RAS 10906

NUREG-1757
Vol. 3

DOCKETED
USNRC
2005 DEC 21 PM 3: 30
OFFICE OF THE SECRETARY
AJUDICATIONS STAFF

Consolidated NMSS Decommissioning Guidance

Financial Assurance, Recordkeeping, and Timeliness

Final Report

Manuscript Completed: September 2003
Date Published: September 2003

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LES Exhibit 82

Template=SECY-028

SECY-02

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of Louisiana Energy Services LP

Docket No. 70-3103-ML Official Exhibit No. LES 82

OFFERED by: Applicant/Licensee Intervenor

NRC Staff Other

IDENTIFIED on 10/24/05 Witness/Panel LES Deconversion

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk Bethany Engel

ABSTRACT

As part of its redesign of the materials licensing program, the U.S. Nuclear Regulatory Commission (NRC) Office of Nuclear Material Safety and Safeguards (NMSS) consolidated and updated numerous decommissioning guidance documents into this three-volume NUREG. Specifically, the three volumes address the following topics:

(1) "Decommissioning Process for Materials Licensees";

(2) "Characterization, Survey, and Determination of Radiological Criteria"; and

(3) "Financial Assurance, Recordkeeping, and Timeliness."

This NUREG series is intended for use by NRC staff, licensees, and others.

Volume 3 of the NUREG series provides guidance on the technical aspects of compliance with "Timeliness in Decommissioning of Materials Facilities" (59 FR 36026) (the Timeliness Rule); the financial assurance requirements set forth as part of the decommissioning rulemaking in 1998 (53 FR 24018); and the recordkeeping requirements set forth as part of the technical and financial criteria for decommissioning licensed nuclear facilities (53 FR 24018 and 58 FR 39628). Specifically, Volume 3 provides guidance relevant to demonstrating compliance with 10 CFR 30.35, 30.36, 40.36, 40.42, 70.25, 70.38, 72.30, and 72.54. This guidance takes a risk-informed, performance-based approach to the demonstration of compliance. Licensees should use this guidance in preparing decommissioning plans, license termination plans, final status surveys, and other technical decommissioning reports for NRC submittal. NRC staff will use this guidance in reviewing these documents and related license amendment requests. This three-volume guidance replaces NUREG–1727 ("NMSS Decommissioning Standard Review Plan") and NUREG/BR–0241 ("NMSS Handbook for Decommissioning Fuel Cycle and Materials Licensees").

PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in this NUREG are covered by the requirements of 10 CFR Parts 19, 20, 30, 33, 34, 35, 36, 39, 40, 51, 70, 72, and 150 which were approved by the Office of Management and Budget, approval numbers 3150–0044, 0014, 0017, 0015, 0007, 0010, 0158, 0130, 0020, 0021, 0009, 0132, and 0032.

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4 FINANCIAL ASSURANCE OVERVIEW

NRC regulations at 10 CFR 30.35, 40.36, 70.25, and 72.30 specify the requirements for certain licensees to provide financial assurance for decommissioning. The requirement to provide financial assurance is based on the authorized possession limits specified in the NRC license. In general, above a threshold quantity of radioactive material, the licensee must provide increasing amounts of financial assurance as its authorized possession limit increases. Financial assurance may be provided in certain prescribed amounts where the authorized possession limit falls within specified bounds. The threshold quantities and specified bounds are listed in Appendix A.2. Such licensees must provide the NRC with a certification of financial assurance and the original financial instruments obtained to guarantee that funds will be available for decommissioning. A licensee with authorized possession limits greater than the upper bound of the prescribed amounts must perform a site-specific cost estimate to determine the amount of financial assurance required. Such licensees must provide the NRC with a DFP, which includes the original financial instruments and a certification of financial assurance. Part 72 licensees must submit a DFP but are not required to submit the originals of the financial instruments or a certification of financial assurance. This information is typically presented to NRC for review and approval in the license application or renewal. The information in the DFP is updated periodically to reflect changes in the cost of decommissioning. Later the information is updated in the DP.

A certification of financial assurance is a statement by the licensee that a prescribed amount of funding has been obtained for decommissioning. The amount is established in NRC regulations and is summarized in the introduction to Appendix A to this volume.

A DFP outlines the work required to decommission a facility, provides a site-specific cost estimate for the decommissioning, and states that the funds necessary to complete the decommissioning have been obtained. In general, the cost estimate should provide for decommissioning the facility to allow unrestricted release. The estimate should assume the work will be performed by an independent third-party contractor and not take credit for salvage value or reduced taxes. However, for certain sites where the licensee provides a viable alternative approach, or alternative basis for the cost estimate, the DFP may be approved if the approach provides sufficient assurance of funding for decommissioning.

The objective of NRC's financial assurance requirements is to ensure that a suitable mechanism for financing the decommissioning of licensed facilities is in place in the event that a licensee is unable or unwilling to complete decommissioning. Financial assurance is achieved through the use of financial instruments. Some financial instruments provide a special account into which the licensee may essentially prepay the applicable costs. Other financial instruments guarantee funding by a suitably qualified third party, thereby providing "defense in depth" in the event the licensee is unable or unwilling to pay these costs when they arise. Financial assurance for decommissioning must be obtained prior to the commencement of licensed activities or receipt of licensed material, and it must be maintained until termination of the license. If the license is being terminated under restricted conditions, then financial assurance for site control and maintenance must be obtained prior to license termination. The amount of financial assurance

obtained is often based on a site-specific cost estimate and must be increased if the cost estimate increases. Under NRC regulations, a number of different types of financial instruments may be used to demonstrate financial assurance, including trusts, letters of credit, surety bonds, and guarantees.

This chapter provides guidance to NRC licensees and license applicants on how to demonstrate financial assurance for decommissioning and, if applicable, for site control and maintenance following license termination. It also addresses the financial assurance requirements that apply when the license will be terminated for unrestricted release and when the license will be terminated under restricted conditions. Appendix A establishes a standard format for presenting the information to NRC that will (a) aid the licensee or license applicant in ensuring that the information is complete, (b) help ensure that applicable requirements in 10 CFR Parts 30, 40, 70, and 72 have been met, and (c) help achieve the intent of the regulations, which is to ensure that the decommissioning of all licensed facilities will be accomplished in a safe and timely manner and that licensees will provide adequate funds to cover all costs associated with decommissioning and, if applicable, with site control and maintenance.

Unlike other materials licensees, Part 72 licensees are not required to submit originals of the financial instruments used to provide financial assurance. Financial assurance for Part 72 licenses is administered by the Office of Nuclear Reactor Regulation in conjunction with financial assurance for the associated reactor. For Part 72 licenses that are not associated with a reactor, NMSS may perform the financial assurance review in accordance with the guidance of this volume.

This volume does not address the financial assurance requirements in 10 CFR Part 50.

This applies only to licensees and license applicants covered under the following parts of 10 CFR:

- *Part 30–Byproduct Material.* Financial assurance requirements can be found in 10 CFR 30.35 and 30.36.
- *Part 40–Source Material (except uranium recovery facilities).* Financial assurance requirements can be found in 10 CFR 40.36 and 40.42.
- *Part 70–Special Nuclear Material.* Financial assurance requirements can be found in 10 CFR 70.25 and 70.38.
- *Part 72–Independent Storage of Spent Nuclear Fuel.* Financial assurance requirements can be found in 10 CFR 72.30 and 72.54.
- *Part 20 (Subpart E)–License Termination.* Financial assurance requirements can be found in 10 CFR 20.1403.

Other documents also address the decommissioning financial assurance requirements. Guidance on uranium recovery facilities under Part 40 is provided in "Technical Position on Financial Assurances for Reclamation, Decommissioning, and Long-Term Surveillance and Control of Uranium Recovery Facilities" (NRC 1988). Information on low-level waste disposal facilities under 10 CFR Part 61 is provided in Revision 1 of NUREG–1199, "Standard Format and Content of a License Application for a Low-Level Radiative Waste Disposal Facility" (NRC 1988), and Revision 3 of NUREG–1200, "Standard Review Plan for the Review of a License Application for a Low-Level Radioactive Waste Disposal Facility" (NRC 1994).

The information in this volume is taken directly from the Standard Review Plan (SRP) (NUREG–1727). The SRP was developed specifically for reviewing DPs written to comply with the License Termination Rule (LTR). There has been some minor editing to remove redundancy and use consistent terminology in this document, but the essential information is the same. The difference in writing styles between the documents is because of different objectives and different authors for the documents. While there is some difference in writing style, this was the most efficient means to capture the contents of the SRP, which was recently finalized after significant public comment.

The financial assurance demonstrations discussed below are independent of the cost-benefit analysis required as part of the demonstration that residual radioactivity has been reduced to a level that is as low as reasonably achievable (ALARA). Appendix N of Volume 2 of this NUREG report includes guidance on preparing and reviewing the cost-benefit calculation for the ALARA analysis.

Note that throughout the remainder of this section, the term "licensee" is used generally to refer to licensees, applicants, and other responsible parties.

FINANCIAL ASSURANCE DEMONSTRATIONS REQUIRED AT LICENSE APPLICATION OR RENEWAL

At the time of license application or renewal, licensees who are authorized to possess nuclear materials in excess of certain thresholds specified in 10 CFR Part 30, 40, or 70 must submit a *certification of financial assurance* to demonstrate that sufficient funds will be available when needed for decommissioning the licensed facility (as specified in 10 CFR 30.35(b)(2), 30.35(e), 40.36(b)(2), 40.36(d), 70.25(b)(2), 70.25(c)(2), 70.25(c)(3), and 70.25(e)). The amount of financial assurance certified must be either the prescribed amount specified in NRC regulations, or the amount of the cost estimate provided in the DFP. (Part 72 licensees cannot submit a prescribed amount of financial assurance, they must submit a DFP.)

- A DFP is based on a site-specific cost estimate for decommissioning.
- A certification of financial assurance relies on coverage levels specified in NRC regulations.

Licensees may choose among a number of different mechanisms to comply with the financial assurance requirements for decommissioning. The following financial assurance "methods" are specifically allowed under 10 CFR Parts 30, 40, 70, and 72:

- *Prepayment.* Under this method, the licensee provides advance decommissioning funding in full using an account segregated from licensee assets and outside the licensee's administrative control. Acceptable prepayment mechanisms include trust funds, escrow accounts, government funds, certificates of deposit (CDs), and deposits of government securities.
- *Surety, insurance, or guarantee.* Under this method, an entity with adequate financial strength (e.g., bank, insurer, or other financial institution) guarantees that the required amount of funds will be available whenever needed. Acceptable surety, insurance, or guarantee mechanisms include surety bonds, letters of credit, lines of credit, insurance policies, parent company guarantees, and self-guarantees.
- *External sinking fund.* This method allows a licensee to gradually prepay for decommissioning by combining the use of a partially funded prepayment instrument (e.g., a trust or escrow) with a surety bond, a letter of credit, or insurance covering the unfunded balance.
- *Statement of intent.* This method is a commitment by a Federal, State, or local government licensee to request and obtain decommissioning funds from its funding body, when necessary. A Statement of Intent needs to state the estimated cost of decommissioning, as required in NRC regulations, as well as a demonstration that the party signing the statement has the authority to make such a statement on behalf of the government. The signatory should be the head of the agency or the designee.

Licensees may also use combinations of the above instruments, except in the case of parent company guarantees and self-guarantees, which cannot be combined with other mechanisms.

Note that a DFP must contain a certification of financial assurance. The licensee must include a signed original (or signed duplicate original) of the financial mechanism(s) obtained to satisfy the requirements for decommissioning, whether using a certification of financial assurance alone or a DFP.

Note that Part 72 has different requirements. The DFP submitted under Part 72 does not require a certification of financial assurance. In addition, licensees providing financial assurance under Part 72 are not required to submit originals of the financial instruments obtained to satisfy financial assurance requirements.

FINANCIAL ASSURANCE DEMONSTRATIONS REQUIRED AT THE END OF LICENSED OPERATIONS

At the end of licensed operations, licensees must maintain all financial assurance established pursuant to 10 CFR Parts 30, 40, 70, or 72. In addition, licensees must submit a DP (a) if such a

plan is required by a license condition, or (b) if the procedures and activities necessary to carry out decommissioning (and, if applicable, site control and maintenance) have not been approved by NRC and these procedures could increase the potential health and safety impacts to workers or the public.

A DP must include the following:

- an updated, detailed cost estimate for decommissioning,
- a comparison of that estimate with present funds set aside for decommissioning, and
- a plan for assuring the availability of adequate funds for completion of decommissioning.

If the license is being terminated under restricted conditions, the DP also must include estimated costs for control and maintenance of the site, along with financial assurance coverage for these costs. In addition to the cost estimate and financial assurance mechanism(s), the financial assurance demonstration in a DP should contain a description of the means the licensee will employ for adjusting the cost estimate and associated funding level over any storage or surveillance period.

Licensees may choose among the mechanisms listed above to comply with the financial assurance requirements for decommissioning and, if applicable, for site control and maintenance. However, external sinking funds may *not* be used to cover costs for site control and maintenance. In addition, if the license is being terminated under restricted conditions, 10 CFR 20.1403 allows financial assurance to be provided through special arrangements with a government entity that assumes custody and ownership of the site.

NRC staff will evaluate the decommissioning financial assurance demonstrations submitted by licensees pursuant to the requirements in 10 CFR Parts 30, 40, 70, and 72. NRC staff will evaluate the licensee's financial assurance demonstration to ensure that sufficient funds will be available to carry out decommissioning activities and site control and maintenance (if applicable) in a safe and timely manner. This information must include the following:

- for a DFP, (a) a site-specific cost estimate for decommissioning, (b) a description of the means for adjusting the cost estimate and associated funding level periodically over the life of the facility, (c) a certification of financial assurance by the licensee that financial assurance has been provided in the amount of the cost estimate, and (d) one or more financial assurance mechanisms (including supporting documentation) (note that Part 72 licensees are not required to submit the certification of financial assurance of the third item (c) or the mechanisms of the fourth item (d) with the DFP);
- for a certification of financial assurance, (a) a "certification of financial assurance" (which certifies that the licensee has provided financial assurance in the appropriate amount specified in 10 CFR Parts 30, 40, or 70), and (b) one or more financial assurance mechanisms (including supporting documentation); and

- for a DP, (a) an updated, detailed cost estimate for decommissioning and, if the license is being terminated under restricted conditions, for control and maintenance of the site following license termination; (b) one or more financial assurance mechanisms (including supporting documentation); (c) a comparison of the cost estimate with the present funds set aside for decommissioning and, if the license is being terminated under restricted conditions, for control and maintenance of the site following license termination; and (d) a plan for assuring the availability of adequate funds for completion of decommissioning.

NRC staff will review the financial assurance demonstration submitted by the licensee in accordance with the procedures outlined in this volume. NRC staff will ensure that, at a minimum, the financial assurance submission includes the information summarized above in addition to the following:

- For a licensee submitting a DFP at the time of license application or renewal, NRC staff will review the following:
  - the accuracy and appropriateness of the methods used by the licensee to estimate the costs of decommissioning;
  - the acceptability of the licensee's submitted financial assurance mechanism(s) for decommissioning; and
  - the means identified in the DFP for adjusting the cost estimate and associated funding level over the life of the facility.
- For a licensee submitting a certification of financial assurance at the time of license application or renewal, NRC staff will review the following:
  - the certification of financial assurance, to ensure that it certifies compliance with the appropriate requirements and that it specifies the correct amount of financial assurance; and
  - the acceptability of the licensee's submitted financial assurance mechanism(s).
- For a licensee submitting a DP at the end of licensed operations, NRC staff will review the following:
  - the accuracy and appropriateness of the methods used by the licensee to estimate the costs of decommissioning and, if the license is being terminated under restricted conditions, the costs of site control and maintenance;
  - the acceptability of the licensee's submitted financial assurance mechanism(s) for decommissioning and, if the license is being terminated under restricted conditions, for site control and maintenance; and
  - the means identified in the DP for adjusting the cost estimate and associated funding level over any storage or surveillance period.

The material to be reviewed by NRC staff is technical in nature. NRC staff will make a quantitative evaluation of the licensee's or responsible party's cost estimate or prescribed amount, and financial assurance mechanism(s).

If the licensee has provided adequate financial assurance for decommissioning, NRC staff will prepare a letter for signature of the license reviewer, informing the licensee that the financial assurance for decommissioning is adequate. A sample post-review letter from NRC to licensees for cases where no deficiencies are found in the submittal is provided at the end of this section. If NRC staff determines that the licensee has not complied with NRC's requirements for financial assurance for decommissioning, the staff will prepare a deficiency letter for signature at the Branch Chief level or higher outlining these deficiencies and requiring the licensee to respond within a brief period (e.g., 30 to 60 days) to provide financial assurance. No existing financial assurance will be canceled and returned to the licensee until adequate assurance has been received by NRC. It is important to maintain control and security of the financial instruments once received by NRC.

The staff will follow NRC Management Directive 8.12, "Decommissioning Financial Assurance Instrument Security Program," to ensure security and control of the instrument. In the event a licensee defaults before completing the decommissioning, the management directive specifies procedures for acting on the instrument. Additional guidance is found in Chapters 5 and 6 of this volume.

HOW TO USE CHAPTER 4

This Chapter 4 is organized around the various components of a financial assurance demonstration (e.g., the cost estimate, the financial instrument). Each component of a financial assurance demonstration is addressed briefly in this introduction and then is addressed again in greater detail in its own section. Each subsequent section provides narrative guidance on a particular component and contains one or more checklists to help guide the reader. By completing the tasks on the checklists, a licensee can be sure that its financial assurance demonstration is complete and likely to be acceptable to NRC.

Licensees should read this chapter in its entirety. This chapter directs licensees to Checklist 1 in Section A.1, a checklist that directs the reader to other relevant sections and checklists in Appendix A of this volume. To prepare a financial assurance demonstration that is likely to be acceptable to NRC, a licensee should simply complete the following steps:

1. Complete Checklist 1 in Appendix A.
2. Complete applicable checklists called for by Checklist 1 in Appendix A.
3. Prepare any documentation called for in the completed checklists.
4. Submit the completed checklists and accompanying documentation to NRC for review and approval.

SAMPLE POST-REVIEW LETTER FROM NRC TO LICENSEES

(No Deficiencies in Submittal)

(**NOTE:** *Letters will be printed on NRC letterhead paper.*)

[*Date*]
[*Names of licensee representative*]
[*Title*]
[*Names of a licensee*]
[*Address*]

SUBJECT: DECOMMISSIONING FINANCIAL ASSURANCE

Dear [*insert "Dr.," "Mr.," or "Ms."*] [*insert last name of licensee representative*]:

We have reviewed your [*insert description of information submitted by the licensee (e.g., decommissioning funding plan, certification of financial assurance, cost estimate, financial assurance mechanism)*] dated [*insert date*]. Based on our review, we have no further comments at this time.

If you have any questions, you may contact us at [*insert telephone number*].

Sincerely,

[*Name of NRC representative*]
[*Branch*]

License No. [*insert all applicable NRC license numbers*]
Docket No. [*insert all applicable NRC docket numbers*]

4.1 COST ESTIMATE (AS CONTAINED IN A DECOMMISSIONING FUNDING PLAN OR DECOMMISSIONING PLAN)

The purpose of the review of the cost estimate is to ensure that the licensee or responsible party has developed a cost estimate for decommissioning the facility based on documented and reasonable assumptions and that the estimated cost is sufficient to allow an independent third party to assume responsibility for decommissioning the facility if the licensee or responsible party is unable to complete the decommissioning. In addition, if the licensee or responsible party intends to request license termination under restricted conditions, the cost estimate should be sufficient to allow an independent third party to assume responsibility for all necessary control and maintenance activities at the site.

INFORMATION TO BE SUBMITTED

The information supplied by the licensee or responsible party should be sufficient to allow NRC staff to determine if the cost estimates for decommissioning and site control and maintenance (if applicable) are reasonable, and were developed in accordance with NRC regulations and guidance. NRC staff's review should verify that the cost estimates for decommissioning and site control and maintenance incorporate all of the information summarized under "Evaluation Criteria," below.

Section A.3 of Appendix A to this volume contains guidance—including cost estimating tables—to assist licensees in preparing cost estimates that will be acceptable to NRC. NRC staff should use this guidance to the extent necessary in reviewing costs estimates submitted by licensees.

EVALUATION CRITERIA

The information supplied by the licensee or responsible party should be sufficient to allow NRC staff to determine if the licensee's cost estimate(s) is adequate by comparing the information presented in the decommissioning financial plan or decommissioning plan with applicable NRC regulations and guidance. A cost estimate for decommissioning and site control and maintenance (if applicable) is acceptable if it meets *all* of the conditions in this section.

Evaluation Criteria Applicable to All Cost Estimates for Unrestricted or Restricted Release

At minimum, all cost estimates for unrestricted or restricted release must meet all nine of the following conditions:

1. The cost estimate meets the applicable regulatory requirements in 10 CFR 20.1403(c), 20.1403(e)(2)(iii), 30.35(e), 30.36(e), 30.36(g)(4)(v), 40.36(d), 40.42(e), 40.42(g)(4)(v), 70.25(e), 70.38(e), 70.38(g)(4)(v), 72.30(b), and 72.54(g)(5).
2. The cost estimate is based on documented and reasonable assumptions.
3. The unit cost factors used in the cost estimate are reasonable and consistent with NRC cost estimation reference documents.
4. The cost estimate includes costs for labor, equipment and supplies, overhead and contractor profit, sampling and laboratory analysis, and miscellaneous expenses (e.g., license fees, insurance, and taxes).
5. The cost estimate applies a contingency factor of at least 25 percent to the sum of all estimated costs.
6. The cost estimate does not take credit for (a) any salvage value that might be realized from the sale of potential assets during or after decommissioning or (b) reduced taxes that might result from payment of decommissioning costs or site control and maintenance costs.
7. The means identified in the DFP or DP for adjusting the cost estimate and associated funding level over the life of the facility and any storage or surveillance period is adequate.
8. The cost estimate reflects decommissioning under appropriate facility conditions (for a DFP, routine facility conditions should be assumed; for a DP, facility conditions at the end of licensed operations should be assumed).
9. The cost estimate includes costs for all major decommissioning and site control and maintenance activities specified in Section A.3 of this volume, including (a) planning and preparation, (b) decontamination and/or dismantling of facility components, (c) packaging, shipment, and disposal of radioactive wastes, (d) a final radiation survey, (e) restoration of contaminated areas on facility grounds (if necessary), and (f) site stabilization and long-term surveillance (if necessary).

Additional Evaluation Criteria Applicable to Cost Estimates for Restricted Release

In addition, cost estimates for restricted release must meet all six of the following conditions:

1. The cost estimate for site control and maintenance is consistent with the amount of radioactivity remaining at the site, the radionuclides involved, the characteristics of the residual radioactivity at the site, and site-specific exposure scenarios, pathways, and parameters.
2. The cost estimate for site control and maintenance includes all costs for enforcement of institutional controls, if needed, including activities related to physical barriers at the site (e.g., periodic inspection, surveys, control, maintenance) and maintenance/monitoring of deed restrictions or other institutional controls.

3. The cost estimate for site control and maintenance accounts for the costs of establishing and implementing institutional controls, recordkeeping related to the controls, and corrective actions.
4. The cost estimate for site maintenance includes adequate periods of site control and accounts for all associated costs during this period.
5. The cost estimate for site control and maintenance assumes that all activities will be carried out to a level sufficient to prevent the annual dose to the average member of the critical group from exceeding 0.25 millisievert (mSv) (25 millirem (mrem)).
6. The cost estimate required under 10 CFR 20.1403(e)(2) (if applicable) for site control and maintenance accounts for periodic checks and inspections of the site no less frequently than every 5 years by the party responsible for site control and maintenance.

SPECIFIC REVIEW PROCESS GUIDELINES

Before the site-specific cost estimate can be reviewed, the reviewer will review the cost estimate to verify that the contamination sources assumed in the cost estimate are reasonable, based on the license reviewer's or licensing project manager's knowledge of the site and site operations:

- If the contamination sources are reasonable, the license reviewer or licensing project manager may either conduct a technical review of the cost estimate or prepare a Technical Assistance Request (TAR) to the Branch Chief of the Decommissioning Branch (DCB), for the review of the site-specific cost estimate by DCB staff.
- If there are deficiencies in the assumed contamination sources, the license reviewer or licensing project manager will make a decision on whether there is sufficient information in the submittal to warrant a review of the cost estimate. For DCB TARs, if there is sufficient information, the license reviewer or licensing project manager will prepare a note describing the source deficiencies so that DCB staff comments appropriately consider this information.

The reviewer will provide a memorandum documenting the review of the cost estimate. If there are any deficiencies, the reviewer will provide specific comments for inclusion into a deficiency letter, which will be prepared by the reviewer.

SAMPLE EVALUATION FINDINGS

Documentation of the evaluation findings by NRC staff should include the following:

> "NRC staff has reviewed the cost estimate[s] for the [*insert name and license number of facility*] located at [*insert location of facility*] according to NUREG–1757, Volume 3, "Financial Assurance, Recordkeeping, and Timeliness." Based on this review, NRC staff has determined that the cost estimate[s] submitted by the licensee [*adequately* <u>OR</u> *does not adequately*] reflect[s] the costs to carry out all required decommissioning activities prior to

Appendix A

Standard Format and Content of Financial Assurance Mechanisms for Decommissioning

A.3 Decommissioning Funding Plans

A decommissioning funding plan (DFP) is a financial assurance demonstration that is based on a *site-specific cost estimate* for decommissioning the facility. The amount of the facility-specific cost estimate becomes the minimum required level of financial assurance coverage. Any licensee may use a DFP, but certain licensees *must* use a DFP, as discussed in Section A.1. Licensees who use DFPs must undertake the following actions, as summarized in Checklist 3.

- Prepare a site-specific decommissioning cost estimate (see Section A.3.1).
- Determine the means that will be used to adjust the cost estimate and associated funding levels periodically over the life of the facility (see Section A.3.2).
- Submit the required documentation (see Section A.3.3).

Checklist 3 Decommissioning Funding Plans

License Number(s): _____

Applicable Parts of 10 CFR (check all that apply): ☐ Part 30 ☐ Part 40 ☐ Part 70

☐ Prepare a detailed, site-specific cost estimate (see Section A.3.1).

☐ Determine the means that will be used to adjust the site-specific cost estimate and associated funding levels periodically over the life of the facility (see Section A.3.2).

☐ Include the necessary documentation (see Section A.3.3).

☐ Include a detailed, site-specific cost estimate that includes the following:

- ☐ Description of the means that will be used to adjust the site-specific cost estimate and associated funding level.
- ☐ A certification that financial assurance for decommissioning has been provided in the amount of the decommissioning cost estimate.

☐ Include a financial instrument and supporting documentation.

A.3.1 Preparing the Site-Specific Cost Estimate

In evaluating decommissioning cost estimates, NRC considers the following factors:

- the completeness of the estimate (i.e., scope),
- the level of detail presented, and
- the reasonableness of the estimate (i.e., the accuracy and magnitude of estimated costs).

For updates or revisions to a cost estimate, the NRC will also evaluate the following:

- the adequacy of the historical site assessment (HSA), and
- the adequacy of the characterization survey.

These factors are discussed briefly below. Sections A.3.1.1–A.3.1.3 outline or describe the three basic parts of a cost estimate: the facility description, the estimated decommissioning costs, and key assumptions. Section A.3 concludes with a series of cost estimating tables that can assist licensees in preparing decommissioning cost estimates that are likely to be acceptable to NRC.

The site-specific cost estimate required for a DFP should represent the licensee's best approximation of all direct and indirect costs of decommissioning its facilities under routine facility conditions. The assumption that routine facility conditions will prevail at the time of decommissioning implies that the cost estimate need not consider a worst-case decommissioning scenario. Similarly, however, the estimate should not be based on a scenario that is more optimistic than would be consistent with routine facility conditions. By way of example, NRC believes it reasonable for decommissioning cost estimates to assume the following:

- Inventories of materials and wastes at the time of decommissioning will be in amounts that are consistent with routine facility conditions over time.[7]
- Decommissioning activities take place immediately on cessation of operations without multiyear storage-for-decay periods.
- Work will be performed by an independent third-party contractor.

Decommissioning activities do not need to include removal or disposal of nonradioactive structures and materials beyond that necessary to terminate the NRC license.

A decommissioning cost estimate should contain a substantial level of detail, consistent with the guidance presented in this section, to allow NRC to fully evaluate the adequacy of the estimate. A series of cost estimating tables are provided at the end of this section to assist licensees in preparing decommissioning cost estimates that contain sufficient detail and are likely to be acceptable to NRC. *NRC staff recommends that licensees pattern their cost estimates after the cost estimating tables presented at the end of this section.*

The labor estimates, material costs, and other factors of the cost estimate should have a clear and reasonable basis. Licensees may wish to consider the use of NRC-provided cost information such as that found in NUREG/CR–6477, "Revised Analyses of Decommissioning Reference Non-Fuel-Cycle Facilities" (July 1998), and other NRC cost estimating references. (Other documents that may help in calculating estimates for decommissioning costs are in the bibliography of this appendix.)

Complete decommissioning cost estimates contain three basic parts:

- a facility description,
- the estimated decommissioning costs (including labor costs, nonlabor costs, and a contingency factor), and
- key assumptions.

These parts of cost estimates are discussed separately below and have been incorporated into the cost estimating tables at the end of Section A.3.

A.3.1.1 Facility Description

The facility description provides the basic context of the estimate. It should include both general and specific information, including the following:

- license number and type;
- specific quantities and types of materials authorized by the license (e.g., by specific isotope);
- general discussion of how licensed materials are used in the licensee's operations;
- description of facility buildings, rooms, and grounds, including the number and dimensions of areas (e.g., laboratories) that require decontamination;
- number and dimensions of facility components (e.g., fume hoods, glove boxes, laboratory benches, ductwork) that require decontamination;
- levels of contamination; and
- quantities of materials or waste accumulated prior to shipping or disposal (if applicable).

The facility description should also address any other characteristics of the facility that need to be understood to evaluate the estimated decommissioning costs.

A.3.1.2 Estimated Decommissioning Costs

The cost estimate must account for the costs of all phases of the decommissioning process. The estimate should itemize each of the major decommissioning tasks or activities and should distinguish between labor costs and nonlabor costs, as described in Sections A.3.1.2.1 and A.3.1.2.2. The estimate should also explicitly incorporate a contingency factor as discussed in Section A.3.1.2.3. Estimated costs should be based on reasonable and documented assumptions, and provide sufficient funds to allow an independent third party to assume responsibility for and carry out the decommissioning of the facility if the licensee is unable to do so.

A.3.1.2.1 Labor Costs

Labor costs associated with all decommissioning tasks and activities should include basic wages and benefits for licensee and contractor staff performing decommissioning-related tasks, overhead costs,[8] and contractor profit (sufficient to allow an independent third party to carry out the decommissioning project). Labor costs should be broken out by major task or activity; example categories include the following:

- planning and preparation of the facility and site for decommissioning, including activities such as preparing a detailed DP, preparing other State or local documentation, developing work plans, performing staff training, procuring special equipment, and characterizing the radiological condition of the facility;
- decontamination or dismantling of radioactive facility components;
- restoration of contaminated areas on facility grounds, if necessary;
- a final radiation survey (including sampling); and
- site stabilization and long-term surveillance, if necessary.

The cost estimate should also describe the techniques and methods that will be used to decontaminate facility components because these decontamination methods will impact the amount of labor required. If any of the decommissioning tasks or activities listed above do not apply to a particular facility, the estimate should explain why this is the case.

A.3.1.2.2 Nonlabor Costs

Nonlabor costs also are likely to arise during decommissioning; these costs may include the following:

- packing materials,
- shipping costs (these could be classified as labor costs for some facilities),
- disposal costs,
- other equipment and supplies (e.g., personal protective equipment, brushes),
- laboratory costs (including transport of samples to a third-party laboratory, testing and analysis, etc.), and
- miscellaneous expenses (e.g., license fees, insurance, taxes).

A.3.1.2.3 Contingency Factor

Because of the uncertainty in contamination levels, waste disposal costs, and other costs associated with decommissioning, the cost estimate should apply a contingency factor of 25 percent to the sum of all estimated decommissioning costs. The 25 percent contingency factor provides reasonable assurance for *unforeseen* circumstances that could increase decommissioning costs, and should not be reduced or eliminated simply because foreseeable costs are low.

NRC's recommendation for the use of a 25 percent contingency factor is consistent with the analysis and guidance contained in NUREG/CR–6477, which applies a 25 percent contingency factor to all estimated costs associated with decommissioning various reference facilities.

A.3.1.3 Key Assumptions

Key assumptions used in the decommissioning cost estimate should be identified and adequately justified. For example, claims of low levels of contamination should be supported by test results or by adequate discussion of how the licensed materials are used throughout the facility. Unusual items, such as disposal of radioactive materials at zero costs, should be supported by relevant information (e.g., disposal agreements, contracts, or other information). In general, justifications based on "past experience" are likely to be adequate only if the past experience is relevant; therefore, the cost estimate should compare comparable decommissionings with respect to facilities, materials, processes, management, regulatory requirements, and price levels. If cost models are used, the models should be described in enough detail to determine whether they are adequate and appropriate given the characteristics of the facility.

The cost estimate should clearly state that it does not take credit for any *salvage value* that might be realized from the sale of potential assets (e.g., recovered materials or decontaminated equipment) during or after decommissioning. If estimated credits are taken for salvage value but are not fully realized at the time of decommissioning, the cost estimate (as well as the financial assurance) may be significantly low.[9]

A.3.2 Determining the Means for Adjusting the Cost Estimate

Licensees who use DFPs must specify the means (i.e., the method and frequency) by which they will periodically adjust their cost estimates and associated funding levels over the life of their facilities. In general, cost estimates should be updated with the current prices of goods and services at least every 5 years or when the amounts or types of material at the facility change. Adjustments should be made to account for inflation, for other changes in the prices of goods and services (e.g., disposal cost increases), for changes in facility conditions or operations, and for changes in expected decommissioning procedures.

A.3.3 Submitting the Required Documentation

Under NRC's financial assurance regulations (10 CFR 30.35(e), 40.36(d), and 70.25(e), licensees who use DFPs must submit the following to NRC:

- a site-specific cost estimate for decommissioning (regulatory guidance is provided in Section A.3.1),
- a description of the means that will be used to adjust the site-specific cost estimate and associated funding levels periodically over the life of the facility (regulatory guidance is provided in Section A.3.2),
- a certification of financial assurance by the licensee that financial assurance for decommissioning has been provided in the amount of the decommissioning cost estimate, and
- an *originally signed duplicate* of the financial instruments that provide financial assurance for decommissioning.

This appendix describes the allowable financial instruments in general terms in Section A.1, and then in detail beginning in Section A.4. Licensees should refer to these sections to ensure that their financial assurance instruments and supporting documentation will be acceptable to NRC.

In addition to submitting these materials to NRC, licensees must maintain records of these materials in their files.