

May 15, 2004

David R. Smith  
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SUBJECT: NUCLEAR REGULATORY COMMISSION STAFF GUIDANCE FOR A  
LONG TERM CONTROL POSSESSION ONLY LICENSE AT THE  
SHIELDALLOY METALLURGICAL CORPORATION SITE IN  
NEWFIELD, NEW JERSEY

Dear Mr. Smith:

I have attached a copy of the U.S. Nuclear Regulatory Commission (NRC) staff's April 15, 2004, interim guidance for a long term control (LTC) possession only license at the Shieldalloy Metallurgical Corporation site in Newfield, New Jersey. This guidance provides you with a discussion of key concepts of the LTC license option as well as specific guidance for preparing sections of your decommissioning plan related to the LTC license.

In response to your email, I have tentatively scheduled a meeting here at NRC Headquarters for Tuesday, June 29, 2004, from 1:00 pm until 4:00 pm, so that we can discuss the guidance and respond to any questions that you may have about the guidance. This should give you ample time to read the guidance and formulate your questions. If you have any questions regarding this letter, please call me at 301-415-6664 or email me at [klk@nrc.gov](mailto:klk@nrc.gov).

Sincerely,

**/RA/**

Kenneth L. Kalman, Project Manager  
Materials Decommissioning Section  
Division of Waste Management  
and Environmental Protection  
Office of Nuclear Material Safety  
and Safeguards

Enclosure:

4/15/04 NRC Staff Guidance for a LTC Possession Only License at the  
Shieldalloy Metallurgical Corp Site in Newfield, NJ

Docket No.: 04007102  
Control No.: 32074  
License No.: SMB-743

cc: Eric Jackson, President  
Jill Lipoti, Ph.D., NJ DEP  
Donna Gaffigan, NJ DEP  
Trevor Anderson, USEPA

April 15, 2004

**NRC STAFF INTERIM GUIDANCE FOR A  
LONG-TERM CONTROL POSSESSION ONLY LICENSE AT THE  
SHIELDALLOY NEWFIELD SITE, NEW JERSEY**

**INTRODUCTION AND BACKGROUND**

The U.S. Nuclear Regulatory Commission (NRC) staff recommended to the Commission in SECY-03-0069 the possession-only specific license for long-term control as one option for resolving the License Termination Rule (LTR) institutional control issue at sites where restricted use or alternate criteria could be used. This new type of possession-only license is referred to in this guidance as a long-term control (LTC) license to clearly distinguish it from the NRC's existing possession only licenses for storage. Attachment 1 of SECY-03-0069 provides a description and evaluation of the staff's recommended option of possession-only license for long-term control. On November 17, 2003, the Commission approved this LTR recommendation (SRM-SECY-03-0069).

The staff also noted in SECY-03-0069 that it would continue to work with licensees who expressed an interest in the LTC license and would inform the Commission of the licensee's interest. Following discussions with the staff, Shieldalloy Metallurgical Corporation (SMC) informed the staff that it has decided to use the LTC license and will prepare a revised decommissioning plan to incorporate this approach. The Commission has been informed of SMC's intent to use the LTC license.

The purpose of this "interim" guidance is to provide SMC with: 1) a discussion of key concepts of the new LTC license option and 2) specific guidance for preparing sections of the decommissioning plan related to the LTC license. This interim guidance is based on both existing guidance in the NMSS Consolidated Decommissioning Guidance (NUREG-1757), additional details for the LTC license based on Attachment 1 of SECY-03-0069, and the Standard Review Plan for the Review of a Reclamation Plan for Mill Tailings Sites under Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (NUREG-1620, Rev. 1). The staff expects that lessons learned from this project will be useful for eventually preparing draft regulatory guidance for public comment as approved by the Commission in SRM-SECY-03-0069. The draft guidance would be finalized as a revision to the NMSS Consolidated Decommissioning Guidance in NUREG-1757.

Enclosure

## **KEY CONCEPTS**

### **Purpose of LTC License**

The primary purpose of NRC's LTC license is to provide the legally enforceable and durable institutional controls required by 10 CFR 20.1403(b) to ensure the long-term protection of the public health, safety, and the environment.

The conditions written in the LTC license would specify the necessary controls to limit site access and land use that the licensee must monitor and maintain and that NRC would inspect and enforce, if necessary. The LTC license would also specify other required long-term control activities to be conducted by the licensee such as surveillance, maintenance, reporting, records retention, and stakeholder involvement (see guidance below). Detailed plans to implement the LTC license conditions would be given in a Long-Term Control and Maintenance Plan that the licensee would prepare and NRC would approve during decommissioning and before the LTC license is put in place.

### **Roles and Responsibilities**

The licensee has the primary responsibility for long-term protection of the public health, safety, and the environment by implementing and then maintaining the effectiveness of the controls required by the LTC license. The licensee would maintain the required site access and land use controls, as well as engineered barriers, using periodic surveillance, maintenance, and monitoring, if needed. The licensee would also provide annual reports to NRC, the State, and local governments. Finally, licensing records would be maintained by the licensee.

NRC is responsible for assuring that the licensee's controls and maintenance remain effective by conducting oversight reviews, making periodic inspections, conducting five-year license renewals, issuing a new LTC license when ownership changes in the future, enforcing the license, if needed, and maintaining licensing records for the duration of the LTC license.

Oversight reviews could include reviewing licensee annual reports and other reports (e.g., corrective action reports or requests for NRC approval of the sale of the site) and obtaining advice from stakeholders. NRC's inspection role might include an annual inspection for the first five years and then once every five years thereafter as part of the license renewal process. Periodic inspections might also be needed to address specific adverse events, allegations, and licensee corrective actions. NRC inspections could involve seeking advice and information from stakeholders. A license renewal process would also be conducted every five years, considering licensee reports, NRC inspections, and stakeholder advice. License renewal is a regulatory mechanism to evaluate the sustainability of the LTC license over the long term including: effectiveness of site access and land use controls, licensee performance, new site information, and sufficiency of funding. These evaluations could result in revised license conditions necessary to ensure long-term effectiveness of controls. Enforcement actions may be taken if the conditions of the license are not met.

Stakeholders have a role under the LTR during the licensee's preparation of the decommissioning plan for a restricted use site. For these sites, the licensee is required by 10 CFR 20.1403 (d) to seek advice from such affected parties regarding a number of matters,

including the plans for enforceable institutional controls, sufficient financial assurance, and undue burdens on the local community or other affected parties. The licensee shall document in the decommissioning plan how the advice was sought and incorporated, as appropriate, following analysis of that advice. Similarly, under 10 CFR 20.1405, NRC shall notify and solicit comments from affected parties upon receipt of the decommissioning plan.

In addition to the State and EPA, some other stakeholders may have an ongoing interest in the site after decommissioning has been completed and the LTC license is in place. From time to time, it might be appropriate to schedule public meetings, such as during the five-year license renewal process, to obtain information about the site and to maintain a local awareness of the site and the restrictions on site access and use.

**Requirements for Licensees Proposing Restricted Use with the LTC License.** The decommissioning goal for a site proposing the LTC license is the same as any other decommissioning site proposing restricted use--safe site decommissioning that complies with the LTR. However, for such sites, the license is not terminated after remediation, it is only amended to become an LTC license. Nevertheless, a licensee proposing to use the LTC license needs to comply with all the criteria of 10 CFR 20.1403, even though the license will not be terminated. These restricted use requirements for licensees are:

10 CFR 1403(a): Eligibility for restricted use (ALARA or public/environmental harm)

10 CFR 1403(b): Legally enforceable institutional controls and 25mrem/yr dose criterion

10 CFR 1403(c): Sufficient financial assurance for control and maintenance

10 CFR 1403(d): Submit a decommissioning plan or a license termination plan for restricted use and include how advice from affected parties has been sought and incorporated

10 CFR 1403(e): 100 and 500 mrem/yr dose "cap" requirements if institutional controls were no longer in effect

However, the institutional control requirements would be met with the LTC license conditions.

In addition, because the NRC license would be amended and not terminated, other NRC requirements for NRC licensees would continue, such as record keeping.

### **Eligibility for Restricted Release and the LTR License Option**

In the Statements of Consideration for the LTR, the Commission noted that it allows restricted use as an appropriate method of decommissioning while maintaining the philosophy that "... in general, termination of a license for unrestricted use is preferable because it requires no additional precautions or limitations on use of the site after licensing control ceases, in particular for those sites with long-lived nuclides."

As a result, sites considering restricted use must first comply with the existing "eligibility" requirements of 10 CFR 20.1403(a) that further reductions in residual radioactivity to comply

with unrestricted use criteria would result in net public or environmental harm or are not being made because the levels associated with restrictions are as low as reasonably achievable (ALARA).

In addition, consistent with SECY-03-0069, the use of the LTC license option would be an acceptable option if:

- a. Durable institutional controls are required because the site is considered higher risk under the staff's graded approach to institutional controls in SECY-03-0069 (see below), and
- b. The licensee can demonstrate to NRC satisfaction, that it was unable to establish other types of acceptable institutional controls and independent third party arrangements (e.g., letter from the State rejecting responsibility for ownership, control, or independent third party oversight).

### **Maintaining Ownership of the Site and Minimizing the Size of the Restricted Area**

The LTC license approach for SMC would maintain the current license boundaries with restrictions on access and use for selected portions of the site as necessary to meet restricted use criteria. Other portions of the site could have no restrictions on access and use and could be used for industrial applications consistent with local zoning constraints. The only restriction on these portions of the site would be to: 1) conduct confirmatory groundwater monitoring and 2) prohibit the sale separately from the restricted use portion containing the residual contamination. Maintaining ownership of the complete site will help ensure confirmatory monitoring over the long-term. It will also help ensure sustainability of owner/licensee controls, and thus protection of public health and safety, over the long-term.

The staff considers that minimizing the size of the restricted use area would contribute to demonstrating ALARA. It would also result in a smaller area to control, which may make access limitations like fencing and surveillance simpler and more effective as compared to a much larger area.

### **Risk-Informed, Graded Approach to Institutional Controls.**

Using the NRC LTC license is a way to provide the enforceable "durable" institutional controls required under 10 CFR 20.1403 (e), if needed, because a Federal regulatory entity provides the long-term oversight and enforcement. Generally, durable institutional controls are justified under the staff's risk-informed, graded approach recommended in the LTR Analysis if the site is considered a higher risk site due to either: 1) the longer hazard duration from the long-lived radionuclides (uranium and thorium) in the residual contamination or 2) a calculated dose above 100 mrem/yr when assuming no institutional controls.

For the SMC site, durable institutional controls would be necessary, at least, because of the long hazard duration (long-lived, uranium and thorium contamination). The hazard level will be determined by the calculated dose assuming no institutional controls and will complete the understanding of total risk at the site. This hazard level will help tailor the stringency of the

controls specified in the LTC license and NRC's oversight actions. Additional tailoring could be based on how controls and engineered barriers might fail and site conditions.

### **Flexibility for Potential Reuse of Material**

The time period for the LTC license can be flexible. The LTC license is not necessarily permanent, but would be as long as needed to protect public health and safety and the environment based on the half life of the nuclides and other factors. For example, at the SMC site, if reuse of the slag becomes viable, the licensee could submit a license amendment request and decommissioning plan for NRC approval. After NRC approval and license amendment for decommissioning, the material could be removed for reuse and the decommissioning license terminated with unrestricted release. Thus, potential reuse would not be precluded by the LTC license.

### **Transfer of control/ownership and deed notice.**

Transfers of site ownership are expected over the long-term, and the new owner(s) will need to become the licensee and provide the controls as specified in the conditions of the LTC license. Thus, the required control and maintenance under the LTC license would continue to be effective over the long-term even when ownership transfers as a condition of the license. The licensee must notify NRC of a potential sale and obtain NRC prior approval of the new owner by amending the license prior to the effective date of the sale of the licensed property. The prospective owner must become an NRC licensee effective at the time of the sale. The licensee also must establish and maintain/re-record a deed notice, approved by NRC, as a condition of the license. This will provide additional assurance that potential future owners will be informed that an NRC LTC license is required as well as the conditions of the license.

### **Sufficient Financial Assurance and Trust.**

The licensee must establish a trust and place sufficient funds into it to produce annual income that is sufficient to cover the (1) annual average costs of licensee surveillance, control, radiological monitoring of surface and groundwater if needed, and routine maintenance, (2) NRC oversight costs, and (3) trustee fees and expenses. The licensee should assume 1 % return on investment (consistent with 10 CFR Part 40, Appendix A). The NRC would be the beneficiary of the trust. The licensee would request, and the trustee would pay, in accordance with the instrument, for the costs of surveillance, control, maintenance, and NRC oversight costs, most likely on an annual basis. Because the fund would produce income sufficient to hire a contractor to perform the surveillance and control tasks, the licensee could hire a contractor to perform the duties, and be reimbursed for the full cost, rather than performing the work itself.

In the event the licensee does not perform its duties, NRC could take enforcement action, as necessary, to ensure that control activities are maintained. Alternatively, the trustee could be directed by NRC to provide funds to a contractor to work on behalf of the licensee. NRC could seek a court to appoint a custodial trustee to continue the long-term control activities using funds from the trust in the event that no licensee exists.

## **NRC Fees for LTC Oversight Activities**

No annual fees (10 CFR Part 171) are required for the LTC license. However, fees for NRC services would be recovered (10 CFR Part 170). Therefore, the licensee would be charged for NRC activities during the year, expected to be review of one annual report, annual inspections during the first five years, license renewal activities every five years, enforcement actions if needed, and responses to events and licensee corrective actions as needed. For initial planning purposes at the SMC site, the licensee should assume an NRC fee of \$10,000 for one report review and one inspection each year. Also assume a fee of \$20,000 once every five years for the five-year license renewal, expanded inspection, and report review.

## **Engineered Barriers**

If engineered barriers (e.g., disposal cell and cover) are used, their contribution to compliance should be evaluated as well as their ability to remain effective over the 1000 year compliance time period such that the applicable dose criteria with and without institutional controls are met. Although the licensee will conduct surveillance and routine maintenance of the site (e.g., fence or sign repair), ongoing active maintenance and repair of the engineered barrier should not be relied upon to maintain the effectiveness of the engineered barrier under the LTC license conditions. Consistent with this approach, NRC's guidance in NUREG-1757, Vol 2. Section 3.5, encourages licensees to design robust engineered barriers to mitigate potential future failures, simplify long-term control and minimize the extent of routine maintenance and associated costs, especially for long-lived radionuclides. The design needs to take into account the potential for barrier degradation over time.

The staff's preferred approach is for licensees to design a robust engineered barrier with an erosion control cover that is consistent with the NRC's guidance entitled Design of Erosion Protection for Long-Term Stabilization in NUREG-1623 and section 3.4, Design of Erosion Protection, in NUREG-1620, Rev. 1. Although NUREG-1623 was developed initially for use at uranium mill tailings sites, Section 1, Introduction on page 1 of NUREG-1623 indicates that the guidance can be applied to other sites as well, including decommissioning sites (e.g., Site Decommissioning Management Plan sites). This guidance contains specific criteria to meet the 1,000-year longevity requirement without the use of active maintenance. Although this requirement pertains to uranium mill tailings sites, and there is not a similar requirement under 10 CFR 20.1403 for decommissioning sites, NRC prefers this approach because it is the simplest and most effective way to demonstrate long-term erosion protection with no reliance on ongoing active maintenance. Furthermore, this approach has a well documented technical basis for acceptable methods to achieve long-term protection and over a decade of design, construction, and oversight experience.

## **Dose Assessments.**

Dose assessments for restricted use sites must have doses calculated for two cases: 1) with the controls assumed to be in place and 2) assuming institutional controls are not in effect. This also applies to a site when an LTC license is proposed. In conducting dose assessments, the licensee should identify more realistic exposure scenarios assuming past, present, and reasonably foreseeable (i.e., a few decades and possibly up to 100 years) land use as described in Attachment 6 of SECY-03-0069 and approved by the Commission. No

institutional controls also assumes no maintenance and no repair of engineered barriers, if used, and, as a result, how the engineered barrier might degrade over time, for example, due to erosion or biointrusion.

If SMC proposes that a portion of its site should be unrestricted use, then the total dose from all portions of the site must meet the applicable dose criteria. Therefore, dose assessments for both restricted and unrestricted use portions of the site must also take into consideration the impact of the other portion of the site--impacts of the restricted use portion on the unrestricted use portion (e.g., the potential for future contaminated groundwater to migrate into the unrestricted area) and impacts of the unrestricted portion on the restricted use portion.

### **Finality of Decommissioning Decisions**

NRC recognizes the importance of the finality of its decommissioning decisions. Under 10 CFR 20.1401(c), the Commission could require additional cleanup in the future only if based on new information, it determines that the criteria in the LTR were not met and residual activity remaining at the site could result in significant threat to public health and safety. This requirement also would apply to a site with the LTC license and may be particularly important to potential future owners/licensees who may be concerned about future liabilities should they purchase the site.

### **Long-Term Record Retention and Availability**

The licensee will be required to maintain those decommissioning records, which are necessary for maintaining effective long-term protection. In addition, new LTC records must be maintained for the duration of the LTC license. The purpose of record keeping is to support those licensee LTC activities necessary for effective long-term protection. In the event of ownership and license transfer in the future, there are existing NRC requirements for records transfer to ensure that important records remain available.

In addition, NRC intends to continue maintaining the LTC licensing records in the same docket file used for operations and decommissioning. This approach should result in a continuous and completely documented history of the site operations, decommissioning, and long-term control available in a single file that will improve the efficiency and effectiveness of future search and retrieval of site information. These records are expected to be available to the public in the future. Finally, NRC currently maintains the site decommissioning data base, which includes restricted use sites. This publically available data base provides Internet access to general site information about all NRC decommissioned sites.

NRC recognizes that maintaining records and making them publically available over the long term is one of the important elements to ensure protection for long periods of time so that knowledge of the site will not be forgotten. Retention of duplicate records in different locations by the licensee and NRC enhances long-term record retention.

### **Content of the LTC possession only license and LTC plan**

LTC license conditions specify requirements for: prohibited site access and land use, permitted site access and land use, physical controls (fences, signs, monuments), surveillance,



groundwater monitoring (if needed), corrective actions, maintenance, reporting, records retention and availability.

The LTC Plan provides site information and implementation activities and procedures for each license condition (similar to the Long-Term Surveillance Plan for uranium mill tailings sites required by 10 CFR Part 40, Appendix A. See Appendix D of NUREG-1620, Rev. 1 for guidance). The LTC Plan would include the following information:

Legal description and ownership of the land

Final condition of the site, residual contamination, engineered barriers, and physical controls

LTC license conditions and implementing activities and procedures

### **INFORMATION TO BE SUBMITTED IN THE DECOMMISSIONING PLAN**

Specific guidance on the information to be submitted in the DP for institutional controls, site maintenance, and financial assurance from the NMSS Consolidated Decommissioning Guidance (NUREG-1757, Vol. 1, Rev. 1 and Vol. 3) is provided below. This existing guidance has been supplemented with new draft guidance on the use of the LTC license for institutional controls and site maintenance. The additional new guidance for the LTC license is shown in **bold**.

Existing guidance in NUREG-1757 for eligibility demonstration, obtaining public advice, and dose modeling and ALARA demonstration, and use of engineered barriers (Section 3.5 of NUREG-1757, Vol 2) are sufficient if the LTC license term and concept are specified as the institutional control. However, a new section has been added (17.7.3.2.2) that indicates where the information on engineered barriers should be located in the DP.

#### **17.7.3.2 Institutional Controls and Engineered Barriers**

##### **17.7.3.2.1 Institutional Controls**

The information supplied by the licensee should be sufficient to allow the staff to fully understand what institutional controls the licensee plans to use or has provided for the site and the manner in which these institutional controls will limit doses to the average member of the critical group to 0.25 mSv/y (25 mrem/y). The staff's review should verify that the following information is included in the description of institutional controls that the licensee plans to use or has provided for the site:

##### **Location and Type of Institutional Controls**

- **Location and description of the general type of institutional controls and the basis for selection using NRC's risk-informed graded approach in Attachment 1 of the LTR Analysis in SECY-03-0069. Using this approach, determine if the restricted area of the SMC site is a lower or higher risk**

area and the general type of institutional controls that are needed. Consider both hazard duration based on the half-life of nuclides in the contamination as well as hazard level (i.e., less than or greater than 100 mrem/yr) based on dose assessments assuming no controls. This approach might result in identifying unrestricted use areas where no institutional controls are required, and restricted use areas using either legally enforceable institutional controls or durable and legally enforceable institutional controls.

- A demonstration that the size of the restricted use area has been minimized. The staff considers that minimizing the size of the restricted use area would contribute to demonstrating ALARA for sites that are considering partitioning the site into unrestricted and restricted use portions. It would also result in a smaller area to control, which may make access limitations like fencing and surveillance simpler and thus more effective, compared to a much larger area.

However, for a site like the SMC site where partitioning could be used, single ownership of both the unrestricted and restricted use portions of the existing site should be maintained under the LTC license.

- A description of the **specific type of** legally enforceable institutional control(s) and an explanation of how the institutional control is a legally enforceable mechanism;

**State that SMC would use two specific types of institutional controls. First, that the NRC LTC license is considered to be a specific type of legally enforceable and durable institutional control. Second, describe the licensee's responsibility to put in place and maintain a deed notice that notifies potential landowners of the LTC license requirement and the conditions of the LTC license.**

#### **Restrictions and Controls Implemented by Licensee**

- A description of the restrictions on present and future landowners;

**Describe the access and land use restrictions based on the dose assessments assuming no controls. Identify specific access and land use scenarios that could lead to non-compliance with the dose criteria of the LTR and therefore should be prohibited (e.g., farming, construction of a residence, excavation into the cell for any purpose, or groundwater use).**

**Also indicate what access and land use that might be permitted (e.g., industrial, recreational, or wildlife conservation area).**

**Describe what restrictions on land use would be needed to maintain effective engineered barrier performance (e.g., prohibit excavation of the**

cell cap and removal of cell cap material or contaminated material) as well as permitted access and land use.

**Describe the licensee's activities to restrict/control access and land use, including fences, signs, monuments, and periodic surveillance (e.g., annual site surveillance and adverse event surveillance). All of the above should be conditions in the LTC license. Recognize that the licensee will need to prepare a Long-Term Control Plan that will describe the details of how the licensee will implement the LTC license conditions.**

- A discussion of the durability of the institutional control(s);

**Note that NRC considers the LTC license along with the deed notice to be a durable institutional control.**

#### **Duration of the LTC License**

- A description of the duration of the institutional control(s), the basis for the duration, the conditions that will end the institutional control(s) and the activities that will be undertaken to end the institutional control(s);

**Discuss that the duration of the LTC license will be permanent for the SMC site based on the long-half life of the uranium and thorium contamination. However, the license would be renewed in five-year increments.**

#### **Records Retention and Availability**

- A description of the records pertaining to the institutional controls, how and where will they will be maintained, and how the public will have access to the records.

**Identify both historical and new records to be retained under the LTC license by the licensee that are necessary for the licensee to provide effective long-term protection. This includes the Decommissioning Plan, Final Status Survey Report, LTC license, Long-Term Control Plan, and all correspondence under the LTC license.**

**Identify the location and methods used for retention of records by the licensee.**

**Note that NRC will retain all licensing records as part of its Agency record keeping system and that these records will be available to the public in the future as they are today.**

### **Detriments and Benefits from the LTC License**

- A description of any detriments associated with the maintenance of the institutional control(s);

**Describe any detriments to using the LTC license. For example, describe potential impacts on sale of property or value of property due to the NRC license “stigma” or perceptions that NRC could potentially requiring further cleanup in the future (i.e., finality). Detriments might also be a result of restricted use of the land, independent of the type of legal instrument used (LTC license). Include stakeholder inputs, if provided.**

#### **17.7.3.2.2 Engineered Barriers**

- **Include the information on engineered barriers using the guidance in Section 3.5 of NUREG-1757, Vol 2.**

#### 17.7.3.3 Site Maintenance

### **Licensee Maintenance, Control, and Monitoring Program**

- A description of the site maintenance and control program and the basis for concluding that the program is adequate to control and maintain the site.

**Describe the general maintenance and control activities that should be required as conditions of the LTC license, such as visual surveillance and routine maintenance of physical controls and engineered barriers (e.g., fence repair, cutting grass, or removing vegetation).**

**Describe radiological monitoring of surface or groundwater, if such monitoring is needed to verify dose modeling results of potential radionuclide contamination in surface or groundwater. Include location and frequency of sampling, duration of monitoring, and supporting justifications.**

**Reference the Long Term Control Plan that will be prepared by the licensee that will give the detailed activities and procedures to implement the license conditions.**

**Demonstrate that the design of any engineered barriers are sufficiently robust so that ongoing active maintenance or periodic repair necessary to maintain the effectiveness of the engineered barrier is not needed. For example, the design objective should be to preclude the occurrence and need for repair of deep gullies in the erosion protection cap that could exposes residual contamination. Similarly, the cover design (thickness and material) that might be needed for shielding of the residual contamination should be designed to preclude erosion that might reduce**

**its thickness and shielding effectiveness and not rely on repairs to restore the cover thickness. Note that an acceptable erosion cover design would be one that is consistent with NRC's guidance for erosion protection in NUREG-1620, Rev. 1 and NUREG-1623.**

- A demonstration that an appropriately qualified entity has been provided to control and maintain the site.

**Under the LTC license, the entity could be the licensee or a contractor to the licensee. Discuss the qualifications of the personnel that are necessary to conduct the planned LTC activities.**

- A description of the arrangement or contract with the entity charged with carrying out the actions necessary to maintain control at the site.

**This applies if the licensee plans on using a contractor.**

- A demonstration that the contract or arrangement will remain in effect for as long as feasible, and include provisions for renewing or replacing the contract.
- A description of the plans for corrective actions that may be undertaken in the event the **site maintenance and control** program fails; and

**Identify reasonably foreseeable events (e.g., forced entry through fences or disruption of cap material) that could cause a failure of access and land use controls. Describe the corrective actions the licensee would take and requirements that NRC would be notified of the events and planned corrective actions.**

- **A description of licensee reporting to NRC and State and local officials, including an annual report and event corrective actions reports, as needed. The annual report should describe licensee surveillance and routine maintenance. Event corrective action reports would identify the adverse event that occurred and the licensee's planned corrective actions. Follow up reports would summarize the results of the corrective actions taken and an analysis of lessons learned from the event and plans to prevent similar future events from occurring.**

#### **NRC Oversight and Enforcement**

- A description of the entities enforcing, and their authority to enforce, the institutional control(s);

**Identify that NRC will have jurisdiction for oversight of licensee activities and can take enforcement actions, if needed, under its licensing authority from the AEA.**

**The following three bullets are not applicable because there would be no third party under the LTC license. NRC's general role under the LTC license is to assure that the controls are maintained and remain protective over time. Also note that NRC activities would include review, inspection, license renewal, and enforcement.**

- A description of the activities that the entity with the authority to enforce the institutional controls may undertake to enforce the institutional controls;
- A description of the manner in which independent oversight of the entity charged with maintaining the site will be conducted and what entity will conduct the oversight.
- A description of the periodic site inspections that will be performed by the third party, including the frequency of the inspections.
- A description of the manner in which the entity with the authority to enforce the institutional control(s) will be replaced if that entity is no longer willing or able to enforce the institutional control(s) (this may not be needed for Federal or State entities);

**Not applicable under an NRC LTC License.**

#### **Sufficient Financial Assurance**

**The basis for financial assurance for a LTC license should be a combination of methods from 10 CFR 40.36, 10 CFR 20.1403, and NUREG-1757, Vol. 3.**

**10 CFR 40.36 provides for submission and approval by the NRC of the financial instruments used for financial assurance. It further provides for adjusting the cost estimate and funding levels every three years, which will provide a feedback of actual cost experience into the cost estimate. It specifies the methods by which financial assurance must be provided. However, the scope of 10 CFR 40.36 is limited to decommissioning financial assurance for licenses which authorize "possession and use" of more than 10 mCi of source material in a readily discernible form. A LTC license does not necessarily authorize "use". Nor is the LTC licensed facility expected to require "decommissioning" in the traditional sense. Therefore, selected provisions of 10 CFR 40.36 should be included as license conditions in the LTC license, to provide financial assurance for long-term control.**

**10 CFR 20.1403 provides for sufficient funding to enable an independent contractor to perform the surveillance and control tasks. In practice, this would require adding contractor overhead and profit to the cost of performing the tasks. Because 10 CFR 20.1403 applies only to termination of a license, its provisions should be included as a license condition in the LTC license.**

NUREG-1757, Vol. 3 contains guidance on performing the cost estimate for site control and maintenance. Once the amount is estimated, the licensee must provide sufficient funds to produce an annual average income that covers the annual surveillance, control, and maintenance/repair costs, NRC fees, and trustee expenses. By analogy to uranium mill tailings funds, a 1% rate of return may be used by the licensee to determine the minimum funding level. This rate would contribute to the LTR requirement for sufficient funds for a site with long half-life radionuclides needing control over a long time period. It is also justified because the current licensee responsible for the contamination should fund the long-term control so that no additional costs will be passed on to future site owners/licensees.

The cost estimate should include funds for at least the following licensee activities:

- site surveillance of access and land use restrictions
- routine maintenance
- radiological monitoring of surface and groundwater, if needed
- reporting
- records retention.

The cost estimate should also assume the following NRC oversight fees:

- a fee of \$10,000 for one inspection and one report each year
- \$20,000 every five years for five year license renewal, inspection, and report.

Finally, the estimate should include reasonable trustee fees and expenses.

NUREG-1757 Vol. 3 provides for contingency factor of 25% to be added to the cost estimate. This contingency should be retained to buffer against potential market losses, and to provide for unexpected costs. If the contingency proves insufficient, the licensee should be required to add funds to the trust. As a matter of fairness, particularly in light of the long term existence of the fund, if the balance substantially exceeds the amount needed to produce sufficient annual income, a provision, to return excess funds to the licensee with NRC's approval, should be included in the trust.