OK

LES

NATIONAL ENRICHMENT FACILITY

SAFETY ANALYSIS REPORT

Revision 16c

LES building and operating the National Enrichment Facility
providing Energy Independence for America

urenco

Technical Services Building

The overall layout of the Technical Services Building (TSB) is presented in Figures 1.1-9, Technical Services Building First Floor, and 1.1-10, Technical Services Building Second Floor. The TSB contains support areas for the facility. It also acts as the secure point of entry to the Separations Building Modules and the Cylinder Receipt and Dispatch Building (CRDB). The major functional areas of the TSB are:

- Solid Waste Collection Room
- Vacuum Pump Rebuild Workshop
- Decontamination Workshop
- Ventilated Room
- Cylinder Preparation Room
- Mechanical, Electrical and Instrumentation (ME&I) Workshop
- Liquid Effluent Collection and Treatment Room
- Laundry
- TSB Gaseous Effluent Vent System (GEVS) Room
- Mass Spectrometry Laboratory
- Chemical Laboratory
- Environmental Monitoring Laboratory
- Truck Bay/Shipping and Receiving Area
- Medical Room
- Radiation Monitoring Control Room
- Break Room
- Control Room
- Training Room
- ~~Security Alarm Center~~Central Alarm Station (CAS)

LBDCR-08-0019

Source material and SNM are found in this area.

Centrifuge Assembly Building

This building is used to assemble centrifuges before they are moved into the Separations Building and installed in the cascades. The overall layout of the Centrifuge Assembly Building (CAB) is presented in Figures 1.1-11 through 1.1-13. The Centrifuge Assembly Building is located adjacent to the Cylinder Receipt and Dispatch Building. The major functional areas of the CAB are:

- Centrifuge Component Storage Area
- Centrifuge Assembly Area
- Assembled Centrifuge Storage Area
- Centrifuge Test Facility
- Centrifuge Post Mortem Facility

Source material and SNM are used and produced in this area.

Administration Building

The general office areas ~~and Entrance Exit Control Point (EECP)~~ are located in the Administration Building, Figure 1.1-14, Administration Building. ~~All personnel access to the facility occurs at this location. Vehicular traffic passes through a security checkpoint before being allowed to park. Parking is located outside of the Controlled Access Area (CAA) security fence.~~ Personnel enter the Administration Building and general office areas via the main lobby. LBDCR-08-0019

~~Personnel requiring access to facility areas or the CAA must pass through the EECP. The EECP is designed to facilitate and control the passage of authorized facility personnel and visitors.~~ LBDCR-08-0019

~~Entry to the facility area from the Administration Building is only possible through the EECP.~~

Security Building

The main site Security Building is located at the entrance to the plant. It functions as a security checkpoint for incoming and outgoing ~~vehicular traffic~~personnel. Employees~~, visitors and trucks~~ and visitors that have access approval are screened at this location.

The Security Building also contains a Visitor Center. There are adequate physical barriers, locked doors, etc. to separate the visitor accessible areas from areas designed to support security and Emergency Operations Centers (EOC) functions.

~~A guard house is located at the secondary site entrance on the west side of the site.~~ A smaller Gatehouse has been placed at the secondary site entrance. Common carriers, such as mail delivery trucks, are screened at this location. LBDCR-08-0019

The Entrance Exit Control Point (EECP) are located in the Main Security Building. All personnel access to the facility occurs at this location. Vehicular traffic passes through a security checkpoint before being allowed to park. Parking is located outside of the Controlled Access Area (CAA) security fence. Personnel enter the Security Building area via the main lobby. Personnel requiring access to the facility areas or the CAA must pass through the EECP. The

EECP is designed to facilitate and control the passage of authorized facility personnel and visitors.

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Entry to the facility area from the Security Building is only possible through the EECP.

Cylinder Receipt and Dispatch Building

The overall layout of the Cylinder Receipt and Dispatch Building (CRDB) is presented in Figures 1.1-15, Cylinder Receipt and Dispatch Building First Floor Part A, and 1.1-16, Cylinder Receipt and Dispatch Building First Floor Part B. The CRDB is located between two Separations Building Modules, adjacent to the Blending and Liquid Sampling Area. This building contains equipment to receive, inspect, weigh and temporarily store cylinders of feed UF_6 sent to the plant; temporarily store, inspect, weigh, and ship cylinders of enriched UF_6 to facility customers; receive, inspect, weigh, and temporarily store clean empty product and UBCs prior to being filled in the Separations Building; and inspect, weigh, and transfer filled UBCs to the UBC Storage Pad. The functions of the Cylinder Receipt and Dispatch Building are:

- Loading and unloading of cylinders
- Inventory weighing
- Storage of protective cylinder overpacks
- Storage of clean empty and empty UBCs
- Buffer storage of feed cylinders

Source and SNM are used in this area.

Blending and Liquid Sampling Area

The Blending and Liquid Sampling Area is adjacent to the CRDB and is located between two Separations Building Modules. The Blending and Liquid Sampling Area is shown in Figure 1.1-17, Blending and Liquid Sampling Area First Floor.

The primary function of the Blending and Liquid Sampling Area is to provide means to fill ANSI N14.1 Model 30B cylinders with UF_6 at a required ^{235}U enrichment level and to liquefy, homogenize and sample 30B cylinders prior to shipment to the customer. The area contains the major components associated with the Product Liquid Sampling System and the Product Blending System.

SNM is used in this area.

UBC Storage Pad

The facility utilizes an area outside of the CRDB, the UBC Storage Pad, for storage of cylinders containing UF_6 that is depleted in ^{235}U. The cylinder contents are stored under vacuum in corrosion-resistant ANSI N14.1 Model 48Y cylinders.

The UBC storage area layout is designed for moving the cylinders with a small truck and a crane. A flatbed truck moves the UBCs from the CRDB to the UBC Storage Pad entrance. A double girder gantry crane removes the cylinders from the flatbed truck and places them in the

UBC Storage Pad. The gantry crane is designed to double stack the cylinders in the storage area.

Source material is used in this area.

Central Utilities Building

The Central Utilities Building (CUB) is shown on Figure 1.1-18, Central Utilities Building. The Central Utilities Building houses two diesel generators, which provide the site with standby power. The rooms housing the diesel generators are constructed independent of each other with adequate provisions made for maintenance, equipment removal and equipment replacement. The building also contains Electrical Rooms, an Air Compressor Room, and Cooling Water Facility.

~~Visitor Center~~

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~~A Visitor Center is located outside of the Controlled Access area.~~

1.1.3 Process Descriptions

This section provides a description of the various processes analyzed as part of the Integrated Safety Analysis. A brief overview of the entire enrichment process is provided followed by an overview of each major process system.

1.1.3.1 Process Overview

The enrichment process at the NEF is basically the same process described in the SAR for the Claiborne Enrichment Center (LES, 1991). The Nuclear Regulatory Commission (NRC) staff documented its review of the Claiborne Enrichment Center license application and concluded that LES's application provided an adequate basis for safety review of facility operations and that construction and operation of the Claiborne Enrichment Center would not pose an undue risk to public health and safety (NRC, 1993). The design of the NEF incorporates the latest safety improvements and design enhancements from the Urenco enrichment facilities currently operating in Europe.

The primary function of the facility is to enrich natural uranium hexafluoride (UF_6) by separating a feed stream containing the naturally occurring proportions of uranium isotopes into a product stream enriched in ^{235}U and a tails stream depleted in the ^{235}U isotope. The feed material for the enrichment process is uranium hexafluoride (UF_6) with a natural composition of isotopes ^{234}U, ^{235}U, and ^{238}U. The enrichment process is a mechanical separation of isotopes using a fast rotating cylinder (centrifuge) based on a difference in centrifugal forces due to differences in molecular weight of the uranic isotopes. No chemical changes or nuclear reactions take place. The feed, product, and tails streams are all in the form of UF_6.

1.1.3.2 Process System Descriptions

An overview of the four enrichment process systems and the two enrichment support systems is discussed below.

Numerous substances associated with the enrichment process could pose hazards if they were released into the environment. Chapter 6, Chemical Process Safety, contains a discussion of

Sections 6 and 5 of Township 22 South, Range 38 East (a found GLO brass cap on a 2-in iron pipe) bears S00°35'16"E a distance of 1321.66 ft;

THENCE N00°35'16"W along the section line between Sections 31 and 32 a distance of 1345.14 to the POINT OF BEGINNING

Said Parcel CONTAINS 542.80 ACRES more or less

1.2.2 Financial Information

LES estimates the total cost of the NEF to be approximately $1.2 billion (in 2002 dollars), excluding escalation, contingency, interest, tails disposition, decommissioning, and any replacement equipment required during the life of the facility.

There are financial qualifications to be met before a license can be issued. LES acknowledges the use of the following Commission-approved criteria as described in Policy Issues Associated with the Licensing of a Uranium Facility; Issue 3, Financial Qualifications (LES, 2002) in determining if the project is financially feasible:

1. Construction of the facility shall not commence before funding (except decommissioning funding, and liability insurance as discussed below) is fully committed. Of this full funding (equity and debt), the applicant must have in place before constructing the associated capacity: (a) a minimum of equity contributions of 30% of project costs from the parents ~~and affiliates of the partners~~; and (b) firm commitments ensuring funds for the remaining project costs. LAR-07-04 LAR-07-04

2. LES shall not proceed with the project unless it has in place long-term enrichment contracts (i.e., five years) with prices sufficient to cover both construction and operation costs, including a return on investment, for the entire term of the contracts.

3. In accordance with the approved Exemption from certain provisions of 10 CFR 40.36 as discussed in Section 1.2.5 of this SAR, decommissioning funding will be provided incrementally. Therefore, receipt of UF_6 into a building shall not commence before the final executed copies of the reviewed financial assurance instruments for that building are provided to the NRC. LAR-07-04

LES shall in accordance with 10 CFR 140.13b, (CFR, 2003l), prior to and throughout operation, have and maintain nuclear liability insurance in the type and amounts the Commission considers appropriate ~~in the amount of~~ up to a limit of $300 million to cover liability claims arising out of any occurrence within the United States, causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of chemical compounds containing source or special nuclear material. LAR-07-04

The amounts of nuclear energy liability insurance required may be furnished and maintained in the form of:

1. An effective facility form (non-indemnified facility) policy of nuclear energy liability insurance from American Nuclear Insurers and/or Mutual Atomic Energy Liability underwriters; or

2. Such other type of nuclear energy liability insurance as the Commission may approve; or

3. A combination of the foregoing. LAR-07-04

4. $5 million to receive and maintain onsite, an inventory of ≤ 50 kg of natural or depleted UF_6 as "test material". LAR-07-04

5. $300 million to receive and maintain onsite, an inventory > 50 kg of UF_6 on site as "feed material".

If the form of liability insurance will be other than an effective facility form (non-indemnified facility) policy of nuclear energy liability insurance from American Nuclear Insurers and/or Mutual Atomic Energy Liability Underwriters, such form will be provided to the Nuclear Regulatory Commission by LES. The effective date of this incremental insurance will be no later than the date that LES takes possession of ~~licensed nuclear material~~ the above specified quantity and enrichment of UF_6. LAR-07-04

Effective November 26, 2002, nuclear energy liability Facility Form policy number NF-0350 was issued to LES for the planned NEF with the limit of liability of $1,000,000. This standby limit will apply until the plant takes possession of UF_6 in a quantity listed in #4 or #5 above~~source or special nuclear material~~, at which time it is anticipated that the liability insurance coverage limit will be increased to $5 million for "test material", or ~~more closely approximate~~ the $300 million limit for quantities of UF_6 in excess of the 50 kg "test material" limit. Until such time as LES takes possession of source ~~or special nuclear~~ material UF_6, the effects described in 10 CFR 140.13b involving source ~~or special nuclear~~ material are not possible. Therefore, the $1,000,000 standby liability policy, in addition to appropriate construction coverage, is considered to be sufficient for the construction phase. LES will provide proof of liability insurance of a type and in the amounts to cover liability claims required by 10 CFR 140.13b prior to taking possession of source ~~or special nuclear~~ material. LAR-07-04

Information indicating how reasonable assurance will be provided that funds will be available to decommission the facility as required by 10 CFR 70.22(a)(9) (CFR, 2003b), 10 CFR 70.25 (CFR, 2003c), and 10 CFR 40.36 (CFR, 2003d) is described in detail in Chapter 10, Decommissioning.

1.2.3 Type, Quantity, and Form of Licensed Material

LES ~~proposes~~is licensed to acquire, deliver, receive, possess, produce, use, transfer, and/or store special nuclear material (SNM) meeting the criteria of special nuclear material of low strategic significance as described in 10 CFR 70.4 (CFR, 2003e). Details ~~of the SNM~~ are provided in Table 1.2-1, Type, Quantity, and Form of Licensed Material. ~~It is expected that other source materials and by-product materials will also be used for instrument calibration purposes. These materials will be identified during the design phase and the SAR will be revised, accordingly.~~Byproduct materials and selected SNM sources are presented in Table 4.11-1. LAR-07-04 LAR-07-04

1.2.4 Requested Licenses and Authorized Uses

LES is engaged in the production and selling of uranium enrichment services to electric utilities for the purpose of manufacturing fuel to be used to produce electricity in commercial nuclear power plants.

2.1 ORGANIZATIONAL STRUCTURE

The LES organizational structure is described in the following sections. The organizational structure indicates the lines of communication and management control of activities associated with the design, construction, operation, and decommissioning of the facility.

2.1.1 Corporate Functions, Responsibilities, and Authorities

LES is a registered limited partnership formed solely to provide uranium enrichment services for commercial nuclear power plants. The LES partnership is described in Chapter 1, Section 1.2, Institutional Information.

LES has presented to Lea County, New Mexico a proposal to develop the NEF. Lea County would issue its Industrial Revenue Bond (National Enrichment Facility Project) Series 2004 in the maximum aggregate principal amount of $1,800,000,000 to accomplish the acquisition, construction and installation of the project pursuant to the County Industrial Revenue Bond Act, Chapter 4, Article 59 NMSA 1978 Compilation, as amended. The Project is comprised of the land, buildings, and equipment.

Under the Act, Lea County is authorized to acquire industrial revenue projects to be located within Lea County but outside the boundaries of any incorporated municipality for the purpose of promoting industry and trade by inducing manufacturing, industrial and commercial enterprises to locate or expand in the State of New Mexico, and for promoting a sound and proper balance in the State of New Mexico between agriculture, commerce, and industry. Lea County will lease the project to LES, and LES will be responsible for the construction and operation of the facility. Upon expiration of the Bond after 30 years, LES will purchase the project.

The County has no power under the Act to operate the project as a business or otherwise or to use or acquire the project property for any purpose, except as lessor thereof under the terms of the lease.

In the exercise of any remedies provided in the lease, the County shall not take any action at law or in equity that could result in the Issuer obtaining possession of the project property or operating the project as a business or otherwise.

LES is responsible for the design, quality assurance, construction, operation, and decommissioning of the enrichment facility. The President of LES reports to the LES Management Committee. This committee is composed of representatives from the general partners of LES.

The President receives policy direction from the LES Management Committee. Reporting to the President is the Chief Operating Officer & Chief Nuclear Officer. The Vice President - Engineering, Quality Assurance (QA) Director, Vice President - Operations, Project Controls Director, ~~Director of Construction & Project Implementation~~Vice President - Construction and Licensing Director all report to the Chief Operating Officer & Chief Nuclear Officer. The Quality Assurance Director reports to the Chief Operating Officer & Chief Nuclear Officer for functional day to day activities and has a direct reporting relationship to the President for all quality related activities. The Health, Safety & Environment Director reports to the Vice President – Operations, but has a direct reporting relationship to the President for all matters concerning safety during design and construction. Figure 2.1-1, LES Corporate, Design and Construction Organization shows the authority and lines of communication. | LBDCR-08-0032

2.1.2 Design and Construction Organization

As the owner of the enrichment technology and operator of the enrichment facilities in Europe, LES has contracted Urenco Limited to prepare the reference design for the facility, while an architect/engineering (A/E) has been contracted to further specify structures and systems of the facility, and ensure the reference design meets all applicable U.S. codes and standards. A contractor specializing in site evaluations has been contracted to perform the site selection evaluation. A nuclear consulting company has been contracted to conduct the site characterization, perform the Integrated Safety Analysis and to support development of the license application.

During the construction phase, preparation of construction documents and construction itself are contracted to qualified contractors. The ~~Director of Construction & Project Implementation~~Vice President of Construction is responsible for managing, construction and construction turnover testing activities. The Vice President of Engineering has overall design responsibility and ~~the Deputy Vice President of Engineering~~ is the responsible design authority during construction. The Procurement Director is responsible for the procurement. Contractor QA Programs will be reviewed by LES QA and must be approved before work can start. LBDCR-08-0032

Urenco will design, manufacture and deliver to the site the centrifuges necessary for facility operation. In addition, Urenco is supplying technical assistance and consultation for the facility. Urenco has extensive experience in the gas centrifuge uranium enrichment process since it operates three gas centrifuge uranium enrichment plants in Europe. Urenco is conducting technical reviews of the design activities to ensure the design of the enrichment facility is in accordance with the Urenco reference design information.

Procurement activities are coordinated by the LES Procurement Director. For procurement involving the use of vendors located outside the U.S., LES selects vendors only after a determination that their quality assurance programs meet the LES requirements. Any components supplied to LES are designed to meet applicable domestic industry code requirements or their equivalents as stated by the equipment specifications. The Procurement Director reports directly to the Chief Financial Officer and for technical matters to the Chief Operating Officer and Chief Nuclear Officer.

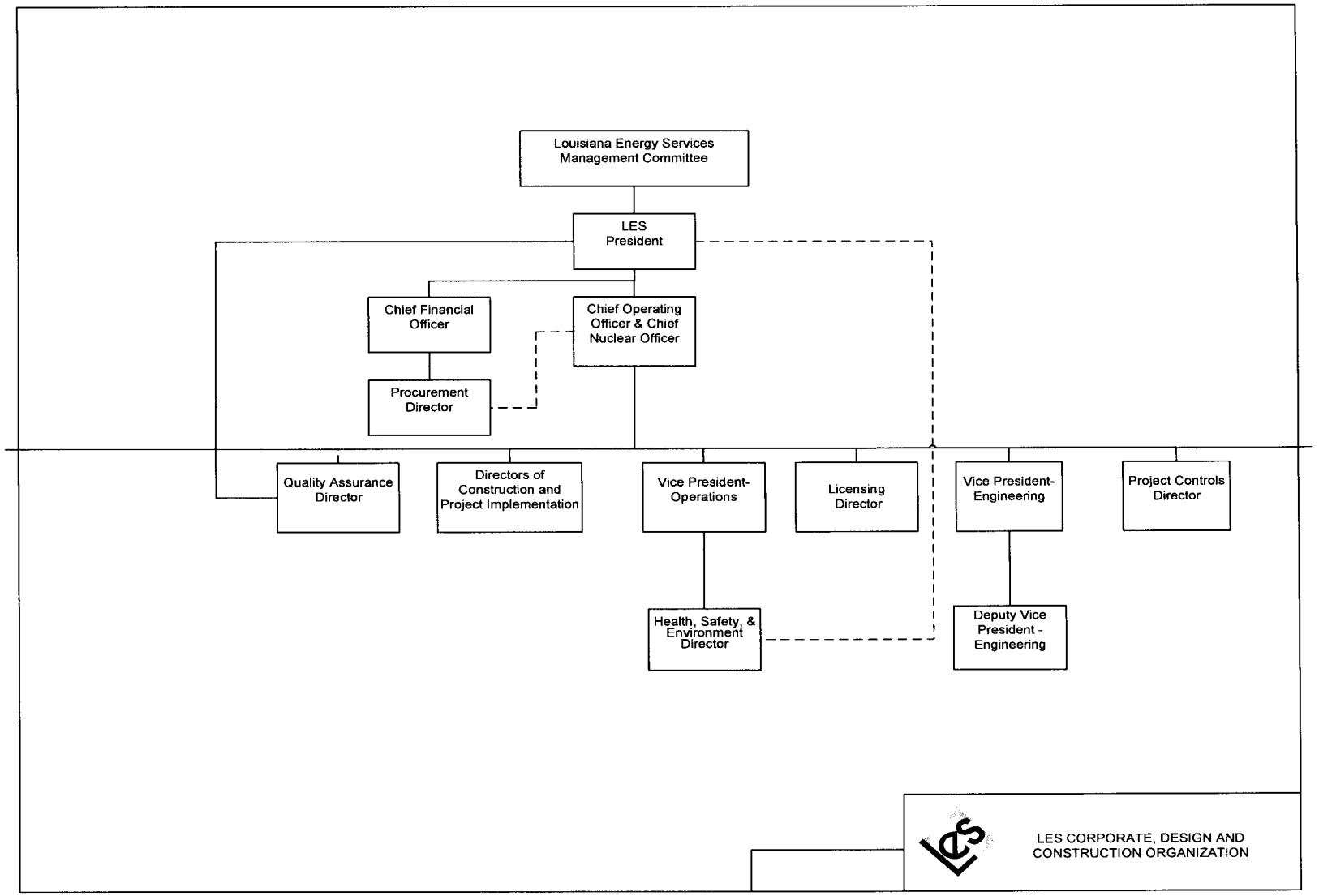
The ~~Director of Construction & Project Implementation~~Vice President of Construction is responsible for managing the work and contracts. The Project Controls Director is responsible for scheduling and project financial controls and reports directly to the Chief Operating Officer and Chief Nuclear Officer. The lines of communication of key management positions within the engineering and construction organization are shown in Figure 2.1-1. LBDCR-08-0032

Position descriptions of key management personnel in the design and construction organization will be accessible to all affected personnel and the NRC.

2.1.3 Operating Organization

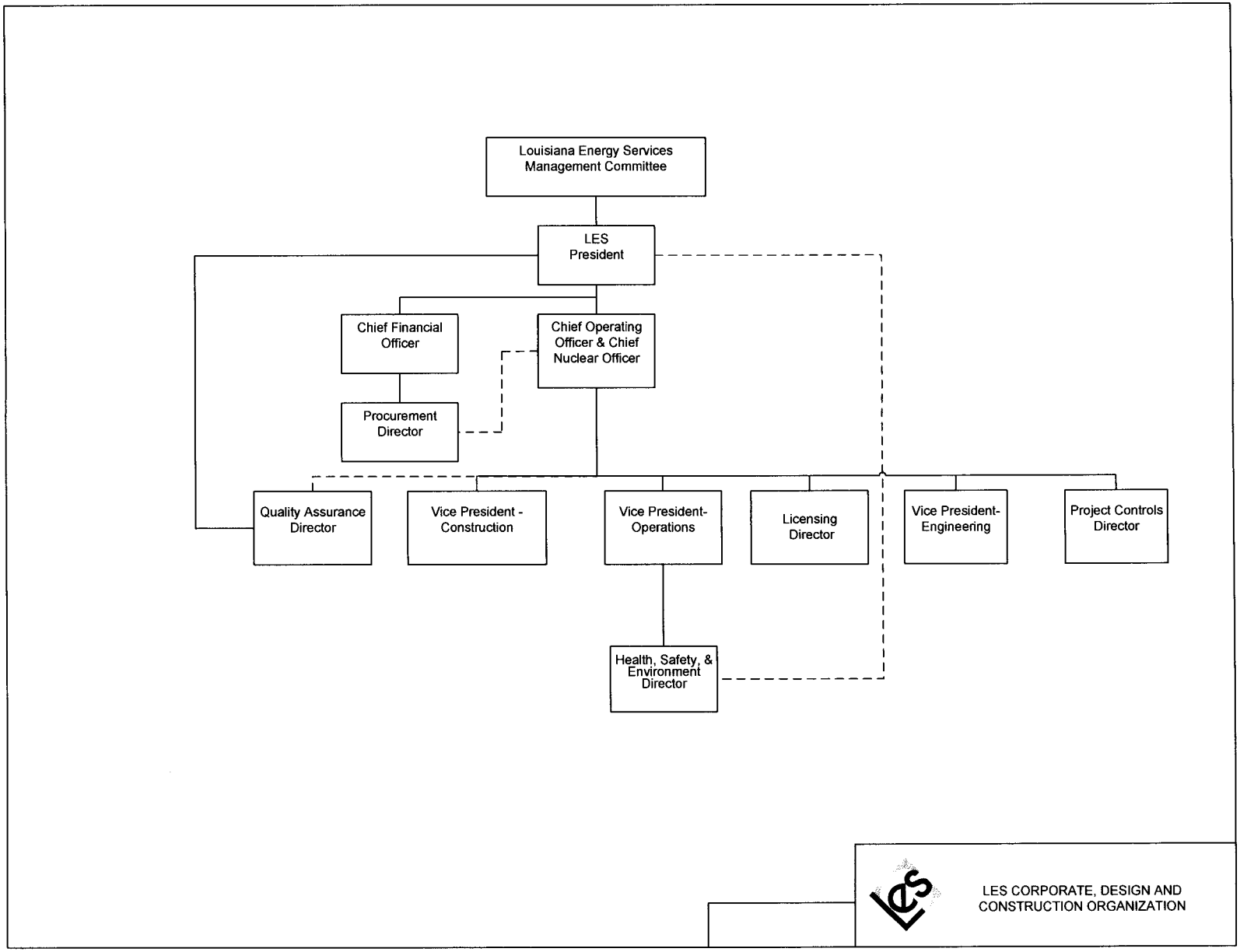
The operating organization for LES is shown in Figures 2.1-1, and 2.1-2, LES National Enrichment Facility Operating Organization. LES has direct responsibility for preoperational testing, initial start-up, operation and maintenance of the facility.

The Vice President – Operations is the Plant Manager, and reports to the Chief Operating Officer & Chief Nuclear Officer. The Plant Manager is responsible for the overall operation and



LBDCR-08-0032

Figure 2.1-1 LES Corporate, Design and Construction Organization



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3.4.5 For IROFS and IROFS with Enhanced Failure Probability Index Numbers (i.e., enhanced IROFS) that require "independent verification" of a safety function, the independent verification shall be independent with respect to personnel and personnel interface. Specifically, a second qualified individual, operating independently (e.g., not at the same time or not at the same location) of the individual assigned the responsibility to perform the required task, shall, as applicable, verify that the required task (i.e., safety function) has been performed correctly (e.g., verify a condition), or re-perform the task (i.e., safety function), and confirm acceptable results before additional action(s) can be taken which potentially negatively impact the safety function of the IROFS. The required task and independent verification shall be implemented by procedure and documented by initials or signatures of the individuals responsible for each task. In addition, the individuals performing the tasks shall be qualified to perform, for the particular system or process (as applicable) involved, the tasks required and shall possess operating knowledge of the particular system or process (as applicable) involved and its relationship to facility safety. The requirements for independent verification are consistent with the applicable guidance provided in ANSI/ANS-3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants.

3.4.6 Upon completion of the design of IROFS, the IROFS boundaries will be defined. In defining the boundaries for each IROFS, Louisiana Energy Services procedure ~~EG-204,~~ "IROFS Boundary Definitions~~,~~" will be used. This procedure requires the identification of each support system and component necessary to ensure the IROFS is capable of performing its specified safety function. LBDCR-08-0010

3.4.7 The applicable guidance of the following industry standards, guidance documents and regulatory guides shall be used for the design, procurement, installation, testing, and maintenance of IROFS at the NEF.

a. Institute of Electrical and Electronics Engineers (IEEE) standard IEEE 603, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations"

b. IEEE standard 384, "IEEE Standard Criteria for Independence of Class IE Equipment and Circuits"

c. Branch Technical Position HICB-11, "Guidance on Application and Qualification of Isolation Devices," from NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants"

d. Regulatory Guide 1.75, "Physical Independence of Electric Systems" e. IEEE standard 344, "IEEE Recommended Practices for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations"

f. Regulatory Guide 1.100, "Seismic Qualification of Electric and Mechanical Equipment for Nuclear Power Plants"

g. American National Standards Institute (ANSI)/Instrumentation, Systems, and Automation Society (ISA)-S67.04, Part 1, "Setpoints for Nuclear Safety-Related Instrumentation"

h. Regulatory Guide 3.17, "Earthquake Instrumentation for Fuel Reprocessing Plants," (for IROFS26 only)

4.11 ADDITIONAL PROGRAM COMMITMENTS

The following section describes additional program commitments related to the Radiation Protection Program.

4.11.1 Leak-Testing Byproduct Material Sources

In addition to the uranium processed at the facility, other sources of radioactivity are used. These sources are small calibration sources used for instrument calibration and response checking. These byproduct material sources may be in solid, liquid, or gaseous form; the sources may be sealed or unsealed. Both types of sources present a small radiation exposure risk to facility workers. ~~Typical b~~Byproduct material quantities ~~and uses for a Urenco uranium enrichment centrifuge plant~~ are summarized in Table 4.11-1, Material Quantities~~Typical Quantities of Byproduct Material for a Urenco Uranium Enrichment Centrifuge Plant. The byproduct materials for the NEF will be identified during the design phase and the Safety Analysis Report will be revised accordingly~~. Leak-testing of sources is performed in accordance with the following NRC Branch Technical Positions (BTPs): LAR-07-04

A. License Condition for Leak-Testing Sealed Byproduct Material Sources

B. License Condition for Leak-Testing Sealed Source Which Contains Alpha and/or Beta-Gamma Emitters

C. License Condition for Leak-Testing Sealed Uranium Sources

The following BTPs were not included in this section since the facility has not requested sources containing plutonium (refer to Table 4.11-1):

- *License Condition for Leak-Testing Sealed Plutonium Sources*, April 1993
- *License Condition for Plutonium Alpha Sources*, April 1993.

4.11.2 Records and Reports

The facility meets the following regulations for the additional program commitments applicable to records and reports:

- 10 CFR 20 (CFR, 2003b), Subpart L (Records), Subpart M (Reports)
- Section 70.61 (Performance requirements) (CFR, 2003e)
- Section 70.74 (Additional reporting requirements) (CFR, 2003s).

The facility Records Management program is described in Section 11.7, Records Management. The facility maintains complete records of the Radiation Protection Program for at least the life of the facility.

The facility maintains records of the radiation protection program (including program provisions, audits, and reviews of the program content and implementation), radiation survey results (air sampling, bioassays, external-exposure data from monitoring of individuals, internal intakes of radioactive material), and results of corrective action program referrals, RWPs and planned special exposures.

Table 4.11-1 Typical Quantities of Byproduct Material for a Urenco Uranium Enrichment Centrifuge Plant		
Radionuclide	**Quantity**	**Use**
^{3}H	19 GBq (5.14E-01 Ci)	Instrument calibration or response checking
^{36}Cl	8.35 kBq (2.26E-07 Ci)	Instrument calibration or response checking
^{57}Co	930 MBq (2.51E-02 Ci)	Instrument calibration or response checking
^{90}Sr	1.04kBq (2.81E-08 Ci)	Instrument calibration or response checking
^{99}Tc	3.09 kBq (8.35E-08 Ci)	Instrument calibration or response checking
^{109}Cd	37 MBq (1.00E-03 Ci)	Instrument calibration or response checking
^{131}Cs	390 Bq (1.05E-08 Ci)	Instrument calibration or response checking
^{133}Ba	0.7 MBq (1.89E-05 Ci)	Instrument calibration or response checking
^{137}Cs	2.05 GBq (5.53E-02 Ci)	Instrument calibration or response checking
^{210}Po	63 MBq (1.70E-03 Ci)	Instrument calibration or response checking
^{226}Ra	38 MBq (1.03E-03 Ci)	Instrument calibration or response checking
^{233}U	3.7 GBq (1.00E-01 Ci)	Instrument calibration or response checking
^{234}U	4.4 Bq (1.19E-10 Ci)	Instrument calibration or response checking
^{235}U	3.7 GBq (1.00E-01 Ci)	Instrument calibration or response checking
^{236}U	3.7 GBq (1.00E-01 Ci)	Instrument calibration or response checking
^{237}Np	2.0 kBq (5.41E-08 Ci)	Instrument calibration or response checking
^{238}U	164.5 Bq (4.45E-09 Ci)	Instrument calibration or response checking
^{241}Am	1.1GBq (2.97E-02 Ci)	Instrument calibration or response checking

LAR-07-04

Byproduct material may be in solid, liquid, or gaseous form. Byproduct material is not necessarily restricted to sealed sources.

Table 4.11-1 Material Quantities		
Source and/or Special Nuclear Material	**Physical Form**	**Maximum Amount to be Possessed at Any One Time (µCi)**
Cl-36	Unsealed, any form	2.26E-1
Cr-51	Sealed per §30.32(g)(1)	1.00E+1
Co-57	Sealed per §30.32(g)(1)	1.00E+4
Co-60	Sealed per §30.32(g)(1)	1.00E+1
Ni-63	Unsealed, any form	1.00E+1
Sr-85	Sealed per §30.32(g)(1)	1.00E+1
Y-88	Sealed per §30.32(g)(1)	1.00E+1
Sr-90	Unsealed, any form	5.00E+0
Y-90	Unsealed, any form	5.00E+0
Tc-99	Unsealed, any form	1.00E+1
Cd-109	Sealed per §30.32(g)(1)	1.00E+3
Sn-113	Sealed per §30.32(g)(1)	1.00E+1
Te-123m	Sealed per §30.32(g)(1)	1.00E+1
Cs-137	Sealed per §30.32(g)(1)	5.00E+4
Eu-152 (13y)	Sealed per §30.32(g)(1)	2.00E+0
Po-210	Unsealed, any form	1.00E+1
Th-230	Unsealed, any form	1.00E+0
U-232	Unsealed, any form	1.00E+0
U-233	Sealed per §30.32(g)(1)	1.00E+5
U-234	Unsealed, any form	1.00E+0
U-235	Unsealed, any form	1.00E+0
U-236	Sealed per §30.32(g)(1)	1.00E+5
U-238	Unsealed, any form	1.00E+0
Am-241	Sealed per §30.32(g)(1)	5.00E+4
Cf-252	Sealed per §30.32(g)(1)	5.00E+4

LAR-07-04

7.3 FACILITY DESIGN

The design of the facility incorporates the following:

- Limits on areas and equipment subject to contamination
- Design of facilities, equipment, and utilities to facilitate decontamination.

7.3.1 Building Construction

The facility consists of several different buildings or functional areas:

- Visitor Center (within the Security Building)
- ~~Site Security Buildings~~Security Building and Gatehouses LBDCR-08-0019
- Administration Building
- Technical Services Building (TSB)
- Central Utilities Building (CUB).
- Separations Building (consisting of three Separations Building Modules), which include:
  - UF_6 Handling Area
  - Cascade Halls
  - Process Services Area.
- Cylinder Receipt and Dispatch Building (CRDB)
- Blending and Liquid Sampling Area
- Centrifuge Assembly Building (CAB)
- Centrifuge Test and Centrifuge Post Mortem Facilities (within the CAB)
- UBC Storage Pad
- Fire Water Pump Building.

The ~~Visitor Center,~~ Security Buildings, Administration Building, Fire Water Pump Building and Tanks and CUB are independent of the rest of the plant main buildings. ~~The Visitor Center is located outside of the Controlled Area security fence.~~ The Security Building, Administration Building, Fire Water Pump Building and the CUB are provided with automatic sprinkler protection. The remaining buildings/areas have no automatic sprinkler protection. LBDCR-08-0019

The TSB, Separations Building, CRDB, Blending and Liquid Sampling Area, CAB and Centrifuge Test and Centrifuge Post Mortem Area are pre-cast concrete frame and concrete panel construction with an upside down ballasted roof system over pre-cast concrete tees. This construction is classified as Type I-B Construction by the New Mexico Commercial Building Code (NMCBC) and as a Type II (222) Construction by NFPA 220. The Administration Building, and Fire Water Pump Building are unprotected steel frame buildings with insulated metal panel exterior walls and with built-up roofing on metal deck roof. This construction is classified as Type II-B Construction by the NMCBC and as a Type II (000) Construction by NFPA 220. The ~~Visitor Center and the~~ Site Security Buildings are ~~unprotected~~ steel frame buildings with insulated metal panel exterior walls and with built-up roofing on metal deck roof. This LBDCR-08-0019

10.2 FINANCIAL ASSURANCE MECHANISM

10.2.1 Decommissioning Funding Mechanism

LES intends to utilize a surety method to provide reasonable assurance of decommissioning funding as required by 10 CFR 40.36(e)(2) (CFR, 2003h) and 70.25(f)(2) (CFR, 2003i). Finalization of the specific incremental financial instruments to be utilized will be completed, and signed originals of those instruments will be provided to the NRC, prior to LES receipt and introduction of ~~licensed material~~UF_6 into a building module. LES intends to provide continuous financial assurance from the time of receipt of licensed material to the completion of decommissioning and termination of the license. Since LES intends to sequentially install and operate the Separations Building Modules over time, financial assurance for decommissioning will be provided during the operating life of the NEF at a rate that is in proportion to the decommissioning liability for these facilities as they are phased in. Similarly, LES will provide decommissioning funding assurance for disposition of depleted tails at a rate in proportion to the amount of accumulated tails onsite up to the maximum amount of the tails as described in Section 10.3, Tails Disposition. An exemption request to permit this incremental financial assurance is provided in Section 1.2.5, "Special Exemptions or Special Authorizations." LAR-07-04

The surety method adopted by LES will provide an ultimate guarantee that decommissioning costs will be paid in the event LES is unable to meet its decommissioning obligations at the time of decommissioning. The surety method will also be structured and adopted consistent with applicable NRC regulatory requirements and in accordance with NRC regulatory guidance contained in NUREG-1757. Accordingly, LES intends that its surety method will contain, but not be limited to, the following attributes:

- The surety method will be open-ended or, if written for a specified term, such as five years, will be renewed automatically unless 90 days or more prior to the renewal date, the issuer notifies the NRC, the trust to which the surety is payable, and LES of its intention not to renew. The surety method will also provide that the full face amount be paid to the beneficiary automatically prior to the expiration without proof of forfeiture if LES fails to provide a replacement acceptable to the NRC within 30 days after receipt of notification of cancellation.
- The surety method will be payable to a trust established for decommissioning costs. The trustee and trust will be ones acceptable to the NRC. For instance, the trustee may be an appropriate State or Federal government agency or an entity which has the authority to act as a trustee and whose trust operations are regulated and examined by a Federal or State agency.
- The surety method will remain in effect until the NRC has terminated the license.
- Unexecuted copies of the surety method documentation are provided in Appendices 10A through 10F. Prior to LES receipt of licensed material, the applicable (incremental) unexecuted copies of the surety method documentation will be replaced with the finalized, signed, and executed surety method documentation, including a copy of the broker/agent's power of attorney authorizing the broker/agent to issue bonds. LAR-07-04

10.2.2 Adjusting Decommissioning Costs and Funding

In accordance with 10 CFR 40.36(d) (CFR, 2003h) and 70.25(e) (CFR, 2003i), LES will update the decommissioning cost estimate for the NEF, and the associated funding levels, over the life of the facility. These updates will take into account changes resulting from inflation or site-specific factors, such as changes in facility conditions or expected decommissioning procedures. These funding level updates will also address anticipated operation of additional Separations Building Modules and accumulated tails.

As required by the applicable regulations 10 CFR 70.25(e) (CFR, 2003i), such updating will occur approximately every three years. A record of the update process and results will be retained for review as discussed in Section 10.2.3, below. The NRC will be notified of any material changes to the decommissioning cost estimate and associated funding levels (e.g., significant increases in costs beyond anticipated inflation). To the extent the underlying instruments are revised to reflect changes in funding levels, the NRC will be notified as appropriate.

In addition to the triennial update of the decommissioning cost estimate described above, LES has committed to supplemental updates as described in the request for exemption in SAR Section 1.2.5 in order to ensure adequate financial assurance on an incremental basis. Specifically, LES commits to update the decommissioning cost estimates and to provide to the NRC a revised funding instrument for facility decommissioning prior to the operation of each Separations Building Module at a minimum. LES also commits to updating the cost estimates for the dispositioning of the depleted uranium byproduct on an annual forward-looking incremental basis and to providing the NRC revised funding instruments that reflect these projections of depleted uranium byproduct production. If any adjustments to the funding assurance are determined to be needed during this annual period due to production variations, they would be made promptly and a revised funding instrument would be provided to the NRC.

The phased incremental decommissioning Funding Plan cost estimate shall be updated as follows:

1. Phase 1: Prior to the receipt of "test material" (≤50 kg natural or depleted UF_6), LES will submit an executed financial assurance instrument providing full funding for decontamination and decommissioning of the Centrifuge Test Facility (CTF), the Post-Mortem Facility (PMF), and the Cylinder Receipt and Dispatch Building (CRDB).

2. Phase 2: Prior to introduction of "feed material" (>50 kg UF_6) into SBM1001, LES will submit an executed financial assurance instrument providing full funding for decontamination and decommissioning of SBM1001 and the licensee shall provide funding for the disposition of depleted uranium tails in an amount needed to disposition the first three years of deleted uranium tails generation.

3. Phase 3: Prior to introduction of "feed material" (>50 kg of UF6) into SBM1003, LES will submit an executed financial assurance instrument increasing full funding for decontamination and decommissioning from that required in Phase 2 to specifically include SBM1003.

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4. Phase 4: Prior to introduction of "feed material" (>50 kg of UF6) into SBM1005, LES will submit an executed financial assurance instrument increasing full funding for decontamination and decommissioning from that required in Phase 3 to specifically include SBM1005.

5. Subsequent updated decommissioning funding estimates and revised funding instruments for facility decommissioning shall be provided, at a minimum, every three years. LAR-07-04

6. Subsequent updated decommissioning cost estimates and revised funding instruments for depleted uranium disposition shall be provided on a forward-looking basis to reflect projections of depleted uranium byproduct generation. The depleted uranium disposition cost estimate shall include an update to the DOE depleted uranium disposition cost estimate. The total amount funded for depleted uranium disposition shall be no less than the updated DOE cost estimate.

For the first triennial period, LES intends to provide decommissioning funding assurance for the entire facility, incorporating the three Separations Building Modules, and the amount of depleted uranium byproduct that would be produced by the end of that first three year period. In 2004 dollars, the following cost estimates would be assured: 1) the total facility decommissioning cost estimate of $131,103,000 from Table 10.1-14, "Total Decommissioning Costs," 2) the cost for dispositioning 4,861 MT of depleted uranium byproduct, the amount produced at the end of the first three years of operation, based on a projected nominal 30 years of operation, and using a cost of $4.68 per kg of depleted uranium byproduct, ($4,680 per MT depleted uranium byproduct) from SAR Section 10.3, yielding a total of $22,749,480, and 3) applying a 25% contingency factor to the total, or $38,463,120. Accordingly the total projected decommissioning cost estimate for the first triennial period of NEF operation for which financial assurance would be provided would be $192,315,600. However, if significant deviations to the facility construction or initial operation schedules are encountered after the first triennial period, LES may instead provide decommissioning funding assurance on the incremental basis described above, i.e., prior to the operation of a Separations Building Module and on an annual basis for the depleted uranium byproduct.

10.2.3 Recordkeeping Plans Related to Decommissioning Funding

In accordance with 10 CFR 40.36(f) (CFR, 2003h) and 70.25(g) (CFR, 2003i), LES will retain records, until the termination of the license, of information that could have a material effect on the ultimate costs of decommissioning. These records will include information regarding: (1) spills or other contamination that cause contaminants to remain following cleanup efforts; (2) as-built drawings of structures and equipment, and modifications thereto, where radioactive contamination exists (e.g., from the use or storage of such materials); (3) original and modified cost estimates of decommissioning; and (4) original and modified decommissioning funding instruments and supporting documentation.