

## SAFETY EVALUATION REPORT

DOCKET: 070-0398  
LICENSE: SNM-362  
LICENSEE: NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY  
SUBJECT: 2016-2017 U.S. DEPARTMENT OF COMMERCE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY STATEMENT OF INTENT AND TRIENNIAL DECOMMISSIONING FUNDING PLAN UPDATE (COST ACTIVITY CODE L33426)

### BACKGROUND

In a letter dated September 29, 2016 (Agencywide Documents Access and Management System [ADAMS] ADAMS Accession No. ML16279A280), U.S. Department of Commerce National Institute of Standards and Technology (NIST) submitted its triennial decommissioning funding plan (DFP) update for its statement of intent (SOI) for its Special Nuclear Material (SNM) license, SNM-362. On October 11, 2016, the Fuel Manufacturing Branch requested technical assistance with the DFP update from the Performance Assessment Branch (PAB). On November 21, 2016, PAB staff determined that NIST's DFP submittal was adequate to perform a technical review. On February 23, 2017, the PAB branch completed its technical review of NIST's DFP submittal.

### Regulatory Requirements

Paragraph 70.25(a)(2) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires an applicant for a specific license that authorizes possession and use of unsealed SNM in certain quantities to submit a DFP.

Paragraph 70.25(e)(2) of 10 CFR requires a licensee to resubmit a DFP, at least every 3 years, with adjustments that are necessary to account for any changes to costs or the amount of contamination.

Paragraph 70.25(e)(1)(i)-(iv) of 10 CFR requires that the DFP, submitted for review and approval by the U.S. Nuclear Regulatory Commission (NRC), must contain a detailed cost estimate for decommissioning that reflects: (1) the cost of an independent contractor to perform the work; (2) the cost of meeting the 10 CFR Sections 20.1402 or 20.1403 criteria for unrestricted use; (3) volume of contamination in the onsite subsurface material that will require remediation; (4) an adequate contingency factor; identification and justification for key assumptions used in the cost estimate; (5) a description of the method of assuring funds will be available for decommissioning; and (6) a certification statement by the licensee that financial assurance has been provided in the amount of the cost estimate for decommissioning.

Paragraph 70.25(e)(1)(v) of 10 CFR requires that the DFP include a signed original, or, if allowed, a copy, of the financial instrument to be used to cover the decommissioning costs. In addition, 10 CFR 70.25(f)(4) requires that when a Federal entity uses a SOI, they must provide a cost estimate for decommissioning or an amount based on the Table in paragraph (d) of 10 CFR 70.25, indicating that funds will be obtained for decommissioning when necessary.

### Review Guidance

The NRC staff conducted their review of the DFP in accordance with NUREG-1757, Vol. 3, Rev. 1, Section 4 and Appendix A.3.

Enclosure

## **DISCUSSION**

### Submission of Updated Decommissioning Funding Plan

For timely renewal, the licensee submitted a DFP in license renewal application. The license renewal update to the DFP was submitted to the NRC staff by letter dated September 29, 2016. NIST's submittal included an updated DFP for its sealed and unsealed source materials. Based on the Health Physics database, NIST possesses approximately 692 sealed or encapsulated sources that will need to be packaged and shipped for disposal or storage. Additionally, the Health Physics database estimates the amount of unsealed source material at approximately 13.5 curies.

The NRC staff has reviewed the DFP submittal. On the basis of the review, the NRC staff has determined that the licensee's materials and quantities of SNM are within its authorized amount. Therefore, the NRC staff finds that the licensee meets the requirement of 10 CFR 70.25(a)(2). Additionally, the NRC staff reviewed the DFP for submission at the time of license renewal. On the basis of the review, the NRC staff has determined that the licensee has submitted a DFP at the time of license renewal. Therefore, the NRC staff finds that the licensee meets the requirement of 10 CFR 70.25(e)(2).

### Detailed Cost Estimate

The licensee's cost estimate submission was developed based upon the work being performed by an independent contractor. The cost estimate includes: (1) a description of the facility where the SNM and source materials are used and stored; (2) a description of how the materials are used; (3) types and quantities of material; (4) quantities of materials or waste accumulated prior to shipping or disposal; (5) number and dimensions of facility components; (6) labor costs for planning and preparation of the facility for decommissioning of the radioactive facility; (7) final surveys; (8) packaging, shipping, and disposal of radioactive wastes; equipment and supplies; and (9) other miscellaneous costs.

The licensee's submittal states that the cost estimate was developed based upon NIST being U.S. Government owned property that is expected to remain well after decommissioning. For those reasons, the preferred avenue in the estimation of decommissioning costs is a limited release followed by long-term monitoring. Remediation is assumed to proceed to levels suitable for unrestricted site release. Tools, materials, and removable equipment will be surveyed for unconditional release per guidance in Regulatory Guide 1.86, Termination of Operating Licenses for New Reactors, while building surfaces and installed equipment will be surveyed using guidance in NUREG-1575, Multi-Agency Radiation Site and Site Investigation Manual.

The licensee's submission does not include any volume of onsite subsurface material containing residual radioactivity that will require remediation.

The licensee's submittal includes a 25 percent contingency factor that has been added to the total decommissioning cost estimate. The submission states that no credit was taken for salvage value. The total decommissioning cost estimate is approximately \$10,282,990. The total cost was estimated based on current dollars at the time of submission.

The cost estimate was developed using conservative "middle of the road" assumptions regarding likely extent and duration of remediation activities. Estimating the amount of remediation that would be required and the amount of material to be handled as radioactive waste was performed by: (1) review of facility floor plans; (2) principal features and equipment of laboratory were inventoried and categorized; (3) historical records and databases were reviewed to assess the isotopes, activities, and source uses in each laboratory; and (4) existing records of routine radiological monitoring were also used. This information was used to

estimate the degree of remediation and the fraction of material to be generated as radioactive waste.

In addition, cost estimates for projects were based on anticipated time and materials rates for goods, labor, and services necessary to complete each project. Unrestricted release for accelerator facilities would be expensive and dangerous work due to many of those areas being activated throughout the volume of structural materials and possibly into the soil. Therefore, after consultation with the NRC personnel, it was decided that restricted release along with long-term surveillance would be pursued for those areas.

Finally, marketplace rates were obtained for each element of the project to include: (1) project labor, (2) materials, (3) supplies, (4) sampling and waste, and; (5) packaging, processing and disposal. Labor cost estimates are based on the 2016 Bureau of Labor Statistics Occupational Employment and Wage Estimates data. Contractor profits are included in the 75 percent overhead.

The licensee's submittal states that it intends to request funds be made available when necessary in the amount of \$10,300,000 which is currently slightly more than the decommissioning cost estimate. Moreover, licensee further states that it intends to request these funds sufficiently in advance of decommissioning to prevent delay of required activities. Finally, the licensee states that appropriate escalations will be applied as necessary to accommodate future conditions when decommissioning is required.

In the September 29, 2016, letter the licensee provides a statement in its SOI, signed by its agency Director, stating that it was his intention to request and obtain \$10,300,000 in financial assurance for the decommissioning of NIST laboratories housing radioactive material and accelerator facilities with residual structural activation.

The NRC staff has reviewed the cost estimate. Based on this review, the NRC staff has determined that the cost estimate submitted by the licensee: (1) adequately reflects the costs to carry out all required decommissioning activities prior to license termination; (2) assumes costs for an independent third party contractor; (3) includes the costs of meeting the 10 CFR 20.1402 criteria for unrestricted use or 20.1403 for license termination with restricted release; (4) addresses whether or not it has any volume of onsite subsurface material containing residual radioactivity that will require remediation; (5) includes an adequate contingency factor of 25 percent; (6) identification and justification of key assumptions; (7) describes the methods of assuring funds through its cost estimate adjustments; and (8) a certification statement of its intention to provide financial assurance in the amount of the cost estimate. Therefore, the NRC has determined that the licensee meets the requirements of 10 CFR 70.25(e)(1)(i)-(iv).

#### Financial Assurance Mechanism

In the September 29, 2016, submission the licensee provided its financial assurance mechanism in the form of a SOI. The wording of the SOI is similar but not identical to the model wording in Appendix A of NUREG-1757, Vol. 3, Rev. 1, Appendix A.11.4. However, the acceptable alternative language under Checklist 11-B is provided in the SOI. The amount of financial assurance that the licensee intends on requesting and obtaining is \$10,300,000 which is slightly above the decommissioning cost estimate amount.

The NRC staff has reviewed the SOI. Based on this review, the NRC staff has determined that the financial assurance mechanism submitted by the licensee is adequate to ensure that sufficient funds will be available to carry out all required decommissioning activities prior to license termination, and therefore, meets the requirements in 10 CFR 70.25(e)(1)(v) and 70.25(f)(4).

#### Principal Author

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