NEI 15-06 [Revision 0]

Use of the Nuclear Decommissioning Trust Fund

November 2015

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Nuclear Energy Institute

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ACKNOWLEDGMENTS

This document was developed by the Nuclear Energy Institute (NEI) Decommissioning Task Force, Decommissioning Funding Team.

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EXECUTIVE SUMMARY

This technical report provides guidance to assist licensees in identifying costs which are appropriately reimbursed from a nuclear decommissioning trust (NDT) consistent with the definition of decommissioning in 10 C.F.R. § 50.2. This report also provides guidance on how licensees (or their cost estimate vendor) should clearly identify these activities in the site-specific decommissioning cost estimate and specify the funds that are set aside for these costs in the nuclear decommissioning trust or other appropriate funding mechanism.

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USE OF THE NUCLEAR DECOMMISSIONING TRUST FUND

1 INTRODUCTION

The purpose of this document is to provide guidance on the development of decommissioning cost estimates and the appropriate use of decommissioning trust funds established by licensees with primary focus on disbursement of funds for the purpose of NRC Radiological Decommissioning (as defined in 10 C.F.R. § 50.2).

Licensees are required to provide financial assurance for NRC Radiological Decommissioning through meeting the requirements of 10 C.F.R. § 50.75 while a facility is operating. The decommissioning process, including the use of decommissioning funds, is governed primarily by 10 C.F.R. § 50.82. The most common method of meeting financial assurance requirements is with a trust, typically called a Nuclear Decommissioning Trust (NDT).

2 DEFINITIONS

- NRC Radiological Decommissioning[1] – those activities meeting the NRC definition of decommissioning in 10 C.F.R. § 50.2:

  Decommission 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 the property under restricted conditions and termination of the license.

  Section 50.82(a) identifies permissible uses of the decommissioning trust funds:

  (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;

  The regulations in 10 C.F.R. Part 50 do not specifically itemize which particular activities are "legitimate decommissioning activities." However, activities that go beyond the scope of decommissioning, as defined in 10 C.F.R. § 50.2, such as restoration costs to prepare the site for its next use after license termination is complete, are not decommissioning activities. Decommissioning activities also do not include the removal, storage, management and disposal of spent fuel, or the disposal during operation of radiologically contaminated materials or the removal and disposal of nonradioactive structures and materials beyond that necessary to terminate the NRC license. Disposal of nonradioactive hazardous waste not necessary for NRC license termination is not covered by these regulations but would be treated by other appropriate agencies having responsibility over these wastes.

[1] In this document, the term "decommissioning activities" means those activities that meet the NRC definition of decommissioning in 10 C.F.R. § 50.2.

Licensees should recognize that this is the regulatory definition for NRC purposes under 10 C.F.R. § 50.2. Other government agencies (e.g. the IRS or FERC) may have different definitions of the term "decommissioning" and the liability required to be reported on a licensee's financial statements (i.e. on its balance sheet) currently utilizes a different definition and process.

- Spent Fuel Management – Activities performed to manage inventories of irradiated fuel and Greater than Class C Waste (GTCC) at the reactor site following permanent cessation of operation of the reactor until title and possession of the fuel and GTCC is transferred to the Secretary of Energy for its ultimate disposal in a repository. Funding for spent fuel management activities are addressed in a separate regulation, 10 C.F.R. § 50.54(bb). [2]

- Site Restoration – Activities performed to prepare the site for its next use or some desired end state beyond license termination. Such activities extend beyond what is required to complete decommissioning as defined in 10 C.F.R. § 50.2.

- Commingling of Funds – The inclusion in the NDT of monies to provide for radiological decommissioning, spent fuel management, and site restoration.

- Nuclear Decommissioning Trust (NDT) – a method of providing financial assurance, where an account or accounts are segregated from licensee assets and outside the administrative control of the licensee and its subsidiaries or affiliates, such that the amount of funds would be sufficient to pay for decommissioning costs at the time permanent cessation of operations is expected or otherwise sufficient as described in 10 C.F.R. § 50.75(e)(1). Use of NDT funds is governed by 10 C.F.R. § 50.82(a)(8).

- Decommissioning Funding Assurance – the specific requirements to provide for decommissioning funding to permit license termination are under 10 C.F.R. § 50.75(e)(1). These requirements do not apply to spent fuel management, which is addressed under 10 C.F.R. § 50.54(bb).

- Independent Spent Fuel Storage Installation (ISFSI) Decommissioning Funding Assurance – Financial assurance and recordkeeping requirements for decommissioning an ISFSI (or Monitored Retrievable Storage facility) following the removal of spent fuel, high-level radioactive waste, and reactor-related Greater Than Class C (GTCC) waste are addressed in 10 C.F.R. § 72.30.

- Site-Specific Decommissioning Cost Estimate (DCE) – The estimate required to be submitted within 2 years following permanent cessation of operations, pursuant to 10 C.F.R. § 50.82(a)(8)(iii). The purpose of the site-specific decommissioning cost estimate is to calculate the cost required to complete license termination, spent fuel management and site restoration. The DCE

[2] The NRC considers GTCC wastes to be low-level radioactive waste. Inclusion of GTCC under the "spent fuel management" definition in this document is not intended to limit either the options for managing GTCC at a permanently defueled facility, or the disposal options that may become available to licensees in the future.

categorizes the cost by decommissioning period, is used to establish the asset retirement obligation, and provides a basis for financial assurance evaluations.

- Post-shutdown Decommissioning Activities Report (PSDAR) – The report required within 2 years following permanent cessation of operations, pursuant to 10 C.F.R. § 50.82(a)(4). It is required to be submitted to the NRC and made available for public comment in accordance with 10 C.F.R. § 50.82(a)(4) prior to or within 2 years following permanent cessation of operations. The purpose of the PSDAR is to provide a general overview for the NRC and the public of the licensee's proposed decommissioning activities. Ninety (90) days after NRC has received the PSDAR submittal, the licensee is permitted to perform major decommissioning activities, if the NRC does not object. After the 90 day wait period has expired, without objection from the NRC, the licensee is allowed to reimburse license termination expenditures from the NDT.

- Planning expenses for decommissioning – expenses authorized up to 3% of the generically prescribed decommissioning funds (see 10 C.F.R. § 50.75(c)) to be available to the licensee for planning purposes (including "paper studies") before 90 days post-PSDAR submittal, including before permanent cessation of power reactor operations, as specified in 10 C.F.R. § 50.82(a)(8)(ii).

3 NRC REQUIREMENTS FOR DECOMMISSIONING COST ESTIMATE AND FINANCIAL ASSURANCE DURING DECOMMISSIONING

The regulations at 10 C.F.R. § 50.82(a)(4)(i) require a site-specific decommissioning cost estimate (DCE) be submitted in conjunction with the Post-Shutdown Decommissioning Activities Report (PSDAR):

> *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.*

The regulations at 10 C.F.R. § 50.75(f)(1) and (f)(2) require decommissioning funding status reports annually beginning at 5 years before projected end of operations and continuing through the decommissioning period until license termination. This applies even before the site-specific DCE is submitted.

After the site-specific DCE is submitted, 10 C.F.R. § 50.82(a)(8)(v) requires an annual financial assurance status report, which requires the licensee to demonstrate that there is funding available to terminate the 10 C.F.R. Part 50 license. The financial assurance requirements are based on the DCE.

> *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.

If the annual financial assurance status report shows a projected shortfall in the amount of remaining funds to complete decommissioning, then 10 C.F.R. § 50.82(a)(8)(vi) requires that the licensee include additional financial assurance to cover the shortfall:

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.

DECOMMISSIONING COST ESTIMATE DISCUSSION

The licensees should make their site-specific DCE as comprehensive as practical to comply with regulatory requirements and to provide a transparent view of the decommissioning project for all stakeholders. During the course of developing the site-specific DCE in accordance with the NRC guidance in Regulatory Guide (RG) 1.202, licensees should clearly account for and include in the DCE those activities that are necessary to decommission the facility pursuant to the definition provided in 10 C.F.R. § 50.2, or are clearly necessary to remove the facility or site safely from service in order to facilitate decommissioning. Examples of such activities include maintaining emergency preparedness capabilities, physical security, property taxes, insurance and fees for attorneys and consultants.

The regulations do not prohibit, and some licensees have created, separate subaccounts for other activities in the decommissioning trust fund. Licensees may include in their NDT, and separately account for, funds to provide for activities that do not fall within the 10 C.F.R. § 50.2 definition of decommissioning. The practice of combining these funds is commonly known as commingling and is generally permitted under NRC's regulations, as described in NRC Regulatory Information Summary (RIS) 2001-07, Rev.1:

> *The NRC has not precluded the commingling in a single account of funds accumulated to comply with NRC Radiological Decommissioning requirements and funds accumulated to address State site restoration costs (State costs) and spent fuel management costs, as long as the licensee is able to identify and account for the NRC Radiological Decommissioning funds that are contained within a single account.*

Based on the information in RIS 2001-7, Rev. 1, the key to appropriately managing commingled funds is to assure that funds for NRC Radiological Decommissioning are identified and accounted for by the licensee, despite being commingled with funds that are set aside for other purposes (i.e., spent fuel management, and site restoration).

Submittal of the site-specific DCE triggers annual financial assurance reports that require licensees to show that there are sufficient funds available in the NDT, or provided by another financial assurance method, to complete NRC Radiological Decommissioning based on the estimated cost to complete those activities as described in the DCE.

Activities associated with management of spent (irradiated) fuel and site restoration are not within the scope of the NRC definition of decommissioning. It is common practice, however, to provide the DCE subdivided into categories like license termination (i.e., radiological decommissioning), spent fuel management and site restoration. Site restoration is generally taken to mean activities undertaken to allow the site to be used for other purposes (e.g., industrial) following termination of the Part 50 license.

The requirements to show plans for how different categories of cost (license termination, spent fuel management, and site restoration) will be funded vary with the most demanding requirements applied to license termination. Funding assurance requirements for license termination costs are specifically articulated in 10 C.F.R. § 50.75(e)(1). These requirements do not apply to an irradiated fuel management plan under 10 C.F.R. § 50.54(bb). Since site restoration activities are outside the regulatory scope of the NRC, there is no NRC-based requirement beyond the expectation of accounting for those funds separately from NRC obligations.

Consistent with the PSDAR being an informational filing, the associated plans should inform the regulator and stakeholders of how the licensee expects to fund the spending necessary to complete license termination.

In the case of a delayed decommissioning plan, RG 1.185 has additional specific guidance:

> *Following submission of a site-specific cost estimate, if the licensee specifies the delayed completion of decommissioning in its PSDAR, it must provide a means of adjusting cost estimates and associated funding levels over the duration of the storage or surveillance period to ensure that the appropriate amount of funding will be available to terminate the license as required by 10 CFR 50.82(a)(8)(iv). The PSDAR should describe that mechanism.*

ISFSI DECOMMISSIONING DISCUSSION

Currently there is no mechanism to remove spent nuclear fuel from a reactor site. Consequently, licensees may have completed decontamination and dismantlement of their facility with only an ISFSI remaining under their 10 C.F.R. Part 50 license or they may have transitioned to an ISFSI-only license under 10 C.F.R. Part 72. As described in the definitions section, 10 C.F.R. § 72.30 imposes specific decommissioning financial assurance and recordkeeping requirements for both general and specific ISFSI licensees. Section 72.30(e)(5) states, however, that Part 50 power reactor licensees and ISFSI specific licensees who meet the definition of an "electric utility" (as defined in Part 50) may use the funding assurance methods provided in § 50.75(b), (e), and (h).

4 DEVELOPMENT OF THE DECOMMISSIONING COST ESTIMATE AND USE OF THE DECOMMISSIONING TRUST FUND CONSISTENT WITH THE DEFINITION OF DECOMMISSIONING

The NRC has published guidance documents that licensees should consider in the development of the site specific DCE and when making decisions regarding the appropriate use of NDT funds. Licensees should review the applicable guidance documents to determine whether proposed reimbursements from the NDT for decommissioning activities are consistent with the definition of decommissioning in 10 C.F.R. §§ 50.2 and 50.82(a) (8) (i) (A).

Rulemaking Documents (provide explanation and interpretation of NRC regulations at the time rules are promulgated)

- General Requirements for Decommissioning Nuclear Facilities – Final Rule, 53 FR 24018 (June 27, 1988): promulgated 10 C.F.R. §§ 50.2 and 50.75 and significantly revised Section 50.82.
    - References several NRC and Pacific Northwest Laboratory (PNL) studies at 53 FR 24041.
    - Note: As stated in the Final Rule (see 53 FR 24027), "The PNL reports on decommissioning a reference PWR and reference BWR are detailed engineering studies of the conceptual decommissioning of a large PWR (the 1174 MWe Trojan Nuclear Plant is used as the reference plant) and a large BWR (the 1150 MWe WNP-2 plant is used as reference)." Subsequent NUREG/CR reports have been produced as a result of reviews and reevaluations of these reports. (See NUREG/CR-5884 and NUREG/CR-6174 cited below).
- Decommissioning of Nuclear Power Reactors – Final Rule, 61 FR 39278 (July 29, 1996): significant amendments to the decommissioning rules
- Financial Assurance Requirements for Decommissioning Nuclear Power Reactors – Final Rule, 63 FR 50465 (Sept. 22, 1998): amends rules governing financial assurance for decommissioning, for example, requiring periodic reporting.
- Decommissioning Trust Provisions – Final Rule, 67 FR 78332 (Dec. 24, 2002): amended rules governing decommissioning trust funds to account for licensees

that are no longer rate regulated. The rulemaking also amends notice requirements for certain decommissioning trust fund withdrawals.

- Decommissioning Planning – Final Rule, 76 FR 35512 (June 17, 2011): amended decommissioning planning rules, including reporting requirements for DCEs and imposing new requirements to report spent fuel management costs and to provide for ISFSI decommissioning funding assurance.

Regulatory Guides (describe to the public methods that the staff considers acceptable for use in implementing specific parts of the agency's regulations, to explain techniques that the staff uses in evaluating specific problems or postulated accidents, and to provide guidance to applicants).

Note: Current revisions are listed below. Licensees should verify they are referencing the most recent revision of any Regulatory Guidance.

- Regulatory Guide 1.159, Assuring the Availability of Funds for Decommissioning Nuclear Reactors, Rev. 2 (Oct. 2011)

- Regulatory Guide 1.184, Decommissioning of Nuclear Power Reactors, Rev. 1 (Oct. 2013)

- Regulatory Guide 1.185, Standard Format and Content for Post-Shutdown Decommissioning Activities Report, Rev. 1 (June 2013)

- Regulatory Guide 1.202, Standard Format and Content of Decommissioning Cost Estimates for Nuclear Power Reactors (Feb. 2002)

- Regulatory Guide 1.179, Standard Format and Content of License Termination Plans for Nuclear Power Reactors, Rev. 1 (June 2011)

NUREG Publications and Other NRC Guidance (guidance or other publications prepared by the NRC Staff)

- Regulatory Issue Summary (RIS) 2001-07, Rev. 1, 10 C.F.R. 50.75 Reporting and Recordkeeping for Decommissioning Planning (Jan. 8, 2009): clarifies the need to preserve the distinction between funds accumulated for radiological decommissioning, which licensees are required to report, and funds accumulated for other purposes.

- NUREG-1713, Standard Review Plan for Decommissioning Cost Estimates for Nuclear Power Reactors (Dec. 2004)

    - This document also includes references to several other supporting studies, including NUREG-0586, NUREG/CR-0130, NUREG/CR-0672, NUREG/CR-5884, and NUREG/CR-6174, and NUREG-1307

- NUREG-1307, Report on Waste Disposal Charges: Changes in Decommissioning Waste Disposal Costs at Low-Level Waste Burial Facilities, Rev. 15 (Jan. 2013) (revised periodically)

- NUREG-0586, Final Generic Environmental Impact Statement [GEIS] on Decommissioning of Nuclear Facilities (Initial Report, Aug. 1988; supp. 1, Nov. 2002).

    - This GEIS supported the 1988 decommissioning rulemaking, and referenced several PNL and other supporting studies, including NUREG/CR-0130 and NUREG/CR-0672 listed below.

- NUREG-1700, Standard Review Plan for Evaluating Nuclear Power Reactor License Termination Plans, Rev. 1 (Apr. 2003)

- NUREG-1577, Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance, Rev. 1 (Feb. 1999)

NUREG/CR Publications (guidance or other publications prepared by NRC contractors) are studies, typically performed by Pacific Northwest National Laboratory (PNNL), upon which the NRC staff has relied upon to develop nuclear plant decommissioning funding requirements found at 10 C.F.R. 50.75(c). The formula amounts in this section of NRC regulations are based upon these studies.

- NUREG/CR-0130, Technology, Safety and Costs of Decommissioning a Reference Pressurized-Water Reactor Power Station (June 1978, several addenda published, later updated in NUREG/CR-5884)

- NUREG/CR-0672, Technology, Safety and Costs of Decommissioning a Reference Boiling-Water Reactor Power Station (June 1980, several addenda published, later updated in NUREG/CR-6174)

- NUREG/CR-5884, Revised Analyses of Decommissioning for the Reference Pressurized Water Reactor Power Station (November 1995; issued as part of a review and reevaluation of NUREG/CR-0130)

- NUREG/CR-6174, Revised Analyses of Decommissioning for the Reference Pressurized Water Reactor Power Station (July 1996; issued as part of a review and reevaluation of PNL 1980 decommissioning study of WNP-2 (NUREG/CR-0672).

- Draft Pacific Northwest National Laboratory (PNNL) Study, Assessment of the Adequacy of the 10 C.F.R. 50.75(c) Minimum Decommissioning Fund Formula (dated November 2011; referenced in SECY 13-0066, Staff Findings on the Table of Minimum Amounts Required to Demonstrate Decommissioning Funding Assurance, June 20, 2013)

NRC Past Practice. NRC has received numerous decommissioning cost estimates and analyses from nuclear power plant licensees. Many of these estimates were sent in response to NRC specific requests for additional information on decommissioning liabilities. Some were provided in response to specific NRC requests as part of their review of a licensee's compliance with NRC's funding assurance regulations at 10 C.F.R. § 50.75. NRC's reliance upon the decommissioning cost estimates in these instances is

indicative of their reasonableness and the expectation that NRC would accept them formally.

Additionally, several licensees have submitted five-year, pre-shutdown preliminary decommissioning cost estimates, in compliance with 10 C.F.R. § 50.75(f)(3). NRC staff has reviewed these documents and provided Safety Evaluation Reports (SER), which find costs identified by the decommissioning cost estimates to be reasonable. Since the SERs produced by NRC staff are formal responses, they constitute NRC's approval that decommissioning costs presented in the estimates are true, accurate and allowable.

The three examples provided below reference the licensees' original five-year, pre-shutdown preliminary decommissioning cost estimate submission to NRC, and NRC's Safety Evaluation Reports to the licensees.

Vermont Yankee

ADAMS Accession No. ML080430658 – Vermont Yankee Nuclear Power Station License No. DPR-28 (Docket No. 50-271) Report pursuant to 10 C.F.R. 50.75(f)(3)

ADAMS Accession No. ML083390193 – Vermont Yankee Nuclear Power Station – Safety Evaluation re: Spent Fuel Management Program and Preliminary Decommissioning Cost Estimate (TAC Nos. MD8035 and MD8051)

Oyster Creek

ADAMS Accession No. ML041130434 – (Oyster Creek) Submittal of Preliminary Decommissioning Cost Estimate

ADAMS Accession No. ML050550242 – Oyster Creek Nuclear Generating Station (OCNGS) – Safety Evaluation re: Preliminary Decommissioning Cost Estimate and Spent Fuel Management Program (TAC Nos. MC2996 and MC4994)

Kewaunee

ADAMS Accession No. ML090300120 – Dominion Energy Kewaunee, Inc. Kewaunee Power Station Report Pursuant to 10 C.F.R. 50.75(f)(3)

ADAMS Accession No. ML090300484 – Decommissioning Cost Estimate Study of the Kewaunee Nuclear Power Plant

ADAMS Accession No. ML091130661 – Kewaunee – Revised RAI re. Preliminary Decommissioning Cost Estimate (TACME253)

ADAMS Accession No. ML092321079 – (Safety Evaluation Report) Kewaunee Power Station – Irradiated Fuel Management Program and Preliminary Decommissioning Cost Estimate (TAC Nos. ME0253 and ME0275)

4.1 Screening Criteria for Licensees and Logic Tree to guide their application

Using the guidance in this document and the references provided, licensees should use the following general screening criteria to determine if the NDT may be used to support a cost/activity. These criteria must be applied in the appropriate sequence to assure that the NDT use in question is in compliance with NRC regulations, consistent with NRC

guidance, and backed by a clear accounting of the licensees cost estimates guiding the accumulation of the NDT. These criteria are presented in the form of the decision logic tree on the following page.

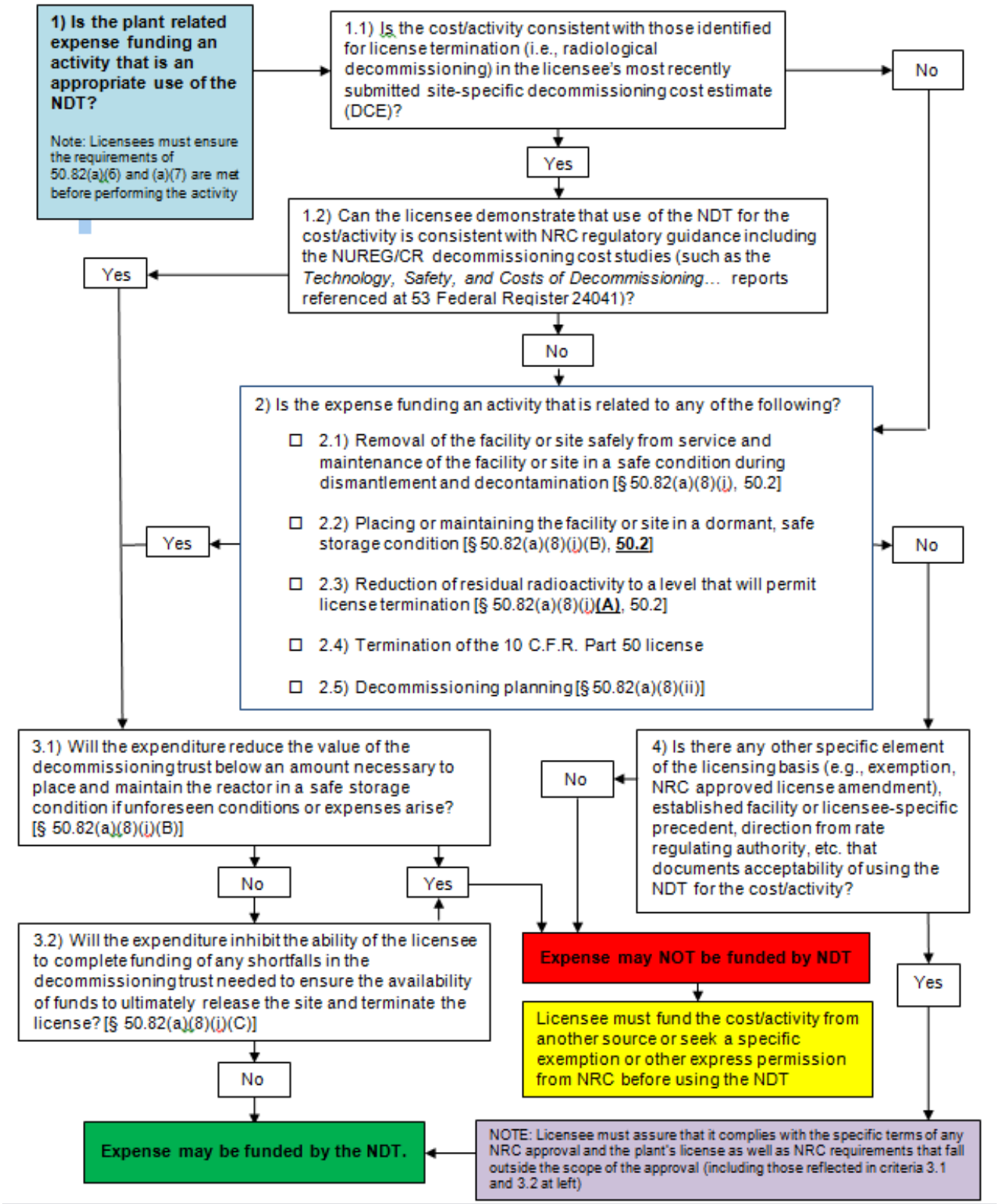
<u>Applicability</u>: This decision tree is intended to be applied prospectively by licensees. It is not intended to be used as a tool to retrospectively evaluate decisions regarding the use of Nuclear Decommissioning Trust (NDT) funds. A number of facility and licensee-specific factors have influenced decisions regarding the use of NDT funds in the past, such as direction provided by rate regulating authorities and conditions imposed during license transfer proceedings. This decision tree was not developed as a tool to reexamine such decisions. Instead, the decision tree should be used prospectively, as a high-level tool to assist licensees in evaluating decisions regarding the use of NDT funds. The decision tree attempts to account for some facility or licensee-specific circumstances that have been relevant to decisions on the use of funds (see question 4). But it is important to understand that questions in the decision tree may not be all-inclusive in this regard. Thus, licensees should consider any additional facility or licensee-specific circumstances or precedent that may be relevant to the use of NDT funds, even if such circumstances or precedent are not explicitly captured in the decision tree.

Further, the decision tree is intended to assist in evaluating the use of funds accumulated for the purpose of radiological decommissioning and that were relied upon to demonstrate financial assurance under 10 C.F.R. § 50.75. To the extent that a licensee maintains subaccounts in its NDT for other activities (e.g. spent fuel management, site restoration), the funds collected in those subaccounts would not be subject to the restrictions regarding use of funds discussed in this decision tree and elsewhere in this guidance document.[3]

Finally, the criteria provided in this decision tree are intended to be applied by power reactor licensees that are engaged in, or planning for, decommissioning of the reactor and associated structures. The criteria in this decision tree are not applicable to ISFSI-only sites that have completed all other plant-related radiological decommissioning activities. As discussed above in Section 3, financial assurance for the decommissioning of ISFSIs is governed by the requirements in 10 C.F.R. § 72.30.

[3] "Decommissioning of Nuclear Power Reactors: Final Rule," 61 Fed. Reg. 39, 278, 39,285 (July 29, 1996)("The final rule does not prohibit licensees from having separate sub-accounts for other activities in the decommissioning trust fund if minimum amounts specified in the rule are maintained for radiological decommissioning.").

Decision Logic Tree for Application of Plant RelatedNDT Usage Screening Criteria



4.2 Examples

The following illustrative examples are included to supplement the guidance provided above. Before relying upon an example, a licensee should ensure that the example is applicable to its particular circumstances. The use of the "Decision Logic Tree for Application of NDT Usage Screening Criteria" may be demonstrated through the application of the examples below:

Example 1: A licensee has included post-shutdown utility and DOC staffing costs in its most recent DCE and is evaluating whether such costs/expenses may be funded by the NDT.

NUREG/CR-5884, Volume 1, Section 2.2 Study Bases and Assumptions includes the following:

> *For decommissioning activities immediately following plant shutdown, the staff is drawn largely from the operating personnel of the station, who are very familiar with the facility and its systems. However, the staff required to decommission the reference plant are assumed to be drawn primarily from an offsite contractor, a Decommissioning Operations Contractor (DOC). The cost estimates presented in this reevaluation study assume that the utility contracts with a DOC, based on the assumption that most utilities do not have the work force available and in some instances, the expertise to manage the complete decommissioning operation.*

NUREG/CR-5884, Table 3.1, identifies the following DECON period-dependent (costs which are based upon the length of the decommissioning period) and undistributed (costs which are allocated to overhead for the period under consideration) costs:

> *(e.g.) DOC mobilization/demobilization, utility and DOC overhead staff, nuclear insurance, regulatory costs, plant power usage, taxes, laundry services, and environmental monitoring.*

The PNNL study makes it clear that this list of costs is not meant to be all-inclusive. Table 3.2 and Table 3.3 list the utility and DOC staffing, which includes staffing positions for security and legal (lawyer), and Chapter 4 reports similar expected costs for SAFSTOR.

Application of Decision Logic Tree: Given the information provided above, the licensee evaluating utility and DOC staffing costs would answer "yes" to the questions provided in boxes 1.1 and 1.2. The licensee would then need to evaluate the questions provided in boxes 3.1 and 3.2 in order to determine whether the costs may be funded by the NDT. If the licensee had not included these costs in its most recent DCE, it is likely that this cost would screen "yes" in response to question 2.1, 2.2, or 2.3, depending on the stage of decommissioning. The licensee would then be directed to the questions in boxes 3.1 and 3.2.

Example 2: A licensee has included post-shutdown regulatory costs, property taxes, and nuclear insurance in its most recent DCE and is evaluating whether such costs/expenses may be funded by the NDT.

Regulatory costs, which include both state and NRC regulatory fees for the reference plant, are shown in NUREG/CR-5884 Table 3.26 for one of the decommissioning periods (dismantlement). Property taxes, nuclear insurance and regulatory costs are discussed extensively in Appendix B, Sections B.9, B.10 and B.13, respectively.

NUREG-1713 Table 1 identifies various decommissioning expenses from NUREG/CR studies that include consultant/other staff, regulatory costs, monitoring costs, nuclear liability insurance, and property taxes.

NUREG/CR-5884 Appendix I, Regulatory Considerations for Decommissioning, expands upon regulatory costs expected during the decommissioning process, and also includes costs for Security and Safeguards Plans and Environmental Plans (see Volume 2, page I.7).

Application of Decision Logic Tree: Given the information provided above, the licensee evaluating post-shutdown regulatory costs (security and safeguards plans, environmental plans, etc.), property taxes, and nuclear insurance costs would answer "yes" to questions 1.1 and 1.2. The licensee would then need to evaluate questions 3.1 and 3.2 in order to determine whether the costs may be funded by the NDT. If the licensee had not included these costs in its most recent DCE, it is likely that this cost would screen "yes" to question 2.1, 2.2, or 2.4, depending on the stage of decommissioning. The licensee would then be directed to questions 3.1 and 3.2.

Example 3: A licensee has included asbestos removal costs in its most recent DCE and is evaluating whether such costs/expenses may be funded by the NDT.

Asbestos removal. This is discussed in NUREG/CR-5884, Section B.12:

> *Removal and disposal of residual asbestos is carried out simultaneously with the initial radiation survey activities. While perhaps 50,000 lb of asbestos is present in the site buildings, the bulk of that material is non-friable and is located outside of the three main buildings. Preliminary estimates developed by Portland General Electric suggest a total cost of about $165,000 for removal and disposal of these materials. These costs are classified as cascading costs in this report. These costs do not include the cement asbestos boards contained in the cooling tower. These latter materials are removed during demolition of clean structures and are discussed in Appendix L.*

As noted in a footnote at the bottom of the page, cascading costs are defined as those costs associated with the removal of non-contaminated and releasable material in support of the decommissioning process (e.g., if it is considered necessary to remove portions of the top floors or a roof to get at a bottom floor nuclear component). Asbestos removal and disposal costs are identified as costs considered by the PNNL PWR Study.

Application of Decision Logic Tree: The licensee would need to carefully evaluate the costs associated with asbestos removal to determine whether the removal of non-contaminated and releasable asbestos is being undertaken in support of the decommissioning process (i.e., is necessary to complete radiological decommissioning of the facility). If so, given the discussion provided above, the licensee evaluating post-shutdown asbestos removal costs would answer "yes" to questions 1.1 and 1.2. The licensee would then need to evaluate the questions provided in boxes 3.1 and 3.2 in order to determine whether the costs may be funded by the NDT. If the licensee had not included these costs in its most recent DCE, it is likely that this cost would screen "yes" question 2.3 and the licensee would be directed to the questions in boxes 3.1 and 3.2.

On the other hand, removal of non-contaminated and releasable asbestos that is not necessary to support radiological decommissioning (e.g., removal of asbestos boards contained in cooling towers) would screen "no" under box 1.2. In this case, the licensee would be directed to the questions in box 2. Since in this example this activity may not support radiological decommissioning, it is likely that it would screen "no" to each of the questions in box 2. Thus, the licensee would be directed to box 4.

Example 4: Indirect, Period and Overhead Costs

NUREG-1713 Table 1 identifies various decommissioning expenses from NUREG/CR studies that include consultant/other staff, regulatory costs, monitoring costs, nuclear liability insurance, and property taxes.

While not directly applicable to commercial nuclear plant licensees, NRC provides additional detail in NUREG-1757, Consolidated Decommissioning Guidance, Financial Assurance, Recordkeeping and Timeliness, Volume 3, Revision 1, February 2012, page A-24, as to what costs a materials licensee may incur during decommissioning, which is typical of those nuclear plant licensees are likely to encounter during decommissioning. In discussing labor costs, NRC notes:

> *The term "overhead" typically includes costs that are not directly traceable to any particular product produced or project conducted by the firm. Thus, overhead typically includes "period" costs, such as insurance, utilities, rent, supplies, property taxes, depreciation, and the costs of any wages, salaries, and benefits incurred as a result of the corporation's officers and support staff (e.g., accounting staff, legal staff, janitorial staff, security staff).*

Application of Decision Logic Tree: The licensee would need to determine if it could answer "yes" to the question provided in box 1.1. If so, given the information above, the licensee would answer yes to the question in 1.2. The licensee would then need to evaluate the questions provided in boxes 3.1 and 3.2 in order to determine whether the costs may be funded by the NDT. If the licensee had not included these costs in its most recent DCE, it is likely that this cost would screen "yes" in response to question 2.1, 2.2, or 2.3, depending on the stage of decommissioning. The licensee would then be directed to the questions in boxes 3.1 and 3.2.

Example 5: Economic Development or Local Transition Assistance

The guidance documents discuss in this paper generally do not include "economic development" or other forms of local transition assistance for host communities, although this type of support has been seen in some decommissioning projects. These are payment streams that are negotiated outside of the State or locality's legal taxing authority.

Application of Decision Logic Tree: Even if the licensee could answer "yes" to 1.1, it would have to answer "no" to 1.2, and to subsequently "no" to 2.1 to 2.5. The licensee would need to evaluate whether there was any other basis (exemption, etc.) in 4 and if not, answer "no" and conclude that the funds could not be withdrawn from the NDT.

Example 6: Spent Fuel Management Activities

A licensee that has recently ceased operations and defueled the reactor vessel is evaluating whether costs associated with spent fuel management activities may be funded by the NDT. Although the licensee has provided estimates of spent fuel management costs in its most recent decommissioning cost estimate, the license has not established designated subaccounts for spent fuel management, or otherwise identified and accounted for expenses related to non-radiological decommissioning in its NDT.[4] The NRC's current position is that activities associated with spent fuel management fall outside of the definition of decommissioning provided in 10 C.F.R. § 50.2.[5]

Application of Decision Logic Tree: Although the licensee described in this example would answer "yes" to question 1.1, given the NRC's current position regarding costs associated with spent fuel management, it would answer "no" to question 1.2 and subsequently "no" to 2.1 through 2.5. The licensee would then move to question 4 and evaluate whether it has another basis to utilize the NDT for these expenses. One example of such a basis would be a situation where the licensee has been granted an exemption allowing the use of NDT funds for spent fuel management costs. In such a case, the licensee would answer "yes" to question 4 and use of NDT funds would be allowed. If the licensee could not answer "yes" to question 4, use of NDT funds would not be permitted.

[4] The NRC has acknowledged that the agency's decommissioning rules do not prohibit the establishment subaccounts within the NDT to fund activities other than radiological decommissioning. *See* 61 Fed. Reg. 39, 278, 39,285 (July 29, 1996). This example describes a situation where the licensee has not established such a subaccount or otherwise communicated to the NRC that a portion of the funds collected in the NDT are earmarked for purposes other than radiological decommissioning.

[5] *See* "Southern California Edison Company; San Onofre Nuclear Generating Station, Units 2 and 3, Exemption; issuance," 79 Fed. Reg. 55,019 (Sept. 15, 2014); "Duke Energy Florida, Inc.; Crystal River Unit 3 Nuclear Generating Plant, Exemption; issuance," 80 Fed. Reg. 5,795 (Feb. 3, 2015); "Entergy Nuclear Operations, Inc.; Vermont Yankee Nuclear Power Station, Exemption; issuance," 80 Fed. Reg. 35,992 (June 23, 2015).

APPENDIX A – SUPPLEMENTAL INFORMATION REGARDING RELATED ISSUES

Related Issue: **Caution about Financial Reporting Requirements**

Licensees that prepare financial statements under GAAP reporting rules will record the obligation to decommission the facility in those statements as an Asset Retirement Obligation (ARO). The methodology used for calculation the ARO is defined in accounting literature and is not necessarily consistent with the NRC conceptions of decommissioning costs. As is apparent from the following description of how the ARO is calculated and maintained over time, a licensee's ARO may differ from metrics like the NRC minimum decommissioning formula amount or the DCE. Licensees should be aware that several metrics to calculate decommissioning liability exist.

Under ASC 410-20 (the standard for how companies prepare their financial statements), the decommissioning liability is computed by developing expected scenarios for decommissioning the plant and producing expected cash flows for each scenario. Each of the cash flow scenarios is weighted based on the likelihood of that outcome and the present value of the combined cash flow stream is calculated using a Credit Adjusted Risk Free (CARF) rate. Examples of possible scenarios that may be probabilistically weighted include: license renewal followed by SAFSTOR, license renewal followed by prompt decommissioning, or SAFSTOR at the end of current license. If the likelihood of a scenario changes, or the potential scenarios themselves change, then the probabilities must be updated to adjust the liability. A new CARF is applied, but only to the incremental increase in cash flows (existing cash flows are discounted at the original rate).

Related Issue: **Review of Collection Schedules**

It may be appropriate for licensees to review the basis for collections that were deposited into the NDT. While there is not necessarily an NRC regulatory requirement to match the use of funds with the stated purpose that funds were collected, the decisions in rate-making proceedings may contain assumptions about what costs were considered when collection schedules were set. This information may address (1) questions about whether the NDT includes funds collected for spent fuel management or site restoration and (2) disputes involving intergenerational issues between ratepayers subject to collections during plant operation, ratepayers subject to collections after cessation of operations and ratepayers receiving refunds of any over collection.

Related Issue: **Merchant and Cost of Service Environments**

Under NRC regulations, the NRC examines the overall financial viability of an entity during initial licensing, a license transfer, or when there is evidence of safety concerns that potentially stem from financial distress. Since current NRC regulations allow certain funding assurance mechanisms that only apply to plants under cost of service regulation, the NRC already makes a regulatory distinction between plants in different environments.

In the case of a license transfer to a merchant entity, NRC can impose conditions (typically an NDT that meets the NRC minimum, a financing mechanism to ensure liquidity for the period between an unplanned shutdown and access to the NDT, and a reasonable projection of financial viability over a five year horizon) or deny the transfer. In the case of safety concerns arising from financial distress during operation, the regulatory framework allows the NRC to require plant shutdown and allows the NRC to force the licensee to either find capital to resolve the safety issue or declare permanent cessation of operations and proceed into decommissioning.

As explained in the Decommissioning Planning – Final Rule (76 FR 35512): "Deregulation of the electric industry now permits a reactor licensee to operate as a merchant plant not subject to rate regulation or rate recovery of costs of service. When it ceases operation, it may have no sales revenues. The licensee may be organized as a separate company or a subsidiary of a holding company to isolate the risks and rewards of selling electricity on the open market. Without access to rate relief, with no sales revenues, and with the licensee's owner protected by limited liability, shortfalls in decommissioning funding may jeopardize timely completion of decommissioning. This final rule provides NRC regulatory authority to perform oversight to assure that the licensee anticipates potential shortfalls and takes steps to control costs to stay within its budget or obtain additional funds."

Five plants at four sites have recently entered decommissioning. Three plants are in a cost of service framework and two are in a merchant framework. All these plants have put forward plans to manage the decommissioning projects within the regulations and, as of mid-2015, there is no basis to conclude that the current regulatory framework is not adequate.

Related Issue: **Other Regulatory Agencies/Authorities**

There are other constraints on the licensee beyond NRC regulations, which could drive a licensee to decide that some costs incurred during decommissioning will not be funded by the NDT, but may seem appropriately included in the DCE. For licensees utilizing a tax qualified trust, IRS regulations are a major factor in how the licensee will decide what can be reimbursed from the NDT and this will vary from licensee to licensee depending on their specific business model, the manner in which tax rules apply to that business model, and how their recordkeeping systems work (mainly for allocated costs).

For licensees in cost of service regulation, the entity responsible for that regulation (e.g. Public Utility Commission) will likely influence use of the funds. Beyond that, the licensee may have agreements with host states or communities about the use of NDT funds or there may be other unique factors. Including these costs in the DCE, even if they will not be paid for through NDT funds, is consistent with the guidance to make the DCE as complete as reasonable. However, there is no requirement to do so and licensees should consider identifying them as non-NRC Radiological Decommissioning costs which are not subject to the NRC Radiological Decommissioning Financial Assurance requirements.

Recent experience for licensees undergoing decommissioning suggests that different functional disciplines within the licensee must be involved in the reimbursement process to ensure all requirements are fully understood and observed. At a minimum, the following perspectives should be considered:

NRC Regulations: This would typically involve the regulatory assurance/licensing organization or legal staff of the licensee and would ensure compliance with NRC regulations and guidance.

Tax Regulations: Most licensees have a decommissioning trust that is qualified under IRS regulations at 26 C.F.R. § 1.468(A) and certain guidance about the criteria for reimbursement (e.g. economic performance) exists. Representatives of the licensee's tax department should be involved in ensuring compliance. There is little precedent regarding breaches of IRS qualified fund rules and the consequences could potentially be significant.

State/Local Regulations: For licensees operating under cost of service regulation or having any continued obligations to ratepayers, the relevant part of the licensee's external affairs/regulatory affairs or legal department should be involved to ensure compliance with any applicable regulations or other requirements.

Financial Review: Appropriate staff should review each reimbursement request to determine if the costs being reimbursed were appropriate, accurate and consistent with the DCE. While DCEs will not contain the granularity to provide dollar by dollar verification, this practice will provide additional validation of the licensee's standard approval authorization process.

Management Review: It is suggested that in addition to the technical reviews for compliance that the preceding groups would provide, that the licensee also review the reimbursement for appearance of impropriety. This may be especially important when other divisions of the licensee are providing services to the decommissioning project.

Review of reimbursement may also provide an early indication of whether the project is incurring any material costs that were not contemplated in the DCE, or if costs are occurring at a time or in an amount inconsistent with DCE. This early indication of a variance from the DCE will be a valuable tool in project management.

Licensees should consider having each of these internal organizations review the DCE to ensure the planned reimbursement of costs incurred are consistent with the NRC, IRS, FERC and State regulations governing use of the NDT funds for decommissioning activities. Following submittal of the PSDAR, it will also be necessary to provide ongoing reviews of any activities that may result in a significant change from the actions and schedules described in the PSDAR (refer to 10 C.F.R. § 50.82(a)(7)) or activities for which additional detail has been made available.

Licensees should keep records of all reimbursements to support audits and to allow progress reports on the decommissioning project to be prepared, both for internal review and potential publication to provide additional data on the adequacy of financial assurance. This audit process should focus on assuring that there is a clear accounting for funds in each of the decommissioning categories – NRC radiological decommissioning, spent fuel management, ISFSI decommissioning, and site restoration.

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