shielded Canister
DSFM	Division of Spent Fuel Management
DQAP	Decommissioning Quality Assurance Program
FAI	Emergency Action Level
FATI	Energy Absorbing Torque Limiter
FCO	Engineering Change Order
FCDB	Fuel Cycle and Decommissioning Branch
FCR	Field Condition Report
FHD	Forced Helium Dehydration
FSAR	Final Safety Analysis Report
FW	Flood and Wind
GTCC	Greater than Class C
HI-PORT	low profile transporter
HI-STORM	Holtec International Storage Module
HI-TRAC VW	transfer cask
IP	Inspection Procedure
 ISFSI	Independent Spent Fuel Storage Installation
ITS	Important to Safety
ITS	Leak Test Services
MD	Mating Device
MDA	Mating Device Adapter
MLIW	Mean Lower Low Water
MPC	multi-purpose canister
mrem	milliRoentgen equivalent man
NCV	Noncited Violation
NECP	Nuclear Engineering Change Package
NDE	Nondestructive Examination
NRC	U.S. Nuclear Regulatory Commission
NUHOMS	Nuclear Horizontal Modular Storage
OBE	Operational Basis Earthquake
PCI	PCI Energy Services

(220 of 314)

Permanently Defueled Emergency Plan
Quality Assurance
Radiation Protection
Holtec Response to Request for Technical Information
Southern California Edison
spent fuel pool
Supplier Manufacturing Deviation Report
San Onofre Nuclear Generating Station
Soil Structure Interaction
Transnuclear, Inc.
Technical Specification
Underground Maximum Capacity
Unresolved Item
Vertical Cask Transporter
Vertical Ventilated Module
Extra Safety and Monitoring

IR 05000206/2017-003, 05000361/2017-003, 05000362/2017-003, AND 07200041/2017-001; SONGS ISFSI – DATED AUGUST 24, 2018

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SUNSI Review ADAMS		Publicly Available		Non-Sensitive		
By: LEB	🗷 Yes 🗆 No 🛛		Non-Publicly Available		□ Sensitive	
OFFICE	RIV/DNMS/FCDB	RIV/DNMS/FCDB	V/DNMS/FCDB NMSS/DFSM/IOB I		NMSS/DFSM/IOB	RIV/DNMS/FCDB/BC
NAME	LBrookhart	ESimpson	MDavis		ELove	JKatanic
SIGN	/RA/	/RA/	via email		via email	/RA/
DATE	8/23/18	8/23/18	7/25	/18	7/25/18	8/24/18

## ADAMS ACCESSION NUMBER: ML18200A400

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(222 of 314)



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

February 26, 2020

Mr. Charles G. La Bella Barnes & Thornburg LLP 655 West Broadway, Suite 900 San Diego, California 92101

SUBJECT: PETITION REQUESTING ENFORCEMENT ACTION UNDER SECTION 2.206 OF TITLE 10 OF THE CODE OF FEDERAL REGULATIONS AGAINST SOUTHERN CALIFORNIA EDISON RELATED TO DECOMMISSIONING OEPRATIONS AT THE SAN ONOFRE NUCLEAR GENERATING STATION UNITS 2 AND 3

# Dear Mr. La Bella:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to the petition submitted pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 2.206, "Requests for action under this subpart," dated September 24, 2019 (Agencywide Documents Access and Management System [ADAMS] Accession Nos. ML19309D323 and ML19311C699), as supplemented on January 21, 2020 (ADAMS Accession No. ML20023A182). The NRC's Executive Director for Operations referred your petition to the Office of Nuclear Material Safety and Safeguards (NMSS) for appropriate review or action.

# Petition

In the petition, you requested that the NRC immediately suspend all decommissioning operations at the San Onofre Nuclear Generating Station (SONGS) and require Southern California Edison (SCE or the licensee) to submit an amended decommissioning plan to account for spent nuclear fuel being placed in storage at SONGS. As the basis for the request you stated: burial of spent nuclear fuel at SONGS poses an immediate threat to public safety (for example, integrity of fuel canisters); the licensee's estimated cost of decommissioning SONGS is based on unreasonable and fundamentally flawed assumptions; and the NRC has not considered the environmental and safety effects of sea level rise caused by climate change and has not addressed the environmental impacts of decommissioning on environmental justice, threatened and endangered species, offsite land use, offsite aquatic and terrestrial ecology, and certain cultural and historic resources.

# Staff Action

On October 25, 2019, the NRC provided a response to Public Watchdogs by e-mail (ADAMS Accession No. ML19326A969) stating that the NRC staff concluded, in accordance with Section II.B.1 of Management Directive (MD) 8.11 "Review Process for 10 CFR 2.206 Petitions" (ADAMS Accession No. ML18296A043), that the request does not warrant immediate action. The NRC staff has determined that the decommissioning activities at SONGS do not constitute an immediate threat to public health and safety.

On December 18, 2019, the NRC informed you via e-mail (ADAMS Accession No. ML19353A048) that the petition review board (PRB) concluded that the petition did not meet the criteria for consideration under 10 CFR 2.206 because it appears that all of the issues raised in the petition have previously been the subject of NRC staff review, and do not raise concerns that the NRC staff has not previously considered and resolved. On January 21, 2020, the PRB conducted a public teleconference with Public Watchdogs at your request, to discuss the PRB's initial assessment and any supplemental information for the PRB's consideration. The transcript for the January 21<sup>st</sup> public meeting can be found at ADAMS Accession No. ML20028E467. The PRB considered the information presented during the January 21, 2020, discussion, as well as the original petition and the supplemental information submitted in reaching its final determination, as discussed below.

## NRC Staff Response to Specific Concerns

<u>Protection of Public Health and Safety</u>. The NRC has continued to carefully regulate the licensee's decommissioning activities at SONGS, which include its review of the fuel storage facility design, inspections encompassing the physical facility as well as the licensee's operational performance, and appropriate enforcement actions. More specifically, the NRC performed a thorough review of the UMAX Independent Spent Fuel Storage Installation (ISFSI) design used at SONGS, a design the NRC approved in 2017 through a public rulemaking (ADAMS Accession No. ML16341B061). In addition, NRC staff continually performs oversight to ensure that the storage of spent nuclear fuel at SONGS does not pose a threat to public health and safety. NRC inspections of decommissioning activities at SONGS, including inspections related to the ISFSI, are documented in inspection reports that are publicly available. See for example ADAMS Accession Nos. ML18200A400 and ML19316A762.

The NRC staff has also considered the events described in the petition regarding the licensee's fuel loading operations and potential scratching of the fuel canisters. See ADAMS Accession No. ML19190A217. The NRC's regulatory review and oversight actions included a detailed assessment of the significance of the events, specific enforcement actions, and subsequent consideration of the licensee's corrective actions. Specifically, regarding integrity of the fuel canisters, NRC inspectors concluded that localized scratches (peak stresses) on the canisters are not a safety concern (using the ASME Code Section III, Subsection NB stress intensity limits as reference). NRC inspectors also concluded that canister evaluations performed by SCE using visual scratch assessments and statistical evaluations acceptable. These evaluations were adequate to demonstrate that canister scratches from incidental contact for previous and future canisters, will continue to meet the confinement design functions as specified in the UMAX Final Safety Analysis Report and ASME Code Section III canister wall thickness tolerances.

As a result, the NRC remains confident that reasonable assurance of adequate protection of the public health and safety can be maintained for as long as fuel is stored in accordance with the requirements of the SONGS license, the certificate of compliance for the UMAX system (and any other licensed systems that may be implemented in the future at the SONGS site), and other applicable requirements.

<u>Decommissioning Cost Estimate</u>. Regarding your concern about the estimated cost of completing decommissioning at SONGS, the NRC staff concluded in its review of the SONGS Decommissioning Cost Estimate (DCE) (ADAMS Accession No. ML15204A383) that the site-specific DCE and the cost of long-term storage of spent fuel for SONGS, Units 2 and 3, are reasonable and provide a sufficient level of detail on the funding mechanisms to meet the

requirements of 10 CFR 50.82(a)(4)(i). In addition, the NRC staff reviewed the 2019 Decommissioning Funding Status (DFS) report for SONGS and determined that the licensee complies with the decommissioning funding assurance requirements of 10 CFR 50.75 and 10 CFR 50.82, as applicable, for the 2019 DFS reporting cycle (ADAMS Accession No. ML19346E375). The SONGS DFS reports are submitted and reviewed annually by the NRC staff to ensure continued compliance with the decommissioning financial assurance requirements. Finally, the NRC safety evaluation for the SONGS Irradiated Fuel Management Plan (IFMP) (ADAMS Accession No. ML15182A256) states that "the NRC staff finds the SONGS IFMP estimates to be reasonable, based on a cost comparison with similar decommissioning reactors...."

<u>Environmental Impacts</u>. Regarding your concern about the environmental impacts of the decommissioning activities, the NRC staff concluded in its review of the SONGS Post Shutdown Decommissioning Activities Report (ADAMS Accession No. ML15204A383) that these activities are bounded by the previously issued NUREG-0586, "Final Generic Environmental Impact Statement [GEIS] on Decommissioning of Nuclear Facilities," and its supplements, and did not find any deviations from the previously issued Environmental Statement for SONGS (ADAMS Accession No. ML18239A414). Therefore, the NRC is confident that the environment can be adequately protected, and all impacts bounded, during decommissioning activities at SONGS.

<u>Retrievability of Spent Fuel</u>. On January 21, 2020, you raised concerns regarding spent nuclear fuel currently stored at SONGS being non-retrievable, in violation of10 CFR 72.122(I), and with potential impacts from flooding. Specifically, you stated that "although the Holtec Final Safety Analysis Report and Certificates of Compliance clearly contemplate a potential flooding event and state that a site-specific analysis will be submitted by Licensees, Public Watchdogs is not aware that any such analysis has been performed or submitted."

Interim Staff Guidance No. 2, Revision 2, "Fuel Retrievability in Spent Fuel Storage Applications" (ADAMS Accession No. ML16117A080), defines ready retrieval as "the ability to safely remove the spent fuel from storage for further processing or disposal." A licensee can demonstrate the ability for ready retrieval by demonstrating that it can remove a canister loaded with spent fuel assemblies from a storage cask/overpack. As discussed in NRC Supplemental Inspection Report 2018-002 for SONGS (ADAMS Accession No. ML19190A217), the NRC inspection team observed the licensee implementing all the corrective action enhancements to download and retrieve a simulated canister at the SONGS ISFSI pad, during exercises conducted between January 28-30, 2019. SCE was fully successful in downloading and retrieving the canister during the exercises, and the corrective actions taken were determined by the NRC inspectors to be adequate.

<u>Flood Analysis</u>. Regarding your concerns with flooding at the SONGS ISFSI, SCE's flood analyses determined that the UMAX maximum design flood parameters envelope the SONGS site flooding parameters. The NRC staff verified this flood evaluation in the SONGS 10 CFR 72.212 report to qualify the use of the UMAX system at SONGS, and the NRC documented this in an inspection report (ADAMS Accession No. ML18200A400). The NRC did not identify any issues as a result of its review of the flood evaluation for SONGS.

Having considered the results of recent inspections, the NRC's evaluation of past SONGS DFS reports, the applicable environmental documents, and the supplemental information provided, the PRB's final determination is that your petition does not meet the acceptance criteria in

MD 8.11, Section III.C.1(b), because the issues raised in the petition have been "the subject of a facility-specific or generic NRC staff review," and none of the circumstances in Section III.C.1(b)(ii) applies. The NMSS Office Director was briefed on and supported this conclusion.

Thank you for bringing these issues to the attention of the NRC.

Sincerely,

Kevin Williams Date: 2020.02.26 15:38:11 -05'00'

Kevin Williams, Deputy Director Division of Materials Safety, Security, State, and Tribal Programs Office of Nuclear Material Safety and Safeguards

Docket No(s). 50-361 and 50-362

cc: <u>charles.labella@btlaw.com</u> <u>eric.beste@btlaw.com</u> <u>zachary.heller@btlaw.com</u> <u>randy.gordon@btlaw.com</u> <u>lwohlford@btlaw.com</u>

> Public Watchdogs 7867 Convoy Cr #302 San Diego, CA 92111

Listserv

SUBJECT: PETITION REQUESTING ENFORCEMENT ACTION UNDER SECTION 2.206 OF TITLE 10 OF THE CODE OF FEDERAL REGULATIONS AGAINST SOUTHERN CALIFORNIA EDISON RELATED TO DECOMMISSIONING OEPRATIONS AT THE SAN ONOFRE NUCLEAR GENERATING STATION UNITS 2 AND 3 DATE: February 26, 2020

**DISTRIBUTION**: OEDO-19-00454 PUBLIC RidsEdoMailCenter Resource RidsOgcMailCenter Resource RidsOpaMail Resource RidsOcaMail Resource RidsRgnIVMailCenter Resource AAverbach, OGC RChang, NMSS

OFFICE	NMSS/DUWP	NRR	NMSS/DUWP	NMSS/DFM					
NAME	ZCruz Perez	PBuckberg	MDoell	JWoodfield					
DATE	2/7/2020	2/10/2020	2/7/2020	2/10/2020					
OFFICE	R-IV	NMSS/DFM	NMSS/MSST	DUWP					
NAME	SAnderson	LHamdam	SHoliday	BWatson					
DATE	2/11/2020	2/7/2020	2/7/2020	2/11/2020					
OFFICE	OGC	NMSS	NMSS/MSST						
NAME	RCarpenter	JLubinski	KWilliams						
DATE	2/11/2020	2/26/2020	2/26/2020						

# ADAMS Accession No.: ML20038A336

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(227 of 314)



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

August 19, 2015

Mr. Thomas J. Palmisano Vice President and Chief Nuclear Officer Southern California Edison Company San Onofre Nuclear Generating Station P.O. Box 128 San Clemente, CA 92674-0128

SUBJECT: SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3 – REVIEW AND APPROVAL OF THE IRRADIATED FUEL MANAGEMENT PLAN (TAC NOS. MF4894 AND MF4895)

Dear Mr. Palmisano:

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.54(bb), licensees of nuclear power plants within 2 years following permanent cessation of operation must submit to the U.S. Nuclear Regulatory Commission (NRC), for review and preliminary approval, the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor, until title and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository. In addition, pursuant to Section 50.82(a)(4)(i), the licensee must submit a post-shutdown decommissioning activities report (PSDAR). A site-specific decommissioning cost estimate (DCE), containing the projected cost of managing irradiated fuel, is part of the PSDAR. On June 12, 2013, SCE informed the NRC that it had permanently ceased operations of SONGS Units 2 and 3 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML131640201).

By letter dated September 23, 2014 (ADAMS Accession No. ML14269A032), Southern California Edison Company (SCE, the licensee) submitted the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, Irradiated Fuel Management Plan (IFMP) to the NRC. SCE concurrently submitted the PSDAR and the site-specific DCE under separate cover letters (ADAMS Accession Nos. ML14269A033 and ML14269A034, respectively). As approved by exemption dated September 5, 2014, (ADAMS Accession No. ML14101A132), SCE uses the nuclear decommissioning trust fund (DTF) for license termination, irradiated fuel management and site restoration expenditures. While costs associated with all of these activities are discussed in the IFMP, the enclosed review focuses on irradiated fuel management. The NRC staff is conducting a separate review of the PSDAR and site-specific DCE.

Based on its review of SCE's submittal, the NRC staff finds that the licensee's program to manage and provide funding for the management of all irradiated fuel is adequate and provides sufficient detail regarding the associated funding mechanisms. Further, the staff has determined that the elected actions within the program are consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that these actions will be implemented in a timely basis. Therefore, the staff concludes that the SONGS, Units 2 and 3, IFMP complies with 10 CFR 50.54(bb) and approves the plan on a preliminary basis. The NRC staff's review of the SONGS IFMP is enclosed.

-2-

T. Palmisano

The NRC staff recognizes that the IFMP analysis is based on a reported DTF balance that may fluctuate over time. Should a material decline in the DTF balance occur, the staff's analysis and findings may be impacted. However, in accordance with 10 CFR 50.82(a)(8)(vii), the licensee must annually submit to the NRC, by March 31, a report on the status of its funding for managing irradiated fuel. Further, in accordance with 10 CFR 50.54(bb), the licensee shall notify the NRC of any significant changes to the IFMP. Accordingly, the regulations provide a means of informing the NRC staff of fluctuations in the reported DTF balance and significant changes to the IFMP.

If you have any questions, please contact me at 301-415-4037 or Thomas.Wengert@nrc.gov.

Sincerely,

Thomas Preyr

Thomas J. Wengert, Senior Project Manager Plant Licensing IV-2 and Decommissioning Transition Branch Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosure: Safety Evaluation

cc w/enclosure: Distribution via Listserv

(229 of 314)



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

# SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

# IRRADIATED FUEL MANAGEMENT PLAN

# SOUTHERN CALIFORNIA EDISON COMPANY

# SAN ONOFRE NUCLEAR GENERATING STATION, UNITS 2 AND 3

# DOCKET NUMBERS 50-361 AND 50-362

# 1.0 INTRODUCTION AND BACKGROUND

By letter dated September 23, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14269A032), Southern California Edison Company (SCE, the licensee) submitted the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, Irradiated Fuel Management Plan (IFMP) to the U.S. Nuclear Regulatory Commission (NRC). SCE concurrently submitted the Post-Shutdown Decommissioning Activities Report (PSDAR) and the Site Specific Decommissioning Cost Estimate (DCE) by separate letters (ADAMS Accession Nos. ML14269A033 and ML14269A034, respectively), which are currently under staff review.

# 2.0 BACKGROUND

As described in the SONGS PSDAR, the SONGS site is located on the coast of Southern California in San Diego County, and is approximately 62 miles southeast of Los Angeles and 51 miles northwest of San Diego. The property on which the units were built is subject to an easement from the United States Navy. The site is located entirely within the boundaries of the United States Marine Corps Base Camp Pendleton. The property is approximately 4,500 feet long and 800 feet wide, and encompasses 84 acres. The property is situated between the coast of the Pacific Ocean and Interstate 5 (I-5), but does not include the office buildings and facilities located east of I-5. The nearest privately owned land is approximately 2.5 miles away.

SONGS is a two-unit pressurized-water reactor site that houses supporting facilities. The reactors were previously licensed to produce 3,438 megawatt thermal each. A third unit (SONGS, Unit 1) existed until its closure in 1992. An onsite Independent Spent Fuel Storage Installation (ISFSI), used to store fuel from Units 1, 2, and 3 is located on the portion of the site previously occupied by Unit 1. Fuel storage at the ISFSI was initiated in 2003, and the pad was expanded in 2007 to support 63 horizontal storage modules. To date, a total of 51 dry storage containers (DSCs) have been installed, with 50 containers storing irradiated fuel and one containing greater-than-Class-C (GTCC) waste.

SONGS, Units 2 and 3, have been owned by four entities. SCE is authorized to act as the agent for the other owners. The percent ownership of both reactors is as follows: SCE owns 78.21 percent; San Diego Gas & Electric Company owns 20 percent; and Riverside owns 1.79 percent, with Anaheim providing decommissioning funding, despite not currently owning any percentage of the facilities. The relative obligation for decommissioning varies by unit and entity as follows:

Cost Cotogorios	Owners					
Cost Categories	SDG&E	Riverside	Anaheim	SCE		
SONGS 1	20%	0%	0%	80%		
SONGS 2	20%	1.79%	2.4737%	75.7363%		
SONGS 3	20%	1.79%	2.4625%	75.7475%		
Common Facilities (Units 2 & 3)	20%	1.79%	2.4681%	75.7419%		
SONGS 1 Fuel	20%	0%	0%	80%		
SONGS 2/3 Fuel	20%	1.79%	2.3398%	75.8702%		
ISFSI Maintenance and D&D	20%	1.6066%	2.2686%	76.1248%		
San Diego Switchyard	100%	0%	0%	0%		
Edison Switchyard	0%	0%	0%	100%		
Interconnection Facilities	50%	0%	0%	50%		
Nuclear Fuel Cancellation Charges	20%	1.79%	0%	78.21%		

By letter dated June 12, 2013, SCE notified the NRC of its permanent cessation of operations of Units 2 and 3, effective on June 7, 2013 (ADAMS Accession No. ML131640201). SCE subsequently submitted two letters to the NRC, dated July 22, 2013 (ADAMS Accession No. ML13204A304), and June 28, 2013 (ADAMS Accession No. ML13183A391), certifying the permanent removal of fuel from the reactor vessels of Units 2 and 3, respectively.

The NRC staff notes that as approved by exemption dated September 5, 2014, (ADAMS Accession No. ML14101A132), SCE uses the nuclear decommissioning trust fund (DTF) for license termination, irradiated fuel management and site restoration expenditures. While costs associated with all of these activities are discussed in the IFMP, this review focuses specifically on the costs associated with the management of irradiated fuel. A separate review of the PSDAR and site-specific DCE is currently being performed by the NRC staff.

# 3.0 REGULATORY EVALUATION

# 3.1 Regulatory Requirements

Title 10 of the Code of Federal Regulations (10 CFR) Section 50.54(bb) states, in part:

For nuclear power reactors licensed by the NRC, the licensee shall, within 2 years following permanent cessation of operation ... submit written notification to the Commission for its review and preliminary approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor following permanent cessation of the operation

of the reactor until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository.

## Section 50.54(bb) of 10 CFR further states:

The licensee must demonstrate to NRC that the elected actions will be consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that the actions will be implemented on a timely basis. Where implementation of such actions requires NRC authorizations, the licensee shall verify in the notification that submittals for such actions have been or will be made to NRC and shall identify them. A copy of the notification shall be retained by the licensee as a record until expiration of the reactor operating license. The licensee shall notify the NRC of any significant changes in the proposed waste management program as described in the initial notification.

In addition, 10 CFR 50.82(a)(4)(i) states, in part, that the site-specific DCE that is submitted as part of the PSDAR includes the projected costs of managing irradiated fuel.

## 3.2 Information Submitted in Support of the IFMP Review

Similar to reviews of other IFMPs,<sup>1</sup> the NRC staff reviewed the following information submitted in support of the SONGS IFMP:

- Estimated cost to isolate the spent fuel pool (SFP) and fuel handling systems. For the decontamination (DECON) option, the cost to isolate the SFP and fuel handling systems may be considered as part of the preparation for DECON;
- Estimated cost to construct an ISFSI or a combination of wet/dry storage;
- Estimated annual cost for the operation of the selected option (wet or dry storage or a combination of the two) until the Department of Energy (DOE) takes possession of the fuel;
- Estimated cost for the preparation, packaging, and shipping of the fuel to DOE;
- Estimated cost to decommission the spent fuel storage facility; and
- Brief discussion of the selected storage method or methods, and the estimated time for these activities.

In addition, the NRC has determined that irradiated fuel can be safely stored in spent fuel pools and ISFSIs. The technical feasibility of either storage method was codified in the Continued Storage of Spent Nuclear Fuel Rule (79 FR 56238), as supported by NUREG-2157, "Generic Environmental Impact Statement for Continued Storage of Spent Nuclear Fuel" (ADAMS Accession No. ML14196A105), and specifically, Appendix B, "Technical Feasibility of Continued Storage and Repository Availability." With regard to "actions implemented on a timely basis," NUREG-2157 considers three time periods: short-term storage, long-term storage, and indefinite storage. While all storage timeframes are considered technically feasible, the shortterm storage period of 60 years beyond licensed life for reactor operations covers the IFMP

<sup>&</sup>lt;sup>1</sup> Most recently, the safety evaluation by the Office of Nuclear Reactor Regulation related to the updated IFMP of Duke Energy Florida, Inc., Crystal River Unit 3 Nuclear Generating Plant, Docket No. 50-302 (ADAMS Accession No. ML14344A408).

- 4 -

proposed by SCE. This timeframe coincides with the decommissioning timeframe. A minimum assumption is that all spent fuel will be moved from the spent fuel pool to dry cask storage by the end of the short-term storage timeframe.

## 4.0 TECHNICAL EVALUATION

The SONGS IFMP represents a high level plan for the management of irradiated fuel. It references the SONGS DCE as identifying the details, schedules, and costs of the spent fuel management activities. As noted above, the NRC is reviewing the SONGS DCE and PSDAR separately. However, during this review, the NRC staff considered relevant portions of the DCE and ensured consistency between the documents.

Table 1 of the IFMP identifies the seven periods of spent fuel management. For each period, the table provides a brief description, the duration, and the cost on a unit basis in 2014 dollars in the unit of thousands. The first period, "Spent Fuel Management Transition," consists of activities that support the implementation of security enhancements required for reductions in staff, cyber security modifications, post-Fukushima modifications for Unit 2, and the design and fabrication of spent fuel canisters. This period began in June 2013, ended in December 2013, and cost a total of \$129,997,000. As per the IFMP, the safe initial interim storage of SONGS irradiated fuel will occur in each unit's respective SFP (also known as "wet storage"). The normal systems that support the SFPs will be replaced by stand-alone cooling and filtration systems. These new systems will allow the SFP to independently operate from the normal systems (also known as "islanding"). Table 2 of the IFMP provides the estimated cost to isolate the SFPs and fuel handling systems, which is \$22,183,000. After appropriate cooling has occurred, all irradiated fuel in the SFPs will be transferred to the ISFSI for "dry storage." This activity is currently scheduled to be completed by 2019.

The second period, "Spent Fuel Transfer to Dry Storage," includes preparation and issuance of the IFMP; selection of the dry storage system canister design and vendor; design and construction of the ISFSI expansion (as discussed below); purchase, delivery, and loading of spent fuel canisters; and the transfer of the fuel to the ISFSI. This period began in January 2014 and is expected to end in June 2019. It is estimated to cost \$716,822,000.

Units 2 and 3 have generated a total of 3,460 irradiated fuel assemblies. At present, 792 irradiated fuel assemblies from both units have already been transferred to the ISFSI. The remaining 2,668 irradiated fuel assembles will be loaded into DSCs and transferred to the ISFSI. The ISFSI currently contains 18 DSCs that store Unit 1 fuel and 33 DSCs that store Units 2 and 3 fuel. All of the fuel that is currently stored on the ISFSI is kept in Transnuclear NUHOMS Model Number-24PT1 or PT4 DSCs.

SCE intends to expand the current ISFSI in order to accommodate the remaining irradiated fuel from Units 2 and 3. Additional DSCs will be procured from one or more of the available, NRC-approved dry storage system suppliers, which began in 2014. An estimated 47 DSCs will be required for Unit 2 fuel, and an estimated 44 DSCs will be required for Unit 3 fuel. The exact number will depend on the capacity of the selected system and the number of DSCs needed to store GTCC waste and other materials. The estimated cost for a combination of wet/dry storage and ISFSI expansion is \$306,391,000.

- 5 -

The third period, "Dry Storage during Decommissioning for Units 1, 2, and 3," is scheduled for June 2019 through December 2031. The execution of scheduled activities during this period is expected to cost a total of \$122,849,000. The fourth period, "Dry Storage Only – Units 1, 2, and 3," is scheduled for December 2031 through December 2049 and is expected to cost \$58,765,000. The fifth period, "Dry Storage Only – Units 2 and 3," is scheduled for December 2051, and is expected to cost \$214,653,000.

The sixth period, "Decontamination and Dismantlement (D&D) Period 1," is scheduled for December 2049 through May 2050 and is expected to cost \$2,520,000. The final period, "D&D Period 2," is scheduled for May 2050 through September 2051 and is expected to cost \$30,590,000. These final two periods will serve as the time to decontaminate and dismantle the ISFSI and return the area to unrestricted use, once all spent fuel has been removed from the site.

The SONGS Units 2 and 3 IFMP is based on the commencement of industry-wide acceptance of spent fuel by DOE in 2024 and SONGS' priority-ranking in that queue. As such, SCE is assuming that all fuel will be removed from the SONGS site by 2049. The estimated cost for preparation, packing, and shipping of the fuel to DOE is \$6,742,000. The estimated cost to decommission the ISFSI is \$33,110,000.

The NRC staff, as part of its analysis of the IFMP, used the information and cost estimates outlined above, in conjunction with Tables 4A and 4B of the SONGS IFMP that provides the annual cost to manage the spent fuel, to calculate the ending balance for the SONGS DTF at the end of the projected fuel removal period. The calculation resulted in a positive ending balance: \$406,084,000 for Unit 2 and \$499,465,000 for Unit 3. The NRC staff subtracted projected radiological decontamination costs, spent fuel management costs, and site restoration costs from the projected opening balance on a yearly basis. The NRC staff then applied a 2-percent real rate of return on this value to calculate a projected year-end balance. The yearly closing balance calculations can be found in Attachment 1, "Unit 2 IFMP Closing Balance Calculations," of SCE's IFMP submittal.

The NRC staff finds the SONGS IFMP estimates to be reasonable, based on a cost comparison with similar decommissioning reactors, while acknowledging that there are large uncertainties and potential site-specific variances that may impact these cost estimates in the future.

Regarding the provision in 10 CFR 50.54(bb), "The licensee must demonstrate to NRC that the elected actions will be consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that the actions will be implemented on a timely basis," the SONGS IFMP is consistent with the determinations that the NRC has made in the Continued Storage of Spent Nuclear Fuel Rule and NUREG-2157. The NRC staff has determined that storing fuel in either the spent fuel pool or ISFSI represents an acceptable means for storing irradiated fuel. The licensee's plan contains both storage methods, with irradiated fuel being taken out of the spent fuel pool and fully transitioned to the ISFSI within 5 years, followed by complete dry storage. The anticipated date to transfer fuel to DOE and subsequent decommissioning of the ISFSIs are scheduled to be completed in 2051. This supports the requirement to complete decommissioning within the 60-year timeframe, as required by 10 CFR 50.82.

- 6 -

## 5.0 CONCLUSION

Based on the NRC staff's review of the SONGS IFMP and site-specific DCE, the staff finds that SCE has provided sufficient detail to satisfy the requirements of 10 CFR 50.54(bb). Based on the staff's calculated positive ending balance (as provided in Attachments 1 and 2 of this safety evaluation), the NRC staff finds that SCE has demonstrated reasonable assurance that funding will be available to maintain the IFMP until the fuel is transferred to the DOE for permanent disposal. Further, the NRC staff finds that the actions and timeframes described in the IFMP are consistent with the NRC's generic determination for spent fuel management, associated with the Continued Storage of Spent Nuclear Fuel Rule, as supported by NUREG-2157. Therefore, the NRC staff preliminarily approves the SONGS IFMP.

Principal Contributor: Eric Olvera

Date: August 19, 2015

## (235 of 314)

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	SONGS Unit 2: IFMP Closing Balance Calculations					
Year	Opening Balance	Radiological Decontamination	Spent Fuel Management	Site Restoration	2% Interest	Closing Balance
2013						\$1,847,000
2014	\$1,847,000	\$79,799	\$35,719	\$15,089	\$34,328	\$1,750,721
2015	\$1,750,721	\$69,196	\$106,308	\$7,439	\$31,356	\$1,599,133
2016	\$1,599,133	\$54,541	\$59,308	\$3,730	S29,631	\$1,511,186
2017	\$1,511,186	\$111,903	\$59,308	\$1,957	\$26,760	\$1,364,778
2018	\$1,364,778	\$47,520	\$59,308	\$0	\$25,159	\$1,283,109
2019	\$1,283,109	\$108,328	\$27,554	\$13,539	\$22,674	\$1,156,362
2020	\$1,156,362	\$185,482	\$4,908	S36	\$19,319	\$985,254
2021	\$985,254	\$79,081	\$4,908	\$36	\$18,025	\$919,254
2022	\$919,254	\$54,785	\$4,908	\$1,927	\$17,153	\$874,787
2023	\$874,787	\$158,207	\$4,908	\$36	\$14,233	\$725,868
2024	\$725,868	\$37,930	\$4,908	\$16,848	\$13,324	\$679,506
2025	\$679,506	\$2,922	\$4,908	\$44,621	\$12,541	\$639,596
2026	\$639,596	\$2,922	\$4,908	\$19,412	\$12,247	\$624,601
2027	\$624,601	\$2,922	\$4,908	\$22,469	\$11,886	\$606,188
2028	\$606,188	\$2,922	\$4,908	\$31,688	\$11,333	\$578,004
2029	\$578,004	\$2,922	\$4,908	\$66,873	\$10,066	\$513,367
2030	\$513,367	\$2,922	\$4,908	\$71,867	\$8,673	\$442,343
2031	\$442,343	\$2,055	\$5,089	\$23,181	\$8,240	\$420,258
2032	\$420,258	\$2,122	\$7,214	\$0	\$8,218	\$419,141
2033	\$419,141	\$0	\$7,214	\$0	\$8,239	\$420,165
2034	\$420,165	SO	\$7,214	\$0	\$8,259	\$421,210
2035	\$421,210	\$0	\$7,228	\$0	\$8,280	\$422,262
2036	\$422,262	SO	\$7,665	\$0	\$8,292	\$422,889
2037	\$422,889	\$0	\$7,665	\$0	\$8,304	\$423,528
2038	S423,528	SO	\$7,665	\$0	\$8,317	\$424,181
2039	\$424,181	\$0	\$7,665	\$0	\$8,330	\$424,846
2040	\$424,846	SO	\$7,665	\$0	\$8,344	\$425,525
2041	\$425,525	\$0	\$7,665	\$0	\$8,357	\$426,217
2042	\$426,217	SO	\$7,665	\$0	S8,371	\$426,923
2043	\$426,923	\$0	\$7,665	\$0	\$8,385	\$427,643
2044	\$427,643	SO	\$7,665	S0	S8,400	\$428,378
2045	\$428,378	\$0	\$7,665	\$0	\$8,414	\$429,127
2046	\$429,127	\$0	S7,665	\$0	S8,429	\$429,891
2047	\$429,891	\$0	\$7,665	\$0	\$8,445	\$430,671
2048	S430,671	SO	\$7,665	\$0	\$8,460	S431,466
2049	\$431,466	\$0	\$7,667	\$0	\$8,476	\$432,275
2050	\$432,275	SO	S9,974	\$20,177	\$8,042	S410,166
2051	\$410,166	\$0	\$6,573	\$11,928	\$7,833	\$399,498
2052	\$399,498	SO	\$0	S1,377	\$7,962	S406,084
Totals		\$1,008,481	\$559,311	\$374,230		

Notes (SONGS IFMP):

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Costs are in 2014 dollars (in thousands) and are not escalated from the base year.

SONGS Unit 2 Trust fund balances at end of 2013 were \$1,847,000.

Radiological Decontamination, Spent Fuel Management, and Site Restoration figures from SONGS IFMP.

Attachment 1

## (236 of 314)

-	8	-
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	SONGS Unit 3: IFMP Closing Balance Calculations					
Year	Opening Balance	Radiological Decontamination	Spent Fuel Management	Site Restoration	2% Interest	Closing Balance
2013						\$2,079,400
2014	\$2,079,400	\$78,964	S40,156	S15,969	\$38,886	\$1,983,197
2015	\$1,983,197	\$74,096	\$112,024	\$9,390	\$35,754	\$1,823,441
2016	\$1,823,441	S61,451	\$64,405	\$25,227	\$33,447	\$1,705,805
2017	\$1,705,805	\$40,631	\$64,405	\$3,799	\$31,939	\$1,628,910
2018	\$1,628,910	\$86,348	S64,405	S0	S29,563	\$1,507,720
2019	\$1,507,720	\$96,521	\$29,675	\$13,908	\$27,352	\$1,394,968
2020	\$1,394,968	\$120,873	S4,908	S2,135	\$25,341	\$1,292,393
2021	\$1,292,393	\$194,090	\$4,908	\$575	\$21,856	\$1,114,676
2022	S1,114,676	\$135,313	\$4,908	\$2,467	\$19,440	\$991,428
2023	\$991,428	\$114,581	\$4,908	\$1,511	\$17,409	\$887,837
2024	S887,837	S26,874	S4,908	\$36,778	\$16,386	\$835,662
2025	\$835,662	\$2,922	\$4,908	\$40,655	\$15,744	\$802,921
2026	\$802,921	\$2,922	\$4,908	\$21,676	S15,468	\$788,883
2027	\$788,883	\$2,922	\$4,908	\$25,848	\$15,104	\$770,309
2028	\$770,309	\$2,922	S4,908	\$20,945	S14,831	\$756,365
2029	\$756,365	\$2,922	\$4,908	\$117,321	\$12,624	\$643,838
2030	S643,838	\$2,922	S4,908	S116,672	\$10,387	\$529,723
2031	\$529,723	\$2,055	\$5,089	\$25,501	\$9,942	\$507,019
2032	S507,019	\$2,122	\$7,214	SO	\$9,954	\$507,637
2033	\$507,637	\$0	\$7,214	\$0	\$10,008	\$510,432
2034	\$510,432	SO	\$7,214	SO	\$10,064	S513,282
2035	\$513,282	\$0	\$7,228	\$0	\$10,121	\$516,175
2036	\$516,175	SO	S7,665	SO	S10,170	\$518,680
2037	\$518,680	\$0	\$7,665	\$0	\$10,220	\$521,236
2038	\$521,236	S0	\$7,665	S0	S10,271	\$523,842
2039	\$523,842	\$0	\$7,665	\$0	\$10,324	\$526,500
2040	\$526,500	SO	S7,665	\$0	S10,377	\$529,212
2041	\$529,212	\$0	\$7,665	\$0	\$10,431	\$531,978
2042	\$531,978	SO	S7,665	S0	S10,486	\$534,799
2043	\$534,799	\$0	\$7,665	\$0	\$10,543	\$537,677
2044	\$537,677	SO	\$7,665	SO	\$10,600	\$540,612
2045	\$540,612	\$0	\$7,665	\$0	\$10,659	\$543,606
2046	\$543,606	S0	\$7,665	SO	S10.719	\$546,660
2047	\$546,660	\$0	\$7,665	\$0	\$10,780	\$549,775
2048	\$549,775	SO	S7,665	SO	\$10,842	\$552,952
2049	\$552,952	\$0	\$7,667	\$0	\$10,906	\$556,191
2050	\$556,191	SO	\$9,974	\$23,120	S10,462	\$533,559
2051	\$533,559	\$0	\$6,573	\$45,566	\$9,628	\$491,048
2052	\$491,048	SO	SO	\$1,377	\$9,793	\$499,465
Totals		\$1,051,451	\$586,876	\$550,440		

Notes (SONGS IFMP):

Costs are in 2014 dollars (in thousands) and are not escalated from the base year.

SONGS Unit 3 Trust fund balances at end of 2013 were \$2,079,400.

Radiological Decontamination, Spent Fuel Management, and Site Restoration figures from SONGS IFMP.

-2-

T. Palmisano

The NRC staff recognizes that the IFMP analysis is based on a reported DTF balance that may fluctuate over time. Should a material decline in the DTF balance occur, the staff's analysis and findings may be impacted. However, in accordance with 10 CFR 50.82(a)(8)(vii), the licensee must annually submit to the NRC, by March 31, a report on the status of its funding for managing irradiated fuel. Further, in accordance with 10 CFR 50.54(bb), the licensee shall notify the NRC of any significant changes to the IFMP. Accordingly, the regulations provide a means of informing the NRC staff of fluctuations in the reported DTF balance and significant changes to the IFMP.

If you have any questions, please contact me at 301-415-4037 or Thomas.Wengert@nrc.gov.

Sincerely,

/**RA**/

Thomas J. Wengert, Senior Project Manager Plant Licensing IV-2 and Decommissioning Transition Branch Division of Operating Reactor Licensing Office of Nuclear Reactor Regulation

Docket Nos. 50-361 and 50-362

Enclosure: Safety Evaluation

cc w/enclosure: Distribution via Listserv

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## ADAMS Accession No.: ML15182A256

OFFICE	NRR/DORL/LPL4-2/PM	NRR/DORL/LPL4-2/LA	NRR/DIRS/IFIB/BC	NMSS/DSFM/SFLB
NAME	SKoenick	PBlechman	ABowers	MSampson
DATE	7/9/15	7/9/15	7/10/15	7/17/15
OFFICE	OGC	NRR/DORL/LPL4-2/BC	NRR/DORL/D(A)	NRR/DORL/LPL4-2/PM
NAME	BMizuno w/cmt	MKhanna	ALLund/GWilson for	TWengert
DATE	8/18/15	8/10/15	8/12/15	8/19/15

OFFICIAL RECORD COPY

	Case: 20-70899, 04/27/2020, ID	: 11672824, DktEntry	(23) : 18-9, Page 1 of 3	38 of 314)
NRC FC	PRM 588		U. S. NUCLEAR REGULATORY CO	MMISSION
(10-2000) 10 CFR 72	2		PAGE <u>1</u> OF <u>3</u>	PAGES
	LICENSE FOR INDEPENDENT STO HIGH-LEVEL R	ORAGE OF SPENT N RADIOACTIVE WAST	NUCLEAR FUEL AND	
Purs Cod a lic mat belo Part and to a	suant to the Atomic Energy Act of 1954, as amended, the e of Federal Regulations, Chapter 1, Part 72, and in reliand ense is hereby issued authorizing the licensee to receive, a erials associated with spent fuel storage designated below, w; and to deliver or transfer such material to persons auth (s). This license shall be deemed to contain the conditions is subject to all applicable rules, regulations, and orders ny conditions specified herein.	Energy Reorganization Act of ce on statements and repress cquire, and possess the pow ; to use such material for the norized to receive it in accord specified in Section 183 of the of the Nuclear Regulatory C	of 1974 (Public Law 93-438), and Tit entations heretofore made by the lice ver reactor spent fuel and other radio purpose(s) and at the place(s) desig ance with the regulations of the apple Atomic Energy Act of 1954, as ame commission now or hereafter in effect	le 10, ensee, active nated icable nded, ct and
	Licensee			
<sup>1.</sup> Priv	vate Fuel Storage, Limited Liability Company	3. License No.	SNM-2513	
		Amendment No.	0	
2. Priv 1 C Res	vate Fuel Storage Facility Driqui Road servation of the Skull Valley Band of Goshute	4. Expiration Date	February 21, 2026	
Gra	antsville, UT 84029	5. Docket or Reference No.	72-22	
6. Byp Spe	roduct, Source, and/or cial Nuclear Material	Physical Form	8. Maximum Amount That License May Possess at Any One Time	e
A. Sp comm pursua assoc related storag	ent nuclear fuel elements from A. Intact fuel as ercial nuclear utilities licensed ant to 10 CFR Part 50 and iated radioactive materials d to the receipt, transfer, and e of that spent nuclear fuel. STORM 100 Sto modified as des below.	ssemblies, damaged , and fuel debris, as ificate of Compliance ndment 0, for the HI- orage Cask System, scribed in paragraph 9	A. 40,000 Metric Tons of Uranium in the form of intact spent fuel assemblies, dama fuel assemblies, and fuel de In addition, the cumulative a of material received and acc during the licensed term of t facility may not exceed 40,0 Metric Tons of Uranium.	aged bris. mount epted he 00
9.	Authorized Use: The material identified in 6.4 storage, and transfer in the Private Fuel Stora Analysis Report (SAR) dated June 20, 1997, November 21, 2001, and as may be further storage and 10 CFR 72.48. Storage is authoriz Compliance No. 1014, Amendment 0, for the incorporate the lid shims and weld modificatio (PFS Hearing Exh. 257, pp. 7-14 through 7-16)	A and 7.A above is auth age Facility (PFSF), as as revised or suppleme upplemented and amer ed only in casks design HI-STORM 100 Storag ons described in Holtec 6, 8-28, and Figures 26	norized for receipt, possession described in the PFSF Safety inted through Revision 22 dat inded in accordance with 10 C ned in accordance with Certifi e Cask System, modified to Report HI-2033134, as revise A and 26B).	n, red FR cate of ed
10.	Authorized Place of Use: The licensed mater the PFSF, on the Reservation of the Skull Val Tooele County, Utah.	ial is to be received, po lley Band of Goshute Ir	essessed, transferred, and stond adians geographically located	ored at within
11.	The Technical Specifications contained in the license. The licensee shall operate the install the Appendix. The Appendix contains Techni satisfy the requirements of 10 CFR 72.44(d)(2)	Appendix attached he lation in accordance wit ical Specifications relat 2).	reto are incorporated into the the Technical Specification ed to environmental protectio	s in n to

- 12. The licensee shall comply with the "Environmental Conditions" specified in Section 9.4.2, Mitigation Measures, of the "Final Environmental Impact Statement for the Construction and Operation of an Independent Spent Fuel Storage Installation on the Reservation of the Skull Valley Band of Goshute Indians and the Related Transportation Facility in Tooele County, Utah," NUREG-1714 (December 2001)
- 13. The licensee shall submit a Final Safety Analysis Report within 90 days from the date of this license that incorporates the accident analyses and commitments provided by PFS in the U.S. Nuclear Regulatory Commission's (NRC's) adjudicatory proceeding on the PFS license application, concerning aircraft crash and munitions impact events.

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-9, Page 2 of 3

NRC FORM 588A	U. S. NUCLEAR REGULATORY COMMISSION	PAGI	E 2	OF	3	PAGES
10 CFR 72		License No.		Ame	ndmen	t No.
LICENSE FOR INDEPENDE	NT STORAGE OF SPENT NUCLEAR	SNM-2513				0
FUEL AND HIGH-LI	EVEL RADIOACTIVE WASTE	Docket or Reference No.				
SUPPL	EMENTARY SHEET		72-22			

- 14. The design, construction, and operation of the ISFSI shall be accomplished in accordance with the NRC's regulations specified in Title 10 of the *Code of Federal Regulations*. All commitments to applicable Commission Regulatory Guides and to applicable engineering and construction codes shall be met.
- 15. Pursuant to 10 CFR 72.7, the licensee is hereby exempted from the provisions of 10 CFR 72.102(f)(1) regarding the seismic design criteria of 10 CFR Part 100, Appendix A. The exemption to 10 CFR 72.102(f)(1) allows the licensee to use a Probabilistic Seismic Hazards Analysis methodology to calculate the design earthquake values to be used in the facility design.
- 16. The licensee shall follow the approved Private Fuel Storage Quality Assurance Program Description, dated August 30, 1996, as supplemented by Chapter 12, Quality Assurance, of the Safety Analysis Report. Changes to the plan are subject to Commission approval in accordance with 10 CFR Part 72, Subpart G.
- 17. The licensee shall follow the "Emergency Plan, Private Fuel Storage Facility," Revision 11 dated March 30, 2001, and as further supplemented and revised in accordance with 10 CFR 72.44(f).
- 18. The licensee shall:
  - (1) follow the "Physical Protection Plan, Private Fuel Storage Facility," Revision 2 dated June 8, 1999, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186;
  - (2) follow the "Safeguards Contingency Plan, Private Fuel Storage Facility," Revision 1 dated June 8, 1999, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186; and
  - (3) follow the "Security Training and Qualification Plan, Private Fuel Storage Facility," Revision 1 dated June 8, 1999, as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.186.
- 19. Construction of the PFSF shall not commence before funding (equity, revenue, and debt) is fully committed, that is adequate to construct a facility with the initial capacity as specified by the licensee to the NRC. Construction of any additional capacity beyond this initial capacity amount shall commence only after funding is fully committed that is adequate to construct such additional capacity.
- 20. The licensee shall not commence operation of the PFSF unless it has in place pass-through service contracts with its customers, in substantially the form submitted to and approved by the Atomic Safety and Licensing Board, covering all costs relating to the customers' spent fuel, including common expenses of the PFSF, throughout the storage term for all spent fuel accepted at the PFSF.
- 21. The licensee shall:
  - (1) include in its service contracts provisions requiring customers to retain title to the spent fuel stored, and allocating legal and financial liability among the licensee and the customers;
  - (2) include in its service contracts provisions requiring customers to provide periodically credit information, and, where necessary, additional financial assurances such as guarantees, prepayment, or payment bond;
  - (3) include in its service contracts a provision requiring the licensee not to terminate its license prior to furnishing the spent fuel storage services covered by the service contract; and
  - (4) obtain onsite and offsite insurance coverage in the amounts committed to by PFS in the adjudicatory proceedings on the PFS license application.

(240 of 314)

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-9, Page 3 of 3

NRC FORM 588A	U. S. NUCLEAR REGULATORY COMMISSION	PAGE	3	OF	3	PAGES
10 CFR 72		License No.		Ame	ndment	: No.
LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR		SNM-2513				0
FUEL AND HIGH-LEVEL RADIOACTIVE WASTE		Docket or Reference No.				
SUPPLEMENTARY SHEET			72-22			

## 22. The licensee shall:

(1) <u>Simulated Stuck Lid Removal of HI-STORM 100 (Rev. 0) Cask Lids With Shims.</u>

Before the initial receipt of spent nuclear fuel at the facility, the licensee shall perform an operational test using the cranes specified in the licensee's SAR, and such other necessary or appropriate ancillary equipment, to demonstrate that it is capable of removing the HI-STORM 100 storage cask lid under conditions which simulate resistance to movement between the cask lid shims and the overpack inner shell. The licensee shall provide notice to the NRC staff 15 days prior to the conduct of this test, and the results of the test shall be documented and available for inspection by the NRC staff.

(2) Assurance of Fit of HI-STORM 100 (Rev. 0) Cask Lids With Shims.

Prior to inserting a multipurpose canister (MPC) containing spent fuel into each new or re-used HI-STORM 100 storage cask at the facility, the licensee shall conduct a test (although not necessarily in the Canister Transfer Building) of each new or re-used cask to assure the fit of the spent fuel storage cask lid with shims. The licensee shall fully insert the concrete and steel storage cask lid into the particular concrete and steel storage cask will be used to store spent fuel, release the lifting mechanism of the crane, re-attach it, and then remove the lid from the cask. The capacity of the crane used to insert and remove the cask lid shall not exceed that of the cranes located in the Canister Transfer Building used to perform lid placement or removal. The results of each such test shall be documented and available for inspection by the NRC staff.

- 23. The licensee shall submit a Startup Plan to the NRC at least 90 days prior to receipt and storage of spent fuel at the facility.
- 24. Prior to removing the shipping cask closure lid, the gas inside the shipping cask shall be sampled to verify that the canister confinement boundary is intact.
- 25. This license is effective as of the date of issuance shown below.

FOR THE NUCLEAR REGULATORY COMMISSION

/**RA**/

William H. Ruland, Deputy Director Licensing and Inspection Directorate Spent Fuel Project Office Office of Nuclear Material Safety and Safeguards

Date of Issuance February 21, 2006

Attachment: Appendix A - Technical Specifications

(241 of 314)

32919

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-10, Page 1 of 7

## Federal Register/Vol. 83, No. 136/Monday, July 16, 2018/Notices

#### I. Obtaining Information and Submitting Comments

#### A. Obtaining Information

Please refer to Docket ID NRC–2018– 0050 when contacting the NRC about the availability of information for this action. You may obtain publiclyavailable information related to this action by any of the following methods:

• Federal rulemaking Website: Go to http://www.regulations.gov and search for Docket ID NRC–2018–0050.

• NRC's Agencywide Documents Access and Management System (ADAMS): You may obtain publiclyavailable documents online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/ adams.html. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr.resource@nrc.gov. The supporting statement is available in ADAMS under Accession No. ML18127B276.

• *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

• *NRC's Clearance Officer:* A copy of the collection of information and related instructions may be obtained without charge by contacting the NRC's Clearance Officer, David Cullison, Office of the Chief Information Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–2084; email: *INFOCOLLECTS.Resource@NRC.GOV.* 

#### \_ \_ . . . \_

## B. Submitting Comments

The NRC cautions you not to include identifying or contact information in comment submissions that you do not want to be publicly disclosed in your comment submission. All comment submissions are posted at *http:// www.regulations.gov* and entered into ADAMS. Comment submissions are not routinely edited to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the OMB, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that comment submissions are not routinely edited to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

#### **II. Background**

Under the provisions of the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), the NRC recently submitted a request for renewal of an existing collection of information to OMB for review entitled, "10 CFR part 140, Financial Protection Requirements and Indemnity Agreements." The NRC hereby informs potential respondents that an agency may not conduct or sponsor, and that a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

The NRC published a **Federal Register** notice with a 60-day comment period on this information collection on April 10, 2018 (83 FR 15422).

1. The title of the information collection: "10 CFR part 140, Financial Protection Requirements and Indemnity Agreements."

2. OMB approval number: 3150–0039.

Type of submission: Revision.
The form number, if applicable:

A. The form number, if applicable.

5. *How often the collection is required or requested:* On occasion, as needed for applicants and licensees to meet their responsibilities called for in Sections 170 and 193 of the Atomic Energy Act of 1954.

6. Who will be required or asked to respond: Each applicant for or holder of a license issued under parts 50 or 54 of title 10 of the *Code of Federal Regulations* (10 CFR) to operate a nuclear reactor, or the applicant for or holder of a combined license issued under parts 52 or 54 of 10 CFR, as well as licensees authorized to possess and use plutonium in a plutonium processing and fuel fabrication plant. In addition, licensees authorized to construct and operate a uranium enrichment facility in accordance with parts 40 and 70 of 10 CFR.

7. The estimated number of annual responses: 102.

8. The estimated number of annual respondents: 102.

9. The estimated number of hours needed annually to comply with the information collection requirement or request: 796.

10. *Abstract:* 10 CFR part 140 specifies the information to be submitted by licensees that enables the NRC to assess (a) financial protection required by licensees and for the indemnification and limitation of liability of certain licensees and other persons pursuant to Section 170 of the Atomic Energy Act of 1954, as amended, and (b) the liability insurance required of plutonium processing and fuel fabrication plants, as well as uranium enrichment facility licensees pursuant to Section 193 of the Atomic Energy Act of 1954, as amended.

Dated at Rockville, Maryland, this 10th day of July, 2018.

For the Nuclear Regulatory Commission.

## Kristen Benney,

Acting NRC Clearance Officer, Office of the Chief Information Officer.

[FR Doc. 2018–15080 Filed 7–13–18; 8:45 am] BILLING CODE 7590–01–P

NUCLEAR REGULATORY

COMMISSION

[Docket No. 72-1051; NRC-2018-0055]

#### Holtec International's HI–STORE Consolidated Interim Storage Facility for Interim Storage of Spent Nuclear Fuel

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** License application; opportunity to request a hearing and to petition for leave to intervene; order.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) received a license application from Holtec International (Holtec), by letter dated March 30, 2017, as supplemented on April 13, October 6, December 21, and 22, 2017; and February 22, 2018. By this application, Holtec is requesting authorization to construct and operate the HI-STORE Consolidated Interim Storage (CIS) Facility, in Lea County, New Mexico. If the NRC approves the application and issues a license to Holtec, Holtec intends to store up to 8,680 metric tons of uranium (MTU) of commercial spent nuclear fuel in the HI-STORM UMAX Canister Storage System for a 40-year license term.

DATES: A request for a hearing or petition for leave to intervene must be filed by September 14, 2018. ADDRESSES: Please refer to Docket ID NRC–2018–0055 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

• Federal Rulemaking Website: Go to http://www.regulations.gov and search for Docket ID NRC-2018-0055. Address questions about NRC dockets to Jennifer Borges; telephone: 301-287-9127; email: Jennifer.Borges@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

## Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

• NRC's Agencywide Documents Access and Management System (ADAMS): You may obtain publicly available documents online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/ adams.html. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr.resource@nrc.gov. For the convenience of the reader, the ADAMS accession numbers are provided in a table in the "Availability of Documents" section of this document.

• *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: Jose R. Cuadrado, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415– 0606; email: *Jose.Cuadrado@nrc.gov.* 

## SUPPLEMENTARY INFORMATION:

#### I. Introduction

The NRC received an application from Holtec for a specific license pursuant to part 72 of title 10 of the *Code of Federal Regulations* (10 CFR), "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste." On March 19, 2018, notice of the NRC's acceptance and docketing of the application and the public availability of the application was provided in the **Federal Register** (83 FR 12034).

Holtec is proposing to construct and operate the HI-STORE Consolidated Interim Storage (CIS) Facility on a large parcel of presently unused land owned by the Eddy-Lea Energy Alliance (ELEA), LLC. The ELEA was formed in 2006 in accordance with enabling legislation passed in New Mexico and consists of an alliance of the city of Carlsbad, Eddy County, the city of Hobbs, and Lea County. The proposed site for the CIS facility is located in southeastern New Mexico in Lea County, 32 miles east of Carlsbad, New Mexico, and 34 miles west of Hobbs, New Mexico.

Holtec is proposing to construct and operate Phase 1 of the CIS facility within an approximately 1,040 acre parcel. Holtec is currently requesting authorization to possess and store 500 canisters of spent nuclear fuel (SNF) containing up to 8,680 metric tons of

uranium (MTUs), which includes spent uranium-based fuel from commercial nuclear reactors, as well as a small quantity of spent mixed-oxide fuel. If the NRC issues the requested license, Holtec expects to subsequently request additional amendments to the initial license to expand the storage capacity of the facility. In its plans, Holtec proposes expanding the facility in 19 subsequent expansion phases, each for an additional 500 canisters, to be completed over the course of 20 years. Ultimately, Holtec anticipates that approximately 10,000 canisters of SNF would be stored at the CIS facility upon completion of 20 phases. Each phase would require NRC review and approval.

According to its application, Holtec intends to only use the HI–STORM UMAX Canister Storage System for storage of spent nuclear fuel canisters at the facility. The HI–STORM UMAX Canister Storage System stores the canister containing SNF entirely belowground, providing a clear, unobstructed view of the entire CIS facility from any location.

# II. Opportunity To Request a Hearing and Petition for Leave To Intervene

Within 60 days after the date of publication of this notice, any person (petitioner) whose interest may be affected by this action may file a request for a hearing and petition for leave to intervene (petition) with respect to the action. Petitions shall be filed in accordance with the Commission's "Agency Rules of Practice and Procedure" in 10 CFR part 2. Interested persons should consult a current copy of 10 CFR part 2. The NRC's regulations are accessible electronically from the NRC Library on the NRC's website at http://www.nrc.gov/reading-rm/doccollections/cfr/. A copy of the regulations is also available at the NRC's Public Document Room, located at One White Flint North, Room O1-F21, 11555 Rockville Pike (First Floor), Rockville, Maryland 20852. If a petition is filed, the Commission or a presiding officer will rule on the petition and, if appropriate, a notice of a hearing will be issued.

As required by 10 CFR 2.309(d) the petition should specifically explain the reasons why intervention should be permitted with particular reference to the following general requirements for standing: (1) The name, address, and telephone number of the petitioner; (2) the nature of the petitioner's right under the Act to be made a party to the proceeding; (3) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (4) the possible effect of any decision or order which may be entered in the proceeding on the petitioner's interest.

In accordance with 10 CFR 2.309(f), the petition must also set forth the specific contentions which the petitioner seeks to have litigated in the proceeding. Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the petitioner must provide a brief explanation of the bases for the contention and a concise statement of the alleged facts or expert opinion which support the contention and on which the petitioner intends to rely in proving the contention at the hearing. The petitioner must also provide references to the specific sources and documents on which the petitioner intends to rely to support its position on the issue. The petition must include sufficient information to show that a genuine dispute exists with the applicant or licensee on a material issue of law or fact. Contentions must be limited to matters within the scope of the proceeding. The contention must be one which, if proven, would entitle the petitioner to relief. A petitioner who fails to satisfy the requirements at 10 CFR 2.309(f) with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene. Parties have the opportunity to participate fully in the conduct of the hearing with respect to resolution of that party's admitted contentions, including the opportunity to present evidence, consistent with the NRC's regulations, policies, and procedures.

Petitions must be filed no later than 60 days from the date of publication of this notice. Petitions and motions for leave to file new or amended contentions that are filed after the deadline will not be entertained absent a determination by the presiding officer that the filing demonstrates good cause by satisfying the three factors in 10 CFR 2.309(c)(1)(i) through (iii). The petition must be filed in accordance with the filing instructions in the "Electronic Submissions (E-Filing)" section of this document.

A State, local governmental body, Federally-recognized Indian Tribe, or agency thereof, may submit a petition to the Commission to participate as a party under 10 CFR 2.309(h)(1). The petition should state the nature and extent of the petitioner's interest in the proceeding. The petition should be submitted to the Commission no later than 60 days from the date of publication of this notice. The petition must be filed in accordance

(243 of 314)

32921

## Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

with the filing instructions in the "Electronic Submissions (E-Filing)" section of this document, and should meet the requirements for petitions set forth in this section. Alternatively, a State, local governmental body, Federally-recognized Indian Tribe, or agency thereof may participate as a nonparty under 10 CFR 2.315(c).

If a hearing is granted, any person who is not a party to the proceeding and is not affiliated with or represented by a party may, at the discretion of the presiding officer, be permitted to make a limited appearance pursuant to the provisions of 10 CFR 2.315(a). A person making a limited appearance may make an oral or written statement of his or her position on the issues but may not otherwise participate in the proceeding. A limited appearance may be made at any session of the hearing or at any prehearing conference, subject to the limits and conditions as may be imposed by the presiding officer. Details regarding the opportunity to make a limited appearance will be provided by the presiding officer if such sessions are scheduled.

#### **III. Electronic Submissions (E-Filing)**

All documents filed in NRC adjudicatory proceedings, including a request for hearing and petition for leave to intervene (petition), any motion or other document filed in the proceeding prior to the submission of a request for hearing or petition to intervene, and documents filed by interested governmental entities that request to participate under 10 CFR 2.315(c), must be filed in accordance with the NRC's E-Filing rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562; August 3, 2012). The E-Filing process requires participants to submit and serve all adjudicatory documents over the internet, or in some cases to mail copies on electronic storage media. Detailed guidance on making electronic submissions may be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at http://www.nrc.gov/site-help/ *e-submittals.html.* Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days prior to the filing deadline, the participant should contact the Office of the Secretary by email at *hearing.docket@nrc.gov*, or by telephone at 301–415–1677, to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating; and (2) advise the Secretary that the participant will be submitting a petition or other adjudicatory document (even in instances in which the participant, or its counsel or representative, already holds an NRC-issued digital ID certificate). Based upon this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already established an electronic docket.

Information about applying for a digital ID certificate is available on the NRC's public website at http:// www.nrc.gov/site-help/e-submittals/ getting-started.html. Once a participant has obtained a digital ID certificate and a docket has been created, the participant can then submit adjudicatory documents. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF submissions is available on the NRC's public website at http://www.nrc.gov/ site-help/electronic-sub-ref-mat.html. A filing is considered complete at the time the document is submitted through the NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59 p.m. Eastern Time on the due date. Upon receipt of a transmission, the E-Filing system time-stamps the document and sends the submitter an email notice confirming receipt of the document. The E-Filing system also distributes an email notice that provides access to the document to the NRC's Office of the General Counsel and any others who have advised the Office of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the document on those participants separately. Therefore, applicants and other participants (or their counsel or representative) must apply for and receive a digital ID certificate before adjudicatory documents are filed so that they can obtain access to the documents via the E-Filing system.

A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the NRC's public website at *http:// www.nrc.gov/site-help/esubmittals.html*, by email to *MSHD.Resource@nrc.gov*, or by a tollfree call at 1–866–672–7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and 6 p.m., Eastern Time, Monday through Friday, excluding government holidays.

Participants who believe that they have a good cause for not submitting documents electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing electronically and requesting authorization to continue to submit documents in paper format. Such filings must be submitted by: (1) First class mail addressed to the Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, Attention: Rulemaking and Adjudications Staff; or (2) courier, express mail, or expedited delivery service to the Office of the Secretary, 11555 Rockville Pike, Rockville, Maryland 20852, Attention: Rulemaking and Adjudications Staff. Participants filing adjudicatory documents in this manner are responsible for serving the document on all other participants. Filing is considered complete by first-class mail as of the time of deposit in the mail, or by courier, express mail, or expedited delivery service upon depositing the document with the provider of the service. A presiding officer, having granted an exemption request from using E-Filing, may require a participant or party to use E-Filing if the presiding officer subsequently determines that the reason for granting the exemption from use of E-Filing no longer exists.

Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing docket which is available to the public at https:// adams.nrc.gov/ehd/, unless excluded pursuant to an order of the Commission or the presiding officer. Participants are requested not to include personal privacy information, such as social security numbers, home addresses, or personal phone numbers in their filings, unless an NRC regulation or other law requires submission of such information. For example, in some instances, individuals provide home addresses in order to demonstrate proximity to a facility or site. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants are requested not to include copyrighted materials in their submission.

## **IV. Availability of Documents**

The documents identified in this **Federal Register** notice are accessible to interested persons in ADAMS under the accession numbers identified in the table below.

## 32922

## Federal Register/Vol. 83, No. 136/Monday, July 16, 2018/Notices

Title		
Holtec International HI-STORE CIS License Application NRC request for supplemental information		
Holtec letter with schedule for response to NRC request for supplemental information	ML17206A203	
Holtec's October 6, 2017, information submittal in response to NRC request for supplemental information	ML17310A21	
Holtec's December 21, 2017, information submittal in response to NRC request for supplemental information	ML17362A097	
Holtec's December 22, 2017, information submittal in response to NRC request for supplemental information	ML18011A158	
Holtec's February 22, 2018, information submittal in response to proprietary information determination	ML18058A617	
NRC letter accepting application for review	ML18059A251	
NRC Federal Register Notice of docketing Holtec license application	ML18058A171	

### V. Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation

A. This Order contains instructions regarding how potential parties to this proceeding may request access to documents containing sensitive unclassified information (including Sensitive Unclassified Non-Safeguards Information (SUNSI) and Safeguards Information (SGI)). Requirements for access to SGI are primarily set forth in 10 CFR parts 2 and 73. Nothing in this Order is intended to conflict with the SGI regulations.

B. Within 10 days after publication of this notice of hearing and opportunity to petition for leave to intervene, any potential party who believes access to SUNSI or SGI is necessary to respond to this notice may request access to SUNSI or SGI. A "potential party" is any person who intends to participate as a party by demonstrating standing and filing an admissible contention under 10 CFR 2.309. Requests for access to SUNSI or SGI submitted later than 10 days after publication will not be considered absent a showing of good cause for the late filing, addressing why the request could not have been filed earlier.

C. The requestor shall submit a letter requesting permission to access SUNSI, SGI, or both to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemakings and Adjudications Staff, and provide a copy to the Deputy General Counsel for Hearings and Administration, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001. The expedited delivery or courier mail address for both offices is: U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Rockville, Maryland 20852. The email address for the Office of the Secretary and the Office of the General Counsel are Hearing.Docket@nrc.gov and

*OGCmailcenter@nrc.gov*, respectively.<sup>1</sup> The request must include the following information:

(1) A description of the licensing action with a citation to this **Federal Register** notice;

(2) The name and address of the potential party and a description of the potential party's particularized interest that could be harmed by the action identified in C.(1);

(3) If the request is for SUNSI, the identity of the individual or entity requesting access to SUNSI and the requestor's basis for the need for the information in order to meaningfully participate in this adjudicatory proceeding. In particular, the request must explain why publicly available versions of the information requested would not be sufficient to provide the basis and specificity for a proffered contention; and

(4) If the request is for SGI, the identity of each individual who would have access to SGI if the request is granted, including the identity of any expert, consultant, or assistant who will aid the requestor in evaluating the SGI. In addition, the request must contain the following information:

(a) A statement that explains each individual's "need to know" the SGI, as required by 10 CFR 73.2 and 10 CFR 73.22(b)(1). Consistent with the definition of "need to know" as stated in 10 CFR 73.2, the statement must explain:

(i) Specifically why the requestor believes that the information is necessary to enable the requestor to proffer and/or adjudicate a specific contention in this proceeding; <sup>2</sup> and (ii) The technical competence (demonstrable knowledge, skill, training or education) of the requestor to effectively utilize the requested SGI to provide the basis and specificity for a proffered contention. The technical competence of a potential party or its counsel may be shown by reliance on a qualified expert, consultant, or assistant who satisfies these criteria.

(b) A completed Form SF-85, "Questionnaire for Non-Sensitive Positions," for each individual who would have access to SGI. The completed Form SF-85 will be used by the Office of Administration to conduct the background check required for access to SGI, as required by 10 CFR part 2, subpart C, and 10 CFR 73.22(b)(2), to determine the requestor's trustworthiness and reliability. For security reasons, Form SF-85 can only be submitted electronically through the electronic questionnaire for investigations processing (e-QIP) website, a secure website that is owned and operated by the Office of Personnel Management. To obtain online access to the form, the requestor should contact the NRC's Office of Administration at 301-415-3710.3

(c) A completed Form FD–258 (fingerprint card), signed in original ink, and submitted in accordance with 10 CFR 73.57(d). Copies of Form FD–258 may be obtained by writing the Office of Administrative Services, Mail Services Center, Mail Stop P1–37, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, or by email to *MAILSVC.Resource@nrc.gov.* The fingerprint card will be used to satisfy the requirements of 10 CFR part 2, subpart C, 10 CFR 73.22(b)(1), and Section 149 of the Atomic Energy Act of 1954, as amended, which mandates that

<sup>&</sup>lt;sup>1</sup>While a request for hearing or petition to intervene in this proceeding must comply with the filing requirements of the NRC's "E-Filing Rule," the initial request to access SUNSI and/or SGI under these procedures should be submitted as described in this paragraph.

<sup>&</sup>lt;sup>2</sup> Broad SGI requests under these procedures are unlikely to meet the standard for need to know; furthermore, NRC staff redaction of information from requested documents before their release may be appropriate to comport with this requirement. These procedures do not authorize unrestricted disclosure or less scrutiny of a requestor's need to

know than ordinarily would be applied in connection with an already-admitted contention or non-adjudicatory access to SGI.

<sup>&</sup>lt;sup>3</sup> The requestor will be asked to provide his or her full name, social security number, date and place of birth, telephone number, and email address. After providing this information, the requestor usually should be able to obtain access to the online form within one business day.

(245 of 314)

## Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

all persons with access to SGI must be fingerprinted for an FBI identification and criminal history records check.

(d) A check or money order payable in the amount of \$324.00<sup>4</sup> to the U.S. Nuclear Regulatory Commission for each individual for whom the request for access has been submitted.

(e) If the requestor or any individual(s) who will have access to SGI believes they belong to one or more of the categories of individuals that are exempt from the criminal history records check and background check requirements in 10 CFR 73.59, the requestor should also provide a statement identifying which exemption the requestor is invoking and explaining the requestor's basis for believing that the exemption applies. While processing the request, the Office of Administration, Personnel Security Branch, will make a final determination whether the claimed exemption applies. Alternatively, the requestor may contact the Office of Administration for an evaluation of their exemption status prior to submitting their request. Persons who are exempt from the background check are not required to complete the SF–85 or Form FD–258; however, all other requirements for access to SGI, including the need to know, are still applicable.

**Note:** Copies of documents and materials required by paragraphs C.(4)(b), (c), and (d) of this Order must be sent to the following address: U.S. Nuclear Regulatory Commission, ATTN: Personnel Security Branch, Mail Stop TWFN–07–D04M, 11555 Rockville Pike, Rockville, MD 20852.

These documents and materials should *not* be included with the request letter to the Office of the Secretary, but the request letter should state that the forms and fees have been submitted as required.

D. To avoid delays in processing requests for access to SGI, the requestor should review all submitted materials for completeness and accuracy (including legibility) before submitting them to the NRC. The NRC will return incomplete packages to the sender without processing.

E. Based on an evaluation of the information submitted under paragraphs C.(3) or C.(4) above, as applicable, the NRC staff will determine within 10 days of receipt of the request whether:

(1) There is a reasonable basis to believe the petitioner is likely to establish standing to participate in this NRC proceeding; and (2) The requestor has established a legitimate need for access to SUNSI or need to know the SGI requested.

F. For requests for access to SUNSI, if the NRC staff determines that the requestor satisfies both  $E_{(1)}$  and  $E_{(2)}$ above, the NRC staff will notify the requestor in writing that access to SUNSI has been granted. The written notification will contain instructions on how the requestor may obtain copies of the requested documents, and any other conditions that may apply to access to those documents. These conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement or Affidavit, or Protective Order setting forth terms and conditions to prevent the unauthorized or inadvertent disclosure of SUNSI by each individual who will be granted access to SUNSI.<sup>5</sup>

G. For requests for access to SGI, if the NRC staff determines that the requestor has satisfied both E.(1) and E.(2) above, the Office of Administration will then determine, based upon completion of the background check, whether the proposed recipient is trustworthy and reliable, as required for access to SGI by 10 CFR 73.22(b). If the Office of Administration determines that the individual or individuals are trustworthy and reliable, the NRC will promptly notify the requestor in writing. The notification will provide the names of approved individuals as well as the conditions under which the SGI will be provided. Those conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement or Affidavit, or Protective Order<sup>6</sup> by each individual who will be granted access to SGI.

H. Release and Storage of SGI. Prior to providing SGI to the requestor, the NRC staff will conduct (as necessary) an inspection to confirm that the recipient's information protection system is sufficient to satisfy the requirements of 10 CFR 73.22. Alternatively, recipients may opt to view SGI at an approved SGI storage location rather than establish their own SGI protection program to meet SGI protection requirements.

I. Filing of Contentions. Any contentions in these proceedings that

are based upon the information received as a result of the request made for SUNSI or SGI must be filed by the requestor no later than 25 days after receipt of (or access to) that information. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of hearing or opportunity for hearing), the petitioner may file its SUNSI or SGI contentions by that later deadline.

J. Review of Denials of Access. (1) If the request for access to SUNSI or SGI is denied by the NRC staff either after a determination on standing and requisite need, or after a determination on trustworthiness and reliability, the NRC staff shall immediately notify the requestor in writing, briefly stating the reason or reasons for the denial.

(2) Before the Office of Administration makes a final adverse determination regarding the trustworthiness and reliability of the proposed recipient(s) for access to SGI, the Office of Administration, in accordance with 10 CFR 2.336(f)(1)(iii), must provide the proposed recipient(s) any records that were considered in the trustworthiness and reliability determination, including those required to be provided under 10 CFR 73.57(e)(1), so that the proposed recipient(s) have an opportunity to correct or explain the record.

(3) The requestor may challenge the NRC staff's adverse determination with respect to access to SUNSI or with respect to standing or need to know for SGI by filing a challenge within 5 days of receipt of that determination with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

(4) The requestor may challenge the Office of Administration's final adverse determination with respect to trustworthiness and reliability for access to SGI by filing a request for review in accordance with 10 CFR 2.336(f)(1)(iv).

(5) Further appeals of decisions under this paragraph must be made pursuant to 10 CFR 2.311.

K. Review of Grants of Access. A party other than the requestor may challenge an NRC staff determination granting access to SUNSI whose release would harm that party's interest independent of the proceeding. Such a challenge must be filed within 5 days of

<sup>&</sup>lt;sup>4</sup> This fee is subject to change pursuant to the Office of Personnel Management's adjustable billing rates.

<sup>&</sup>lt;sup>5</sup> Any motion for Protective Order or draft Non-Disclosure Affidavit or Agreement for SUNSI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 30 days of the deadline for the receipt of the written access request.

<sup>&</sup>lt;sup>6</sup> Any motion for Protective Order or draft Non-Disclosure Affidavit or Agreement for SGI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 180 days of the deadline for the receipt of the written access request.

## Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

the notification by the NRC staff of its grant of access and must be filed with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

If challenges to the NRC staff determinations are filed, these procedures give way to the normal process for litigating disputes concerning access to information. The availability of interlocutory review by the Commission of orders ruling on such NRC staff determinations (whether granting or denying access) is governed by 10 CFR 2.311.<sup>7</sup>

L. The Commission expects that the NRC staff and presiding officers (and any other reviewing officers) will consider and resolve requests for access to SUNSI or SGI, and motions for protective orders, in a timely fashion in order to minimize any unnecessary delays in identifying those petitioners who have standing and who have propounded contentions meeting the specificity and basis requirements in 10 CFR part 2. The attachment to this Order summarizes the general target schedule for processing and resolving requests under these procedures.

It is so ordered.

Dated at Rockville, Maryland, this 10th of July 2018.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,

Secretary of the Commission.

## ATTACHMENT 1—GENERAL TARGET SCHEDULE FOR PROCESSING AND RESOLVING REQUESTS FOR ACCESS TO SENSITIVE UNCLASSIFIED NON-SAFEGUARDS INFORMATION AND SAFEGUARDS INFORMATION IN THIS PROCEEDING

Day	Event/activity
0	Publication of <b>Federal Register</b> notice of hearing and opportunity to petition for leave to intervene, including order with in- structions for access requests.
10	Deadline for submitting requests for access to Sensitive Unclassified Non-Safeguards Information (SUNSI) and/or Safeguards Information (SGI) with information: Supporting the standing of a potential party identified by name and address; describing the need for the information in order for the potential party to participate meaningfully in an adjudicatory proceeding; dem- onstrating that access should be granted ( <i>e.g.</i> , showing technical competence for access to SGI); and, for SGI, including application fee for fingerprint/background check.
60	Deadline for submitting petition for intervention containing: (i) Demonstration of standing; (ii) all contentions whose formulation does not require access to SUNSI and/or SGI (+25 Answers to petition for intervention; +7 requestor/petitioner reply).
20	U.S. Nuclear Regulatory Commission (NRC) staff informs the requestor of the staff's determination whether the request for access provides a reasonable basis to believe standing can be established and shows (1) need for SUNSI or (2) need to know for SGI. (For SUNSI, NRC staff also informs any party to the proceeding whose interest independent of the proceeding would be harmed by the release of the information.) If NRC staff makes the finding of need for SUNSI and likelihood of standing, NRC staff begins document processing (preparation of redactions or review of redacted documents). If NRC staff makes the finding of need to know for SGI and likelihood of standing, NRC staff begins background check (including fingerprinting for a criminal history records check), information processing (preparation of redactions or review of redacted documents), and readiness inspections.
25	If NRC staff finds no "need," no "need to know," or no likelihood of standing, the deadline for requestor/petitioner to file a motion seeking a ruling to reverse the NRC staff's denial of access; NRC staff files copy of access determination with the presiding officer (or Chief Administrative Judge or other designated officer, as appropriate). If NRC staff finds "need" for SUNSI, the deadline for any party to the proceeding whose interest independent of the proceeding would be harmed by the release of the information to file a motion seeking a ruling to reverse the NRC staff's grant of access.
30	Deadline for NRC staff reply to motions to reverse NRC staff determination(s).
40	(Receipt +30) If NRC staff finds standing and need for SUNSI, deadline for NRC staff to complete information processing and file motion for Protective Order and draft Non-Disclosure Affidavit. Deadline for applicant/licensee to file Non-Disclosure Agreement for SUNSI.
190	(Receipt +180) If NRC staff finds standing, need to know for SGI, and trustworthiness and reliability, deadline for NRC staff to file motion for Protective Order and draft Non-disclosure Affidavit (or to make a determination that the proposed recipient of SGI is not trustworthy or reliable). Note: Before the Office of Administration makes a final adverse determination regarding access to SGI, the proposed recipient must be provided an opportunity to correct or explain information.
205	Deadline for petitioner to seek reversal of a final adverse NRC staff trustworthiness or reliability determination under 10 CFR 2.336(f)(1)(iv).
Α	If access granted: Issuance of a decision by a presiding officer or other designated officer on motion for protective order for access to sensitive information (including schedule for providing access and submission of contentions) or decision reversing a final adverse determination by the NRC staff.
A + 3	Deadline for filing executed Non-Disclosure Affidavits. Access provided to SUNSI and/or SGI consistent with decision issuing the protective order.
A + 28	Deadline for submission of contentions whose development depends upon access to SUNSI and/or SGI. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of opportunity to request a hearing and petition for leave to intervene), the petitioner may file its SUNSI or SGI contentions by that later deadline.
A + 53	(Contention receipt +25) Answers to contentions whose development depends upon access to SUNSI and/or SGI.
A + 60 >A + 60	(Answer receipt +7) Petitioner/Intervenor reply to answers. Decision on contention admission.

<sup>&</sup>lt;sup>7</sup> Requestors should note that the filing requirements of the NRC's E-Filing Rule (72 FR 49139; August 28, 2007, as amended at 77 FR

<sup>46562;</sup> August 3, 2012) apply to appeals of NRC staff determinations (because they must be served on a presiding officer or the Commission, as

applicable), but not to the initial SUNSI/SGI request submitted to the NRC staff under these procedures.

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-10, Page 7 of 7

## Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

[FR Doc. 2018–15079 Filed 7–13–18; 8:45 am] BILLING CODE 7590–01–P

#### OCCUPATIONAL SAFETY AND HEALTH REVIEW COMMISSION

# Privacy Act of 1974; System of Records.

**AGENCY:** Occupational Safety and Health Review Commission.

**ACTION:** Rescindment of System of Records Notices.

**SUMMARY:** In accordance with the Privacy Act of 1974, the Occupational Safety and Health Review Commission (OSHRC) is rescinding the Privacy Act system-of-records notices for following systems of records: Travel Records, OSHRC–1; and Mailing Lists for News Releases, Speeches, Booklets, Reports, OSHRC–2.

**DATES:** Comments must be received by OSHRC on or before August 15, 2018. The rescindment of OSHRC–1 and OSHRC–2 will become effective on that date, without any further notice in the **Federal Register**, unless comments or government approval procedures necessitate otherwise.

**ADDRESSES:** You may submit comments by any of the following methods:

• *Email: rbailey@oshrc.gov*. Include "PRIVACY ACT SYSTEM OF RECORDS" in the subject line of the message.

• Fax: (202) 606-5417.

• *Mail:* One Lafayette Centre, 1120 20th Street NW, Ninth Floor, Washington, DC 20036–3457.

• *Hand Delivery/Courier:* Same as mailing address.

Instructions: All submissions must include your name, return address, and email address, if applicable. Please clearly label submissions as "PRIVACY ACT SYSTEM OF RECORDS."

**FOR FURTHER INFORMATION CONTACT:** Ron Bailey, Attorney-Advisor, Office of the General Counsel, via telephone at (202) 606–5410, or via email at *rbailey@ oshrc.gov.* 

**SUPPLEMENTARY INFORMATION:** Following OSHRC's review of its systems of records, the agency is rescinding two of its system-of-records notices: (1) Travel Records, OSHRC–1; and (2) Mailing Lists for News Releases, Speeches, Booklets, Reports, OSHRC–2.

The records included in OSHRC–1 are fully covered by the following Privacy Act notices for governmentwide systems of records: GSA/GOVT–4, see 74 FR 26700, July 6, 2009, and GSA/GOVT–3, see 78 FR 20108, May 3, 2013. OSHRC– 1 is therefore being rescinded to avoid duplicative notices. Additionally, based on a comprehensive review of OSHRC's records, the agency has determined that mailing lists for news releases, speeches, booklets, and reports are no longer maintained by the agency. As this system of records, OSHRC–2, no longer exists, its notice is being rescinded.

The notices rescinding OSHRC–1 and OSHRC–2 are as follows.

#### OSHRC-1

#### SYSTEM NAME AND NUMBER:

Travel Records, OSHRC–1.

#### HISTORY:

April 14, 2006, 71 FR 19556; August 4, 2008, 73 FR 45256; October 5, 2015, 80 FR 60182; and September 28, 2017, 82 FR 45324.

### OSHRC-2

#### SYSTEM NAME AND NUMBER:

Mailing Lists for News Releases, Speeches, Booklets, Reports, OSHRC–2.

#### HISTORY:

April 14, 2006, 71 FR 19556; August 4, 2008, 73 FR 45256; October 5, 2015, 80 FR 60182; and September 28, 2017, 82 FR 45324.

Dated: July 9, 2018.

#### Nadine N. Mancini,

General Counsel, Senior Agency Official for Privacy.

[FR Doc. 2018–15069 Filed 7–13–18; 8:45 am] BILLING CODE 7600–01–P

#### SECURITIES AND EXCHANGE COMMISSION

[Investment Company Act Release No. 33156; 812–14884]

### DMS ETF Trust I, et al.

July 10, 2018.

**AGENCY:** Securities and Exchange Commission ("Commission"). **ACTION:** Notice.

Notice of an application under section 6(c) of the Investment Company Act of 1940 ("Act") for an exemption from section 15(a) of the Act and rule 18f-2 under the Act, as well as from certain disclosure requirements in rule 20a-1 under the Act, Item 19(a)(3) of Form N-1A, Items 22(c)(1)(ii), 22(c)(1)(iii), 22(c)(8) and 22(c)(9) of Schedule 14A under the Securities Exchange Act of 1934, and sections 6-07(2)(a), (b), and (c) of Regulation S–X ("Disclosure Requirements"). The requested exemption would permit an investment adviser to hire and replace certain subadvisers without shareholder approval

and grant relief from the Disclosure Requirements as they relate to fees paid to the sub-advisers.

**APPLICANTS:** DMS ETF Trust I, DMS ETF Trust II, and DMS Mutual Fund Trust (each, a "Trust" and collectively, the "Trusts"), each a Delaware statutory trust that will be registered under the Act as an open-end management investment company, and DMS ETF Solutions, LLC (the "Initial Adviser"), a Delaware limited liability company that will be registered as an investment adviser under the Investment Advisers Act of 1940 (collectively with the Trusts, the "Applicants").

FILING DATES: The application was filed on March 12, 2018.

HEARING OR NOTIFICATION OF HEARING: An order granting the application will be issued unless the Commission orders a hearing. Interested persons may request a hearing by writing to the Commission's Secretary and serving applicants with a copy of the request, personally or by mail. Hearing requests should be received by the Commission by 5:30 p.m. on August 6, 2018, and should be accompanied by proof of service on the applicants, in the form of an affidavit or, for lawyers, a certificate of service. Pursuant to rule 0-5 under the Act, hearing requests should state the nature of the writer's interest, any facts bearing upon the desirability of a hearing on the matter, the reason for the request, and the issues contested. Persons who wish to be notified of a hearing may request notification by writing to the Commission's Secretary.

**ADDRESSES:** Secretary, U.S. Securities and Exchange Commission, 100 F Street NE, Washington, DC 20549–1090. Applicants, 130 West 42nd Street, Ste. 1050, New York, NY 10036.

#### FOR FURTHER INFORMATION CONTACT:

Christine Y. Greenlees, Senior Counsel, at (202) 551–6879, or Andrea Ottomanelli Magovern, Branch Chief, at (202) 551–6821 (Division of Investment Management, Chief Counsel's Office).

**SUPPLEMENTARY INFORMATION:** The following is a summary of the application. The complete application may be obtained via the Commission's website by searching for the file number, or an applicant using the Company name box, at *http://www.sec.gov/search/search.htm* or by calling (202) 551–8090.

#### **Summary of the Application**

1. An Adviser will serve as the investment adviser to each Subadvised Series pursuant to an investment advisory agreement with the applicable Trust (the "Investment Management

### Federal Register/Vol. 83, No. 168/Wednesday, August 29, 2018/Notices

construction permit for the RPF even if the 10 CFR 70.21(f) timing requirement has not been met. The NRC is considering issuing the requested exemption. The proposed action would not significantly: (a) Affect probabilities of evaluated accidents; (b) affect margins of safety; (c) affect the effectiveness of programs contained in licensing documents; (d) increase effluents; (e) increase occupational radiological exposures; or (f) affect operations or decommissioning activities of the RPF. The reason the environment would not be significantly affected is because the requested exemption affects only the timing of construction and does not affect the previous evaluation regarding the environmental impacts of constructing and operating the NWMI RPF, as described in the Environmental Impact Statement for Construction Permit for the Northwest Medical Isotopes Radioisotope Production Facility, Final Report (NUREG-2209). The impacts of connected 10 CFR part 70 actions at the RPF were evaluated in NUREG–2209. On the basis of the EA included in Section II of this document, and incorporated herein by reference, the NRC has determined not to prepare an EIS for the proposed action. The related environmental documents are: (a) NWMI Exemption request dated December 17, 2017, as supplemented on March 12, 2018 (ADAMS Accession Nos. ML17362A040 and ML18088A175); (b) NWMI Preliminary Safety Analyses Report, Chapter 19, "Environmental Report," Corvallis, OR, revision OA dated June 2015, (ADAMS Accession Nos. ML15210A123, ML15210A128, ML15210A129, and ML15210A131; and (c) NUREG-2209, "Environmental Impact Statement for the Construction Permit for the Northwest Medical Isotopes Radioisotope Production Facility," issued in May 2018 (ADAMS Accession No. ML17130A862).

This FONSI and other related environmental documents may be examined, and/or copied for a fee, at the NRC's PDR, located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852. Publicly-available records are also accessible online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/ adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC's PDR reference staff by telephone at 1-800-397-4209 or 301-415-4737, or by email to pdr.resource@nrc.gov.

Dated at Rockville, Maryland this 24th day of August, 2018.

For the Nuclear Regulatory Commission.

## Brian W. Smith,

Deputy Director, Division of Fuel Cycle Safety, Safeguards, and Environmental Review, Office of Nuclear Material Safety and Safeguards.

[FR Doc. 2018–18757 Filed 8–28–18; 8:45 am] BILLING CODE 7590–01–P

#### NUCLEAR REGULATORY COMMISSION

[Docket No. 72-1050; NRC-2016-0231]

#### Interim Storage Partner's Waste Control Specialists Consolidated Interim Storage Facility

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Revised license application; opportunity to request a hearing and to petition for leave to intervene; order imposing procedures.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) received a request from Interim Storage Partners, a joint venture between Waste Control Specialists, LLC (WCS) and Orano CIS, LLC by letters dated June 8, 2018, and July 19, 2018, to resume NRC staff review of a license application for the WCS Consolidated Interim Storage Facility (CISF) in Andrews County, Texas. By letter dated April 18, 2017, the previous applicant, WCS, asked NRC to temporarily suspend all safety and environmental review activities. **DATES:** A request for a hearing or petition for leave to intervene must be filed by August 29, 2018. Any potential party as defined in section 2.4 of title 10 of the Code of Federal Regulations (10 CFR), who believes access to Sensitive Unclassified Non-Safeguards

Information (SUNSI) is necessary to respond to this notice must request document access by September 10, 2018.

**ADDRESSES:** Please refer to Docket ID NRC–2016–0231 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

• Federal Rulemaking Website: Go to http://www.regulations.gov and search for Docket ID NRC-2016-0231. Address questions about NRC dockets to Jennifer Borges; telephone: 301-287-9127; email: Jennifer.Borges@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

 NRC's Agencywide Documents Access and Management System (ADAMS): You may obtain publiclyavailable documents online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/ adams.html. To begin the search, select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415–4737, or by email to *pdr.resource*@ nrc.gov. For the convenience of the reader, the ADAMS accession numbers are provided in a table in the "Availability of Documents" section of this document.

• *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1–F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

FOR FURTHER INFORMATION CONTACT: John-Chau Nguyen, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–0262; email: John-Chau.Nguyen@nrc.gov.

## SUPPLEMENTARY INFORMATION:

#### I. Introduction

The NRC received, by letter dated April 28, 2016, an application from WCS for a specific license pursuant to 10 CFR part 72, "Licensing **Requirements for the Independent** Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste." WCS proposed to construct a Consolidated Interim Storage Facility (CISF) on its approximately 60.3 square kilometer (14,900 acre) site in western Andrews County, Texas. WCS currently operates facilities on this site that process and store Low-Level Waste and Mixed Waste (*i.e.*, waste that is considered both hazardous waste and Low-Level Waste). The facility also disposes of both hazardous waste and toxic waste.

On January 30, 2017, the NRC published two notices in the **Federal Register**: (1) A notice describing the closing date for the scoping period for the Environmental Impact Statement (EIS), and dates, times, and locations of scoping meetings wherein the NRC received oral comments as part of the EIS scoping process (82 FR 8771); and (2) a notice of its acceptance of the WCS application and an opportunity to request a hearing and petition for leave to intervene (82 FR 8773). On March 16, 2017 (82 FR 14039), the NRC published a notice in the Federal Register of an extension to the scoping period and

44071

## Federal Register/Vol. 83, No. 168/Wednesday, August 29, 2018/Notices

additional public meetings. On April 4, 2017, and in a corrected notice dated April 10, 2017, the NRC published in the Federal Register (82 FR 16435; 82 FR 17297) an order granting all petitioners an extension of time until May 31, 2017, to file hearing requests on WCS's license application. On July 20, 2017 (82 FR 33521), the NRC published a notice in the Federal Register that WCS had asked NRC to temporarily suspend all safety and environmental review activities. The July 20, 2017, notice in the Federal Register withdrew the notice of opportunity to request a hearing for WCS's application and explained that the NRC staff would publish a notice in the Federal Register if WCS requested that the NRC staff resume its review of WCS's application.

By letters dated June 8, 2018, and July 19, 2018, NRC received a request from Interim Storage Partners (ISP), a joint venture between WCS and Orano CIS, LLC to resume NRC staff review of the license application for the WCS Consolidated Interim Storage Facility (CISF) in Andrews County, Texas. ISP provided Revision 2 of the License Application, including a revised Safety Analysis Report and Environmental Report. In its June 8, 2018, letter, ISP stated that the Physical Security Plan and Safeguards Contingency Plan submitted with Revision 1 of its License Application remain applicable to the current application. The NRC staff has determined that Revision 1 of the Emergency Plan also remains applicable to the current application. Though ISP is the new owner, the name of the proposed facility remains the WCS CISF.

An NRC administrative completeness review found the revised application acceptable for a technical review. Prior to issuing the license, the NRC will need to make the findings required by the Atomic Energy Act of 1954, as amended (AEA), and the NRC's regulations. The NRC's findings will be documented in a safety evaluation report and an EIS.

# II. Opportunity To Request a Hearing and Petition for Leave To Intervene

Within 60 days after the date of publication of this notice, any persons (petitioner) whose interest may be affected by this action may file a request for a hearing and petition for leave to intervene (petition) with respect to the action. Petitions shall be filed in accordance with the Commission's "Agency Rules of Practice and Procedure" in 10 CFR part 2. Interested persons should consult a current copy of 10 CFR part 2. The NRC's regulations are accessible electronically from the NRC Library on the NRC's website at http://www.nrc.gov/reading-rm/doccollections/cfr/. A copy of the regulations is also available at the NRC's Public Document Room, located at One White Flint North, Room O1–F21, 11555 Rockville Pike (first floor), Rockville, Maryland 20852. If a petition is filed, the Commission or a presiding officer will rule on the petition and, if appropriate, a notice of a hearing will be issued.

As required by 10 CFR 2.309(d), the petition should specifically explain the reasons why intervention should be permitted with particular reference to the following general requirements for standing: (1) The name, address, and telephone number of the petitioner; (2) the nature of the petitioner's right under the Act to be made a party to the proceeding; (3) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (4) the possible effect of any decision or order which may be entered in the proceeding on the petitioner's interest.

In accordance with 10 CFR 2.309(f), the petition must also set forth the specific contentions which the petitioner seeks to have litigated in the proceeding. Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the petitioner must provide a brief explanation of the bases for the contention and a concise statement of the alleged facts or expert opinion which support the contention and on which the petitioner intends to rely in proving the contention at the hearing. The petitioner must also provide references to the specific sources and documents on which the petitioner intends to rely to support its position on the issue. The petition must include sufficient information to show that a genuine dispute exists with the applicant or licensee on a material issue of law or fact. Contentions must be limited to matters within the scope of the proceeding. The contention must be one which, if proven, would entitle the petitioner to relief. A petitioner who fails to satisfy the requirements at 10 CFR 2.309(f) with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene. Parties have the opportunity to participate fully in the conduct of the hearing with respect to resolution of that party's admitted contentions, including the opportunity to present evidence, consistent with the NRC's regulations, policies, and procedures.

Petitions must be filed no later than 60 days from the date of publication of this notice. Petitions and motions for leave to file new or amended contentions that are filed after the deadline will not be entertained absent a determination by the presiding officer that the filing demonstrates good cause by satisfying the three factors in 10 CFR 2.309(c)(1)(i) through (iii). The petition must be filed in accordance with the filing instructions in the "Electronic Submissions (E-Filing)" section of this document.

A State, local governmental body, Federally-recognized Indian Tribe, or agency thereof, may submit a petition to the Commission to participate as a party under 10 CFR 2.309(h)(1). The petition should state the nature and extent of the petitioner's interest in the proceeding. The petition should be submitted to the Commission no later than 60 days from the date of publication of this notice. The petition must be filed in accordance with the filing instructions in the "Electronic Submissions (E-Filing)" section of this document, and should meet the requirements for petitions set forth in this section. Alternatively, a State, local governmental body, Federally-recognized Indian Tribe, or agency thereof may participate as a nonparty under 10 CFR 2.315(c).

If a hearing is granted, any person who is not a party to the proceeding and is not affiliated with or represented by a party may, at the discretion of the presiding officer, be permitted to make a limited appearance pursuant to the provisions of 10 CFR 2.315(a). A person making a limited appearance may make an oral or written statement of his or her position on the issues but may not otherwise participate in the proceeding. A limited appearance may be made at any session of the hearing or at any prehearing conference, subject to the limits and conditions as may be imposed by the presiding officer. Details regarding the opportunity to make a limited appearance will be provided by the presiding officer if such sessions are scheduled.

#### **III. Electronic Submissions (E-Filing)**

All documents filed in NRC adjudicatory proceedings, including a request for hearing and petition for leave to intervene (petition), any motion or other document filed in the proceeding prior to the submission of a request for hearing or petition to intervene, and documents filed by interested governmental entities that request to participate under 10 CFR 2.315(c), must be filed in accordance with the NRC's E-Filing rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562; August 3, 2012). The E-Filing process requires participants to Federal Register/Vol. 83, No. 168/Wednesday, August 29, 2018/Notices

submit and serve all adjudicatory documents over the internet, or in some cases to mail copies on electronic storage media. Detailed guidance on making electronic submissions may be found in the Guidance for Electronic Submissions to the NRC and on the NRC website at http://www.nrc.gov/site-help/ e-submittals.html. Participants may not submit paper copies of their filings unless they seek an exemption in accordance with the procedures described below.

To comply with the procedural requirements of E-Filing, at least 10 days prior to the filing deadline, the participant should contact the Office of the Secretary by email at hearing.docket@nrc.gov, or by telephone at 301–415–1677, to (1) request a digital identification (ID) certificate, which allows the participant (or its counsel or representative) to digitally sign submissions and access the E-Filing system for any proceeding in which it is participating; and (2) advise the Secretary that the participant will be submitting a petition or other adjudicatory document (even in instances in which the participant, or its counsel or representative, already holds an NRC-issued digital ID certificate). Based upon this information, the Secretary will establish an electronic docket for the hearing in this proceeding if the Secretary has not already established an electronic docket.

Information about applying for a digital ID certificate is available on the NRC's public website at http:// www.nrc.gov/site-help/e-submittals/ getting-started.html. Once a participant has obtained a digital ID certificate and a docket has been created, the participant can then submit adjudicatory documents. Submissions must be in Portable Document Format (PDF). Additional guidance on PDF submissions is available on the NRC's public website at http://www.nrc.gov/ site-help/electronic-sub-ref-mat.html. A filing is considered complete at the time the document is submitted through the NRC's E-Filing system. To be timely, an electronic filing must be submitted to the E-Filing system no later than 11:59

p.m. Eastern Time on the due date. Upon receipt of a transmission, the E-Filing system time-stamps the document and sends the submitter an email notice confirming receipt of the document. The E-Filing system also distributes an email notice that provides access to the document to the NRC's Office of the General Counsel and any others who have advised the Office of the Secretary that they wish to participate in the proceeding, so that the filer need not serve the document on those participants separately. Therefore, applicants and other participants (or their counsel or representative) must apply for and receive a digital ID certificate before adjudicatory documents are filed so that they can obtain access to the documents via the E-Filing system.

A person filing electronically using the NRC's adjudicatory E-Filing system may seek assistance by contacting the NRC's Electronic Filing Help Desk through the "Contact Us" link located on the NRC's public website at *http:// www.nrc.gov/site-help/esubmittals.html*, by email to *MSHD.Resource@nrc.gov*, or by a tollfree call at 1–866–672–7640. The NRC Electronic Filing Help Desk is available between 9 a.m. and 6 p.m., Eastern Time, Monday through Friday, excluding government holidays.

Participants who believe that they have a good cause for not submitting documents electronically must file an exemption request, in accordance with 10 CFR 2.302(g), with their initial paper filing stating why there is good cause for not filing electronically and requesting authorization to continue to submit documents in paper format. Such filings must be submitted by: (1) First class mail addressed to the Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001, Attention: Rulemaking and Adjudications Staff; or (2) courier, express mail, or expedited delivery service to the Office of the Secretary, 11555 Rockville Pike, Rockville, Maryland 20852, Attention: Rulemaking and Adjudications Staff. Participants filing adjudicatory

documents in this manner are responsible for serving the document on all other participants. Filing is considered complete by first-class mail as of the time of deposit in the mail, or by courier, express mail, or expedited delivery service upon depositing the document with the provider of the service. A presiding officer, having granted an exemption request from using E-Filing, may require a participant or party to use E-Filing if the presiding officer subsequently determines that the reason for granting the exemption from use of E-Filing no longer exists.

Documents submitted in adjudicatory proceedings will appear in the NRC's electronic hearing docket which is available to the public at *https://* adams.nrc.gov/ehd, unless excluded pursuant to an order of the Commission or the presiding officer. If you do not have an NRC-issued digital ID certificate as described above, click cancel when the link requests certificates and you will be automatically directed to the NRC's electronic hearing dockets where you will be able to access any publicly available documents in a particular hearing docket. Participants are requested not to include personal privacy information, such as social security numbers, home addresses, or personal phone numbers in their filings, unless an NRC regulation or other law requires submission of such information. For example, in some instances, individuals provide home addresses in order to demonstrate proximity to a facility or site. With respect to copyrighted works, except for limited excerpts that serve the purpose of the adjudicatory filings and would constitute a Fair Use application, participants are requested not to include copyrighted materials in their submission.

## **IV. Availability of Documents**

The documents identified in this **Federal Register** notice are accessible to interested persons in ADAMS under the accession numbers identified in the table below.

Title	ADAMS accession No.
WCS CISF License Application, Revision 2, with Safety Analysis Report and Environmental Report	
WCS submittal of Supplemental Security Information (redacted) WCS submittal of Supplemental Security Information (redacted) WCS CISF Emergency Plan, Rev. 1	ML16235A467 ML16280A300 ML17082A054

44073

Federal Register/Vol. 83, No. 168/Wednesday, August 29, 2018/Notices

#### V. Order Imposing Procedures for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information for Contention Preparation

A. This Order contains instructions regarding how potential parties to this proceeding may request access to documents containing sensitive unclassified information (including Sensitive Unclassified Non-Safeguards Information (SUNSI) and Safeguards Information (SGI)). Requirements for access to SGI are primarily set forth in 10 CFR parts 2 and 73. Nothing in this Order is intended to conflict with the SGI regulations.

B. Within 10 days after publication of this notice of hearing and opportunity to petition for leave to intervene, any potential party who believes access to SUNSI or SGI is necessary to respond to this notice may request access to SUNSI or SGI. A "potential party" is any person who intends to participate as a party by demonstrating standing and filing an admissible contention under 10 CFR 2.309. Requests for access to SUNSI or SGI submitted later than 10 days after publication will not be considered absent a showing of good cause for the late filing, addressing why the request could not have been filed earlier.

C. The requestor shall submit a letter requesting permission to access SUNSI, SGI, or both to the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemakings and Adjudications Staff, and provide a copy to the Associate General Counsel for Hearings, Enforcement and Administration, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The expedited delivery or courier mail address for both offices is: U.S. Nuclear Regulatory Commission, 11555 Rockville Pike, Rockville, Maryland 20852. The email address for the Office of the Secretary and the Office of the General Counsel are Hearing.Docket@ nrc.gov and

*RidsOgcMailCenter.Resource@nrc.gov* respectively.<sup>1</sup> The request must include the following information:

(1) A description of the licensing action with a citation to this **Federal Register** notice;

(2) The name and address of the potential party and a description of the potential party's particularized interest that could be harmed by the action identified in C.(1); (3) If the request is for SUNSI, the identity of the individual or entity requesting access to SUNSI and the requestor's basis for the need for the information in order to meaningfully participate in this adjudicatory proceeding. In particular, the request must explain why publicly available versions of the information requested would not be sufficient to provide the basis and specificity for a proffered contention; and

(4) If the request is for SGI, the identity of each individual who would have access to SGI if the request is granted, including the identity of any expert, consultant, or assistant who will aid the requestor in evaluating the SGI. In addition, the request must contain the following information:

(a) A statement that explains each individual's "need to know" the SGI, as required by 10 CFR 73.2 and 10 CFR 73.22(b)(1). Consistent with the definition of "need to know" as stated in 10 CFR 73.2, the statement must explain:

(i) Specifically why the requestor believes that the information is necessary to enable the requestor to proffer and/or adjudicate a specific contention in this proceeding; <sup>2</sup> and

(ii) The technical competence (demonstrable knowledge, skill, training, or education) of the requestor to effectively utilize the requested SGI to provide the basis and specificity for a proffered contention. The technical competence of a potential party or its counsel may be shown by reliance on a qualified expert, consultant, or assistant who satisfies these criteria.

(b) A completed Form SF-85, "Questionnaire for Non-Sensitive Positions," for each individual who would have access to SGI. The completed Form SF-85 will be used by the Office of Administration to conduct the background check required for access to SGI, as required by 10 CFR part 2, subpart C, and 10 CFR 73.22(b)(2), to determine the requestor's trustworthiness and reliability. For security reasons, Form SF–85 can only be submitted electronically through the electronic questionnaire for investigations processing (e-QIP) website, a secure website that is owned and operated by the Office of Personnel Management. To obtain online access to the form, the requestor should contact the NRC's Office of Administration at  $301-415-3710.^3$ 

(c) A completed Form FD-258 (fingerprint card), signed in original ink, and submitted in accordance with 10 CFR 73.57(d). Copies of Form FD-258 may be obtained by writing the Office of Administrative Services, Mail Services Center, Mail Stop P1-37, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to MAILSVC.Resource@nrc.gov. The fingerprint card will be used to satisfy the requirements of 10 CFR part 2, subpart C, 10 CFR 73.22(b)(1), and Section 149 of the Atomic Energy Act of 1954, as amended, which mandates that all persons with access to SGI must be fingerprinted for an FBI identification and criminal history records check.

(d) A check or money order payable in the amount of  $324.00^{4}$  to the U.S. Nuclear Regulatory Commission for each individual for whom the request for access has been submitted.

(e) If the requestor or any individual(s) who will have access to SGI believes they belong to one or more of the categories of individuals that are exempt from the criminal history records check and background check requirements in 10 CFR 73.59, the requestor should also provide a statement identifying which exemption the requestor is invoking and explaining the requestor's basis for believing that the exemption applies. While processing the request, the Office of Administration, Personnel Security Branch, will make a final determination whether the claimed exemption applies. Alternatively, the requestor may contact the Office of Administration for an evaluation of their exemption status prior to submitting their request. Persons who are exempt from the background check are not required to complete the SF-85 or Form FD-258; however, all other requirements for access to SGI, including the need to know, are still applicable.

**Note:** Copies of documents and materials required by paragraphs C.(4)(b), (c), and (d) of this Order must be sent to the following address: U.S. Nuclear Regulatory Commission, Attn: Personnel Security Branch, Mail Stop TWFN–03–B46M, 11555 Rockville Pike, Rockville, MD 20852.

<sup>&</sup>lt;sup>1</sup>While a request for hearing or petition to intervene in this proceeding must comply with the filing requirements of the NRC's "E-Filing Rule," the initial request to access SUNSI and/or SGI under these procedures should be submitted as described in this paragraph.

<sup>&</sup>lt;sup>2</sup> Broad SGI requests under these procedures are unlikely to meet the standard for need to know; furthermore, NRC staff redaction of information from requested documents before their release may be appropriate to comport with this requirement. These procedures do not authorize unrestricted disclosure or less scrutiny of a requestor's need to know than ordinarily would be applied in connection with an already-admitted contention or non-adjudicatory access to SGI.

<sup>&</sup>lt;sup>3</sup> The requestor will be asked to provide his or her full name, social security number, date and place of birth, telephone number, and email address. After providing this information, the requestor usually should be able to obtain access to the online form within one business day.

<sup>&</sup>lt;sup>4</sup> This fee is subject to change pursuant to the Office of Personnel Management's adjustable billing rates.

These documents and materials should *not* be included with the request letter to the Office of the Secretary, but the request letter should state that the forms and fees have been submitted as required.

D. To avoid delays in processing requests for access to SGI, the requestor should review all submitted materials for completeness and accuracy (including legibility) before submitting them to the NRC. The NRC will return incomplete packages to the sender without processing.

E. Based on an evaluation of the information submitted under paragraphs C.(3) or C.(4) above, as applicable, the NRC staff will determine within 10 days of receipt of the request whether:

(1) There is a reasonable basis to believe the petitioner is likely to establish standing to participate in this NRC proceeding: and

NRC proceeding; and (2) The requestor has established a legitimate need for access to SUNSI or need to know the SGI requested.

F. For requests for access to SUNSI, if the NRC staff determines that the requestor satisfies both E.(1) and E.(2) above, the NRC staff will notify the requestor in writing that access to SUNSI has been granted. The written notification will contain instructions on how the requestor may obtain copies of the requested documents, and any other conditions that may apply to access to those documents. These conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement or Affidavit, or Protective Order setting forth terms and conditions to prevent the unauthorized or inadvertent disclosure of SUNSI by each individual who will be granted access to SUNSI.<sup>5</sup>

G. For requests for access to SGI, if the NRC staff determines that the requestor has satisfied both E.(1) and E.(2) above, the Office of Administration will then determine, based upon completion of the background check, whether the proposed recipient is trustworthy and reliable, as required for access to SGI by 10 CFR 73.22(b). If the Office of Administration determines that the individual or individuals are trustworthy and reliable, the NRC will promptly notify the requestor in writing. The notification will provide the names of approved individuals as well as the conditions under which the SGI will be provided. Those conditions may include, but are not limited to, the signing of a Non-Disclosure Agreement

or Affidavit, or Protective Order<sup>6</sup> by each individual who will be granted access to SGI.

H. Release and Storage of SGI. Prior to providing SGI to the requestor, the NRC staff will conduct (as necessary) an inspection to confirm that the recipient's information protection system is sufficient to satisfy the requirements of 10 CFR 73.22. Alternatively, recipients may opt to view SGI at an approved SGI storage location rather than establish their own SGI protection program to meet SGI protection requirements.

I. Filing of Contentions. Any contentions in these proceedings that are based upon the information received as a result of the request made for SUNSI or SGI must be filed by the requestor no later than 25 days after receipt of (or access to) that information. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of hearing or opportunity for hearing), the petitioner may file its SUNSI or SGI contentions by that later deadline.

. Review of Denials of Access.

(1) If the request for access to SUNSI or SGI is denied by the NRC staff either after a determination on standing and requisite need, or after a determination on trustworthiness and reliability, the NRC staff shall immediately notify the requestor in writing, briefly stating the reason or reasons for the denial.

(2) Before the Office of Administration makes a final adverse determination regarding the trustworthiness and reliability of the proposed recipient(s) for access to SGI, the Office of Administration, in accordance with 10 CFR 2.336(f)(1)(iii), must provide the proposed recipient(s) any records that were considered in the trustworthiness and reliability determination, including those required to be provided under 10 CFR 73.57(e)(1), so that the proposed recipient(s) have an opportunity to correct or explain the record.

(3) The requestor may challenge the NRC staff's adverse determination with respect to access to SUNSI or with respect to standing or need to know for SGI by filing a challenge within 5 days of receipt of that determination with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

(4) The requestor may challenge the Office of Administration's final adverse determination with respect to trustworthiness and reliability for access to SGI by filing a request for review in accordance with 10 CFR 2.336(f)(1)(iv).

(5) Further appeals of decisions under this paragraph must be made pursuant to 10 CFR 2.311.

K. Review of Grants of Access. A party other than the requestor may challenge an NRC staff determination granting access to SUNSI whose release would harm that party's interest independent of the proceeding. Such a challenge must be filed within 5 days of the notification by the NRC staff of its grant of access and must be filed with: (a) The presiding officer designated in this proceeding; (b) if no presiding officer has been appointed, the Chief Administrative Judge, or if he or she is unavailable, another administrative judge, or an Administrative Law Judge with jurisdiction pursuant to 10 CFR 2.318(a); or (c) if another officer has been designated to rule on information access issues, with that officer.

If challenges to the NRC staff determinations are filed, these procedures give way to the normal process for litigating disputes concerning access to information. The availability of interlocutory review by the Commission of orders ruling on such NRC staff determinations (whether granting or denying access) is governed by 10 CFR 2.311.<sup>7</sup>

L. The Commission expects that the NRC staff and presiding officers (and any other reviewing officers) will consider and resolve requests for access to SUNSI or SGI, and motions for protective orders, in a timely fashion in order to minimize any unnecessary delays in identifying those petitioners who have standing and who have propounded contentions meeting the specificity and basis requirements in 10 CFR part 2. The attachment to this Order summarizes the general target schedule for processing and resolving requests under these procedures.

<sup>&</sup>lt;sup>5</sup> Any motion for Protective Order or draft Non-Disclosure Affidavit or Agreement for SUNSI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 30 days of the deadline for the receipt of the written access request.

<sup>&</sup>lt;sup>6</sup> Any motion for Protective Order or draft Non-Disclosure Agreement or Affidavit for SGI must be filed with the presiding officer or the Chief Administrative Judge if the presiding officer has not yet been designated, within 180 days of the deadline for the receipt of the written access request.

<sup>&</sup>lt;sup>7</sup>Requestors should note that the filing requirements of the NRC's E-Filing Rule (72 FR 49139; August 28, 2007, as amended at 77 FR 46562; August 3, 2012) apply to appeals of NRC staff determinations (because they must be served on a presiding officer or the Commission, as applicable), but not to the initial SUNSI/SGI request submitted to the NRC staff under these procedures.
(253 of 314)

44075

## Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-11, Page 6 of 6

Federal Register/Vol. 83, No. 168/Wednesday, August 29, 2018/Notices

<i>It is so ordered.</i> Dated at Rockville, Maryland, this 24th of August, 2018.		For the Nuclear Regulatory Commission. <b>Rochelle C. Bavol, Acting,</b> <i>Secretary of the Commission.</i>
		Attachment 1—General Target Schedule for Processing and Resolving Requests for Access to Sensitive Unclassified Non-Safeguards Information and Safeguards Information in This Proceeding
Day		Event/activity
0	Publication of <b>Federal Register</b> notice of hearing and opportunity to petition for leave to intervene, including order with in structions for access requests. Deadline for submitting requests for access to Sensitive Unclassified Non Safeguards Information (SUNSI) and/or Safeguards Information (SGI) with information: Supporting the standing of a potential party identified by name and address; describing the need for the information in order for the potential party to participate meaningfully in an adjudicatory proceeding; dem onstrating that access should be granted ( <i>e.g.</i> , showing technical competence for access to SGI); and, for SGI, including application fee for fingerprint/background check.	

60 ...... Deadline for submitting petition for intervention containing: (i) Demonstration of standing; (ii) all contentions whose formulation does not require access to SUNSI and/or SGI (+25 Answers to petition for intervention; +7 requestor/petitioner reply).

#### 

30 ..... Deadline for NRC staff reply to motions to reverse NRC staff determination(s).

40 ...... (Receipt +30) If NRC staff finds standing and need for SUNSI, deadline for NRC staff to complete information processing and file motion for Protective Order and draft Non-Disclosure Affidavit. Deadline for applicant/licensee to file Non-Disclosure Agreement for SUNSI.

190 ...... (Receipt +180) If NRC staff finds standing, need to know for SGI, and trustworthiness and reliability, deadline for NRC staff to file motion for Protective Order and draft Non-disclosure Affidavit (or to make a determination that the proposed recipient of SGI is not trustworthy or reliable). Note: Before the Office of Administration makes a final adverse determination regarding access to SGI, the proposed recipient must be provided an opportunity to correct or explain information.

205 ..... Deadline for petitioner to seek reversal of a final adverse NRC staff trustworthiness or reliability determination under 10 CFR 2.336(f)(1)(iv).

- A ...... If access granted: Issuance of a decision by a presiding officer or other designated officer on motion for protective order for access to sensitive information (including schedule for providing access and submission of contentions) or decision reversing a final adverse determination by the NRC staff.
- A + 3 ..... Deadline for filing executed Non-Disclosure Affidavits. Access provided to SUNSI and/or SGI consistent with decision issuing the protective order.

A + 28 ...... Deadline for submission of contentions whose development depends upon access to SUNSI and/or SGI. However, if more than 25 days remain between the petitioner's receipt of (or access to) the information and the deadline for filing all other contentions (as established in the notice of opportunity to request a hearing and petition for leave to intervene), the petitioner may file its SUNSI or SGI contentions by that later deadline.

>A + 60 ..... Decision on contention admission.

[FR Doc. 2018–18758 Filed 8–28–18; 8:45 am] BILLING CODE 7590–01–P

#### NUCLEAR WASTE TECHNICAL REVIEW BOARD

## Senior Executive Service Performance Review Board

**AGENCY:** U.S. Nuclear Waste Technical Review Board.

**ACTION:** Notice of Performance Review Board membership.

**SUMMARY:** This notice announces the membership of the Nuclear Waste Technical Review Board (NWTRB) Senior Executive Service (SES) Performance Review Board (PRB).

**DATES:** August 27, 2018.

**FOR FURTHER INFORMATION CONTACT:** Neysa M. Slater-Chandler by telephone at 703–235–4480, or via email at *slaterchandler@nwtrb.gov*, or via mail at 2300 Clarendon Blvd., Suite 1300, Arlington, VA 22201.

**SUPPLEMENTARY INFORMATION:** 5 U.S.C. 4314(c)(1) through (5) requires each agency to establish, in accordance with regulations prescribed by the Office of Personnel Management, one or more SES Performance Review Boards.

The PRB shall review and evaluate the initial summary rating of a senior executive's performance, the executive's response, and the higher-level official's comments on the initial summary rating. In addition, the PRB will review

1254 of 314)



December 31, 2019

SECY-20-0001

FOR: The Commissioners

FROM: John W. Lubinski, Director Office of Nuclear Material Safety and Safeguards

SUBJECT:SUMMARY OF STAFF REVIEW AND FINDINGS OF THE<br/>2019 DECOMMISSIONING FUNDING STATUS REPORTS FROM<br/>OPERATING AND DECOMMISSIONING POWER REACTOR<br/>LICENSEES

### PURPOSE:

The purpose of this paper is to inform the Commission of the U.S. Nuclear Regulatory Commission (NRC) staff's findings from its review of the 2019 decommissioning funding status (DFS) reports submitted by operating power reactor licensees and power reactor licensees in decommissioning. This paper does not address any new commitments or resource implications.

### BACKGROUND:

In 1988, the NRC established technical and financial requirements to assure that decommissioning of all licensed facilities would be accomplished in a safe and timely manner and that adequate licensee funds would be available for this purpose (Volume 53 of the *Federal Register* (FR), page 24018 (53 FR 24018); June 27, 1988). "Decommission," in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.2, "Definitions," means to remove a facility or site safely from service and reduce residual radioactivity to a level that permits: (1) release of the property for unrestricted use and termination of the license; or (2) release of

CONTACT: Shawn W. Harwell, NMSS/REFS (301) 415-1309

the property under restricted conditions and termination of the license. Therefore, decommissioning, as used in NRC regulations, refers exclusively to radiological decommissioning.

In 1998, in response to the anticipated deregulation of the power generating industry, the NRC amended the decommissioning financial assurance rules under 10 CFR 50.75, "Reporting and recordkeeping for decommissioning planning," resulting in additional methods and flexibility for reactor licensees to provide financial assurance for decommissioning (63 FR 50465; September 22, 1998). Additionally, the amended regulations established the requirements that power reactor licensees report, on a biennial basis, the status of their decommissioning funds and on material changes to their external trust agreements and other financial assurance mechanisms.

In 2011, the NRC further amended its regulations to improve decommissioning planning and to reduce the likelihood that any current operating facility would become a legacy site<sup>1</sup> (76 FR 35512; June 17, 2011). As a result, under 10 CFR 50.82, "Termination of license," power reactor licensees in decommissioning are required to provide annual DFS reports to the NRC that include, among other things, information on decommissioning expenditures made during the previous calendar year, the remaining balance of decommissioning funds, and an estimate of the cost to complete decommissioning.

#### **DISCUSSION:**

Pursuant to NRC regulations at 10 CFR 50.75(f)(1) (for operating power reactors) and 10 CFR 50.82(a)(8)(v)–(vi) (for power reactors in decommissioning), licensees are required to submit DFS reports to the NRC. DFS reports are required every 2 years from operating power reactor licensees, annually from operating power reactor licensees that are within 5 years of the projected end of their operation or involved in a merger or acquisition, and annually from power reactor licensees in decommissioning. Licensees must submit these reports to the NRC by March 31 of the reporting year. The reports must provide specified information that will allow the agency to monitor the status of decommissioning funds for all power reactor licensees from the time they begin operating until their license is terminated.

For operating reactors, in accordance with 10 CFR 50.75(f)(1), the DFS reports must include: (1) the amount of decommissioning funds estimated to be required pursuant to 10 CFR 50.75(b) and 10 CFR 50.75(c); (2) the amount of decommissioning funds accumulated to the end of the calendar year preceding the date of the report; (3) a schedule of the annual amounts remaining to be collected; (4) the assumptions used regarding rates of escalation in decommissioning costs, rates of earnings on decommissioning funds, and rates of other factors used in funding projections; (5) any contracts on which the licensee is relying; (6) any modifications occurring to a licensee's current method of providing financial assurance since the last submitted report; and (7) any material changes to trust agreements.

10 CFR 50.75(c) requires licensees to demonstrate reasonable assurance of funding for decommissioning. Shortfalls should, therefore, be corrected in a timely manner. The staff notes that while the decommissioning funding amounts certified by licensees under this part do not represent the actual cost of plant decommissioning, they do provide assurance that licensees

1

As defined in the Statement of Considerations accompanying the 2011 rule, a "legacy site" is a facility that is in decommissioning status with complex issues and an owner who cannot complete the decommissioning work for technical or financial reasons.

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have available the bulk of the funds to safely decommission the facility. Adjustments to the certification amount are required annually over the operating life of the facility and account for inflation in the labor, energy, and waste burial components of decommissioning costs. Within 5 years before the projected end of operations, 10 CFR 50.75(f) requires that each licensee submit a preliminary decommissioning cost estimate that includes an updated assessment of the major factors that could affect the cost to decommission. The preliminary cost estimate is a more accurate representation of the licensee's cost to decommission as compared to the NRC required minimum. Therefore, shortfalls identified during the operating cycle and between biennial DFS reporting periods are considered to be temporary lapses in funding for decommissioning that may be remedied by use of a parent company guarantee, trust fund growth, or trust fund contributions. In any event, guidance in Regulatory Guide (RG) 1.159, "Assuring the Availability of Funds for Decommissioning Nuclear Reactors," Revision 2, issued October 2011, states that shortfalls identified in a biennial DFS report must be corrected by the time the next report is due.

For power reactors in decommissioning, in accordance with 10 CFR 50.82(a)(8)(v), the annual DFS reports must include: (1) the amount spent on decommissioning, both cumulative and over the previous calendar year, the remaining balance of any decommissioning funds, and the amount provided by other financial assurance methods being relied upon; (2) an estimate of the costs to complete decommissioning, reflecting any difference between actual and estimated costs for work performed during the year, and the decommissioning criteria upon which the estimate is based; (3) any modifications occurring to a licensee's current method of providing financial assurance since the last submitted report; and (4) any material changes to trust agreements or financial assurance contracts. Pursuant to 10 CFR 50.82(a)(8)(vi), if the sum of the balance of any remaining decommissioning funds, plus earnings on such funds calculated at not greater than a 2 percent real rate of return, together with the amount provided by other financial assurance methods being relied upon, does not cover the estimated cost to complete the decommissioning, the DFS report must include additional financial assurance to cover the estimated cost of completion.

Pursuant to 10 CFR 50.75(e)(2), the NRC reserves the right to review, as needed, the rate of accumulation of decommissioning funds and take additional actions as appropriate, on a case-by-case basis, to ensure a licensee's adequate accumulation of decommissioning funds. This includes modification of a licensee's schedule for the accumulation of decommissioning funds. Additionally, in accordance with 10 CFR 50.82(c), for licensees that shut down their reactors prematurely, the collection period for any shortfall of funds will be determined on a case-by-case basis upon application by the licensee, taking into account the specific financial situation of each licensee.

Using staff guidance in Office of Nuclear Reactor Regulation Office Instruction LIC-205, "Procedures for NRC's Independent Analysis of Decommissioning Funding Assurance for Operating Nuclear Power Reactors and Power Reactors in Decommissioning," Revision 6. dated April 10, 2017,<sup>2</sup> the NRC staff reviewed the 2019<sup>3</sup> DFS reports for completeness and compliance with 10 CFR 50.75(f)(1) - (2) and 10 CFR 50.82(a)(8)(v) - (vi). The staff's review included reports for 98 operating power reactors and 21 power reactors in decommissioning. Two tables summarizing the staff's review are enclosed. Table 1, "2019 Decommissioning Funding Status Report for Operating Power Reactor Licensees (December 31, 2018)." summarizes the information from the 98 DFS reports submitted by operating power reactor

(256 of 314)

<sup>2</sup> Agencywide Documents Access and Management System (ADAMS) Accession No. ML17075A095 3

The 2019 DFS reports reflect the financial status as of December 31, 2018.

(257 of 314)

### The Commissioners

licensees,<sup>4</sup> and Table 2, "2019 Decommissioning Funding Status Report for Power Reactor Licensees in Decommissioning (December 31, 2018)," summarizes the information from the 21 DFS reports submitted by power reactor licensees in decommissioning.<sup>5</sup>

### Results of the NRC Staff's Review—Operating Power Reactor Licensees

The NRC staff's review of the 2019 DFS reports for operating power reactor licensees resulted in the following findings:

- All 98 operating power reactor licensees met the reporting requirements of 10 CFR 50.75(f) and are currently demonstrating decommissioning funding assurance (DFA).
- As of the December 31, 2018 reporting period cutoff date, three operating power reactors with shortfalls were identified in the 2019 DFS review cycle (Beaver Valley Power Station, Unit 1 (BVPS, Unit 1); Clinton Power Station, Unit 1 (Clinton, Unit 1); and Perry Nuclear Power Plant, Unit 1 (PNPP)).
- According to its 2019 DFS report,<sup>6</sup> Exelon Generation Company, LLC (EGC), the licensee for Clinton, Unit 1, did not demonstrate DFA for this unit, as of December 31, 2018, due to market performance. However, according to EGC and verified by the NRC staff, as of February 28, 2019, DFA is demonstrated for Clinton, Unit 1, due to recovery in market performance.
- According to its 2019 DFS report,<sup>7</sup> FirstEnergy Nuclear Operating Company (FENOC), the licensee for BVPS, Unit 1 and PNPP, did not demonstrate DFA for either of these units, as of December 31, 2018. However, according to FENOC and verified by the NRC staff, as of January 31, 2019, DFA is demonstrated for PNPP, due to recovery in market performance. For BVPS, Unit 1, in both its 2019 DFS report and in a supplemental letter dated August 29, 2019,<sup>8</sup> related to a license transfer application for the FENOC reactor fleet, FENOC reported a shortfall in DFA. As a condition of its approval of the license transfer application on December 2, 2019,<sup>9</sup> the NRC required the applicants to implement and maintain a provisional trust agreement in the amount required to cover the BVPS, Unit 1 shortfall. Accordingly, DFA is demonstrated for BVPS, Unit 1.
- The 2017 DFS report review cycle included 100 operating power reactors. Since the last summary of staff review and findings for DFS reports,<sup>10</sup> two units have transitioned to a decommissioning status and are now included in the review of power reactor licensees in decommissioning.
- Amounts accumulated in the decommissioning trust funds for operating power reactors totaled approximately \$56.5 billion as of December 31, 2018.

<sup>4</sup> ADAMS Accession No. ML19346E376

<sup>5</sup> ADAMS Accession No. ML19346E377

<sup>&</sup>lt;sup>6</sup> ADAMS Accession No. ML19091A140

ADAMS Accession No. ML19074A242
 ADAMS Accession No. ML19241A461

<sup>&</sup>lt;sup>8</sup> ADAMS Accession No. ML19241A461 9 ADAMS Accession No. ML19203C053

ADAMS Accession No. ML19303C953
 ADAMS Accession No. ML18006B523

<sup>&</sup>lt;sup>10</sup> ADAMS Accession No. ML18096B523

### Results of the NRC Staff's Review—Power Reactor Licensees in Decommissioning

The NRC staff's review of the 2019 DFS reports for power reactor licensees in decommissioning resulted in the following findings:

- All 21 power reactor licensees in decommissioning met the reporting requirements of 10 CFR 50.82(a)(8)(v)–(vi).
- All 21 power reactor licensees in decommissioning demonstrated decommissioning funding assurance by either demonstrating a sufficient funding balance or by providing additional financial assurance to cover identified shortfalls.
- One of the 21 power reactor licensees in decommissioning reported a shortfall. In its submittal,<sup>11</sup> EGC, the licensee for Peach Bottom Atomic Power Station, Unit 1 (PBAPS, Unit 1), identified, and the NRC staff confirmed, a shortfall in funding for PBAPS, Unit 1, of about \$15 million (in 2018 dollars). EGC provided additional financial assurance to cover the estimated cost to complete decommissioning at PBAPS, Unit 1, pursuant to 10 CFR 50.82(a)(8)(vi) and guidance in RG 1.159. Specifically, EGC indicated that collections from "non-bypassable charges"<sup>12</sup> from which EGC funds its decommissioning trust will be adjusted to cover any funding shortfall that exists. The NRC staff verified that the amounts to be collected will be adjusted, as necessary, in accordance with the applicable tariff in EGC's next filing to the Pennsylvania Public Utility Commission (PaPUC) of the Nuclear Decommissioning Cost Adjustment to cover any funding shortfall for PBAPS, Unit 1, at that time. The cost adjustment is made every five years pursuant to PaPUC Electric Tariff No. 4. The next effective date of a rate adjustment would be January 1, 2023. That scheduled adjustment provides additional assurance that funding will be available to complete radiological decommissioning at PBAPS, Unit 1.
- Current balances in the decommissioning trust funds for power reactor licensees in decommissioning totaled approximately \$8.2 billion as of December 31, 2018.

### CONCLUSION:

Based on its review of the 2019 DFS reports, the NRC staff finds that all licensees are in compliance with the decommissioning funding assurance reporting requirements of 10 CFR 50.75(f)(1)–(2) for operating power reactor licensees and 10 CFR 50.82(a)(8)(v)–(vi) for power reactor licensees in decommissioning. The staff also finds that all licensees are in compliance with the decommissioning funding assurance requirements of 10 CFR 50.75 and 10 CFR 50.82, as applicable, for the 2019 DFS reporting cycle.

<sup>&</sup>lt;sup>11</sup> ADAMS Accession No. ML19091A140

<sup>&</sup>lt;sup>12</sup> The regulation at 10 CFR 50.2 states, "Non-bypassable charges mean those charges imposed over an established time period by a Government authority that affected persons or entities are required to pay to cover costs associated with the decommissioning of a nuclear power plant. Such charges include, but are not limited to, wire charges, stranded cost charges, transition charges, exit fees, other similar charges, or the securitized proceeds of a revenue stream."

## COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

has JUS for J. Lubinski

John W. Lubinski, Director Office of Nuclear Material Safety and Safeguards

Enclosures:

- 1. 2019 DFS Report for Operating Power Reactor Licensees
- 2. 2019 DFS Report for Power Reactor Licensees in Decommissioning

SUBJECT: SUMMARY OF STAFF REVIEW AND FINDINGS OF THE 2019 DECOMMISSIONING FUNDING STATUS REPORTS FROM OPERATING AND DECOMMISSIONING POWER REACTOR LICENSEES

### PKG - ML19346E375 SECY Paper - ML19346E378 Enclosure 1 - ML19346E376 Enclosure 2 - ML19346E377

		*Concurred via email	200800001		
OFFICE	NMSS/REFS	NMSS/REFS	NMSS/REFS		
NAME	SHarwell	FMiller	KCoyne		
DATE	12/12/2019	12/12/2019	12/16/2019		
OFFICE	TechEd*	OGC – NLO*	NMSS		
NAME	JDougherty	JWachutka	RLewis for JLubinski		
DATE	12/16/2019	12/16/2019	12/31/2019		

**OFFICIAL RECORD COPY** 

## for Operating Power Reactor Licensees (December 31, 2018)

Plant Name	Expected Shutdown	Approx. No. of Years	Decommissioning Trust	Projected DTF Balance <sup>1</sup>	NRC Minimum <sup>2</sup> or Site-
	Date as of 3/31/2019	<b>Remaining Before</b>	Fund (DTF) Balance (As	Before	Specific Cost
		Expected Shutdown	of 12/31/18)	Decommissioning	Estimate (SSCE <sup>3</sup> )
			,	(2018\$)	(2018\$)
Arkansas Nuclear One, Unit 1	05/20/2034	16	\$506,719,075	\$689,546,000	\$472,331,427
Arkansas Nuclear One, Unit 2	07/17/2038	20	\$405,329,792	\$651,497,475	\$491,386,711
Arnold (Duane) Energy Center	10/20/2020	2	\$471,829,046	\$462,395,253	\$741,739,000 (SSCE)
Beaver Valley Power Station, Unit 1	05/31/2021	3	\$286,891,783	\$301,086,676	\$748.559,222 (SSCE)
Beaver Valley Power Station, Unit 2	10/31/2021	3	\$383,221,237	\$405,545,049	\$756,289,281 (SSCE)
Braidwood Station, Unit 1	07/29/2046	28	\$344,387,000	\$600,798,526	\$516,910,976
Braidwood Station, Unit 2	10/17/2047	29	\$373,111,000	\$664,960,663	\$516,910,976
Browns Ferry Nuclear Plant, Unit 1	12/20/2033	15	\$382,129,027	\$804,356,143	\$670,652,094
Browns Ferry Nuclear Plant, Unit 2	06/28/2034	16	\$372,441,358	\$807,117,683	\$670,652,094
Browns Ferry Nuclear Plant, Unit 3	07/02/2036	18	\$337,644,437	\$811,864,555	\$670,652,094
Brunswick Steam Electric Plant, Unit 1	09/08/2036	18	\$556,172,662	\$792,968,330	\$647,338,240
Brunswick Steam Electric Plant, Unit 2	12/27/2034	16	\$612,128,747	\$841,352,723	\$647,338,240
Byron Nuclear Generating Station, Unit 1	09/16/2044	26	\$378,722,000	\$634,628,010	\$516,910,976
Byron Nuclear Generating Station, Unit 2	08/02/2046	28	\$364,942,000	\$637,533,617	\$516,910,976
Callaway Plant, Unit 1	10/18/2044	26	\$516,590,664	\$2,081,907,143	\$943,465,000 (SSCE)
Calvert Cliffs Nuclear Power Plant, Unit 1	07/31/2034	16	\$385,697,000	\$526,609,517	\$479,528,791
Calvert Cliffs Nuclear Power Plant, Unit 2	08/13/2036	18	\$498,432,000	\$709,461,610	\$479,528,791
Catawba Nuclear Station, Unit 1	12/05/2043	25	\$434,010,828	\$808,514,773	\$479,369,171
Catawba Nuclear Station, Unit 2	12/05/2043	25	\$443,253,463	\$833,206,989	\$479,369,171
Clinton Power Station, Unit 1	09/29/2026	8	\$543,165,000	\$662,922,006	\$681,913,929
Columbia Generating Station	12/20/2043	25	\$267,400,000	\$633,085,084	\$560,620,749
Comanche Peak Nuclear Power Plant, Unit 1	02/08/2030	12	\$509,817,614	\$784,788,250	\$407,782,271
Comanche Peak Nuclear Power Plant, Unit 2	02/02/2033	15	\$570,766,848	\$890,895,328	\$407,782,271
Cooper Nuclear Station	01/18/2034	16	\$600,371,186	\$875,013,391	\$635,296,272
Davis-Besse Nuclear Power Station, Unit 1	04/22/2037	19	\$562,958,730	\$812,054,756	\$491,347,203
Diablo Canyon Power Plant, Unit 1	11/02/2024	6	\$1,306,300,000	\$2,642,507,129	\$521,994,236
Diablo Canyon Power Plant, Unit 2	08/26/2025	7	\$1,708,500,000	\$2,759,198,842	\$521,994,236
Donald C. Cook Nuclear Power Plant, Unit 1	10/25/2034	16	\$648,808,262	\$925,350,280	\$512,358,221
Donald C. Cook Nuclear Power Plant, Unit 2	12/23/2037	19	\$590,864,127	\$904,956,927	\$516,910,976
Dresden Nuclear Power Station, Unit 2	12/22/2029	11	\$696,581,000	\$866,390,450	\$659,754,252
Dresden Nuclear Power Station, Unit 3	01/12/2031	13	\$712,342,000	\$906,892,241	\$659,754,252
Farley (Joseph M.) Nuclear Plant, Unit 1	06/25/2037	19	\$429,795,326	\$693,130,020	\$481,147,134
Farley (Joseph M.) Nuclear Plant, Unit 2	03/31/2041	23	\$415,793,077	\$724,773,434	\$481,147,134

1 Includes growth from earnings and contributions.

2 Derived from minimum formula at Title 10 of the Code of Federal Regulations (10 CFR) 50.75(c). Incorporates labor, energy, and low-level waste (LLW) burial escalation factors.

3 Six licensees provided SSCEs.

ML19346E376

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## for Operating Power Reactor Licensees (December 31, 2018)

Plant Name	Expected Shutdown	Approx. No. of Years	Decommissioning Trust	Projected DTF Balance <sup>1</sup>	NRC Minimum <sup>2</sup> or Site-
	Date as of 3/31/2019	Remaining Before	Fund (DTF) Balance (As	Before	Specific Cost
		Expected Shutdown	of 12/31/18)	Decommissioning	Estimate (SSCE <sup>3</sup> )
				(2018\$)	(2018\$)
Fermi, Unit 2	03/20/2045	27	\$1,290,000,000	\$2,179,739,540	\$1,124,206,329
Fitzpatrick (James A.) Nuclear Power Plant	10/17/2034	16	\$837,714,000	\$1,149,497,103	\$656,818,742
Ginna (Robert E.) Nuclear Power Plant	09/18/2029	11	\$453,696,000	\$562,419,719	\$447,772,783
Grand Gulf Nuclear Station, Unit 1	11/01/2044	26	\$945,000,000	\$1,619,813,428	\$659,706,159
Hatch (Edwin I.) Nuclear Plant, Unit 1	08/06/2034	16	\$556,872,142	\$761,589,867	\$642,017,733
Hatch (Edwin I.) Nuclear Plant, Unit 2	06/13/2038	20	\$504,817,125	\$752,073,127	\$642,017,733
Hope Creek Generating Station, Unit 1	04/11/2046	28	\$548,048,000	\$946,314,050	\$682,827,069
Indian Point Nuclear Generating, Unit 2	04/30/2020	2	\$598,412,232	\$665,712,399	\$521,744,003
Indian Point Nuclear Generating, Unit 3	04/30/2021	3	\$780,593,070	\$885,909,858	\$521,744,003
LaSalle County Station, Unit 1	04/17/2042	24	\$510,017,000	\$812,992,812	\$681,913,929
LaSalle County Station, Unit 2	12/16/2043	25	\$511,373,000	\$841,358,445	\$681,913,929
Limerick Generating Station, Unit 1	10/26/2044	26	\$447,650,000	\$970,726,285	\$699,162,069
Limerick Generating Station, Unit 2	06/22/2049	31	\$476,814,000	\$1,189,138,805	\$699,162,069
McGuire Nuclear Station, Unit 1	03/03/2041	23	\$540,429,542	\$843,022,670	\$508,151,771
McGuire Nuclear Station, Unit 2	03/03/2043	25	\$591,619,169	\$960,505,217	\$508,151,771
Millstone Power Station, Unit 2	07/31/2035	17	\$672,500,000	\$936,727,760	\$471,737,576
Millstone Power Station, Unit 3	11/25/2045	27	\$704,800,000	\$1,206,886,636	\$501,543,596
Monticello Nuclear Generating Plant, Unit 1	09/08/2030	12	\$496,452,338	\$867,609,095	\$616,429,987
Nine Mile Point Nuclear Station, Unit 1	08/22/2029	11	\$622,189,000	\$770,007,040	\$624,843,730
Nine Mile Point Nuclear Station, Unit 2	10/31/2046	28	\$515,615,000	\$899,252,314	\$699,162,069
North Anna Power Station, Unit 1	04/01/2038	20	\$454,380,000	\$668,661,969	\$488,174,147
North Anna Power Station, Unit 2	08/21/2040	22	\$409,760,000	\$631,781,904	\$488,174,147
Oconee Nuclear Station, Unit 1	02/06/2033	15	\$448,983,678	\$595,906,645	\$445,577,753
Oconee Nuclear Station, Unit 2	10/06/2033	15	\$446,338,646	\$600,340,911	\$445,577,753
Oconee Nuclear Station, Unit 3	07/19/2034	16	\$583,969,218	\$797,319,523	\$445,577,753
Palisades Nuclear Plant	05/31/2022	4	\$443,630,000	\$474,977,452	\$480,360,545
Palo Verde Nuclear Generating Station, Unit 1	06/01/2045	27	\$1,051,297,000	\$1,785,294,634	\$521,994,236
Palo Verde Nuclear Generating Station, Unit 2	04/24/2046	28	\$1,099,314,000	\$1,898,184,618	\$521,994,236
Palo Verde Nuclear Generating Station, Unit 3	11/25/2047	29	\$1,104,914,000	\$1,969,184,363	\$521,994,236
Peach Bottom Atomic Power Station, Unit 2	08/08/2033	15	\$588,443,000	\$846,583,161	\$699,162,069
Peach Bottom Atomic Power Station, Unit 3	07/02/2034	16	\$612,126,000	\$903,857,122	\$699,162,069
Perry Nuclear Power Plant, Unit 1	03/18/2026	8	\$517,115,938	\$597,734,336	\$1,124,013,107 (SSCE)
Pilgrim Nuclear Power Station	05/31/2019	0	\$1,027,714,005	\$1,038,034,062	\$1,187,994,231 (SSCE)

1 Includes growth from earnings and contributions.

2 Derived from minimum formula at Title 10 of the Code of Federal Regulations (10 CFR) 50.75(c). Incorporates labor, energy, and low-level waste (LLW) burial escalation factors.

3 Six licensees provided SSCEs.

## for Operating Power Reactor Licensees (December 31, 2018)

Plant Name	Expected Shutdown	Approx. No. of Years	Decommissioning Trust	Projected DTF Balance <sup>1</sup>	NRC Minimum <sup>2</sup> or Site-
	Date as of 3/31/2019	Remaining Before	Fund (DTF) Balance (As	Before	Specific Cost
		Expected Shutdown	of 12/31/18)	Decommissioning	Estimate (SSCE <sup>3</sup> )
				(2018\$)	(2018\$)
Point Beach Nuclear Plant, Unit 1	10/05/2030	12	\$401,729,516	\$508,898,548	\$447,201,839
Point Beach Nuclear Plant, Unit 2	03/08/2033	15	\$378,522,034	\$503,224,830	\$447,201,839
Prairie Island Nuclear Generating Plant, Unit 1	08/09/2033	15	\$492,616,045	\$668,571,373	\$441,873,225
Prairie Island Nuclear Generating Plant, Unit 2	10/29/2034	16	\$461,002,122	\$660,974,441	\$441,873,225
Quad Cities Station, Unit 1	12/14/2032	14	\$692,681,544	\$926,844,344	\$659,754,252
Quad Cities Station, Unit 2	12/14/2032	14	\$747,179,957	\$998,816,061	\$659,754,252
River Bend Station, Unit 1	08/29/2045	27	\$803,300,000	\$1,589,990,378	\$654,849,543
Robinson (H.B.) Steam Electric Plant, Unit 2	07/31/2030	12	\$625,691,157	\$788,656,382	\$436,377,517
Salem Nuclear Generating Station, Unit 1	08/13/2036	18	\$630,405,000	\$966,669,058	\$501,543,596
Salem Nuclear Generating Station, Unit 2	04/18/2040	22	\$542,719,000	\$907,501,292	\$501,543,596
Seabrook Station, Unit 1	03/15/2050	32	\$688,077,235	\$1,282,885,897	\$530,326,196
Sequoyah Nuclear Plant, Unit 1	09/17/2040	22	\$211,311,189	\$625,513,258	\$508,151,771
Sequoyah Nuclear Plant, Unit 2	09/15/2041	23	\$201,304,966	\$626,380,349	\$508,151,771
Shearon Harris Nuclear Power Plant, Unit 1	10/24/2046	28	\$545,067,139	\$950,617,972	\$488,514,851
South Texas Project, Unit 1	08/20/2047	29	\$459,285,587	\$961,961,454	\$407,782,271
South Texas Project, Unit 2	12/15/2048	30	\$559,456,215	\$1,171,141,534	\$407,782,271
St. Lucie Plant, Unit 1	03/01/2036	18	\$1,016,752,531	\$1,435,232,094	\$491,581,184
St. Lucie Plant, Unit 2	04/06/2043	25	\$985,042,926	\$1,601,901,726	\$491,581,184
Summer (Virgil C.) Nuclear Station, Unit 1	08/06/2042	24	\$299,517,198	\$548,876,499	\$458,916,086
Surry Power Station, Unit 1	05/25/2032	14	\$456,600,000	\$596,007,008	\$473,140,598
Surry Power Station, Unit 2	01/29/2033	15	\$457,800,000	\$606,596,977	\$473,140,598
Susquehanna Steam Electric Station, Unit 1	07/17/2042	24	\$600,939,723	\$962,725,845	\$699,162,069
Susquehanna Steam Electric Station, Unit 2	03/23/2044	26	\$661,493,829	\$1,095,625,036	\$699,162,069
Three Mile Island Nuclear Station, Unit 1	04/19/2019	0	\$669,617,000	\$909,702,208	\$492,942,745
Turkey Point Nuclear Generating, Unit 3	07/19/2032	14	\$839,232,304	\$1,100,949,292	\$475,568,111
Turkey Point Nuclear Generating, Unit 4	04/10/2033	15	\$948,100,859	\$1,262,550,210	\$475,568,111
Vogtle Electric Generating Plant, Unit 1	01/16/2047	29	\$351,543,613	\$647,862,895	\$508,151,771
Vogtle Electric Generating Plant, Unit 2	02/09/2049	31	\$350,188,491	\$672,787,932	\$508,151,771
Waterford Steam Electric Station, Unit 3	12/18/2044	26	\$481,644,236	\$956,909,328	\$508,151,771
Watts Bar Nuclear Plant, Unit 1	11/09/2035	17	\$267,806,997	\$622,872,985	\$508,151,771
Watts Bar Nuclear Plant, Unit 2	10/21/2055	37	\$101,186,523	\$635,750,418	\$508,151,771
Wolf Creek Generating Station, Unit 1	03/11/2045	27	\$497,066,000	\$1,173,254,740	\$516,910,976

1 Includes growth from earnings and contributions.

2 Derived from minimum formula at Title 10 of the Code of Federal Regulations (10 CFR) 50.75(c). Incorporates labor, energy, and low-level waste (LLW) burial escalation factors.

3 Six licensees provided SSCEs.

for Power Reactor Licensees in Decommissioning (December 31, 2018)

Plant Name	Estimated Year of Completion of Radiological Decommissioning	Estimated Number of Years Remaining Until Part 50 License Termination	Decommissioning Trust Fund (DTF) Balance (As of 12/31/18) <sup>1</sup>	Estimated Remaining Cost to Complete Radiological Decommissioning (2018\$)
Crystal River Nuclear Generating Plant, Unit 3	2073	55	\$666,240,035	\$746,689,950
Dresden Nuclear Power Station, Unit 1	2036	18	\$342,623,000	\$442,845,000
Fermi, Unit 1	2032	14	\$22,800,000	\$22,500,000
Fort Calhoun Nuclear Power Plant	2030	12	\$975,633,000	\$881,641,181
Humboldt Bay Power Plant, Unit 3	2019	1	\$211,900,000	\$24,200,000
Indian Point Nuclear Generating, Unit 1	2073	55	\$471,200,000	\$583,420,000
Kewaunee Power Station	2073	55	\$574,411,000	\$550,383,000
La Crosse Boiling-Water Reactor	2019	1	\$21,700,000	\$1,600,000
Millstone Power Station, Unit 1	2058	40	\$504,610,000	\$301,206,000
Nuclear Ship Savannah	2031	13	\$108,000,000	\$124,900,000
Oyster Creek Nuclear Generating Station	2035	17	\$848,000,000	\$618,000,000
Peach Bottom Atomic Power Station, Unit 1	2034	16	\$117,728,000	\$263,409,000
San Onofre Nuclear Generating Station, Unit 1	2030	12	\$438,700,000	\$77,300,000
San Onofre Nuclear Generating Station, Unit 2	2032	14	\$1,497,800,000	\$699,300,000
San Onofre Nuclear Generating Station, Unit 3	2032	14	\$1,736,200,000	\$688,800,000
Three Mile Island Nuclear Station, Unit 2	2053	35	\$843,000,000	\$1,320,506,000
Vallecitos Boiling-Water Reactor	2025	7	\$11,992,513	\$11,992,513
Vallecitos Experimental Superheat Reactor	2025	7	\$15,646,541	\$15,646,541
Vermont Yankee Nuclear Power Station	2073	55	\$517,890,000	\$498,450,000
Zion Nuclear Power Station, Unit 1	2020	2	Both Units Combined:	Both Units Combined:
Zion Nuclear Power Station, Unit 2	2020	2	\$53,200,000	\$24,000,000

1 Dollar amounts reflected in the DTF Balance column may also include funding from other financial assurance methods, such as surety bonds and parent company guarantees, pursant to 10 CFR 50.75 (e)(1)(iii).

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TABLE 2

264 01 314

Enclosure 2

(265 of 314)

## Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 1 of 50



UNITED STATES NUCLEAR REGULATORY COMMISSION REGION IV 1600 EAST LAMAR BOULEVARD ARLINGTON, TEXAS 76011-4511

July 9, 2019

EA-18-155

Mr. Doug Bauder Vice President and Chief Nuclear Officer Southern California Edison Company San Onofre Nuclear Generating Station P.O. Box 128 San Clemente, CA 92674-0128

# SUBJECT: NRC SUPPLEMENTAL INSPECTION REPORT 050-00206/2018-006, 050-00361/2018-006, 050-00362/2018-006, 072-00041/2018-002

Dear Mr. Bauder:

This letter refers to a supplemental inspection using the U.S. Nuclear Regulatory Commission's (NRC's) Inspection Procedure 92702, "Follow-up on Traditional Enforcement Actions," conducted on January 28 through February 1, February 11-15, March 19, March 21-23, and April 10-13, 2019, at your facility in San Clemente, California. The inspection continued with in-office reviews of information provided by your staff from November 2018 through May 17, 2019.

The NRC performed this inspection to review corrective actions taken by the Southern California Edison Company in response to the misalignment of a loaded spent fuel storage canister as it was being downloaded into a storage vault at San Onofre Nuclear Generating Station (SONGS). Our initial review of the incident was documented in NRC Special Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, 072-00041/2018-001 and Notice of Violation (NRC's Agencywide Documents Access and Management System (ADAMS) Accession ML18341A172) and finalized in NRC letter "Notice of Violation and Proposed Imposition of Civil Penalty - \$116,000 and NRC Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, 072-00041/2018 001," (ADAMS Accession ML19080A208).

The enclosed report documents the results of the supplemental inspection. The inspectors discussed the preliminary inspection findings with you and members of your staff on February 15, 2019, at the conclusion of a portion of the onsite inspection. A final exit briefing was conducted telephonically with Mr. Al Bates, Regulatory and Oversight Manager, and members of your staff on June 13, 2019.

The NRC performed this supplemental inspection to determine if: (1) the root and contributing causes of the significant performance issues were understood, (2) the extent of condition and extent of cause for the significant performance issues were identified, (3) the corrective actions taken to address and preclude repetition of significant performance issues were prompt and effective, and (4) the corrective action plans direct prompt actions to effectively address and

D. Bauder

preclude repetition of significant performance issues. Additionally, the inspection team reviewed and determined if follow-up items from the NRC Special Inspection had been completed.

The NRC determined that your staff's causal evaluations to address the previously issued violations were adequately performed to the depth and breadth required. The NRC noted that your staff's evaluations identified that the primary root cause of the Severity Level II violation for failure to provide redundant lift protection features during downloading operations was that management failed to recognize the complexity and risks associated with a long duration fuel transfer campaign using a relatively new system design. Your staff determined that the primary cause for the Severity Level III violation for failure to make a report to the NRC was that management failed to recognize the required integration and application of 10 CFR Part 72 reporting requirements.

The NRC determined that your staff identified and implemented appropriate corrective actions to revise loading procedures, revise the reportability program, utilize equipment enhancements, require adequate training, enhance oversight of operations, and enhance the corrective action program at SONGS. The NRC also determined that your staff's extent of condition and extent of cause evaluations adequately reviewed whether other operations were susceptible to similar performance deficiencies. However, even though your causal evaluations and corrective actions were comprehensive, the NRC staff identified four observations associated with the evaluations and corrective actions.

Based on the results of the supplemental inspection, the NRC identified five findings that were identified as violations of NRC requirements and were determined to be Severity Level IV violations of low safety significance under the traditional enforcement process. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of the NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to: (1) the Regional Administrator, Region IV, and (2) the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter, its enclosure, and your response if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from ADAMS. ADAMS is accessible from the NRC's Website at <a href="http://www.nrc.gov/reading-m/adams.html">http://www.nrc.gov/reading-m/adams.html</a>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

(267 of 314)

D. Bauder

If you have any questions regarding this inspection report, please contact Lee Brookhart at 817-200-1549, or the undersigned at 817-200-1223.

Sincerely,

Greg Warnick, Chief Reactor Inspection Branch Division of Nuclear Materials Safety

Docket Nos.: 050-00206; 050-00361; 050-00362; 072-00041 License Nos.: DPR-13; NPF-10; NPF-15

Enclosure:

Supplemental Inspection Report 050-00206/2018-006; 50-00361/2018-006; 050-00362/2018-006; 072-00041/2018-002 w/Attachments:

- 1. Supplemental Inspection Information
- 2. Radiological Surveys of ISFSI pads

(268 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 4 of 50

## U.S. NUCLEAR REGULATORY COMMISSION

## REGION IV

Docket Nos.:	50-206; 50-361; 50-362; 72-041			
License Nos.:	DPR-13; NPF-10; NPF-15			
Report No.:	050-00206/2018-006; 050-00361/2018-006; 050-00362/2018-006; and 072-00041/2018-002			
EA No.:	18-155			
Licensee:	Southern California Edison Company			
Facility:	San Onofre Nuclear Generating Station			
Location:	San Clemente, CA 92674-012			
Inspection Dates:	Onsite: January 28 - February 1, 2019; February 11 - 15, 2019; March 19, 21 - 23, 2019; and April 10 - 13, 2019 In-office review from November 2018 through May 17, 2019			
Exit Meeting Date:	June 13, 2019			
Inspectors:	Lee Brookhart, Senior ISFSI Inspector Reactor Inspection Branch Division of Nuclear Materials Safety, Region IV Eric Simpson, CHP, Health Physicist Reactor Inspection Branch Division of Nuclear Materials Safety, Region IV W. Chris Smith, Reactor/ISFSI Inspector Reactor Inspection Branch Division of Nuclear Materials Safety, Region IV Christopher Newport, Senior Resident Inspector Project Branch A, Diablo Canyon Division of Reactor Projects, Region IV			
Accompanied by:	Janine F. Katanic, PhD, CHP, Acting Branch Chief Fuel Cycle and Decommissioning Branch Division of Nuclear Materials Safety, Region IV			
Approved By:	Greg Warnick, Chief Reactor Inspection Branch Division of Nuclear Materials Safety, Region IV			
Attachments:	<ol> <li>Supplemental Inspection Information</li> <li>Radiological Surveys of ISFSI Pads</li> </ol>			

(269 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 5 of 50

## EXECUTIVE SUMMARY

# NRC Supplemental Inspection Report 050-00206/2018006; 050-00361/2018006; 050-00362/2018006; and 072-00041/2018-002

On January 28 through February 1; February 11-15; March 19; March 21-23; and April 10-13, 2019, the U.S. Nuclear Regulatory Commission performed an announced on-site Supplemental Inspection of the Independent Spent Fuel Storage Installation at the decommissioning San Onofre Nuclear Generating Station in San Clemente, California. The inspection continued with an in-office review of the licensee's analyses, procedures, and other materials gathered and provided prior to and after the on-site portion of the inspection through May 17, 2019.

The scope of the inspection was to evaluate and review the licensee's follow-up investigation, causal evaluations, implemented corrective actions, and planned corrective actions associated with violations described in the NRC's Special Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, and 072-00041/2018-001 and Notice of Violation (NRC's Agencywide Documents Access and Management System (ADAMS) Accession ML18341A172) and Notice of Violation and Proposed Imposition of Civil Penalty - \$116,000 and NRC Inspection Report (ADAMS Accession ML19080A208).

The NRC determined that the licensee's causal evaluations were conducted to a level of detail commensurate with the significance of the problems and reached reasonable conclusions as to the root and contributing causes of the event. The NRC determined that completed or planned corrective actions were comprehensive and sufficient to address the performance issues that led to the previously identified violations.

Additionally, the inspectors identified five Severity Level IV, non-cited violations that involved failures to: (1) ensure appropriate quality standards on new equipment for downloading/withdrawal operations; (2) ensure purchased material conformed to the procurement documents for load sensing shackles; (3) ensure the loaded transfer cask and its conveyance was evaluated under the site-specific design basis earthquake; (4) provide adequate written basis for the initial 10 CFR 72.48 scratch evaluation; and (5) request the certificate holder to obtain a Certificate of Compliance amendment for use of the intermediate shelf in the spent fuel pool.

### Follow-up on Traditional Enforcement Actions, Inspection Procedure 92702

The inspectors independently reviewed the licensee's causal evaluations for the
performance issues and significant findings that led to the August 3, 2018,
misalignment incident. The NRC concluded that the evaluations were conducted to
a level of detail commensurate with the significance of the problems and the root
causes combined with the contributing causes adequately addressed the findings
presented in the NRC Special Inspection Report. The inspectors also concluded
that the root and contributing causes of the significant performance issues were
understood by the licensee. One observation was identified by the NRC which
related to the licensee's contributing causes. Subsequently, the licensee addressed
and resolved the NRC observation by implementing additional corrective actions.
(Section 1.2.1)

- The inspectors determined that the licensee evaluated the performance issues using systematic methodologies to identify root and contributing causes. The inspectors concluded that the licensee's causal evaluations addressed the extent of condition and extent of cause of the issues and appropriately considered safety culture traits. One observation was identified by the NRC regarding the licensee's extent of condition evaluation. Subsequently, the licensee addressed and resolved the issue by implementing additional corrective actions. (Section 1.2.2)
- The NRC concluded that the licensee's evaluations and corrective actions taken in the areas of licensee oversight, procedures, training, equipment, corrective action program, and reportability were appropriate to prevent recurrence of prior inspection findings and violations and were adequately prioritized with consideration to risk significance and regulatory compliance. The inspectors concluded that the licensee's completed corrective actions in the areas of training, corrective action program, and procedures were adequate to restore compliance and prevent recurrence for the relevant violations issued in the NRC Special Inspection Report, dated December 19, 2018. (Section 1.2.3.b (1)-(6))
- During the NRC's review, the inspectors identified two additional observations and two violations of NRC requirements relating to the licensee's corrective actions. The two violations were related to the licensee's failure to establish measures to ensure appropriate quality standards were specified in design documentation in accordance with 10 CFR 72.146 and the licensee's failure to establish measures to ensure that purchased equipment conformed to the procurement documents in accordance with 10 CFR 72.154 for the recent enhancements to fuel canister transfer equipment. The licensee entered the findings into the corrective action program as action requests 1218-20333 and 1219-52380. The violations were determined to have a low safety significance and the Severity Level IV violations were treated as non-cited violations. Subsequently, the licensee addressed and resolved the NRC observations and violations by implementing additional corrective actions. (Section 1.2.3.c)
- The inspectors evaluated and concluded that the licensee's corrective actions were prompt and effective, and the licensee had adequately established appropriate quantitative or qualitative measures of success for the actions implemented to monitor the effectiveness of the corrective actions to prevent recurrence. (Section 1.2.4)

## Follow-up of Events and Notices of Enforcement Discretion, Inspection Procedure 71153

- The NRC reviewed Licensee Event Report 2018-001-1 (ADAMS Accession ML18317A060), dated November 8, 2018, for the licensee's actions which led to the inadvertent disablement of redundant important-to-safety slings during downloading operations on August 3, 2018. The NRC inspectors reviewed all the implemented and planned corrective actions and found them to be adequate to restore compliance and prevent recurrence. This licensee event report is closed. (Section 2.2.1)
- The NRC reviewed Licensee Event Report 2018-002-0 (ADAMS Accession ML19050A170), dated February 14, 2019. The licensee notified the

NRC that previous operations utilizing the low-profile-transporter were performed outside the clearance limits calculated in the station's site-specific seismic analysis. The NRC inspectors reviewed all the implemented corrective actions and found them to be adequate to restore compliance and prevent recurrence. The licensee event report described that an analysis was still in progress to determine if past operations were acceptable. This licensee event report remains open, pending NRC review of the additional information. (Section 2.2.2)

- The NRC reviewed Licensee Event Notification 53858, dated February 2, 2019. The licensee notified the NRC that previous operations utilizing the vertical cask transporter had been performed, for short periods of time, outside conditions described in the station's site-specific seismic analysis. Specifically, the licensee prematurely removed the seismic restraint band prior to stack-up operations. The NRC inspectors reviewed all the implemented and planned corrective actions and found them to be adequate to restore compliance and prevent recurrence. This licensee event notification is closed. (Section 2.2.3)
- The inspectors documented a violation of Certification of Compliance 72-1040, Appendix B, Technical Specification 3.4.15, for the licensee's failure to conduct transportation operations in accordance with the station's site-specific seismic analysis. Specifically, the NRC identified, the licensee prematurely removed the seismic restraint band prior to stack-up operations during vertical cask transporter operations. The licensee entered the finding into the corrective action program as action requests 0219-88442, 0219-22465, and 0319-95843. The NRC determined that the finding was of low safety significance since the licensee had re-performed the seismic evaluations restoring compliance and demonstrated the canister and its conveyance would not have tipped-over or slid off the haul route during those transportation operations. This Severity Level IV violation was treated as a non-cited violation. (Section 2.2.4)
- As a follow-up to the Special Inspection Charter, the NRC reviewed the licensee's evaluation to analyze the potential effects of dropping a canister approximately 18 feet onto the base of the UMAX vault. The NRC agreed with the evaluation conclusion that the canister would not have breached had the canister fell to the bottom of the UMAX vault. Additionally, the NRC concluded that the canister would have continued to perform all safety functions, including structural, thermal, criticality control, and shielding. (Section 2.2.5.a)
- The licensee performed a change under the 10 CFR 72.48 process to evaluate and accept scratches from incidental contact during insertion and withdrawal operations on previously loaded and future canisters placed in the UMAX independent spent fuel storage installation. The licensee's subsequent written evaluation, based on in-situ visual assessments and statistical analyses of eight loaded canisters, was adequate to demonstrate that the proposed change would not affect the canisters' ability to meet the confinement design function and structural functions as specified in the Holtec Final Safety Analysis Report.

The licensee's evaluation also demonstrated that American Society of Mechanical Engineers Section III code tolerances for wear were met and did not require a change to the storage system's technical specifications. The NRC utilized the data obtained through the visual assessments to perform independent statistical assessments using several models that were appropriate for the sample size. The NRC concluded that the conclusion presented by the Southern California Edison Company was conservative and reasonably bounded the maximum anticipated scratch or wear depth resulting from routine operational activities. The NRC concluded the licensee's 10 CFR 72.48 change did not require prior NRC review and approval through an amendment request. (Section 2.2.5.b)

 The inspection results documented one violation of NRC requirements for the licensee's failure to include an adequate evaluation to support a design change in accordance with 10 CFR 72.48. The NRC identified that the licensee's original evaluations to allow scratching and gouging on canisters contained multiple errors and inadequacies, and the NRC determined that the calculation could not adequately bound the maximum possible scratch depth on a canister.

The licensee entered the finding into the corrective action program as action requests 1218-11302 and 0219-96601. The NRC determined that the finding was of low safety significance since the licensee re-performed the written evaluation utilizing in-situ visual assessment and statistical analyses that calculated a maximum probable scratch depth, which provided an adequate basis for the determination that the change did not require NRC review through an amendment request. This Severity Level IV violation was treated as a non-cited violation. (Section 2.2.6)

 The NRC closed an Unresolved Item from NRC Inspection Report 07200041/2017-001 dated, August 24, 2018 (ADAMS Accession ML18200A400). The Unresolved Item was related to a 10 CFR 72.48 evaluation for the scenario of a hypothetical accident of the loaded HI-TRAC VW transfer cask contacting the sides and bottom of the spent fuel pool during the short period of time that a loaded multi-purpose canister was in an unconstrained condition on an intermediate shelf in the spent fuel pool.

The inspectors determined one violation of NRC requirements occurred, for the licensee's failure to request the certificate holder to obtain an amendment prior to implementing a change in accordance with 10 CFR 72.48. The licensee's design change created the possibility of an accident of a different type than any previously evaluated in the Holtec Final Safety Analysis Report. The licensee entered the issue into the corrective action program as action requests 0718-10512 and 0617-86918. The NRC determined that the finding was of low safety significance since the accident condition had been analyzed and NRC approved in NUREG-0712 "Safety Evaluation Report related to the operation of SONGS Units 2 and 3, dated February 1981," and described in the San Onofre Nuclear Generating Station Decommissioning Safety Analysis Report. The licensee restored compliance by revising the loading procedures to no longer utilize the intermediate shelf in the spent fuel pool. This Severity Level IV violation was treated as a non-cited violation. (Section 2.2.7)

 The inspection team observed the licensee perform several dry run exercises utilizing a simulated canister. On January 28, 2019, the licensee successfully demonstrated operations utilizing the low-profile transporter to transport the simulated canister within the transfer cask to the independent spent fuel storage installation pad while maintaining compliance with the station's site-specific seismic analysis. On February 14, 2019, the licensee successfully demonstrated removal of the transfer cask from the bottom of the spent fuel pool directly to the cask washdown pit without utilizing the intermediate shelf in the spent fuel pool.

On January 28-30, 2019, the inspection team observed the licensee implementing all the corrective action enhancements to download and retrieve a simulated canister at the independent spent fuel storage installation pad. These exercises contained: (1) all vendor personnel trained and qualified under the new training program, (2) use of more personnel, located in strategic positions to observe canister downloading, (3) utilization of the enhanced procedures, (4) implementation of the new canister transfer monitoring equipment, and (5) enhanced oversight by licensee personnel qualified under a new oversight training program. The station was fully successful in downloading and retrieving the canister during the exercises and the corrective actions taken were determined by the inspectors to be adequate to restore compliance and prevent recurrence of the performance issues that led to the misalignment event. (Section 2.2.8)

- The NRC inspectors closed the violation for the licensee failure to ensure that redundant drop protection features were available during the August 3, 2018, misalignment event. The NRC thoroughly reviewed the licensee's completed and proposed corrective actions related to the misalignment event and concluded the corrective actions were adequate to restore compliance, address extent of condition, and prevent recurrence. (Section 2.2.9)
- The NRC inspectors performed independent measurements and verifications of the radiological conditions at the licensee's independent spent fuel storage installation. The inspectors measured various locations including background areas, public access areas, owner-controlled areas, and representative locations on both generally licensed independent spent fuel storage installation pads. Based on the number and age of canisters in service, the NRC did not identify any radiological concerns during the survey. Additionally, the NRC did not identify any measurements at the owner-controlled area boundary or in the public access areas to be above normal background measurements. (Section 2.2.10)

(274 of 314)

Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 10 of 50

## **REPORT DETAILS**

### Summary of Plant Activities

The San Onofre Nuclear Generating Station (SONGS) independent spent fuel storage installation (ISFSI) consists of two ISFSI designs located adjacent to each other. The Transnuclear, Inc. (TN) nuclear horizontal modular storage (NUHOMS) ISFSI contains 51 loaded concrete advanced horizontal storage modules (AHSMs), which hold stainless steel dry shielded canisters (DSCs). Spent fuel from all three reactors are stored at the NUHOMS ISFSI in 50 of the storage modules.

Greater-than-Class-C (GTCC) waste from the Unit 1 reactor decommissioning project is stored in one module. There is a total of 63 AHSMs on the NUHOMS ISFSI pad. The 12 empty AHSMs will be available for storage of additional GTCC waste from Units 2 and 3. The 63 AHSMs currently on the pad are designed for the 24PT1-DSC (Unit 1 fuel) and 24PT4-DSC (Unit 2/3 fuel) canisters, which hold a maximum of 24 spent fuel assemblies. The 24PT1-DSCs are loaded and maintained under Amendment 0 of Certificate of Compliance (CoC) No. 72-1029 and the 24PT4-DSCs are loaded and maintained under Amendment 1 of CoC No. 72-1029. Both systems were being maintained under Final Safety Analysis Report (FSAR), Revision 5.

The Holtec UMAX ISFSI portion was designed to hold 75 multi-purpose canisters (MPCs). The MPC-37s contain 37 pressurized water reactor fuel assemblies in accordance with UMAX CoC No. 72-1040, Amendment 2, the HI-STORM UMAX FSAR, Revision 4, and the HI-STORM FW FSAR, Revision 5. The licensee has 29 loaded canisters in service at the UMAX ISFSI. A 30<sup>th</sup> canister had been loaded, welded, dried, and helium backfilled, but remained inside the Unit 3 spent fuel building. The licensee ceased all loading operations to address the investigation and implementation of corrective actions associated with the August 3, 2018, misalignment incident.

### 1 Followup on Traditional Enforcement Actions (Inspection Procedure 92702)

### 1.1 Inspection Scope

The NRC performed this supplemental inspection in accordance with Inspection Procedure 92702, "Follow-up of Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternative Dispute Resolution Confirmatory Orders," to assess the licensee's response to the issues identified during the inspection documented in NRC Special Inspection Report dated, December 19, 2018, "Special Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, and 072-00041/2018-001 and Notice of Violation," (NRC Special Inspection) (ADAMS Accession ML18341A172), using the following inspection objectives:

- Objective 1: To assure that the root and contributing causes of significant performance issues were understood;
- Objective 2: To independently assess and assure that the extent of condition and extent of cause of significant performance issues were identified;

- Objective 3: To assure that corrective actions taken to address and preclude repetition of significant performance issues were prompt and effective;
- Objective 4: To assure that corrective action plans directed prompt actions to effectively address and preclude repetition of significant performance issues.

The NRC Special Inspection Report documented the NRC's review of an August 3, 2018, misalignment incident that occurred when a loaded spent fuel canister came to rest on the shield ring near the top of the UMAX ISFSI vault, which prevented it from being fully lowered into the storage vault. At that time, the important-to-safety (ITS) rigging and lifting slings were slack and were no longer capable of performing their safety function of supporting and controlling the loaded canister. This failure to maintain redundant drop protection placed the canister (No. 29) in an unanalyzed condition because the ISFSI FSAR assumed a postulated drop was a non-credible event. The estimated time the canister was in an unsupported position was approximately 45 minutes.

Following the misalignment incident, the licensee failed to notify the NRC that ITS equipment was disabled and would fail to function as designed when required by the Certificate of Compliance to provide redundant drop protection features to prevent and mitigate the consequences of a drop accident and no redundant equipment was available and operable to perform the required safety function. The licensee's failure to make the required report to the NRC existed for 39 days until the report was submitted and compliance restored.

On March 25, 2019, the NRC issued letter, "Notice of Violation and Proposed Imposition of Civil Penalty - \$116,000 and NRC Inspection Report 050-00206/2018-005, 050-00361/2018-005, 050-00362/2018-005, 072-00041/2018-001," (ADAMS Accession ML19080A208), to document the final significance determination for the identified escalated violations. The licensee's failure to ensure ITS equipment was available to provide redundant drop protection during downloading operations was characterized as a finding having significant safety consequence and was identified as a Severity Level II violation of NRC requirements. The licensee's failure to make a timely notification to the NRC Headquarters Operations Center for the August 3, 2018, disabling of ITS equipment impacted the ability of the NRC to perform its regulatory oversight function and was identified as a Severity Level III violation of NRC requirements.

The inspectors reviewed the licensee's causal evaluations and supplemental information during the inspection period. The inspectors held discussions with licensee personnel to determine if the root causes, contributing causes, and the contribution of safety culture components related to the issues were understood, and that corrective actions taken or planned were appropriate to address the causes and preclude repetition.

1.2 Observations and Findings

## 1.2.1 Problem Identification and Cause Evaluations (Objective 1)

### a. Overview

The inspectors verified that the licensee's evaluations adequately documented identification of the issues. The violation involving failure to provide redundant drop protection features during downloading operations was self-revealed and the violation for

failure to make a report to the NRC was NRC identified. The inspectors determined that the evaluations documented how long the issues existed and prior opportunities for identification. The inspectors also determined that the evaluation documented significant plant-specific consequences and compliance concerns associated with the issues.

The inspectors evaluated whether the licensee's causal evaluations were conducted to a level of detail commensurate with the significance of the problem, and whether the licensee's evaluations included consideration of prior occurrences of the problem and knowledge of prior operating experience.

### b. Assessment

The licensee performed four causal evaluations to address the issues resulting from the August 3, 2018, misalignment incident. The four causal evaluations were tracked in the licensee's Corrective Action Program (CAP) and addressed the following areas:

- Root Cause Evaluation (RCE) Quality Investigation (QI)-2529 was initiated to identify the root causes and corrective actions necessary to address the misalignment event and enhance Holtec's processes and procedures to prevent recurrence.
- Apparent Cause Evaluation (ACE) (Action Report (AR) 0818-20356) was initiated to determine why the Southern California Edison Company (SCE) oversight was ineffective in preventing the misalignment event.
- Common Cause Evaluation (CCE) (AR 0618-77146) was initiated to identify common issues that challenged construction of ISFSI facilities and fuel transfer operations.
- Reportability Root-Cause Evaluation (RRCE) (AR 1218-33805) was initiated to determine why a report was not submitted to the NRC within the required time-frame.

The RCE QI-2529 identified one root cause and five contributing causes. Specifically, the evaluation determined that the root cause of this event was: "Holtec Management failed to recognize the complexity and risks associated with fuel transfer operation while using a relatively new system design (UMAX) in conjunction with a long duration campaign, and thus, did not implement necessary program improvements or the necessary level of oversight." The licensee determined that the contributing causes were: (1) inadequate content in procedures to recognize special conditions related to a new equipment system (UMAX); (2) the design review process did not ensure that unintended consequences of design features were captured; (3) communication protocols with a chain of command established during canister movements were not well defined; (4) Holtec had not established a continuous learning environment which promoted the use of internal and external operating experience; (5) the Holtec Training Program did not consider the uniqueness of the UMAX system relative to the other HI-STORM systems nor the uniqueness of challenges raised in a long-term project, which led to not fully establishing qualification or proficiency requirements for the task performers.

As a result, Holtec identified and addressed a significant number of weaknesses in the areas of design review, procedures, training, safety culture, operating experience,

corrective action processes, and communications. The SCE reviewed and approved Holtec RCE QI-2529 and the associated corrective actions through the SONGS's Corrective Action Program (CAP) as Action Request (AR) 0818-76588.

The ACE 0818-20356 identified one apparent cause and two contributing causes. Specifically, the evaluation determined that the apparent cause was: "SCE ISFSI Project Management failed to establish a rigorous process to ensure technically accurate Holtec Procedures, adequate SCE and Holtec training to support procedure implementation, and sufficiently detailed Oversight Specialist guidance." The licensee determined that the contributing causes were: (1) SCE project management observations were not being routinely performed, and (2) SCE project management had not consistently reinforced initiation of an AR for deviations from what was expected, even if covered by procedure, or that result in additional dose. As a result, the licensee identified and addressed a significant number of weaknesses in the areas of vendor material reviews, training for oversight individuals, oversight processes, safety culture, operating experience, and corrective action processes.

The CCE 0618-77146 identified one common cause and one contributing cause. Specifically, the licensee's evaluation determined that the common cause was: "Holtec did not staff the project with knowledgeable experienced personnel to effectively manage, and administer, the Holtec Quality Assurance Program or the Holtec Corrective Action Program." The licensee determined that the contributing cause was: (1) Holtec procedures and processes that feed into the Holtec CAP, were not sufficiently detailed or prescriptive to guide or instruct a person with limited quality and CAP experience to identify and effectively resolve conditions adverse to quality and/or trends in a timely manner. As a result, the licensee identified and addressed weaknesses in the areas of CAP processes and CAP training in both the Holtec and SCE CAP programs.

The RRCE 1218-33805 identified one root cause and two contributing causes. Specifically, the licensee's evaluation determined that the root cause was: "SCE Management failed to recognize the transition to fuel transfer operations as requiring the integration, familiarization, and application of 10 CFR 72.75 reporting requirements into plant processes." The licensee determined that the contributing causes were: (1) There was a lack of guidance to facilitate understanding of the wording in 10 CFR 72.75(d); and (2) SCE management did not encourage, and the organization did not demonstrate, a conservative bias for reporting. As a result, the licensee identified and addressed weaknesses in the areas of reportability training and the reportability process.

### c. Observations

An observation was identified by the NRC inspectors during the review of the four causal evaluations, which related to contributing causes. The inspectors identified that the licensee failed to address one potential contributing cause of the spent fuel storage canister downloading event. Specifically, the inspectors noted that the site emphasis on minimizing radiation dose directly led to personnel critical to the oversight of the downloading evolution being relocated to a low dose area where direct observation of the downloading activities was not possible. This led to a partial loss of command and control of the evolution and was likely a contributing cause of the event.

The inspectors noted that this potential causal factor was identified in the ACE 0818-20356. However, the causal factor was not identified as a contributing factor

nor tracked as a specific corrective action in the ACE 0818-20356 or RCE QI-2529. The inspectors identified through interviews with the loading personnel that training on this causal factor was conducted for personnel involved in future downloading operations. However, the inspectors were unable to verify the subject was captured in the licensee's training lessons and training presentations. In response, the licensee initiated corrective action AR 0219-25489 to address the NRC identified issue. Corrective actions taken included revising the radiation protection work plan and training lesson plans to include radiation protection lessons learned. Corrective actions taken were adequate to resolve the NRC observation.

### d. Conclusions

The inspectors independently reviewed the licensee's causal evaluations for the performance issues and significant findings that existed which led to the misalignment incident. The NRC concluded that the evaluations were conducted to a level of detail commensurate with the significance of the problems and the root causes combined with the contributing causes and adequately addressed the findings presented in the NRC Special Inspection Report. The inspectors also concluded that the root and contributing causes of the significant performance issues were understood by the licensee. One observation was identified by the NRC related to the identified contributing causes, which was subsequently entered into the CAP and addressed by the licensee to resolve the NRC concern. As a result, Inspection Objective 1 was met.

## 1.2.2 Extent of Condition and Extent of Cause Evaluation (Objective 2)

### a. Overview

The inspectors verified that the significant performance issues were evaluated using a systematic methodology. The inspectors evaluated whether the root-cause evaluation was conducted to a level of detail commensurate with the significance of the problems, and that it included a consideration of prior occurrences of the problems and knowledge of prior operating experience. Additionally, the inspectors assessed whether the causal evaluations addressed the extent of condition and extent of cause associated with the significant performance issues and assessed whether the licensee appropriately considered safety culture traits.

## b. Assessment

The inspectors determined that the licensee's causal evaluations used systematic methodologies and were conducted to a level of detail commensurate with the significance of the problems. The identified causes, discussed in the previous section, are the results of an aggregate review using multiple analytical techniques. The inspectors also determined that the causal evaluations included a consideration of prior occurrences of the problems and knowledge of prior operating experience.

The licensee used the following systematic methods to complete the four causal evaluations:

The RCE QI-2529 applied: 1.) Five Whys Approach; 2.) Barrier Analysis;
 3.) Organizational and Programmatic Assessment; 4.) Human Factor Analysis;
 5.) Comparative Time Line; and 6.) Safety Culture Assessment

- The ACE 0818-20356 applied: 1.) Cause and Effect Charting; and 2.) Lines of Inquiry List
  - The CCE 0618-77146 applied: 1.) Pareto Chart; and 2.) Bin Assessment
  - The RRCE 1218-33805 applied: 1.) Cause and Effect Charting; 2.) Barrier Analysis; and 3.) Safety Culture Assessment

The inspectors determined whether the licensee's causal evaluations addressed extent of condition and extent of cause of the problems identified in the reviews. Specifically, the RCE QI-2529 assessed the degree that the actual condition may exist in plant equipment, processes, or human performance that could result in the same or similar consequences. The extent of cause-initiated changes within Holtec's processes, which included evaluation of other facility's downloading procedures, verification of crew composition, qualifications, lessons learned, training enhancements, and design reviews.

The licensee's ACE 0818-20356 assessed all other fuel movements and heavy lifts at SONGS. The extent of cause review-initiated changes in all other ISFSI loading procedures and reviews of ISFSI non-loading procedures. Additionally, changes were initiated in licensee oversight of other vendor activities, including decommissioning activities, in the areas of training, document reviews, oversight observation programs, and lessons learned.

The licensee's RRCE 1218-33805 assessed additional areas where reportability may have been required but was not made to the NRC. Through that review the licensee determined one notification to the NRC was required. This notification related to the lateral clearance between the low-profile transporter and other structures (e.g. light posts), and the low-profile transporter's center of gravity was not maintained in accordance with the seismically analyzed limits. The licensee made the required notification (EN) 53798) (see Section 2.2.2 for further discussion of the licensee event report). The extent of cause review addressed other reporting requirements within 10 CFR 72.75 and other applicable federal regulations. Additional actions were taken to enhance training and procedural processes to ensure reporting requirements would be followed as required in 10 CFR Parts 20, 49, 50, 71, and 72.

### c. Observations

An observation was identified by the inspectors during the extent of condition review for the four causal evaluations. The inspectors identified that the licensee failed to perform one of the extent of condition reviews described in ACE 0818-20356. Specifically, Corrective Action (CA) 17 (CA-17), which stated, for Holtec procedures, other than operating procedures, determine which ones have a potential impact on operations and conduct a review using the review guidance in Corrective Action to Prevent Recurrence 2 (CAPR-2). The CAPR-2 task actions were to include additional requirements in procedure S0123-XV-93, "Contractor Oversight," to ensure a more rigorous review was completed by SCE oversight staff before accepting the document for use at the station.

The NRC inspectors identified that this review of Holtec non-loading/maintenance procedures had not been performed as specified in CA-17. In response, the licensee initiated corrective action AR 0818-20356 to perform the required review. The review included approximately 15 Holtec procedures which involved areas of crane maintenance, special lifting device maintenance, vertical cask transporter (VCT) maintenance, foreign material control program, weld examination program, etc. The inspectors reviewed the comments and discrepancies that were identified by the SCE staff from the review. The documentation of the review included a table of all comments identified by SCE staff and the revised procedures that documented that identified issues were changed. The corrective actions taken were adequate to address the NRC observation.

### d. Conclusions

The inspectors determined that the licensee evaluated the issues using systematic methodologies to identify root and contributing causes. Additionally, the inspectors concluded that the licensee's causal evaluations addressed the extent of condition and extent of cause of the issues and appropriately considered safety culture traits. One observation was identified by the inspectors which was related to the extent of condition review. The licensee addressed the issue by taking adequate corrective actions. As a result, Objective 2 was met.

### 1.2.3 Corrective Actions Taken (Objective 3)

### a. Overview

The inspectors reviewed the licensee's causal evaluations to assess whether appropriate corrective actions were specified for the root and contributing causes or that the licensee had an adequate evaluation for why no corrective actions were necessary. The inspectors also assessed whether the corrective actions had been prioritized with consideration of the safety significance and regulatory compliance. The inspectors evaluated whether the corrective actions taken to address and preclude repetition of significant performance issues were prompt and effective, and whether the violations, related to the NRC Special Inspection, had been adequately addressed.

### b. Assessment

The corrective actions taken by the licensee are described below in the following areas: (1) Licensee Oversight; (2) Procedures; (3) Training; (4) Equipment and Personnel; (5) Corrective Action Program; and (6) Reportability.

### (1) Licensee Oversight

The licensee's ACE 0818-20356, contained the majority of the corrective actions for the area of licensee oversight. Corrective actions drove extensive changes to the training and qualification program that an ISFSI oversight specialist is required to complete. The licensee increased the number of oversight specialists that directly observe ISFSI operations from approximately 10 to 14 individuals. All existing and new specialists were required to complete the enhanced qualification program requirements. The licensee assigned a specific training manager to oversee the enhanced training/qualification program. The licensee developed new lesson plans as

part of the qualification process. The new lesson plans included training on new load monitoring equipment, new task specific guides for field observations, new oversight roles and responsibilities, expectations, procedure changes, use of the corrective action program, acceptance review process changes, lessons learned, and other topics.

The licensee developed procedure G-XV93-PTP-01, "Pool to Pad Job Guide Desktop Guide," Revision 0. The inspectors reviewed the procedure and observed that it contained job guides for the ISFSI oversight specialists to use as a tool to assist in preparation and observational direction on the critical tasks during fuel transfer operations. The procedure described key elements of all work activities, detailing how and why tasks were critical. The guide directed the ISFSI oversight specialists to which specific tasks were required to be observed. The inspectors' review concluded that the task guide contained all critical tasks associated with fuel operations.

The licensee's site acceptance process of vendor procedures and training documents were revised. The changes included additional requirements to ensure a rigorous review prior to procedure acceptance and use at SONGS. The inspectors reviewed the procedure changes and the package of reviews conducted by oversight personnel to ensure all new and previously accepted documents received the same level of review. The inspectors concluded that the changes were appropriate, the reviews were thorough, and all identified issues were adequately addressed and corrected.

The licensee's changes included developing an oversight management organization to conduct observations on oversight specialists while they performed their field duties. The program included peer-to-peer observational requirements by decommissioning oversight personnel, as well as management observational requirements of the ISFSI oversight personnel. The program also contained effectiveness review requirements to ensure the required peer and management observations were effective and completed as required. The inspectors reviewed audit packages that were performed on oversight specialists during training exercises. The peer and management observations were effective and coservations were well documented, and all identified enhancements and coaching items were captured in the licensee's CAP. The NRC concluded that the licensee had made substantial improvements throughout the ISFSI oversight program. No NRC observations were identified in this area.

### (2) Canister Handling Procedures

The licensee's ACE 0818-20356 and RCE QI-2529 evaluations of the misalignment incident identified corrective actions which were intended to address procedural inadequacies that contributed to the incident. To address identified issues, the causal evaluations recommended corrective actions for the procedures that included the following changes: (1) continuous monitoring of weight sensing equipment during downloading operations; (2) establishment of clear underload criteria for when to halt downloading operations; (3) defining crew member roles and responsibilities by title; (4) listing qualification requirements for the specified roles; (5) listing critical steps in procedures; (6) defining responsibilities of cask loading supervisors; and (7) identifying areas where escalated management oversight was required.

Changes (1) and (2) were specifically directed at Holtec Procedure HPP-2464-400, "MPC Transfer at SONGS," Revision 17. The NRC inspectors reviewed the procedure revisions that included the new requirement to continuously monitor the canister weight. The procedure revisions included establishment of clear underload criteria for when to halt downloading operations. The revised procedure directed the VCT operator and VCT platform rigger to maintain visual contact with the VCT control panel screen, load shackle tablet weight display screen, and downloader slings during canister downloading operations.

Procedure HPP-2464-400, Section 7.6, "Canister Download into Cavity Enclosure Container (CEC)," was revised to include steps to record the canister weight and to establish an underload restriction value. These changes included contingency steps for re-centering the canister if downloading operators noted a restriction in downward travel. The procedure also directed stop work requirements if certain underload conditions were experienced. Those actions included withdrawing the canister back into the transfer cask, making the appropriate notifications to site management, and condition report initiation into the CAP.

Changes (3) through (7) were applied to all operational procedures related to dry cask storage operations at SONGS. Those procedures included HPP-2464-100, "MPC Pre-Operation Inspection;" HPP-2464-200, "MPC Loading at SONGS;" HPP-2464-300, "MPC Sealing;" HPP-2464-400, "MPC Transfer at SONGS;" HPP-2464-500, "MPC Unloading;" and HPP-2464-600, "Responding to Abnormal Conditions." The NRC inspectors verified that each of those procedures were updated with the new requirements.

(Closed) Notice of Violation VIO 07200041/2018-001-04, Failure to provide adequate instructions in procedures, 10 CFR 72.150, EA-18-155

The NRC Special Inspection Report documented a violation of NRC requirements related to the licensee's failure to prescribe activities affecting quality by documented instructions or procedures of a type appropriate to the circumstances and include appropriate quantitative or qualitative acceptance criteria for determining that important activities had been satisfactorily accomplished.

The licensee responded to the Notice of Violation and described the corrective steps taken to ensure full compliance in SCE submittal to the NRC, dated December 26, 2018 (ADAMS Accession ML18362A148). The inspectors reviewed the licensee's implemented corrective actions related to procedural direction during follow-up inspection activities. The inspectors concluded, based on the changes described above, that the licensee had performed adequate corrective actions to restore compliance, address extent of condition, and prevent recurrence.

However, the inspectors made observations related to the corrective actions to improve Holtec Procedure HPP-2464-400 (see Section 1.2.3.c.(2)). The licensee subsequently addressed the NRC observations. No additional deficiencies were identified during NRC's review of this violation.

This closes VIO 07200041/2018-001-04, "Failure to provide adequate instructions in procedures" (10 CFR 72.150), EA-18-155.

(3) Training

Inadequate training was identified by the licensee as a contributing cause that led to the canister misalignment event. Specifically, RCE QI-2529 Contributing Cause 5

stated, in part, that the "Holtec training program did not consider uniqueness of UMAX system relative to HI-STORM or uniqueness of challenges raised in a long-term project which led to not fully establishing qualification or proficiency requirements for the Task Performers when transferring a canister into a UMAX system."

The licensee had several corrective actions associated with training, for both fuel handling personnel and oversight personnel, which broadly included: updated initial training, on-the-job demonstrations, updated qualifications, ongoing proficiency requirements, updated training lesson plans, scripted pre-job briefs, and the incorporation of site-specific operating experience into the training program. The specific corrective actions associated with training included:

- CA-19 and CA-20: Developed a SONGS site-specific training program and procedures which augmented the existing Holtec corporate training program and procedures. The corrective actions required that the site training program to include a site-specific task list and a task to training matrix which described all the applicable positions of a fuel handling crew to be utilized at SONGS. The corrective actions required all positions to be described and minimum training and qualifications for each position listed. The training program was required to include the appropriate elements of a systematic approach to training (SAT).
- CA-22: Included a 10 CFR 72.48 evaluation to incorporate additional text into Chapter 9 of the FSAR to add criteria for load limits, training, procedure compliance, and use of engineering features.
- CA-23: Required the addition of a training consultant to perform an evaluation of the current site-specific training program, including effectiveness, and to provide recommendations for improvements to the Holtec standard training program. Areas of evaluation included, but were not limited to, review and enhancement of task analysis matrices, the development of training programs, implementation plans, proficiency requirements, and regualification requirements.
- CA-24: Required training and qualification for all loading personnel currently assigned to the project in accordance with new SONGS site-specific training program requirements (CA-20).

The licensee concluded that procedure HSP-34, "Training of Subcontracted Field Service Personnel," which was previously used to train and qualify the pool-to-pad personnel, was not based on a SAT. A site-specific training program, HPP-2464-1134, "Training of site services personnel," Revision 1, was developed by the licensee and reviewed by the inspectors. This SAT based program was developed to be used in conjunction with procedure HSP-34.

A SAT program is defined in 10 CFR 55.4, and includes the following attributes: (1) systematic analysis of job performance requirements and training needs; (2) the derivation of learning objectives, based upon the preceding analysis, which describe desired performance after training; (3) the training program design and implementation based on the learning objectives; (4) the evaluation of trainee mastery of learning objectives during training; and (5) the training program evaluation and revision based upon the performance of trained personnel in the job setting. The new site-specific training procedure HPP-2464-1164 required:

- All positions to be described and minimum training and qualifications for each position listed in a training matrix.
- To contain the minimum qualification requirements to ensure that personnel were appropriately trained prior to performing fuel transfer activities.
- To include the appropriate elements of a SAT program.

The training corrective actions required the licensee to update all lesson plans, which included an additional 13 new lesson plans and development of seven new on-the-job training requirements using the SAT process. The corrective action program and Operating Experience (OE) programs were included as a feedback loop into the training program as required by procedure HPP-2464-1164. In addition, the licensee staffed a site program training manager to oversee the training program and ensure the SAT program elements were maintained. Finally, the inspectors reviewed the changes in UMAX FSAR, Chapter 9, to verify the change included revised language from CA-22.

(Closed) Notice of Violation VIO 07200041/2018-001-03, Failure to assure that operations of important-to-safety equipment were limited to trained and certified personnel, 10 CFR 72.190, EA-18-155

The NRC Special Inspection documented a violation of NRC requirements related to the licensee's failure to assure that operation of equipment and controls, that had been identified as ITS in the Safety Analysis Report, were limited to trained and certified personnel or were under the direct supervision of an individual with training and certification in the operation.

The licensee submitted a response to the NRC on December 26, 2018 (ADAMS Accession ML18362A148), which contained the corrective steps taken to ensure full compliance was achieved. The inspectors reviewed the licensee's implemented corrective actions related to the training of personnel during follow-up inspection activities. The inspectors concluded, based on the changes described above, that the licensee had performed adequate corrective actions to restore compliance, address the extent of condition, and prevent recurrence. No additional deficiencies were identified during the inspectors' review of this violation.

This closes VIO 072-00041/2018-001-03, "Failure to assure that operations of important-to-safety equipment were limited to trained and certified personnel" (10 CFR 72.190), EA-18-155.

### (4) Equipment and Personnel

The licensee's causal evaluation contained corrective actions to implement a new load monitoring system, increased the number personnel present during downloading operations, and added remote monitoring capabilities to limit canister misalignments and prevent a condition in which the lifting devices no longer controlled the weight of the canister.

The new load monitoring equipment included two load sensing shackles, which were placed in-line with each respective downloading sling. These dual and redundant load sensing shackles were calibrated by an approved vendor to an accuracy of  $\pm 1\%$  of the actual weight. The load sensing shackles wirelessly transmitted the weight of the canister to two digital readout tablets. Each tablet was equipped with an audible and visual alarm that would activate when the weight decreased below the established set points. One tablet was positioned next to the Holtec cask loading supervisor and SCE oversight specialist. The second tablet was positioned above the VCT control box and could be observed by both the VCT operator and an additional spotter, who was required to be on the VCT platform during downloading operations.

As part of the equipment enhancements, the licensee installed a camera on the side of one of the VCT towers. The camera was positioned to provide an overhead view of the top of the canister as it passed through the transfer cask into the ISFSI vault. The camera wirelessly displayed the video feed to a monitor that was located next to the Holtec cask loading supervisor and the SCE oversight specialist.

Other enhancements included increased number of personnel on the ISFSI pad during downloading operations from the two personnel (VCT operator and rigger in the man-basket) during the August 3<sup>rd</sup> incident to nine individuals on the ISFSI pad. This included an additional rigger in a separate elevated lift-basket to visually observe the canister as it was lowered through the transfer cask into the ISFSI vault.

During the downloading demonstrations performed by the licensee January 28 through February 1, 2019, the NRC inspectors observed the licensee successfully utilize the new equipment to safely lower a canister into the ISFSI vault. However, the inspectors identified two violations of NRC requirements regarding the licensee's equipment implementation and procurement of the new load monitoring equipment (see Section 1.2.3.c.(3) and (4)).

### (5) Corrective Action Program

The licensee's ACE 0818-20356, RCE QI-2529, and CCE 0618-77146 identified corrective actions to address deficiencies in the CAP. The ACE 0818-20356 identified that ISFSI project management had not encouraged initiation of condition reports for deviations experienced in dry cask storage operations as a contributing cause. The RCE QI-2529 identified that Holtec had not fostered an environment that promoted sharing of internal and external operating experiences among the dry cask storage workers. The CCE 0618-77146 identified Holtec procedures and processes that input to the Holtec Field Condition Report (FCR) process and the Holtec CAP, were not sufficiently detailed or prescriptive to guide or instruct a person with limited quality assurance (QA) and CAP experience to identify, and effectively resolve, conditions adverse to quality and/or trends in a timely manner.

To address these issues, all three of these causal evaluations recommended corrective actions in the area of the CAP which included the following actions: (1) conducting a lessons learned case study based on recent events to clarify condition report initiation; (2) developing oversight specialist condition report training; (3) revising procedure HSP-42, "Project Manager's Desktop guide for Site Services Pool to Pad Projects," to include a section on operational experience; (4) revising procedure HSP-35, "Procedure for Field Condition Reports and Procedure Field

Change Notices for All Site Work," to provide clarification on the threshold for condition report initiation; (5) establishing a process to ensure operational experiences were communicated across and within project areas; (6) assigning a qualified and experienced full time Holtec QA Manger to the ISFSI Project to oversee the CAP; (7) developing a SCE CAP training plan; and (8) requiring Holtec to adopt and adhere to SCE's CAP for SONGS related work activities.

Action (1) required SCE to develop a personnel training module that included specific events identified during active fuel transfer operations that provided lessons learned applicable to improving SCE's implementation of its CAP. The training developed by SCE included examples of deviations experienced during the loading campaign and at other sites as well as the August 3, 2018, downloading operations. The inspectors reviewed the training documentation and verified that applicable dry cask storage staff had completed the required training.

Action (2) involved training the SCE oversight specialists in documenting issues into the oversight specialist database. The training emphasized the documentation of relevant issues or comments into the database with sufficient detail such that the observed deficiencies could be understood. The inspectors reviewed the training documentation and verified the roster of ISFSI oversight specialists had completed the required training.

Action (3) revised procedure HSP-42 to include steps which required operating experience, lessons learned, and best practices encountered during the execution phases of fuel loading operations to be captured by the Holtec project manager. Six sources of operating experience were identified: (1) standard shift turnover sheets; (2) FCRs; (3) management observation program comments; (4) site services weekly project updates/conference calls; (5) the Holtec Users Group database; and (6) the Holtec Lessons Learned database. The operating experience collected from these sources was required to be shared with dry cask storage workers during pre-job briefings and two-minute drills, as applicable, by the Holtec site project manager.

Action (4) revised procedure HSP-35 to provide procedural clarification on the threshold for initiating an FCR. The definitions section of procedure HSP-35 was expanded to include "Short-term Operations." A procedure step was included that explained that "any observed event during Short-term Operations that indicated an abnormal or unexpected condition shall be entered into the FCR tool for further evaluation."

Action (5) revised procedure HSP-42 to require the project manager to collect and disseminate pertinent operating experience to the appropriate dry cask storage personnel on a routine basis. This corrective action also relied on changes made to procedure HSP-35, which lowered the threshold for FCR reporting; SCE CAP training, which redefined the lower thresholds for problem identification; and procedure HSP-1101, "Procedure for Project Risk Management," which was revised to include lessons learned and operating experience documentation that must be reviewed for potential risk impacts.

Action (6) appointed a QA manager for Holtec to the SONGS facility. The appointee had experience with 10 CFR Part 50, Appendix B, and 10 CFR Part 72, Subpart G, requirements. The quality manager tasks included actions to improve quality in work

performed at SONGS, interface with Holtec personnel, maintaining high standards for Holtec work activities, performing corrective action evaluations, performing trending on FCRs, and addressing quality related issues as they are identified on site. The NRC inspectors reviewed the new quality assurance manager's resume and confirmed the individual had the knowledge and experience to perform the required responsibilities.

Action (7) required CAP training to be provided to site personnel. The NRC reviewed lesson plans and attendance records. The training lesson plans contained all the required information described in the causal evaluation and included additional enhancements to strengthen the CAP.

Action (8) required all workers, including contractors, to use the SCE CAP for activities on site. The NRC reviewed the revised process, which included an organization chart to identify which onsite personnel would have access to SCE's Action Request system and documentation that showed Holtec managers and workers had been provided credentials to access the Action Request system.

(Closed) Notice of Violation VIO 07200041/2018-001-01, Failure to identify and correct conditions adverse to quality (10 CFR 72.172), EA-18-155

The NRC Special Inspection documented a violation of NRC requirements related to the licensee's failure to establish measures to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, and deviations were promptly identified and corrected.

The licensee submitted a response to the NRC on December 26, 2018 (ADAMS Accession ML18362A148) which contained the corrective actions taken to ensure full compliance was achieved. The inspectors reviewed the corrective actions implemented related to the use of the licensee's corrective action program during follow-up inspection activities. The inspectors concluded, based on the changes described above, that the licensee had performed adequate corrective actions to restore compliance, address the extent of condition, and prevent recurrence. No additional deficiencies were identified during the inspectors' review of this violation.

This closes VIO 07200041/2018-00101, "Failure to identify and correct conditions adverse to quality" (10 CFR 72.172), EA-18-155.

(6) Reportability

The licensee performed a reportability root cause evaluation (RRCE 1218-33805) to evaluate their failure to make an event notification to the NRC Operations Center for the August 3, 2018, misalignment incident. The corrective actions to address the identified causes included the following actions: (1) developing 10 CFR 72.75 training that identified ITS components, potential accidents, and failures that influence reportability; (2) establishing requirements for biennial refresher training; (3) conducting reviews to determine potential reportability requirements related to other site activities; (4) conducting reviews to determine the target audience for training the reportability changes; (5) revising site notification procedures to have a more conservative reporting bias and the identification of the Shift Manager as the individual responsible for the final decision on reportability for the site; (6) developing and conducting a case study with licensee managers and regulatory assurance

personnel on the communications and reportability aspects of the August 3, 2018, incident; and (7) conducting all-hands briefings regarding the reportability violation and future expectations for reporting.

For actions (1) through (4), SCE developed 10 CFR 72.75 training and required biennial refresher training. This training was delivered to SCE managers and Regulatory Assurance personnel. The training included discussions of accidents and design basis events for both the UMAX and NUHOMS ISFSI designs. The training included the descriptions and function of ITS structures, systems, and components and potential failures that would require reporting under 10 CFR 72.75. The training and biennial refresher requirements were included under the Shift Manager/Certified Fuel Handler Training Program. The initial target audience was SCE managers and Regulatory Assurance staff.

Action (5) required that SCE revise procedure SO-123-0-A7, "Notification and Reporting of Significant Events," to have a conservative bias toward reporting requirements. The procedure was revised to include guidance that if the condition being considered did not literally meet the reporting criteria, but was close, then the staff was directed to make a voluntary report using the closest reporting requirement that matched the condition under consideration. This was required to be completed within the time-frame stipulated by the reporting requirement. Procedure SO-123-0-A7 was also revised to encourage the voluntary reporting of any event or condition that could have safety significance or represent a generic concern.

The reporting procedure was further revised to identify the Shift Manager as the site individual responsible for making the final decision on reportability. Lastly, the SCE notification procedure was revised to include Attachment 11, "Reportability Determination," for a decision-making flow-chart. The flow-chart required the Shift Manager to chair a Reportability Management meeting/conference call to discuss potential reporting conditions. The call decision was required to be documented with the date and time of the decision, the start-time of the reportability clock, when the report was due, and the date/time the event notification was made.

Action (6) required the licensee to develop a case study training module that covered the specifics of the August 3, 2018, misalignment incident and the contributing factors that led to the licensee's failure to properly assess the event and to report the incident to the NRC Operations Center, as required by 10 CFR 72.75(d)(1). The case study discussed the specific details of the incident, acknowledged missed opportunities, and provided examples of how the notification procedure was revised to prevent recurrence of the notification failure. The case study required attendees to fill out a work-sheet that asked specific questions related to the event.

Action (7) required that the Chief Nuclear Officer provide an all-hands briefing to SCE staff and a separate briefing to SCE managers to discuss the violation. The briefings were to discuss the licensee's failure to make the 24-hour NRC notification, the causes of the failure, and management expectations for a conservative bias when making reportability decisions moving forward.
(Closed) Notice of Violation VIO 072-00041/2018-001-05, "Failure to make 24-hour notification" (10 CFR 72.75), EA-18-155

The NRC Special Inspection documented a violation of NRC requirements related to the licensee's failure to make a required 24-hour notification to the NRC within the required timeframe.

On November 8, 2018, the licensee issued Licensee Event Report (LER) 2018-001-0 (ADAMS Accession ML18317A060) in accordance with 10 CFR 72.75(d)(1) for the event and restored compliance. The licensee submitted its response to the Notice of Violation, on April 23, 2019 ADAMS Accession ML19116A056), which contained the corrective actions taken to ensure full compliance was achieved.

The NRC concluded that SCE's completed and proposed corrective actions, as described above, restored compliance, addressed extent of condition, and were adequate to prevent recurrence. No additional deficiencies were identified during the inspectors' review of this violation.

This closes VIO 072-00041/2018-001-05, "Failure to make 24-hour notification," (10 CFR 72.75), EA-18-155.

- c. Observations and Findings
- (1) Executive Oversight Board

The inspectors observed that CAPR-1 associated with the RCE QI-2529 appeared to be administrative in nature and did not meet the level of rigor associated with a CAPR, which should serve to preclude repetition of significant performance issues. The CAPR assigned changes to the Executive Oversight Board agenda to provide an increased focus on early identification of challenges to the project to ensure issues were properly resolved before undesired events occurred.

In response to the inspectors' observation, the licensee placed the identified observation into the corrective action program as AR-0818-7655. The licensee bolstered the required changes to the Executive Oversight Board agenda to incorporate additional techniques to review Management Review Meeting data, participation to evaluate current performance against risk registers, evaluate industrial safety trends, review quality metrics, and review SCE oversight effectiveness. The changes provided rigor to the agenda which served to consistently evaluate project performance against pre-determined standards. The NRC inspectors reviewed the new meeting agenda to verify the topics reviewed would ensure early identification of challenges to the project. Based on the licensee's changes and level of detail that would be reviewed during the meetings, the NRC concluded that the changes were appropriate to support early identification of significant performance deficiencies.

(2) Downloading Procedure

The inspectors determined that SCE had made substantial improvements to fuel handling procedures to ensure safe operations. However, the NRC identified that notable procedural weaknesses remained in downloading procedure HPP-2464-400 "MPC Transfer at SONGS," Revision 17. Procedure weakness included: (1) missing contingency steps for potential new equipment failures; (2) while there were some

criteria specified for when to suspend downloading operations, not all scenarios were addressed; and (3) the procedure lacked some steps necessary to maintain seismic qualifications during cask transport from the fuel building to the spent fuel storage pad.

In response, the licensee initiated AR 0119-81239-10 and AR 0119-81239-9 to capture the inspectors' observations. The licensee took corrective actions and addressed the identified omissions in the next procedural revision.

(3) Equipment Designation

Corrective action CA-1, associated with ACE 0818-20356, implemented guidance for a load monitoring device to ensure load indication was available to assist with suspending operations if the load was lost. SCE implemented the design change to incorporate the new load monitoring equipment using Nuclear Engineering Change Package (NECP) 0918-64884, "VCT Live Load Monitoring System," Revision 1. The load monitoring equipment included intermediate slings, a master link, and load sensing shackles which would be placed in-line with each of the ITS downloading slings. The inspectors identified that the NECP inappropriately designated the new load monitoring equipment as not-important-to-safety (NITS). Inspectors determined that since the new equipment, which failure could result in the drop of a loaded canister, should be controlled and designated under SCE Quality Assurance Program as ITS equipment.

10 CFR 72.146(a) states, in part, the licensee shall establish measures to ensure that the design bases are correctly translated into specifications, drawings, procedures, and instructions. These measures must include provisions to ensure that appropriate quality standards are specified and included in design documents.

Contrary to the above, on December 7, 2018, the licensee failed to establish measures to ensure that the appropriate quality standards were specified and included in design documents. Specifically, the licensee inappropriately designated the new load monitoring equipment at the wrong quality standard in NECP 0918-64884-1, Revision 1.

This violation was dispositioned per the traditional enforcement process using Section 2.3 of the NRC's Enforcement Policy. The NRC determined that the finding was of low safety significance since the equipment had not been used with any loaded canisters and the load monitoring equipment had been purchased by the vendor at the appropriate quality assurance designation of ITS. This finding was determined to be of more than minor safety significance since if left uncorrected, the deficiency could lead to a more significant safety concern.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The violation was evaluated to be similar to Enforcement Policy Section 6.5.d.2.

The licensee entered the issue into the CAP as AR 1218-20333. The licensee restored compliance by verifying that the load monitoring equipment met all applicable

industry standards of NUREG 0612 and American National Standards Institute (ANSI) N14.6 requirements to meet the ITS qualification and revised the design change package to include the correct designation. Additional corrective actions taken by the licensee to preclude repetition included: performing an event investigation, conducting training for the SCE engineering team, conducting reviews of implementing procedures, and updating the site's Quality Equipment List. Because the licensee entered the finding into the CAP, the safety significance of the issue was low, and the issue was not repetitive or willful, this Severity Level IV violation was treated as a noncited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy (NCV 07200044/2018-002-01, Failure to ensure appropriate quality standards (10 CFR 72.146)).

(4) Equipment Procurement

The NRC inspectors reviewed all the procurement documents associated with the new load monitoring equipment that was described in NECP 0918-64884-1. This included reviewing the Holtec purchase specifications and equipment's certificate of conformance for each of the new components (load sensing shackles, master links, and intermediate slings).

The weight of the loaded canister, rigging equipment, and an additional 15% dynamic factor was calculated to be 118,640 lbs (59.34 tons) per HI-2156458 "Cask Handling Weights at SONGS," Revision 1. Each side of the rigging was required to be able to handle the load in the event that one side fails. This would require all rigging on each side to have a minimum rating of 59.34 tons.

The inspectors identified an issue with the certificate of conformance for the StraightPoint load sensing shackles. The load sensing shackles were rated to the capacity of 185,000 (92.5) tons, which was well above the required rating. However, the Holtec Purchase Specification PS-223 "Procurement Specification for Significant Rigging," Revision 0, Step 7.0, "Special Tests," required a proof test load of twice the rated vertical capacity to all rigging components. This is also required by common industry rigging standards contained in American Society of Mechanical Engineers (AMSE) B30.26 "Rigging Hardware," Section 1.4.2. The inspectors identified that the load sensing shackles were only load tested to 1.5 times the rated capacity instead of the required twice the rated capacity per purchase specification PS-223.

Additionally, Holtec's Approved Vendor List, contained the following restriction, "lifting equipment load testing must be performed at Aston I&I Sling factory." The inspectors observed that the proof load testing for the new load sensing shackles was performed at the manufacturer's facility (StraightPoint) and not by Aston I&I Slings factory per Holtec's Approved Vendor List's restrictions.

10 CFR 72.154(a) states, in part, the licensee shall establish measures to ensure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents.

Contrary to the above, on December 7, 2018, the licensee failed to establish measures to ensure that purchased equipment conformed to the procurement documents. Specifically, the licensee accepted the StraightPoint load sensing shackles, which had not been proof load tested to twice the rated capacity as specified in Holtec Purchase

Specification PS-223, Step 7.0. Additionally, the licensee failed to ensure the proof load testing was performed by an approved vendor.

This violation was dispositioned per the traditional enforcement process using Section 2.3 of the NRC's Enforcement Policy. The NRC determined that the finding was of low safety significance since the equipment had not been used with any loaded canisters. This finding was determined by inspectors to be of more than minor safety significance because, if left uncorrected, the deficiency could lead to a more significant safety concern.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The violation was evaluated to be similar to Enforcement Policy Section 6.5.d.2.

The licensee entered the issue into the CAP as AR 1219-52380. The licensee restored compliance by having the load sensing shackles proof tested to twice the rated capacity in accordance with purchase specification PS-223, by the Aston I&I Slings factory per Holtec's Approved Vendor List's restrictions. Additional corrective actions taken by the licensee to preclude repetition included: performing an apparent cause evaluation, reviewing other procured equipment documentation from Aston I&I Slings to ensure testing requirements were met, developing a revised SONGS rigging program to require an independent review and approval of vendor ITS rigging documentation, creating a project specific purchase specification for downloading shackles to provide clear details on load testing requirements, and conducting training for SCE site service project managers. Because the licensee entered the finding into the CAP, the safety significance of the issue was low, and the issue was not repetitive or willful, this Severity Level IV violation was treated as a NCV, consistent with Section 2.3.2.a of the Enforcement Policy (NCV 07200044/2018-002-02, Failure to ensure purchased material conformed to the procurement documents (10 CFR 72.154)).

# d. Conclusions

Based on the licensee's evaluations and actions taken in the areas of licensee oversight, procedures, training, equipment, corrective action program, and reportability, the inspectors concluded that the corrective actions implemented were appropriate to prevent recurrence of the issues and were adequately prioritized with consideration of the risk significance and regulatory compliance. The inspectors concluded that SCE's completed corrective actions in the areas of training, corrective action program, and procedures restored compliance for the violations document in the NRC Notice of Violation issued in the NRC Special Inspection Report.

Additionally, the licensee's corrective actions taken to address the violation for failure to make a report to the NRC, documented in NRC letter of Notice of Violation and Civil Penalty, were adequate to restore compliance and prevent recurrence. However, during the NRC's review of the corrective actions taken, the inspectors identified two observations and two violations of NRC requirements related to the licensee's corrective actions. The licensee took adequate corrective action to restore compliance on the issues identified through the CAP. The violations were determined to have low safety

significance and the Severity Level IV violations were treated as NCVs. As a result, Inspection Objective 3 was met.

## 1.2.4. Corrective Actions Planned (Objective 4)

#### a. Overview

The inspectors evaluated whether the corrective actions planned to address and preclude repetition of significant performance issues were prompt and effective, and that appropriate quantitative or qualitative measures of success had been developed for determining the effectiveness of planned corrective actions.

### b. Assessment

The licensee's causal evaluations contained effectiveness assessments to validate that the corrective actions were successful. In the area of training, the licensee's corrective action plan included acquiring a training consultant to perform an evaluation of the new site-specific training program, including effectiveness, and develop recommendations for improvement. The recommendations would support training enhancements for the SONGS training program and the vendor's standard training program. The area to be evaluated included task analysis matrices, training program, implementation plans, proficiency requirements, and requalification requirements.

In the area of operations, an effectiveness review schedule was established to assess the effectiveness of all corrective actions during both dry run demonstrations/training evolutions and during actual fuel movement activities. The review included an assessment of trends in lifting activities, verification of trained personnel, and detailed observational surveillance of lifting activities by independent auditors. The surveillance tasks included a review of training verification, procedure proficiency, adequate use of the CAP, and verification of management observations.

The licensee's oversight effectiveness review included corrective actions to conduct additional procedure reviews to identify new technical deficiencies, review of oversight task guides to verify sufficient guidance and enhancements, and various peer observations of oversight individuals to verify proficiency in procedures, task guide knowledge, initiation of corrective actions, and ensure desired behaviors. The effectiveness review actions contained detailed criteria that an independent assessor was required to verify during the dry-run exercises and during continued fuel loading activities.

In the area of reportability, the licensee's corrective actions included a new real time reporting exercise to be conducted monthly. All applicable individuals would be required to participate in the exercise. The exercises would take place for three consecutive months and success would be based on no incorrect reportability determinations. In addition, the new reportability process required the assignment of a "meeting skeptic" to monitor the reportability meetings to ensure the desired behavior changes continued and adequate determinations were made.

#### c. Observations and Findings

No findings were identified with the licensee's corrective actions planned.

# d. Conclusion

Based on the licensee's evaluations and documented actions planned, the inspectors concluded that the licensee had adequately established measures to validate the effectiveness of the corrective actions to prevent recurrence. As a result, Inspection Objective 4 was met.

# 2 Follow-up of Events and Notices of Enforcement Discretion (IP 71153)

# 2.1 Inspection Scope

The inspectors evaluated licensee events to verify the licensee's corrective actions were adequate to restore compliance. The inspectors reviewed LERs to ensure the reports were timely, accurate, and the required corrective actions had been completed. Additionally, inspectors documented review of follow-up items from the NRC Special Inspection Report.

# 2.2 Assessment

# 2.2.1 (Closed) Licensee Event Report 2018-001-0, Spent Nuclear Fuel Canister Temporarily Wedged in Dry Cask Storage Container

On November 8, 2018, the licensee issued LER 2018-001-0 (ADAMS Accession ML18317A060) in accordance with 10 CFR 72.75(d)(1) and (g) for inadvertently disabling redundant ITS slings while lowering a spent fuel canister into the ISFSI on August 3, 2018.

The NRC Special Inspection Report, dated December 19, 2018, documented three cited violations and two apparent violations associated with this event that were handled through the NRC's escalated enforcement process.

During this supplemental inspection, the NRC inspectors reviewed the planned and implemented corrective actions taken by the licensee for the identified violations and determined the actions to be adequate to restore compliance and prevent recurrence.

This LER is closed.

# 2.2.2 (Discussed) Licensee Event Report 2018-002-0, Spent Nuclear Fuel Transport Conveyance Vehicle Operated Outside Obstacle Clearance Limits

On February 14, 2019, the licensee issued LER 2018-002-0 (ADAMS Accession ML19050A170) in accordance with 10 CFR 72.75(d)(1) and (g) for past operations of the low-profile-transporter. The licensee identified that transporter's center of gravity was not maintained within limitations specified in the site's specific analysis and operations had been conducted too close to adjacent structures (light posts) and was outside the calculated clearance limits specified in the site's seismic analysis. The licensee identified that the site procedures did not provide sufficient detail to comply with the seismic stability calculation. No actual incidents with structures or collisions with obstacles occurred during past fuel transfer operations and there was no impact to plant personnel or public health and safety.

As part of the licensee's extent of condition review associated with licensee causal evaluation RRCE 1218-33805, the licensee notified the NRC Operations Center within 24 hours of discovery of the issue (Event Notification 53798) and submitted an LER to the NRC within the 60-day time limit in accordance with 10 CFR 72.75(d)(1) requirements.

As part of the review of the August 3, 2018, event, the inspectors reviewed the licensee's corrective actions to restore compliance and prevent recurrence. This included reviewing the licensee's updated seismic analysis which determined that the variance in the height of the conveyance, during the past operations was acceptable and the licensee's changes made to the transportation procedures. Additionally, the inspectors observed licensee perform dry run exercises that demonstrated the procedural changes were adequate to ensure the conveyance would remained within the bounds and limitations of the analysis (see Section 2.2.8). However, as reported in the LER, the licensee was still in progress of developing an analysis to determine if the operation of the conveyance with the reduced obstacle clearance was acceptable. Thus, this LER will remain open, pending NRC review of this additional information.

# 2.2.3 (Closed) NRC Event Notification #53858, Inadequate Analysis for VCT Operations

During the on-site portion of this inspection, the NRC inspectors observed demonstrations of the licensee's corrective actions associated with downloading operations. As the VCT approached the mating device, the procedural steps directed the removal of the restraint band from around the HI-TRAC VW transfer cask. As operations continued, the transfer cask was raised and continued to travel approximately 15-20 feet before being lowered onto the mating device to allow downloading operations to begin. While traveling without the restraint band, the transfer cask was visibly rocking as the VCT approached the mating device. The inspectors questioned the licensee during the site observations to determine if the site's seismic analysis addressed and evaluated travel of the loaded HI-TRAC VW without the restraint band.

On February 2, 2019, in accordance with 10 CFR 72.75(d)(1) the licensee notified the NRC Operations Center within 24 hours of the discovery of issues regarding the past use of the VCT to transport spent fuel storage canisters to the ISFSI pad. The licensee reported that over short periods of time, the canister transport process utilizing the VCT could have been operated without a supporting seismic analysis while transporting loaded canisters for storage. The licensee subsequently retracted Event Notification #53858 on April 2, 2019, citing a revised seismic calculation which confirmed the transport process and VCT operations met the seismic requirements of the Holtec Certificate of Compliance.

The licensee's failure to follow the initial site specific seismic analysis was determined by inspectors to be a violation of NRC requirements. This event notification is closed (see Section 2.2.4 below).

# 2.2.4 Finding related to the Licensee's Event Notification

The licensee's event notification EN #53858 documented that past VCT operations had not been conducted within the requirements of seismic evaluation HI-2156626, "VCT Stability Analysis on Route to ISFSI Pad and on ISFSI Pad for SONGS," Revision 3. For short periods of time, the VCT seismic restraint band was prematurely removed from the transfer cask prior to stack-up evolutions. Evaluation HI-2156626, Section 4.0, "Assumptions," stated that, "the transfer cask and the VCT were considered to behave as a rigid body." The evaluation conservatively assumed the seismic restraint band, which braced the transfer cask to the VCT, was in position at all times during transportation operations.

10 CFR 72.212(b)(3), requires, in part, that the general licensee shall ensure that each cask used conforms to the terms, conditions, and specifications of a Certificate of Compliance as listed in 10 CFR 72.214.

10 CFR 72.214 states, in part, that Certificate Number 1040 [Docket Number 072-01040] Amendment Number 2, effective date January 9, 2017, is an approved cask for storage of spent fuel under the conditions specified in the Certificate of Compliance for the Holtec HI-STORM UMAX Storage System.

Certificate of Compliance 072-01040, Appendix B Technical Specification 3.4.15 requires, in part, the loaded transfer cask and its conveyance shall be evaluated to ensure, under the site-specific Design Basis Earthquake (DBE), that the cask and its conveyance does not tip-over or slide off the haul route.

Contrary to the above, from January 30, 2018, to August 3, 2018, the licensee failed to ensure the cask and its conveyance was evaluated under the site-specific DBE. Specifically, the NRC identified that past VCT transportation operations were not evaluated under the site-specific DBE, since operations were conducted outside the requirements in seismic evaluation HI-2156626.

This violation was dispositioned per the traditional enforcement process using Section 2.3 of the NRC's Enforcement Policy. The NRC determined that the finding was of low safety significance since the licensee had re-performed the evaluation, addressed the deviation that occurred, and demonstrated the canister and its conveyance would not have tipped over or slipped off the haul route during those transportation operations due to prematurely removing the seismic restraint band. This finding was determined by inspectors to be of more than minor safety significance, since if left uncorrected, the deficiency could lead to a more significant safety concern.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The violation was evaluated to be similar to Enforcement Policy Section 6.1.d.1.

The licensee entered the finding into the CAP as AR 0219-88442, 0219-22465, and 0319-95843. The licensee restored compliance by revising the site-specific seismic analyses to bound transportation operations conducted at the site. Additional corrective actions taken by the licensee to preclude repetition included: performance of an apparent cause evaluation, submittal of formal reports to the NRC in accordance with 10 CFR 72.75(d)(1), conducted training on the lessons learned, briefed the Holtec Users Group, and revised the process used to transmit vendor information to the NRC to require a documented review by the appropriate SONGS organization prior to transmittal. Because the licensee entered the issue into the CAP, the safety significance of the issue was low, and the issue was not repetitive or willful, this Severity Level IV

violation was treated as a NCV, consistent with Section 2.3.2.a of the Enforcement Policy (NCV 07200044/2018-002-03, Failure to ensure the loaded transfer cask and its conveyance was evaluated under the site-specific DBE (10 CFR 72.212)).

## 2.2.5 Follow-up of Special Inspection Charter Items from the NRC Special Inspection

## a. Drop Evaluation

The inspectors independently reviewed licensee's evaluation to analyze the potential effects of a canister drop. The licensee evaluation was documented in evaluation HI-2188261 "Structural Evaluation of the MPC Handling Event at SONGS," Revision 3. Evaluation HI-2188261 conservatively assumed the canister fell, uninterrupted, 25 feet to the base of the UMAX vault. The actual height the canister potentially could have dropped was 18 feet. The evaluation defined a canister breach as the point at which the strain measured at any location exceeded the specified strain limit for the material.

Following the guidance from NUREG-1864 "A Pilot Probabilistic Risk Assessment of a Dry Cask Storage System at a Nuclear Power Plant," dated March 2007, the evaluation considered the effects of strain rate and temperature, using a strain in the weld material to be estimated at 0.73 in/in (extension length/original length). Conservatively, the evaluation used one standard deviation below the allowable strain to establish a limit of 0.55 in/in for the weld material. The 316 stainless steel base material had an even higher acceptable strain limit. Conservatively, the evaluation limited the strain of the base material to 0.55 in/in as well.

The drop analysis was performed using the finite element code LS-DYNA, which has been validated under Holtec's Quality Assurance Program, and was a method of evaluation that had been used in the UMAX FSAR for other canister analyses. The results of the analysis resulted in a maximum computed effective strain of 0.468 in/in, which was below the conservative limit of 0.55 in/in for both the base metal and weld material. NRC inspectors independently reviewed the analysis and concluded that the canister would not have breached had the canister fallen 18 feet to the bottom of the UMAX vault.

The condition of the fuel after the postulated drop and the canister's ability to continue to perform its safety function in the regards of pressure, thermal, criticality control, and shielding was analyzed in evaluation HI-2188261, and Storage Position Paper DS-470, "Expected Fuel Damage after MPC Drop," dated November 6, 2018. The analysis concluded that the damage would be mostly limited to deformation and buckling of lowest section of the fuel rods of the spent fuel assemblies. The inspectors independently reviewed each safety function analysis for accident conditions with regard to criticality, thermal performance, shielding, and pressure.

The inspectors concluded that expected temperature and pressure limits would have remained under the accident limits described in FSAR, criticality safety would have been maintained since the confinement boundary was not breached and the system remained dry, and external radiological dose rates of the canister, located in the vault, would have minimal increases. However, the condition of fuel after the postulated drop would not meet the licensing requirements for storage or transportation. The licensee would be required to perform either significant evaluations or supplemental operations to ensure

the safe retrieval, unloading, and re-packaging of the fuel while minimizing the dose to personnel.

b. Scratch Evaluation

As part of the corrective actions from the ACE 0818-20356 and RCE QI-2529, actions were taken to address the discrepancies within the UMAX FSAR, specifically the incidental contact that occurs when a canister was downloaded into the UMAX vault. The UMAX FSAR, Revision 4, Sections 1.2.4 and 9.5 vii, contained design statements that stated:

- Section 1.2.4, "Operational Characteristics of HI-STORM UMAX," The vertical insertion (or withdrawal) of the MPC eliminates the risk of gouging or binding of the MPC with the CEC parts
- Section 9.5 vii, "Regulatory Compliance," Because the MPC insertion (and withdrawal) occurs in the vertical configuration with ample lateral clearances, there is no risk of scratching or gouging of the MPC's external surface (Confinement Boundary). Thus, the ASME Section III Class 1 prohibition against damage to the pressure retaining boundary is maintained.

The HI-STORM UMAX MPC-37 used at SONGS is made of a type 316 stainless steel. It is approximately 76 inches in diameter and 17 feet tall. The 5/8" thick shell is made by seam welding together two cylinders of stainless steel rolled plate. The base plate of the MPC is approximately 3 inches thick and the top lid is 9 inches thick. Additionally, the divider shell inside the CEC of the UMAX vault is painted with a coating developed to assist in limiting scratches to the stainless steel canister during downloading.

The canisters for the Holtec UMAX Storage System are designed and licensed to meet the stress intensity limits per ASME Section III, Subsection NB for Class 1 pressure vessels. Localized scratches are examples of local structural discontinuities per the ASME Code definition in NB-3213.3. As such, the stresses attributed to these local discontinuities are categorized as peak stresses per NB 3213.11, which are "objectionable only as a possible source of a fatigue crack or brittle facture."

Chapter 3 of the HI-STORM FSAR states that the MPC is not vulnerable to fatigue failure or brittle fracture because of the passive nature of the HI-STORM UMAX system and its highly ductile material of construction (Type 316 austenitic stainless). Namely the amplitude of cyclic stresses and pressure pulsation is limited in the pressure vessel and remains orders of magnitude below the canister's material endurance limits. Moreover, peak stresses are not subject to a prescribed stress limit as summarized in FSAR Table 2.2.10 for primary and secondary stress categories.

Therefore, FSAR Section 3.1.2.5 states failure from fatigue is not a credible concern for the HI-STORM UMAX system components. Peak stresses are specifically addressed in Table 3.1.10 of the UMAX FSAR which states: "Increment added to primary or secondary stress by a concentration (notch), or, certain thermal stresses that may cause fatigue but not distortion. Because fatigue is not a credible source of failure in a passive system with gradual temperature changes, the cumulative damage factor from fatigue is not computed for HI-STORM UMAX components." The NRC inspectors concluded that

the localized scratches (peak stresses) on the canister are not a safety concern from the standpoint of ASME Section III, Subsection NB stress intensity limits.

The SONGS canisters were designed and fabricated to contain a shell thickness of 1/8" (0.125 inch) thicker than the standard canister (0.50" nominal wall thickness) associated with the Holtec UMAX Storage System. Additionally, the canisters at SONGS have been laser peened which was developed, applied, and confirmed for SONGS to add a protective layer against high tensile stress over the heat affected zones of the canister seam welds to assist in possible elimination of future stress corrosion cracking concerns. Confirmed by laboratory tests performed by the vendor and licensee, the protective layer over the welds and heat affected zones resulted in an approximately 0.080" inch (80 mil) thick layer of additional protection.

The NRC determined that scratches that occur on the surface of the MPC during insertion and withdrawal due to incidental contact with the internal features of the CEC internals are not of any safety concern from a stress limit. However, allowing the MPC to scratch, or suffer mechanical wear, presented a potential impact to the MPC design basis requirements as specified in the technical specifications. The confinement design function is required by the Holtec Certificate of Compliance 072-01040, Appendix B Technical Specifications, Section 3.3 to meet ASME Section III acceptance limits.

The ASME Section III code acceptance limits for scratches is 10 percent of the nominal wall thickness per ASME Section III, NB-3324.1 Cylindrical Shells and NB-3213.10 Local Primary Membrane Stress, which specifies a local primary membrane stress limit of 1.1Sm (or 10 percent higher than the general primary membrane stress limit). The 10 percent allowance is consistent with NUREG 2214 "Managing Aging Processes in Storage Report," Table 6-2, that states flaws must be assessed in accordance with the acceptance standards identified in ASME Section XI IWB-3514 which provides allowable flaw depths that are below 10% of nominal wall thickness.

For the 0.625-inch thick MPC shell in use at SONGS the maximum allowable scratch depth would be 0.0625 inches per ASME Section III code and required by Technical Specification 3.3, Appendix B.

The licensee performed a change under the 10 CFR 72.48 process to evaluate and accept the scratches on canisters 1 thru 29 placed in the site's UMAX ISFSI. Through the 10 CFR 72.48 process the licensee revised the FSAR Section 1.2.4 and Section 9.5 vii. design statements to allow scratches to previous and future canisters during installation and retrieval. The 10 CFR 72.48 regulation permits a licensee to make changes to the spent fuel storage cask design as described in the FSAR without obtaining prior NRC approval as long as the change does not require a change to the technical specifications or the change does not conflict with the eight criteria of 10 CFR 72.48 (c)(2).

The calculation to demonstrate the maximum depth of any possible scratch from downloading operations was documented in Holtec Dry Storage Position Paper DS-469, "Incidence and Consequence of Canister Shell Scratching from Misaligned Insertion of a Loaded MPC at SONGS," dated November 7, 2018. The DS-469 calculation was used as the basis to support a 10 CFR 72.48 evaluation performed by the licensee. Position paper DS-469 calculated the maximum force on the canister shell during downloading based on dimensional tolerances of components and the maximum angle the canister

could be misaligned. The maximum force was calculated to be approximately 2400 pound-force (lbf).

The licensee's analysis utilized Archard's wear equation to calculate the maximum depth of a possible scratch from the carbon steel shield ring to be 0.010 inches (10 mils) based on the force of 2400 lbf. The NRC inspectors reviewed the calculation and identified several inadequacies with position paper DS-469. The inadequacies included: (1) the calculation did not address contact with the harder stainless steel seismic restraints and was only based on the contact with the softer carbon steel shield ring; (2) the evaluation lacked adequate review of corrosion deposits on the stainless steel canister; and (3) the written evaluation did not address scratches and gouges in the canister's seam weld areas.

The licensee addressed the inspectors' concerns in a subsequent evaluation, HI-2188437, "Incidence and Consequence of Canister Shell Wear Scars from Misaligned Insertion of a Loaded MPC at SONGS," dated March 1, 2019. The licensee's revised 10 CFR 72.48 evaluation contained more details and analysis, which was used as a basis for concluding the change did not require prior NRC approval. The inspectors observed that evaluation HI-2188437 utilized the same methodology as the DS-469 calculation which determined the maximum depth of a possible scratch would be less than 0.0091 inches or (9.1 mils).

However, the inspectors identified additional inadequacies associated with evaluation HI-2188437 which included: (1) the licensee utilized the wrong hardness values in the calculation; (2) the hardness values did not account for the temperature of the canister; (3) the calculations utilized the wrong sling lengths for determining initial point of contact for where contact on the MPC shell could occur; and (4) the inspectors did not agree that the calculation alone could provide adequate basis without empirical evidence (i.e. testing or inspection) to support the calculation's basis.

The licensee addressed the inspectors' concerns in a revision to evaluation HI-2188437, dated March 13, 2019. Additionally, the licensee's third written evaluation included test report HI-2188450, "Simulation of High Force Contact Between MPC and UMAX CEC Storage System Components," dated March 12, 2019. In the test report, simulations were performed using representative samples for the MPC shell and UMAX CEC components most likely to damage the MPC surface. The test simulations were conducted at Holtec's Orrvilon fabrication facility. The test simulations utilized a range of test loads to demonstrate what the maximum wear on a canister would be from contact with the UMAX CEC components. Scratch depths were measured after the completion of the test runs.

The evaluation HI-2188437 calculation was revised using Archard's wear equation to contain the correct hardness values and to account for temperature of the canister. The maximum possible scratch depth utilizing the same force had decreased to 0.0024 inches (2.4 mils). However, the test data reported in test report HI-2188450 found maximum depth of scratches on the samples, using a similar test load of 2,000 lbs, to have a maximum depth of 0.007 inches (7 mils). The NRC staff concluded that the licensee test data invalidated the licensee's calculation that utilized Archard's wear equation to define the maximum possible depth of a scratch on the canister.

Subsequently, the licensee determined that the Archard's wear equation only provided an estimate of abrasive wear (removal of material from a surface by harder material) but the calculation could not account for adhesive wear (localized bonding between contacting solid surfaces leading to material transfer between two surfaces or loss from either surface). The inspectors determined that the licensee's initial written evaluations which contained numerous errors and deficiencies were inadequate and represented a violation of NRC requirements (see Section 2.2.6).

Evaluation HI-2188437 had been revised to address corrosion, pitting, and corrosion induced stress corrosion cracking (CISCC). The evaluation stated, for CISCC to occur, three conditions were necessary; a susceptible material, a strong tensile stress, and a corrosive environment. Type 316 stainless steel is a resistant austenitic material, but CISCC is possible under sufficiently severe conditions. However, for CISCC to occur, a through-wall high tensile stress is needed. The primary tensile stresses for the storage system is due to internal pressure of the helium gas which is low (approximately 45 psi). Also, the residual stresses due to rolling operations on stainless steel plates introduced a compressive stress on the outside surface of the canister shell. Seam welds of the canister were the only areas where local tensile stresses from weld shrinkage could potentially result in a through wall high tensile stress.

However, as previously explained, the canisters purchased at SONGS have been laser peened over all the seam welds and heat affected zones to provide a layer of compressive stress relief of 0.080" depth. Additionally, water is necessary for CISCC. The UMAX vault canisters are sheltered from weather intrusion. The canisters are hotter than the ambient air, so wetting from condensation is not possible during the current licensing period. Specifically, the canisters' temperature would remain above ambient temperatures well beyond the current licensing expiration date of 20 years. As such, any additional required monitoring for corrosion, pitting, and CISCC would be addressed in license renewal and through the licensee's ageing management program. The inspectors concluded that the issues related to possible corrosion, pitting, and CISCC on the canister did not pose an immediate safety concern nor immediately affect any of the system's design basis functions and could be adequately monitored and addressed as part of the licensee's ageing management program.

The licensee's subsequent written evaluation to support the site-specific 10 CFR 72.48 change to allow and bound incidental contact used in-situ visual assessment of surfaces of the canister shell and baseplate from eight loaded canisters in the UMAX ISFSI at SONGS. The sample set of eight canisters was consistent with using the guidance of ANSI ASQ Z1.4, "Sampling Procedures and Tables for Inspection by Attributes." The visual assessment was documented in "SONGS Downloading Effects on HI-STORM MPC Visual Assessment Report," dated April 15, 2019.

The eight canisters selected for inspection included: 1.) MPC serial number (SN) 067, which was involved in the August 3, 2018, misalignment incident; 2.) MPC SN 064, which was documented as having made contact with the internals of the CEC on July 22, 2018; and 3.) six additional MPCs located on different rows than the previous two MPCs. The different rows were selected to account for the drainage slope on the ISFSI pad and its potential effect on canister vertical alignment during downloading operations.

The visual assessment was performed by a robotic crawler equipped with navigational cameras and a borescope. The borescope was a flexible camera with interchangeable tips (general area tip and measurement tip). Two stages were utilized to perform the visual assessment. During the first stage, the robotic crawler and borescope with the general area tip was used to identify general locations of surface irregularities. During the section stage, the robotic crawler with the borescope using the measurement tip characterized the surface irregularities (width and depth measurements as applicable). The equipment selected by the licensee to perform the visual assessment was the General Electric borescope (VideoProbe<sup>™</sup>), along with the Robotic Technologies of Tennessee robot.

This same equipment had been used by Electric Power Research Institute for their Extended Storage Collaboration Program Non-destructive examination subcommittee, which is researching and developing technology to support inspection of dry storage canisters. This equipment had been used at multiple U.S. nuclear sites for Part 72 license renewal applications. The GE inspection Technologies' VideoProbe with Real3D<sup>™</sup> point cloud surface scanning and analysis had been used in aviation, military, and oil & gas applications. Additionally, an NRC inspector was on-site during seven of the eight canister inspections to observe the visual assessment activities.

All surface irregularities were recorded and compared to post-fabrication photos to determine whether the surface irregularities were a result of downloading operations. All irregularities that were identified to have occurred during downloading operations were recorded and characterized. A few identified areas of interest crossed over or resided within the canisters' seam welds or weld heat affected zones. However, the protective layer of 0.080 inches provided by laser peening operations was never exceeded. The majority of wear marks identified were correlated to contact with the divider shell shield ring and had maximum wear depths of up to 0.012 inches (12 mils) deep. Additional wear marks identified were correlated to contact with seismic restraints and a maximum wear depth was 0.026 inches (26 mils) deep. Many wear marks had negligible depths.

Wear profiles for divider shell shield ring and inner seismic restraints were different. The divider shell ring wear marks were broader and shallower in comparison. The maximum depth caused by the stainless inner seismic restraint occurred over relatively short lengths in a localized narrow area and did not apply over the entire length nor width of the wear mark. In summary, the wear marks from incidental contact were not uniform, the maximum depths observed were very small in width and area and a majority of the scratch lengths contained negligible depths.

With the gathered information from the visual assessment report, the licensee performed two statistical analyses to bound the potential wear mark depths on the remaining canisters. Licensee report MPR 0299-0057-MEMO-001, "Canister Inspection Plan," dated April 15, 2019, concluded that the eight canister measurements were sufficient to support a conclusion that there is a 95 percent probability with 95 percent confidence that each of the remaining and future canisters would not have a scratch deeper than 0.035 inches (35 mils) due to downloading operations.

The second statistical analysis was documented in licensee

report MPR 0299-0042-MEMO-024, "Canister Installation and Removal Effects on Wall Thickness," dated May 5, 2019. This statistical analysis determined the deepest scratch resulting from insertion and then withdrawal and assumed the two scratches occurred in

the same location. The licensee utilized the same methodology and determined that the deepest scratch at one location resulting from insertion followed by withdrawal with a 95 percent probability and 95 percent confidence to be 0.0584 inches (58 mils), which was still below the ASME code limit of 10 percent (0.0625 inches).

The NRC inspectors utilized the data obtained through the visual assessments to perform independent statistical assessments using several models that were appropriate for the sample size. The inspectors concluded, through the independent assessments, that the conclusion presented by SCE was conservative and reasonably bounded the maximum anticipated scratch or wear resulting from operational activities.

As such, the licensee's written evaluation using the visual assessments and statistical evaluations was adequate to demonstrate that the proposed change to allow the incidental contact on previous and future canisters will continue to meet the confinement design functions as specified in the FSAR and ASME Section III code tolerances and does not require a change to the storage system's technical specifications. The inspectors found that the licensee's site-specific 10 CFR 72.48 change to be acceptable and met all applicable criteria to not require NRC review and approval through a Certification of Compliance amendment.

# 2.2.6 Finding Related to 10 CFR 72.48 Evaluations

10 CFR 72.48(d)(1) requires, in part, that the licensee and certificate holder shall maintain records of changes in the facility or spent fuel storage cask design, of changes in procedures, and tests and experiments made pursuant to paragraph (c) of the section. These records must include a written evaluation, which provides the bases for the determination that the change does not require a Certificate of Compliance (CoC) amendment pursuant to paragraph (c)(2) of this section.

Contrary to the above, from November 7, 2018, to April 15, 2019, on two occasions the licensee did not maintain records of changes that included a written evaluation that provided the bases for the determination that the change does not require a CoC amendment pursuant to paragraph (c)(2) of 10 CFR 72.48. Specifically, the first two revisions of the 10 CFR 72.48 written evaluations to allow scratching on canisters failed to provide an adequate basis for determination that the change did not require a CoC amendment. As noted in Section 2.2.5.b of this report, the inspectors identified numerous technical errors with the calculations used as the bases for the 10 CFR 72.48 written evaluations did not demonstrate that the maximum possible scratch depth would not exceed ASME Section III code limits, a technical specification requirement.

The inspectors determined that the finding was of low safety significance because the inspectors assessed that the in-situ visual assessment and statistical analysis provided an adequate basis for the determination that the canister will continue to meet structural and confinement design functions as specified in the FSAR and continue to meet ASME Section III code tolerances.

The inspectors determined that the violation was similar to the violation examples in Section 2.1.3.D.5 of the NRC Enforcement Manual, which states that violations of 10 CFR 50.59 will be considered more than minor and categorized at Severity Level IV if

the licensee failed to perform an adequate 10 CFR 72.48 evaluation, similar to a 10 CFR 50.59 evaluation, that resulted in a condition having low safety significance.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the enforcement policy violation examples, it should be assigned a severity level: (1) commensurate with its safety significance, and (2) informed by similar violations addressed in the violation examples. The violation was evaluated to be similar to Enforcement Policy Section 6.1.d.2.

The licensee entered the finding into the CAP as AR 1218-11302 and AR 0219-96601. The licensee restored compliance by revising the written evaluation to provide an adequate basis to conclude the change did not require NRC approval. Specifically, the revised written evaluation provided a basis that incidental contact of the canister with the internal components of the CEC during insertion and withdrawal operations would not remove greater than 10% nominal wall thickness of the canister in accordance with ASME Section III which was required by Appendix B Technical Specification 3.3 requirements. Because the licensee entered the issue into the CAP, the safety significance of the issue was low, and the issue was not repetitive or willful, this Severity Level IV violation was treated as a NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV 07200044/2018-002-04, Failure to provide adequate written basis for 72.48 change (10 CFR 72.48)).

# 2.2.7 (Closed) Unresolved Item 07200041/2017-001-02, 10 CFR 72.48 Methodology

NRC Inspection Report 05000206/2017-003, 05000361/2017-003, 05000362/2017-003, and 07200041/2017-001 dated, August 24, 2018 (ADAMS Accession ML18200A400), documented an Unresolved Item (URI) 07200041/2017-001-02, "10 CFR 72.48 Methodology." The issue related to a 10 CFR 72.48 evaluation for the scenario of a hypothetical accident of the loaded HI-TRAC VW transfer cask contacting the sides and bottom of the spent fuel pool, which was analyzed in report HI-2177713 "HI-TRAC VW Drop in Cask Storage Pool at SONGS," Revision 1.

For a short period of time, the HI-TRAC VW and loaded MPC was in an unconstrained condition on an intermediate shelf in the spent fuel pool. If a DBE seismic event was to occur during that time frame, the HI-TRAC VW with a loaded MPC could hypothetically fall to the lower level of the spent fuel pool and experience a higher lateral force than previously analyzed by the HI-STORM FW and UMAX FSARs. In report HI-2177713, the licensee demonstrated acceptability of the peak impact deceleration for the HI-TRAC VW scenario at SONGS by comparing those lateral forces to the peak impact deceleration values used to support the 10 CFR Part 71 HI-STAR 190 transport package safety analyses which utilized the same canister.

The licensee's evaluation concluded that the maximum peak lateral deceleration value of the HI-TRAC VW in the pool at SONGS to be 74g's, which was below the HI-STAR 190 side drop evaluation of 85.9g's. Additionally, the MPC and fuel basket evaluated stresses were identified by the licensee to be less than the design basis criteria described in the limiting values from HI-STORM FW FSAR, Section 2.2.8. The licensee stated that the same computer software (LS-DYNA) was utilized in all three evaluations (SONGS site-specific drop evaluation, HI-STORM FW/UMAX FSAR non-mechanistic tip-over evaluation, and HI-STAR FSAR transportation cask drop evaluation).

At the time of the initial inspection, the NRC needed more information to determine if the utilization of evaluations conducted for the 10 CFR Part 71 HI-STAR 190 transportation license to bound conditions for storage operations under 10 CFR Part 72 UMAX license through SONGS's 10 CFR 72.48 process was appropriate and in compliance with NRC regulations. The NRC subsequently determined that licensee's change was in violation of 10 CFR 72.48 requirements.

The UMAX FSAR references the FW FSAR for the use of the HI-TRAC VW, also both FSARs discuss various tip-over/drop events or requirements that must be followed such that a tip-over/drop event is not credible.

The FW FSAR, Table 1.2.10, "Criteria for Site-Specific Safety Qualification of HI-TRAC VW," item #10 states, in part, the transfer cask's kinematic stability is established under all loading evolutions where the cask is freestanding to ensure kinematic compliance (no tip-over or collision with a proximate structure).

Additionally, a tip-over/drop event as well as kinematic stability of a canister in a HI-TRAC VW was described as either a non-credible accident or must be demonstrated per analysis to have kinematic stability for tornado missiles (FW Section 2.2.3 e.), cask handling (FW Section 2.2.3 f.), and transportation operations (UMAX Appendix B, Technical Specification 3.4.15).

Nuclear Energy Institute Guidance Document 96-07, Appendix B, "Guidelines for 10 CFR 72.48 Implementation," Section 4.3.5, states that, "a change or activity, which increases the frequency of an accident previously thought to be incredible to the point where it becomes as likely as the accidents in the FSAR, could create the possibility of an accident of a different type."

10 CFR 72.48 (c)(1)(ii)(C) states in part, a licensee may make a change in the facility or spent fuel storage cask design as described in the FSAR without obtaining a CoC amendment if the change does not meet any of the criteria in paragraph (c)(2).

10 CFR 72.48 (c)(2)(v) states in part, a general licensee shall request that the certificate holder obtain a CoC amendment pursuant to 10 CFR 72.244, prior to implementing a proposed change if the change would: Create a possibility for an accident of a different type than any previously evaluated in the FSAR.

Contrary to the above, from January 30, 2018, to August 3, 2018, the licensee made a change in the spent fuel storage cask design as described in the FSAR and failed to request the certificate holder to obtain a CoC amendment prior to implementing the proposed change which created a possibility of an accident of a different type than any previously evaluated in the FSAR. Specifically, the licensee created the possibility of a new accident not previously analyzed in the FSAR through a 10 CFR 72.48 change (10 CFR 72.48 Assignment 0718-10512-3) to allow placement of a loaded HI-TRAC VW cask on an intermediate shelf in the spent fuel pool which was evaluated, by the licensee, to not be kinematically stable and had the potential to collide with proximate structures during a seismic event.

This violation was dispositioned per the traditional enforcement process using Section 2.3 of the NRC's Enforcement Policy. The inspectors determined that the finding was of low safety significance since the accident condition of a spent fuel cask drop (due to a seismic event) from the intermediate shelf in the cask pool to the lower portion of the cask pool was an accident condition that had been analyzed and NRC approved in NUREG-0712, "Safety Evaluation Report related to the operation of SONGS Units 2 and 3, dated February 1981," and described in the SONGS Decommissioning Safety Analysis Report Section 15.1.1.5. Additionally, the licensee's calculations demonstrated that maximum lateral deflection in the fuel basket's active fuel region would not have exceeded requirements in the Holtec FW FSAR.

The inspectors determined that the violation was similar to the violation examples in Section 2.1.3.D.5 of the NRC Enforcement Manual, which states that violations of 10 CFR 50.59 will be considered more than minor and categorized at Severity Level IV if the licensee failed to request a license amendment, the NRC would likely approve the amendment, and the change resulted in a condition having low safety significance.

Consistent with the guidance in Section 1.2.6.D of the NRC Enforcement Manual, if a violation does not fit an example in the Enforcement Policy Violation Examples, it should be assigned a severity level: (1) commensurate with its safety significance; and (2) informed by similar violations addressed in the Violation Examples. The violation was evaluated to be similar to Enforcement Policy Section 6.1.d.2

The licensee entered the issue into the CAP as AR 0718-10512 and AR 0617-86918. The licensee restored compliance by revising the loading procedures to no longer utilize the intermediate shelf in the pool. The revised procedures required the transfer cask to be moved, after spent fuel assembly loading, from the bottom of the spent fuel pool directly to the cask wash-down pit for further processing (see Section 2.2.8). Because the licensee entered the issue into the CAP, the safety significance of the issue was low, and the issue was not repetitive or willful, this Severity Level IV violation was treated as a NCV, consistent with Section 2.3.2.a of the Enforcement Policy (NCV 07200044/2018-002-05, Failure to request the certificate holder to obtain a CoC amendment (10 CFR 72.48)).

No additional deficiencies were identified during the review of the Unresolved Item. This Unresolved Item 07200041/2017-001-02, "10 CFR 72.48 Methodology," is closed.

# 2.2.8 Dry Runs (Transportation, Downloading, Uploading)

# Week of January 28, 2019

During the week of January 28, 2019, inspectors observed SCE perform demonstrations of sections of revised procedures HPP-2464-400, "MPC Transfer at SONGS," Revision 19 and HPP-2464-500, "MPC Unloading at SONGS," Revision 6. The demonstrations for this week of NRC on-site inspection activity involved movement of the HI-TRAC VW transfer cask with a canister simulator from the Unit 2 fuel building along the haul path to the ISFSI pad and included downloading operations.

During the first day of field demonstrations, SCE demonstrated spent fuel travel along a revised travel path for the low-profile transporter while carrying the canister simulator and HI-TRAC VW transfer cask from the Unit 2 fuel building. The haul path was revised based on seismic analyses and the revisions were intended to keep the low-profile transporter and transfer cask the required height and distance from structures along the path that could possibly be impacted if a seismic event were to occur during travel. The

revised path included white and yellow painted lines on the pavement to serve as guides for the operator to travel within. There were also restricted zone markings on the haul path near adjacent structures that were required to be avoided. The transfer cask was transported by the operator from the fuel building to the outside of the plant protected area, and into the SONGS ISFSI protected area, where it met up with the VCT. The VCT continued the movement of the canister simulator onto the ISFSI pad and into stack-up configuration for downloading.

The transfer cask was transported by use of the VCT until it was secured to the UMAX ISFSI mating device. A nighttime downloading demonstration of the canister simulator was performed after the ISFSI haul path travel demonstration. No adverse conditions were identified during the downloading demonstration operations. The new load monitoring equipment, cameras, and personnel present on the ISFSI pad ensured that loss-of-load indications was promptly responded to during downloading operations. The new equipment worked as intended and provided a positive load indication for the canister simulator. The cask loading crew used procedure adherence and the equipment enhances at their disposal to successfully perform the nighttime downloading demonstration.

The following day, the cask loading crew used the most recent revision of procedure HPP-2464-500 to demonstrate removal of the simulator from the UMAX ISFSI vault. Uploading operations proceeded without any issues. In the same manner as the previous evening, the cask loading crew used procedure adherence and the equipment enhancements at their disposal to successfully retrieve the canister simulator from the ISFSI vault.

Finally, a daytime downloading operation was demonstrated in accordance with procedure HPP-2464-400. The daytime downloading proceeded with the same requirements as the nighttime demonstration. The inspectors observed rigorous procedure adherence and oversight supervision during the cask loading operations.

#### Week of February 11, 2019

During the week of February 11, 2019, NRC observed SCE perform demonstrations of sections of its revised procedures HPP-2464-400, "MPC Transfer at SONGS," Revision 19, and HPP-2464-500, "MPC Unloading at SONGS," Revision 6, inside the fuel building. The second-week demonstrations were performed to support procedure revisions that removed usage of the spent fuel pool intermediate shelf location during fuel loading operations. To remove usage of the intermediate shelf required that the crane hook be fully immersed into the pool when placing the transfer cask and empty canister into the cask loading pit. The previous procedure revision avoided immersing the crane hook, block, and wire rope into the potentially contaminated spent fuel pool water.

To facilitate the procedure revisions, SCE performed modifications to the Unit 2 cask handling crane hook that would allow it to be immersed into the spent fuel pool water. At the time of the inspection, the Unit 3 cask handling crane hook had not yet been modified. However, the inspectors noted that the work orders were in place for the modification.

The inspectors observed SCE successfully demonstrate placement of an empty transfer cask and canister into the spent fuel cask loading pit. Next, the licensee successfully demonstrated placement of the MPC lid and drain tube into the transfer cask while at the bottom of the cask loading pit and removal of the transfer cask from the cask loading pit to the cask washdown area. The inspectors observed rigorous procedure adherence and oversight supervision during the fuel loading operations.

# 2.2.9 (Closed) Notice of Violation SLII 072-00041/2018-001-02, "Failure to ensure redundant drop protection features were available" (10 CFR 72.212), EA-18-155

As a result of the NRC Special Inspection a violation was identified for the licensee's failure to provide redundant drop protection features during downloading operations.

The licensee submitted its response to the NRC letter within the required 30-day time frame, on April 23, 2019 (ADAMS Accession ML19116A056), which contained the corrective steps taken to ensure full compliance was achieved.

During supplemental inspection activities conducted from November 2018 to May 2019, the NRC inspectors concluded that SCE's proposed and completed corrective actions, as described in this report, restored compliance, addressed extent of condition, and were adequate to prevent recurrence. No additional deficiencies were identified during NRC's review of this violation.

This closes VIO 072-00041/2018-001-02, "Failure to ensure redundant drop protection features are available," (10 CFR 72.212), EA-18-155.

# 2.2.10 ISFSI Pad Surveys

On October 22, 2018, during a routine decommissioning inspection (ADAMS Accession ML18323A024) the NRC inspectors performed independent measurements and verifications of the radiological conditions at the SONGS ISFSI. The inspectors measured various locations including the background areas, public access areas, owner-controlled areas, protected areas, and representative locations on both generally licensed ISFSI Pads: Transnuclear, (TN) Inc. Nuclear Horizontal Modular Storage (NUHOMS) and Holtec HI-STORM UMAX dry fuel storage systems.

The inspectors used a Ludlum Model 19, NRC Tag Number 033906, serial number 84259 with a calibration due date of July 23, 2019, to perform the survey measurements. The data in Attachment 2 shows the ranges of the measurements of each UMAX location by the VVM number at the inlet air vents, closure lid, and outlet air vent. Attachment 2, also shows the measurements taken on the NUHOMS locations, on contact with the inlet vent and 1 foot away from the inlet vent.

The VVM with the highest gamma measurement was VVM 33 with the inlet air vents ranging from 310-330 µR/hr. The NUHOMS location with the highest gamma measurement was TN 21, on contact with the inlet vent was 1,600 µR/hr. Background measurements from around the site ranged from 3-10 µR/hr. The NRC inspectors did not identify any measurements at the owner-controlled area boundary or in the public access areas to be above normal background measurements. A more detailed discussion of the surveys taken can be found at "NRC Surveys of SONGS ISFSI Pad,"

dated October 22, 2018 (ADAMS Accession ML19011A457) and on the provided table in Attachment 2 of this report.

# 2.3 Conclusions

The inspectors reviewed two LERs and one licensee event notification which had been reported to the NRC since the last inspection. The review of the event notification resulted in one Severity Level IV violation of NRC requirements that was treated as a NCV. The inspectors reviewed inspection follow-up items from the NRC Special Inspection Report which included the NRC's evaluation of the licensee's drop analysis, scratch analysis, and observations of dry run demonstrations. The review of the scratch analysis resulted in one Severity Level IV violation of NRC requirements that was treated as a NCV. The inspectors closed one violation which resulted from the NRC Special Inspection for the licensee's failure to ensure redundant drop protection features during downloading operations on August 3, 2018. The inspectors documented the results of the independent measurements and verifications of the radiological conditions at the SONGS ISFSI.

#### 3 Exit Meeting Summary

On February 15, 2019, following an onsite portion of the inspection, the inspectors provided a debrief of the preliminary results to Mr. Doug Bauder, Vice President and Chief Nuclear Officer, and other members of the licensee staff. The licensee acknowledged the issues presented by the NRC inspection team.

On March 25, 2019, the NRC performed a public webinar meeting to discuss the inspection team's preliminary results. On March 28, 2019, the NRC participated in a San Onofre Community Engagement Panel Meeting to discuss the inspection team's preliminary results. On June 3, 2019, the NRC performed a public webinar meeting to discuss the NRC's decision on resumption of fuel loading activities at SONGS. On June 5, 2019, the NRC participated in a San Onofre Community Engagement Panel Meeting and discussed the NRC's decision on resumption of fuel loading activities at SONGS.

On June 13, 2019, the inspectors presented the final inspection results to Mr. Al Bates, Regulatory and Oversight Manager and other members of the licensee staff. The licensee acknowledged the issues presented.

# SUPPLEMENTAL INSPECTION INFORMATION

# PARTIAL LIST OF PERSONS CONTACTED

#### Licensee Personnel

- A. Bates, Regulatory and Oversight Manager
- M. Morgan, Regulatory and Oversight
- L. Bosch, Plant Manager
- T. Palmisano, former Vice President Decommissioning and Chief Nuclear Officer
- J. Pugh, Project Engineer
- K. Rod, General Manager Decommissioning Oversight
- J. Smith, Project Manager, Holtec
- M. Soler, Vice President Quality, Holtec

## INSPECTION PROCEDURES USED

IP 92702	Follow-up on Traditional Enforcement Actions
IP 71153	Follow-up of Events and Notices of Enforcement

# LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed		
07200044/2018-002-01	NCV	Failure to ensure appropriate quality standards (10 CFR 72.146)
07200044/2018-002-02	NCV	Failure to ensure purchased material conformed to the procurement documents (10 CFR 72.154)
07200044/2018-002-03	NCV	Failure to ensure the loaded transfer cask and its conveyance was evaluated under the site-specific DBE (10 CFR 212)
07200044/2018-002-04	NCV	Failure to provide adequate written basis for 72.48 change (10 CFR 72.48)
07200044/2018-002-05	NCV	Failure to request the certificate holder to obtain a CoC amendment (10 CFR 72.48)
Closed		
072-00041/2018-001-01	VIO	Failure to identify and correct conditions adverse to quality (10 CFR 72.172) EA-18-155
072-00041/2018-001-02	VIO	Failure to ensure redundant drop protection features were available (10 CFR 72.212) EA-18-155

#### (311 of 314)

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 47 of 50

072-00041/2018-001-03	VIO	Failure to assure that operations of important to safety equipment were limited to trained and certified personnel (10 CFR 72.190) EA-18-155
072-00041/2018-001-04	VIO	Failure to provide adequate instructions or procedures (10 CFR 72.150) EA-18-155
072-00041/2018-001-05	VIO	Failure to make 24-hour notification (10 CFR 72.75) EA-18-155
2018-001-0	LER	Spent Nuclear Fuel Canister Temporarily Wedged in Dry Cask Storage Container
53858	EN	Inadequate Analysis for VCT Operations
07200041/2017-001-02	URI	10 CFR 72.48 Methodology
Discussed		
2018-002-0	LER	Spent Nuclear Fuel Transport Conveyance Vehicle Operated Outside Obstacle Clearance Limit

(312 of 314)

# LIST OF ACRONYMS USED

105	
ADAME	Apparent Cause Evaluation
ADAINS	Advenced Herizentel Sternes Medule
ANSM	Advanced Horizontal Storage Module
ASME	American Society of Mechanical Engineers
AR	Action Request
ASME	American Society of Mechanical Engineers
AV	Apparent Violation
CA	Corrective Action
CAP	Corrective Action Program
CAPR	Corrective Action to Prevent Recurrence
CCE	Common Cause Evaluation
CEC	Cavity Enclosure Container
CFR	Code of Federal Regulations
CISSC	corrosion induced stress corrosion cracking
CoC	Certificate of Compliance
DBE	Design Basis Earthquake
EN	Event Notification
FCR	Field Condition Report
FSAR	Final Safety Analysis Report
GTCC	Greater than Class C
HI-STORM FW	Holtec International Storage Module Underground Flood and Wind
HI-STORM UMAX	Holtec International Storage Module Underground Maximum Capacity
IP	Inspection Procedure
ISESI	Independent Spent Fuel Storage Installation
ITS	Important-to-Safety
LER	Licensee Event Report
NECP	Nuclear Engineering Change Package
NCV	Non-Cited Violation
NITS	Not Important to Safety
NPC	U.S. Nuclear Degulatory Commission
NULLOME	Nuclear Regulatory Commission
MDC	multipurpage conjeter
NIFC	Quality Investigation
QI DOF	Quality Investigation
RUE	Root Cause Evaluation
RRGE	Reportability Root Cause Evaluation
SAT	Systematic Approach to Training
SCE	Southern California Edison
SL	Severity Level
SONGS	San Onofre Nuclear Generating Station
TN	Transnuclear
VCT	Vertical Cask Transporter
VIO	Violation
1/1/1/1	Vertical Ventilated Module or yault

# Radiological Surveys of ISFSI Pads

# Table 1, Holtec HI-STORM UMAX ISFSI Pad Survey Results

Vertical Ventilated Module	Inlet Air Vent Range (µR/hr)	Closure Lid Range (µR/hr)	Outlet Air Vent Range (μR/hr)
22	130-160	9-15	110-120
23	170-230	12-17	150-160
24	180-240	11-14	150-170
25	210-240	11-17	170-190
26	180-230	11-16	130-140
27	160-220	9-17	140-160
28	230-300	14-19	210-220
29	200-320	13-18	190-210
30	190-280	12-19	180-190
31	190-220	13-19	170-180
32	200-260	13-18	170-190
33	310-330	13-18	230-240
44	220-260	14-21	180-200
45	180-250	14-20	190-210
46	270-320	15-22	220-240
47	180-250	11-20	170-180
58	130-180	11-17	120-160
59	150-200	14-20	130-150
60	170-200	15-19	140-160
61	160-200	11-18	140-150
67	140-210	11-17	140-150
68	120-160	11-16	130-140
69	160-210	11-16	140-160
70	180-210	13-18	140-150
71	190-220	11-17	140-160
72	120-190	11-15	140-160
73	180-220	11-17	150-170
74	160-180	11-16	130-160
75	100-260	11-16	180-210

# Table 2, TN, Inc. NUHOMS ISFSI Pad Survey Results

AHSM	Inlet Vent Contact (µR/hr)	Inlet Vent 1 Foot Away (μR/hr)
1	800	500
2	700	500
3	800	500
4	800	500
5	700	500
6	700	500
7	600	400
8	700	500

Attachment 2

# Case: 20-70899, 04/27/2020, ID: 11672824, DktEntry: 18-13, Page 50 of 50

AHSM	Inlet Vent Contact (µR/hr)	Inlet Vent 1 Foot Away (µR/hr)
9	700	500
10	600	400
11	800	500
12	700	500
13	600	400
14	500	300
15	100	70
16	420	260
17	440	240
18	440	270
19	1400	900
20	1300	1000
21	1600	1100
22	1000	700
23	1000	700
24	900	600
25	600	400
26	380	220
27	1000	600
28	800	600
29	1000	700
30	1200	800
31	800	500
32	1200	700
33	900	500
34	1100	800
35	900	500
36	1100	700
37	1000	600
38	1200	800
39	1000	600
40	1100	700
41	1100	700
42	1100	700
43	320	180
44	320	180
45	310	170
46	310	210
47	310	180
48	900	600
49	700	500
50	360	210
51	360	220