LES

urenco

SAFETY ANALYSIS REPORT

Revision 16d

LES building and operating the National Enrichment Facility providing energy independence for America

National Enrichment Facility, PO Box 1789, Eunice, New Mexico 88231, USA T: **+1 575 394 4646** F: **+1 575 394 4747** W: **www.nefnm.com**

1.2 INSTITUTIONAL INFORMATION

This section addresses the details of the applicant's corporate identity and location, applicant's ownership organization and financial information, type, quarterly, and form of licensed material to be used at the facility, and the type(s) of license(s) being applied for.

1.2.1 Corporate Identity

1.2.1.1 ~~Applicant~~Licensee

The ~~Applicant's~~ Licensee's name, address, and principal office are as follows: LAR-07-03

Louisiana Energy Services, ~~L.P.~~L.L.C.
~~100 Sun Avenue NE, Suite 204~~P.O. Box 1789
1008 12th St.
~~Albuquerque, NM 87109~~Eunice, NM 88231

1.2.1.2 Organization and Management of Applicant

Louisiana Energy Services (LES), ~~L.P.~~L.L.C. is a Delaware limited ~~partnership~~liability company. LAR-07-03
It has been formed solely to provide uranium enrichment services for commercial nuclear power plants. LES has one, 100% owned subsidiary, operating as a limited liability company, formed for the purpose of purchasing Industrial Revenue Bonds and no divisions. ~~The general partner is as follows:~~The ownership of LES is as follows: LAR-07-03

1. Urenco Investments, Inc. (UII) (a Delaware corporation and wholly-owned subsidiary of Urenco Limited, a corporation formed under the laws of the United Kingdom ("Urenco") and owned in equal shares by BNFL Enrichment Limited ("BNFL-EL"), Ultra-Centrifuge Nederland NV ("UCN"), and Uranit GmbH ("Uranit") companies formed under English, Dutch and German law, respectively; BNFL-EL is wholly-owned by British Nuclear Fuels plc, which is wholly-owned by the Government of the United Kingdom; UCN is 99% owned by the Government of the Netherlands, with the remaining 1% owned collectively by the Royal Dutch Shell Group, DSM, Koninklijke Philips Electronics N.V. and Stork N.V.; Uranit is owned by Eon Kernkraft GmbH (50%) and RWE Power AG (50%), which are corporations formed under laws of the Federal Republic of Germany). UII holds 29.16% (as of December 31, 2006) of the membership units and has 100% of the voting power. It is anticipated that the membership units for UII will increase to more than 50% before the end of 2007 as UII has provided the majority of the funding in 2007.

~~The name and address of the responsible official for the general partner is as follows:~~ LAR-07-03

~~Urenco Investments, Inc.~~
~~Charles W. Pryor, President and CEO~~
~~1560 Wilson Blvd., Suite 300~~
~~Arlington, VA 22209-2463~~

~~Dr. Pryor is a citizen of the United States of America.~~

~~The limited partners are as follows:~~

~~A.~~2. Urenco Deelnemingen B.V. (a Netherlands corporation and wholly-owned subsidiary of Urenco Investments Inc. The ownership of Urenco Investments Inc. is explicitly described above. ~~Nederlands B.V. (UNL);~~ Urenco Deelnemingen B.V. holds 70.84% of the membership units (as of December 31, 2006) and has 0% of the voting power. It is anticipated that the membership units for UDE will recede to less than 50% before the end of 2007 as UII has provided the majority of the funding in 2007. LAR-07-03

~~A. Urenco Investments, Inc. (a Delaware corporation and wholly-owned subsidiary of Urenco Limited);~~

~~Urenco owns 100% of LES.~~

The President of LES is Reinhard Hinterreither. The President reports to the Board of Managers. The Board of Mangers are:

- Dr. Helmut Engelbrecht
  Chief Executive Officer
  Urenco Limited
  18 Oxford Road
  Marlow Bucks
  SL7 2NL, United Kingdom

  Dr. Engelbrecht is a citizen of the Federal Republic of Germany LAR-07-03

- Mr. Bart Le Blanc
  Chief Financial Officer
  Urenco Limited
  18 Oxford Road
  Marlow Bucks
  SL7 2NL, United Kingdom

  Mr. Le Blanc is a citizen of the Netherlands

- Dr. Charles W. Pryor, Jr.
  Chairman of the Board of Urenco Investments
  Urenco Investments, Inc.
  1560 Wilson Blvd., Suite 300
  Arlington, VA 22209, 2463

  Dr. Pryor is a citizen of the United States of America

The Vice President - Operations is the primary regulatory contact and is responsible for the safe operation of the National Enrichment Facility. LES' principal location for business is ~~Albuquerque~~Eunice, New Mexico. The facility will be located in Lea County near Eunice, New Mexico. No other companies will be present or operating on the NEF site other than services specifically contracted by LES.
Foreign Ownership, Control and Influence (FOCI) of LES is addressed in the NEF Standard Practice Procedures for the Protection of Classified Matter, Appendix 1 – FOCI Package. The NRC in their letter dated, March 24, 2003, has stated "...that while the mere presence of foreign

10,000 year return period peak horizontal ground acceleration is estimated at 0.15 g. This return period is equivalent to a mean annual probability of E-4. The associated peak vertical ground motion is ~~also~~ estimated at 0.~~15~~ 10 g. LAR-07-01

1.3.5.3 Other Geologic Hazards

There are no other known geologic hazards that would adversely impact the NEF site.

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~~ liability company formed solely to provide uranium enrichment services for commercial nuclear power plants. The LES company organization and management structure ~~partnership~~ is described in Chapter 1, Section 1.2, Institutional Information. LAR-07-03

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 Board of Managers as described in Section 1.2.

The President receives policy direction from the LES Board of Managers. 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~~ the Quality & Regulatory Affairs Director all report to the Chief Operating Officer & Chief Nuclear Officer. The Quality Assurance Director reports to the ~~Chief Operating Officer & Chief Nuclear Officer~~Quality & Regulatory Affairs Director for functional day to day activities and has a direct ~~reporting relationship~~ line of communication to the Chief Operating Officer & Chief Nuclear Officer and the President for all quality related activities. The Health, Safety & Environment ~~Director~~ Manager and Programs Manager both reports to the Plant Support Director which reports to the Vice President of ~~–~~ Operations. The HS&E Manager and LAR-07-03 LBDCR-08-0046

Programs Manager both have ~~but has~~ a direct ~~reporting relationship~~line of communication to the Chief Operating Officer & Chief Nuclear Officer~~President~~ for all matters concerning safety during operations, design and construction. Figure 2.1-1, LES Corporate, Design and Construction Organization shows the authority and lines of communication. LBDCR-08-0046

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 Vice President of Construction is responsible for managing, construction and construction turnover testing activities. The Vice President of Engineering has overall design responsibility and 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.

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 quality and technical matters to the Chief Operating Officer and Chief Nuclear Officer. LBDCR-08-0046

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 LBDCR-08-0046

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 administration of the enrichment facility. He is also responsible for ensuring the facility complies with all applicable regulatory requirements. In the discharge of these responsibilities, the Plant Manager directs the activities of the following groups:

- ~~Health, Safety, and Environment~~Security
- ~~Production (includes Operations and Uranium Management)~~Operations
- Technical Services
- ~~Support Services~~ Plant Support which includes HS&E functions
- ~~Construction Projects~~Commissioning & Plant Control

~~•Performance Assessment and Feedback.~~

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The responsibilities, authorities and lines of communication of key management positions within the operating organization are discussed in Section 2.2, Key Management Positions.

Position descriptions for key management personnel in the operating organization will be accessible to all affected personnel and to the NRC.

2.1.4 Transition From Design and Construction to Operations

LES is responsible for the design, quality assurance, construction, testing, initial startup, operation, and decommissioning of the facility.

Towards the end of construction, the focus of the organization will shift from design and construction to initial start-up and operation of the facility. As the facility nears completion, LES will staff the LES NEF Operating Organization to ensure smooth transition from construction activities to operation activities. During this transition, the Health, Safety, & Environment ~~(HS&E) Director~~Manager position and Programs Manager position have~~has~~ the authority to report safety concerns directly to the Chief Operating Officer & Chief Nuclear Officer ~~LES President~~ (as shown in Figure 2.1-1 and Figure 2.1-2) for HS&E matters related to operations, design ~~and~~ or construction ~~and reports directly to the Plant Manager (as shown in Figure 2.1-2) for HS&E matters related to operations~~. ~~This~~ These positions ~~is~~ are intentionally provided ~~two levels of reporting and~~ stop work authority at the Chief Operating Officer & Chief Nuclear Officer level to provide significant continued focus on the health, safety, and environment goals during design and construction when the operating organization is not yet fully developed and implemented. Urenco, which has been operating gas centrifuge enrichment facilities in Europe for over 30 years, will have personnel integrated into the LES organization to provide technical support during startup of the facility and transition into the operations phase.

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2.2 KEY MANAGEMENT POSITIONS

This section describes the functional positions responsible for managing the operation of the facility. The facility is staffed at sufficient levels prior to operation to allow for training, procedure development, and other pre-operational activities.

The responsibilities, authorities and lines of communication for each key management position are provided in this section. Responsible managers have the authority to delegate tasks to other individuals; however, the responsible manager retains the ultimate responsibility and accountability for implementing the applicable requirements. Management responsibilities, supervisory responsibilities, and the criticality safety engineering staff responsibilities related to nuclear criticality safety are in accordance with ANSI/ANS-8.19, Administrative Practices for Nuclear Criticality Safety.

The LES Corporate Organization and lines of communication are shown in Figure 2.1-1.

2.2.1 Operating Organization

The functions and responsibilities of key facility management are described in the following paragraphs. Additional detailed responsibilities related to nuclear criticality safety for key management positions and remaining supervisory and criticality safety staff are in accordance with ANSI/ANS-8.19. Some position titles have been changed to better reflect the actual responsibilities of the position. Similarly, some operating functions have been assigned to different managers to better reflect the operating organization presently used at Urenco and U. S. nuclear facilities.

A. Chief Operating Officer & Chief Nuclear Officer

The Chief Operating Officer & Chief Nuclear Officer reports to the President and is a critical member of the leadership team for LES, with the ultimate responsibility for the design, construction, commissioning and operations of the facility. The Chief Operating Officer & Chief Nuclear Officer is ultimately responsible for completion and safe operation of the NEF by managing the overall project~~, operations, licensing, and providing the day-to-day guidance for quality assurance.~~

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B. Vice President - Operations

The Vice President - Operations reports to the Chief Operating Officer & Chief Nuclear Officer and is responsible for ensuring the facility complies with all applicable regulatory requirements. The Vice President – Operations is the Plant Manager. The Plant Manager has direct responsibility for operation of the facility in a safe, reliable and efficient manner. The Plant Manager is responsible for proper selection of staff for all key positions including positions on the Safety Review Committee. The Plant Manager is responsible for the protection of the facility staff and the general public from radiation and chemical exposure and/or any other consequences of an accident at the facility and also bears the responsibility for compliance with the facility license.

C. Quality Assurance Director

The Quality Assurance Director reports to the Quality & Regulatory Affairs Director~~Chief Operating Officer & Chief Nuclear Officer~~ and has overall responsibility for development, management and implementation of the LES QA Program. LBDCR-08-0046

The facility line managers and their staff who are responsible for performing quality-affecting work are responsible for ensuring implementation of and compliance with the QA Program. The QA Director position maintains an independence from other management positions at the facility by having a direct line of communication to the Chief Operating Officer and Chief Nuclear Officer as well as the President for matters affecting quality. This ensures the QA Director has access to any manager for issues affecting quality.~~is independent from other management positions at the facility to ensure the QA Director has access to the managers for matters affecting quality. In addition, the QA Director has the authority and responsibility to contact the LES President with any Quality Assurance concerns.~~ LBDCR-08-0046

D. Health, Safety, and Environment ~~Director~~Manager

The Health, Safety, and Environment (HS&E) ~~Director~~ Manager reports to the ~~Plant Manager~~Plant Support Director and has the responsibility for assuring safety at the facility through activities including ~~regulatory compliance, maintaining compliance with safeguards (UF_6 material control), and implementation and control of the Fundamental Nuclear Material Control (FNMC) Plan. This includes~~ HS&E activities associated with nuclear criticality safety, ~~radiation protection,~~ industrial safety, chemical safety, environmental compliance, and ~~fire protection~~ environmental compliance. The HS&E ~~Director~~ Manager works with the other facility managers to ensure consistent interpretations of HS&E requirements, performs independent reviews, and supports facility and operations change control reviews.

This position ~~is independent from other management positions at the facility~~ has a line of communications to the Chief Operating Officer and Chief Nuclear Officer to ensure objective HS&E audit, review, and control activities are maintained. The HS&E ~~Director~~ Manager has the authority to shut down operations if they appear to be unsafe, and must consult with the ~~Plant Manager~~ Chief Operating Officer and Chief Nuclear Officer with respect to restart of shutdown operations after the deficiency, or unsatisfactory condition, has been resolved. LBDCR-08-0046

E. ~~Production~~ Operations Director

The ~~Production~~ Operations Director reports to the Plant Manager and has the responsibility for Shift Operations, ~~Production Services~~Operations Support, Logistics ~~Control and Information~~Services, and Chemistry ~~and Analysis~~Services. This includes such activities as ensuring the correct and safe operation of UF_6 processes, proper handling of UF_6, and the identification and mitigation of any off normal operating conditions, UF_6 cylinder management (including transportation licensing), directing the scheduling of enrichment operations to ensure smooth production, ensuring proper ~~feed~~ material and ~~maintenance~~ equipment are available for the facility, developing and maintaining production schedules and procedures for enrichment services, ensuring that cylinders of uranium hexafluoride are received and routed correctly at the facility, ~~and~~ all transportation licensing and plant and environmental analysis. In the event of the absence of the Plant Manager, the ~~Production~~ Operations Director may assume the responsibilities and authorities of the Plant Manager. LBDCR-08-0046 LBDCR-08-0046 LBDCR-08-0046

F. Technical Services Director

The Technical Services Director reports to the Plant Manager and is the NEF Design Authority during operations with responsibility for providing technical support to the facility during the operations phase. NEF Design Authority responsibilities include approving design standards and design criteria, preparing and reviewing the NEF Functional Specification, leading the development and resolution of key technical issues, approving changes to the NEF approved design, and establishing processes for design and configuration control. During the operations phase this also includes technical support for facility modifications (including administration of the configuration management system), design and systems engineering support for operations and maintenance, facility management (facility maintenance, warehouse management, and outsourced maintenance supervision), and contamination control (decontamination and waste treatment). The Technical Services Director is also responsible for records management. In the event of the absence of the Plant Manager, the Technical Services Director may assume the responsibilities and authorities of the Plant Manager. LBDCR-08-0046

G. ~~Support Services~~Plant Support Director

The ~~Support Services~~Plant Support Director reports to the Plant Manager and has the responsibility for emergency planning, ~~ensuring adequate staffing,~~ ensuring training is provided for facility employees as well as implementation of the Radiation Protection Program, Environmental Compliance Program and Criticality Safety Program. In doing so he is ensuring proper contamination control and nuclear criticality safety protection. The Plant Support Director is also responsible for the fire protection program, industrial safety, chemical safety and material accountability program.~~, providing administrative support services to the facility regarding records management, the physical security of the facility, the protection of classified matter, and ensuring support functions such as accounting, word processing and general office management are provided for the facility.~~ The Plant Support ~~Services~~ Director, in coordination with the Communications and Community Affairs Director, has the responsibility for providing information about the facility and LES to the public and media, including ensuring that the public and media receive accurate and up-to-date information during an abnormal event at the facility. In the event of the absence of the Plant Manager, the ~~Support Services~~ Plant Support Director may assume the responsibilities and authorities of the Plant Manager. LBDCR-08-0046 LBDCR-08-0046

H. Commissioning & ~~Acceptance~~ Plant Control Director LBDCR-08-0046

The Commissioning & ~~Acceptance~~ Plant Control Director reports to the Plant Manager and has the responsibility for the implementation of major facility modifications and acceptance of the facility during commissioning. The Commissioning & Plant Control Director is also responsible for scheduling and project financial controls. LBDCR-08-0046

I. Performance Assessment and Feedback Manager

The Performance Assessment and Feedback Manager reports to the ~~Plant Manager~~Quality & Regulatory Affairs Director and has the responsibility for organizational performance metrics, and implementing the Corrective Action Program (CAP), Nonconformance Process and Industry Experience Program. LBDCR-08-0046

J. Quality Assurance Inspectors

The Quality Assurance Inspectors report to the Quality Assurance Director (via a designated supervisory position, if applicable) and have the responsibility for performing inspections related to the implementation of the LES QA Program.

K. Quality Assurance Auditors

The Quality Assurance Auditors report to the Quality Assurance Director (via a designated supervisory position, if applicable) and have the responsibility for performing audits related to the implementation of the LES QA Program.

L. Quality Assurance Technical Support

The Quality Assurance Technical Support personnel report to the Quality Assurance Director (via a designated supervisory position, if applicable) and have the responsibility for providing technical support related to the implementation of the LES QA Program.

M. Emergency Preparedness Manager

The Emergency Preparedness Manager reports to the ~~Support Services Director~~Programs Manager and has the responsibility for ensuring the facility remains prepared to react and respond to any emergency situation that may arise. This includes emergency preparedness training of facility personnel, facility support personnel, the training of, and coordination with, offsite emergency response organizations (EROs), and conducting periodic drills to ensure facility personnel and offsite response organization personnel training is maintained up to date. LBDCR-08-0046

N. ~~Licensing Director~~Programs Manager

~~The Licensing Director reports to the Chief Operating Officer & Chief Nuclear Officer and has the responsibility for coordinating facility activities to ensure compliance is maintained with applicable Nuclear Regulatory Commission (NRC) requirements. The Licensing Director is also responsible for ensuring abnormal events are reported to the NRC in accordance with NRC regulations.~~The Programs Manager reports to the Plant Support Director and has the responsibility for assuring safety at the facility through activities including maintaining compliance with safeguards (UF_6 material control), and implementation and control of the Fundamental Nuclear Material Control (FNMC) Plan. This includes activities associated with radiation protection, emergency preparedness and fire protection. The Programs Manager works with the other facility managers to ensure consistent interpretations of nuclear safety requirements, performs independent reviews, and supports facility and operations change control reviews. LBDCR-08-0046

This position has a line of communication to the Chief Operating Officer and Chief Nuclear Officer to ensure objective nuclear safety audit, review, and control activities are maintained. The Programs Manager has the authority to shut down operations if they appear to be unsafe, and must consult with the Chief Operating Officer and Chief Nuclear Officer with respect to restart of shutdown operations after the deficiency, or unsatisfactory condition, has been resolved.

O. Environmental Compliance Officer

The Environmental Compliance Officer reports to the HS&E ~~Director~~ Manager and has the responsibility for coordinating facility activities to ensure all local, state and federal environmental regulations are met. This includes submission of periodic reports to appropriate regulating organizations of effluents from the facility. LBDCR-08-0046

P. Radiation Protection Manager

The Radiation Protection Manager reports to the ~~HS&E Director~~Programs Manager and has the responsibility for implementing the Radiation Protection program. These duties include the training of personnel in use of equipment, control of radiation exposure of personnel, continuous determination of the radiological status of the facility, and conducting the radiological environmental monitoring program. LBDCR-08-0046

During emergency conditions the Radiation Protection Manager's duties may also include:

- Providing Emergency Operations Center personnel information and recommendations concerning chemical and radiation levels at the facility
- Gathering and compiling onsite and offsite radiological and chemical monitoring data
- Making recommendations concerning actions at the facility and offsite deemed necessary for limiting exposures to facility personnel and members of the general public
- Taking prime responsibility for decontamination activities.

In matters involving radiological protection, the Radiation Protection Manager has direct access to the Plant Manager.

Q. Industrial Safety Officer

The Industrial Safety Officer reports to the HS&E ~~Director~~ Manager and has the responsibility for the implementation of facility industrial safety programs and procedures. This shall include programs and procedures for training individuals in safety. LBDCR-08-0046

R. Fire Protection Officer

The Fire Protection Officer reports to the ~~HS&E Director~~Programs Manager and has the responsibility for maintaining the performance of the facility fire protection systems. LBDCR-08-0046

S. Criticality Safety Officer

Criticality Safety Officer reports to the HS&E ~~Director~~ Manager and is responsible for implementing the Criticality Safety Program in the operating organization, including conducting and reporting periodic nuclear criticality safety assessments. LBDCR-08-0046

T. Criticality Safety Engineers

Criticality Safety Engineers report to the Engineering Manager and are responsible for the preparation and/or review of nuclear safety criticality evaluations and analysis. Nuclear criticality safety evaluations and analyses require independent review by a second Criticality Safety Engineer.

U. Chemical Safety Officer

The Chemical Safety Officer reports to the HS&E ~~Director~~ Manager ~~(via a designated supervisory position, if applicable)~~ and is responsible for the preparation and/or review of chemical safety programs and procedures for the facility. LBDCR-08-0046

V. ~~Operations/Shifts~~Shift Operations Manager LBDCR-08-0046

The ~~Operations/Shifts~~Shift Operations Manager reports to the ~~Production~~ Operations Director, and has the responsibility of directing the day-to-day operation of the facility. This includes such activities as ensuring the correct and safe operation of UF_6 processes, proper handling of UF_6, and the identification and mitigation of any off normal operating conditions.

W. Shift Managers

The Shift Managers report to the ~~Operations/Shifts~~Shift Operations Manager and have the responsibility for ensuring safe operation of enrichment equipment and support equipment. Each Shift Manager directs assigned personnel in order to provide enrichment services in a safe, efficient manner. LBDCR-08-0046

X. Safeguards Manager

The Safeguards Manager reports to the ~~HS&E Director~~Programs Manager and has the responsibility for ensuring the proper implementation of the FNMC Plan. This position is separate from and independent of the Operations, Technical Services, Construction ~~Projects,~~and Performance Assessment and Feedback~~, and Support Services~~ departments to ensure a definite division between the safeguards group and the other departments. In matters involving safeguards, the ~~Safeguards~~ Programs Manager, which the Safeguards Manager reports to, has direct access to the ~~Plant Manager~~ Chief Operating Officer & Chief Nuclear Officer. LBDCR-08-0046 LBDCR-08-0046 LBDCR-08-0046

Y. Chemistry ~~and Analysis~~Services Manager

The Chemistry Services~~and Analysis~~ Manager reports to the ~~Production~~ Operations Director and has the responsibility for the implementation of chemistry analysis programs and procedures for the facility. This includes effluent sample collection, chemical analysis of effluents, comparison of effluent analysis results to limits, and reporting of chemical analysis of effluents to appropriate regulatory agencies.

Z. ~~Project Managers~~Logistics Services Manager

~~The Project Managers report to the Commissioning & Acceptance Director and have the responsibility for the implementation of facility modifications and acceptance of the facility commissioning. The Project Managers also provide engineering support as needed to support facility operation and maintenance, and support of performance testing of systems and equipment.~~The Logistics Services Manager reports to the Director of Operations and is responsible for production planning, transport planning, uranium administration, safeguards operational support and materials handling, ensuring that cylinders of uranium hexafluoride are received and routed correctly at the facility, and all transportation licensing is properly implemented and maintained. LBDCR-08-0046

AA. Engineering Manager

The Engineering Manager reports to the Technical Services Director and has the responsibility for providing engineering and technical support at the facility and maintaining the configuration management system. During the operations phase, the Engineering Manager is responsible for the development of all design changes to the plant and in support of the NEF Design Authority manages and controls the design and design basis. During all phases of design, construction and operations the Engineering Manager supports the NEF Design Authority by developing and maintaining the processes for design and configuration control and providing technical support for review of proposed changes to the approved design.

BB. Maintenance Manager

The Maintenance Manager reports to the Technical Services Director and has the responsibility of directing and scheduling maintenance activities to ensure proper operation of the facility, including preparation and implementation of maintenance, surveillance, and test procedures. This includes activities such as repair and preventive maintenance of facility equipment. The Maintenance Manager is responsible for plant systems availability and reliability as well as for coordinating and maintaining testing programs for the facility, including the testing of systems and components to ensure the systems and components are functioning as specified in design documents. LBDCR-08-0046

CC. Security Manager

The Security Manager reports to the ~~Support Services Director~~Vice President of Operations and has the responsibility for directing the activities of security personnel to ensure the physical protection of the facility. The Security Manager is also responsible for the protection of classified matter at the facility and obtaining security clearances for facility personnel and support personnel. ~~In matters involving physical protection of the facility or classified matter, the Security Manager has direct access to the Plant Manager.~~ LBDCR-08-0046 LBDCR-08-0046

DD. Information Manager

The Information Manager reports to the ~~Support Services Director~~Facilities Manager and has the responsibility for adequately controlling documents at the facility. LBDCR-08-0046

EE. Training Manager

The Training Manager reports to the ~~Support Services~~Plant Support Director and has the responsibility for conducting training and maintaining training records for personnel at the facility. LBDCR-08-0046

FF. Procurement Director

The Procurement Director reports to the Chief Financial Officer and has the responsibility for ensuring spare parts and other materials needed for operation of the facility are ordered, received, inspected and stored properly. For quality and technical matters the Procurement Director reports to the Chief Operating Officer & Chief Nuclear Officer. LBDCR-08-0046

GG. Deputy Director of Operations

The Deputy Director of Operations reports to the Director of Operations and assists the Director of Operations and has the responsibility for Shift Operations, Operations Support, Logistics Services, and Chemistry Services. This includes such activities as ensuring the correct and safe operation of UF_6 processes, proper handling of UF_6, and the identification and mitigation of any off normal operating conditions, UF_6 cylinder management (including transportation licensing), directing the scheduling of enrichment operations to ensure smooth production, ensuring proper material and equipment are available for the facility, developing and maintaining production schedules and procedures for enrichment services, ensuring that cylinders of uranium hexafluoride are received and routed correctly at the facility, all transportation licensing and plant and environmental analysis.

HH. Quality & Regulatory Affairs Director

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The Quality and Regulatory Affairs Director reports to the Chief Operating Officer and Chief Nuclear Officer and has responsibility for the direction of Quality Assurance, Performance Assessment and Feedback (including the Corrective Action Program) and Licensing activities (including the Industry Experience Program). The Quality and Regulatory Affairs Director has responsibility for coordinating facility activities to evaluate and assist the LES organizations in maintaining compliance with applicable Nuclear Regulatory Commission (NRC) requirements.

II. Facilities Manager

The Facilities Manager reports to the Technical Services Director and is responsible for adequately controlling documents at the facility.

2.2.2 Shift Crew Composition

The minimum operating shift crew consists of a Shift Manager (or Deputy Shift Manager in the absence of the Shift Manager), one Control Room operator, one Radiation Protection technician, one operator for each Cascade Hall and associated UF_6 handling systems, and security personnel. When only one Cascade Hall is in operation, a minimum of two operators is required.

At least one criticality safety engineer or the criticality safety officer will be available, with appropriate ability to be contacted by the Shift Manager, to respond to any routine request or emergency condition. This availability may be offsite if adequate communication ability is provided to allow response as needed.

2.2.3 Safety Review Committee

The facility maintains a Safety Review Committee (SRC) to assist with the safe operation of the facility. The SRC reports to the Plant Manager and provides technical and administrative review and audit of operations that could impact plant worker, public safety and environmental impacts. The scope of activities reviewed and audited by the SRC shall, as a minimum, include the following:

- Radiation protection
- Nuclear criticality safety
- Hazardous chemical safety

- Industrial safety including fire protection
- Environmental protection
- ALARA policy implementation
- Changes in facility design or operations.

The SRC shall conduct at least one facility audit per year for the above areas.

The Safety Review Committee shall be composed of at least five members, including the Chairman. Members of the SRC may be from the LES corporate office or technical staff. The five members shall include experts on operations and all safety disciplines (criticality, radiological, chemical, industrial). The Chairman, members and alternate members of the Safety Review Committee shall be formally appointed by the Plant Manager, shall have an academic degree in an engineering or physical science field; and, in addition, shall have a minimum of five years of technical experience, of which a minimum of three years shall relate directly to one or more of the safety disciplines (criticality, radiological, chemical, industrial).

The Safety Review Committee shall meet at least once per calendar quarter.

Review meetings shall be held within 30 days of any incident that is reportable to the NRC. These meetings may be combined with regular meetings. Following a reportable incident, the SRC shall review the incident's causes, the responses, and both specific and generic corrective actions to ensure resolution of the problem is implemented.

A written report of each SRC meeting and audit shall be forwarded to the Plant Manager and appropriate Managers within 30 days and be retained in accordance with the records management system.

2.2.4 Personnel Qualification Requirements

The minimum qualification requirements for the facility functions that are directly responsible for its safe operation shall be as outlined below consistent with NUREG-1520. This includes the facility manager (Plant Manager), Operations Manager, Shift Managers, and managers for various safety and environmental disciplines. The nuclear experience of each individual shall be determined to be acceptable by the Plant Manager. "Responsible nuclear experience" for these positions shall include (a) responsibility for and contributions towards support of facility(s) in the nuclear fuel cycle (e.g., design, construction, operation, and/or decommissioning), and (b) experience with chemical materials and/or processes. The Plant Manager may approve different experience requirements for key positions. Approval of different requirements shall be done in writing and only on a case-by-case basis.

The assignment of individuals to the Manager positions reporting directly to the Plant Manager, and to positions on the SRC, shall be approved by the Plant Manager. Assignments to all other staff positions shall be made within the normal administrative practices of the facility.

The actual qualifications of the individuals assigned to the key facility positions described in Section 2.2.1, Operating Organization will be maintained in the employee personnel files or other appropriate file at the facility. Development and maintenance of qualification records and training programs are the responsibility of the -Training Manager.

LBDCR-08-0046

A. Chief Operating Officer & Chief Nuclear Officer

The President of LES, based on the individual's experience, proven ability in management of large scale facilities, and overall leadership qualities, appoints the Chief Operating Officer & Chief Nuclear Officer.

This appointment by the President of LES reflects confidence in the individual's ability as an effective programs and business manager. The Chief Operating Officer & Chief Nuclear Officer shall have, as a minimum, a bachelor's degree (or equivalent) and at least ten years related experience and/or training, or twenty years of related experience.

B. Vice President - Operations

The Chief Operating Officer & Chief Nuclear Officer, based on the individual's experience, proven ability in management of large-scale facilities, proven knowledge of regulatory and QA requirements, and overall leadership qualities, appoints the Vice President - Operations.

The Vice President – Operations is the Plant Manager, who is the overall manager of the facility. The Plant Manager shall be knowledgeable of the enrichment process, enrichment process controls and ancillary processes, criticality safety control, chemical safety, industrial safety, and radiation protection program concepts as they apply to the overall safety of a nuclear facility. The Plant Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and ten years of responsible nuclear experience.

C. Quality Assurance Director

The Quality Assurance Director shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and at least six years of responsible nuclear experience in the implementation of a quality assurance program. The QA Director shall have at least four years experience in a QA organization at a nuclear facility.

D. Health, Safety, and Environment ~~Director~~Manager

LBDCR-08-0046

The Health, Safety, and Environment (HS&E) ~~Director~~ Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and at least five years of responsible nuclear experience in HS&E or related disciplines. The HS&E ~~Director~~ Manager shall also have at least one year of direct experience in the administration of nuclear criticality safety evaluations and analyses.

LBDCR-08-0046

E. ~~Production~~ Operations Director

LBDCR-08-0046

The ~~Production~~ Operations Director shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

F. ~~Operations/Shifts~~Shift Operations Manager

LBDCR-08-0046

The ~~Operations/Shifts~~Shift Operations Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

G. Technical Services Director

The Technical Services Director shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

H. Plant Support ~~Services~~ Director LBDCR-08-0046

The Plant Support ~~Services~~ Director shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

I. Emergency Preparedness Manager

The Emergency Preparedness Manager shall have a bachelor's degree (or equivalent) and a minimum of ~~five~~ six years of experience in the implementation and supervision of emergency plans and procedures, at least three of which must be at a nuclear facility. No credit for academic training may be taken toward fulfilling this experience requirement. LBDCR-08-0028 LBDCR-08-0046

J. ~~Licensing Director~~Programs Manager

~~The Licensing Director shall have a minimum of five years of appropriate, responsible experience in implementing and supervising a nuclear licensing program.~~The Programs Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and at least five years of responsible nuclear experience in HS&E, nuclear safety or related disciplines. LBDCR-08-0046

K. Environmental Compliance Officer

The Environmental Compliance Officer shall have a bachelor's degree (or equivalent) and a minimum of five years of appropriate, responsible experience in implementing and supervising a nuclear environmental compliance program. LBDCR-08-0028

L. Radiation Protection Manager

The Radiation Protection Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and three years of responsible nuclear experience associated with implementation of a Radiation Protection program.

M. Industrial Safety Officer

The Industrial Safety Officer shall have, as a minimum, a bachelor's degree (or equivalent) in either an engineering or a scientific field and three years of appropriate, responsible nuclear experience associated with implementation of a facility safety program.

N. Criticality Safety Officer

Criticality Safety Officer (CSO) shall have experience in the implementation of a criticality safety program. This individual shall hold a Bachelor of Science or Bachelor of Arts degree in an engineering or scientific field and have successfully completed a training program, applicable to the scope of operations, in the physics of criticality and in associated safety practices. In addition, the CSO shall have at least two years of experience performing criticality safety analyses.

The CSO is a technical position with responsibility for oversight of the program. For this reason, the CSO shall have educational and experience requirements equal to or greater than those of a Criticality Safety Engineer as defined in Section 2.2.4.N.

O. Criticality Safety Engineers

The Criticality Safety Engineers shall hold a Bachelor of Science or Bachelor of Arts degree in an engineering or scientific field and have successfully completed a training program, applicable to the scope of operations, in the physics of criticality and in associated safety practices. In addition, these individuals shall have at least two years of experience performing criticality safety analyses.

Should a change to the facility require a nuclear criticality safety evaluation or analysis, an individual who, as a minimum, possesses the equivalent qualifications of the Criticality Safety Engineer shall perform the evaluation or analysis. An independent review of the evaluation or analysis, shall be performed by a second Criticality Safety Engineer with the same minimum qualifications.

P. Chemical Safety Officer

The Chemical Safety Officer shall have a minimum of two years experience in the preparation and/or review of chemical safety programs and procedures. This individual shall hold a bachelor's degree (or equivalent) in an engineering or scientific field and have successfully completed a training program, applicable to the scope of operations, in chemistry and in associated safety practices.

Q. Shift Managers

Shift Managers shall have High School Diplomas (or equivalent) and a minimum of five years of appropriate~~, responsible~~ operating experience ~~in implementing and supervising~~ at a nuclear ~~operations program~~ or chemical process facility. LBDCR-08-0028

R. ~~Projects Manager~~Logistics Services Manager

~~The Projects Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and have a minimum of five years of appropriate, responsible nuclear experience.~~The Logistics Services Manager shall have, as a minimum, a bachelor's degree (or equivalent) and have a minimum of three years of appropriate, responsible experience in implementing and supervising a logistics program. LBDCR-08-0046

S. Safeguards Manager

The Safeguards Manager shall have as a minimum a bachelor's degree in an engineering or scientific field, and five years of experience in the management of a safeguards program for Special Nuclear Material, including responsibilities for material control and accounting. No credit for academic training may be taken toward fulfilling this experience requirement.

T. Chemistry ~~and Analysis~~Services Manager

LBDCR-08-0046

The Chemistry Services~~and Analysis~~ Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or a scientific field and three years of appropriate, responsible nuclear experience associated with implementation of a facility chemistry program.

U. Engineering Manager

The Engineering Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and have a minimum of five years of appropriate, responsible experience in implementing and supervising a nuclear engineering program.

V. Maintenance Manager

The Maintenance Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

W. Security Manager

LBDCR-08-0046

The Security Manager shall have ~~as a minimum, a~~ bachelor's degree (or equivalent) ~~in an engineering or scientific field,~~ and five years of experiences or an associates degree (or equivalent) and ten years off experience. Experience must be in the responsible management of physical security at a facility requiring security capability similar to that required for the facility. No credit for academic training may be taken toward fulfilling this experience requirement.

X. Training Manager

The Training Manager shall have a minimum of five years of appropriate, responsible experience in implementing and supervising a training program.

Y. Fire Protection Officer

LBDCR-08-0028

The Fire Protection Officer shall have bachelor's degree (or equivalent) and shall be trained in the field of fire protection and have practical day-to-day experience at nuclear facilities.

Z. Information Manager

The Information Manager shall have a minimum of three years of appropriate, responsible experience in implementing and supervising a document control program.

AA. Performance Assessment and Feedback Manager

The Performance Assessment and Feedback Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

BB. Procurement Director

The Procurement Director shall have, as a minimum, a bachelor's degree (or equivalent) and have a minimum of three years of appropriate, responsible experience in implementing and supervising a procurement program.

CC. Deputy Director of Operations

The Deputy Director of Operations shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and four years of responsible nuclear experience.

DD. Quality & Regulatory Affairs Director

LBDCR-08-0046

The Quality & Regulatory Affairs Director shall have, as a minimum, a bachelor's degree (or equivalent) and have a minimum of six years of appropriate, responsible nuclear experience.

EE. Facilities Manager

The Facilities Manager shall have a minimum of four years of appropriate, responsible experience.

2.3 ADMINISTRATION

This section summarizes how the activities that are essential for implementation of the management measures and other HS&E functions are documented in formally approved, written procedures, prepared in compliance with a formal document control program. The mechanism for reporting potentially unsafe conditions or activities to the HS&E or Programs organization and facility management is also summarized. Details of the management measures are provided in Chapter 11, Management Measures. | LBDCR-08-0046

2.3.1 Configuration Management

Configuration management is provided for Items Relied On For Safety (IROFS) throughout facility design, construction, testing, and operation. Configuration management provides the means to establish and maintain a technical baseline for the facility based on clearly defined requirements. During design and construction, the Vice President - Engineering has responsibility for configuration management through the design control process. Selected documentation is controlled under the configuration management system in accordance with appropriate QA procedures associated with design control, document control, and records management. Design changes to IROFS undergo formal review, including interdisciplinary reviews as appropriate, in accordance with these procedures.

Configuration management provides the means to establish and maintain the essential features of the design basis of IROFS. As the project progresses from design and construction to operation, configuration management is maintained by the facility engineering organization as the overall focus of activities changes.

Additional details on Configuration Management are provided in Chapter 11, Management Measures.

2.3.2 Maintenance

The maintenance program will be implemented for the operations phase of the facility. Preventive maintenance activities, surveillance, and performance trending provide reasonable and continuing assurance that IROFS will be available and reliable to perform their safety functions.

The purpose of planned and scheduled maintenance for IROFS is to ensure that the equipment and controls are kept in a condition of readiness to perform the planned and designed functions when required. Appropriate plant management is responsible for ensuring the operational readiness of IROFS under this control. For this reason, the maintenance function is administratively closely coupled to operations. The maintenance organization plans, schedules, tracks, and maintains records for maintenance activities.

Maintenance activities generally fall into the following categories:

- Corrective maintenance
- Preventive maintenance
- Surveillance/monitoring
- Functional testing.

2.3.5.3 Facility Operating Organization

The facility operating organization shall provide, as part of the normal duties of supervisory personnel, timely and continuing monitoring of operating activities to assist the Plant Manager in keeping abreast of general facility conditions and to verify that the day-to-day operating activities are conducted safely and in accordance with applicable administrative controls.

These continuing monitoring activities are considered to be an integral part of the routine supervisory function and are important to the safety of the facility operation.

2.3.5.4 Audited Organizations

Audited organizations shall assure that deficiencies identified are corrected in a timely manner.

Audited organizations shall transmit a response to each audit report within the time period specified in the audit. For each identified deficiency, the response shall identify the corrective action taken or to be taken. For each identified deficiency, the response shall also address whether or not the deficiency is considered to be indicative of other problems (e.g., a specific audit finding may indicate a generic problem) and the corrective action taken or to be taken for any such problems determined.

Copies of audit reports and responses are maintained in accordance with the records management system.

2.3.6 Incident Investigations

The Corrective Action Program (CAP) is described in detail in Section 11.6. Each event is considered in terms of its requirements for reporting in accordance with regulations and is evaluated to determine the level of investigation required. These evaluations and investigations are conducted in accordance with approved CAP procedures. The depth of the investigation depends upon the severity of the incident in terms of the levels of uranium released and/or the degree of potential for exposure of workers, the public or the environment.

2.3.7 Employee Concerns

Employees who feel that safety or quality is being compromised have the right and responsibility to initiate the "stop work" process in accordance with the applicable project or facility procedures to ensure the work environment is placed in a safe condition.

Employees also have access to various resources to ensure their safety or quality concerns are addressed, including:

- line management or other facility management (e.g., Performance Assessment and Feedback Management, Plant Manager, HS&E ~~Director~~ Manager, Programs Manager, QA Director) | LBDCR-08-0046
- the facility safety organization (i.e., any of the safety engineers or managers)
- NRC's requirements under 10 CFR 19, Notices, Instructions and Reports to Workers: Inspection and Investigations (CFR, 2003a)

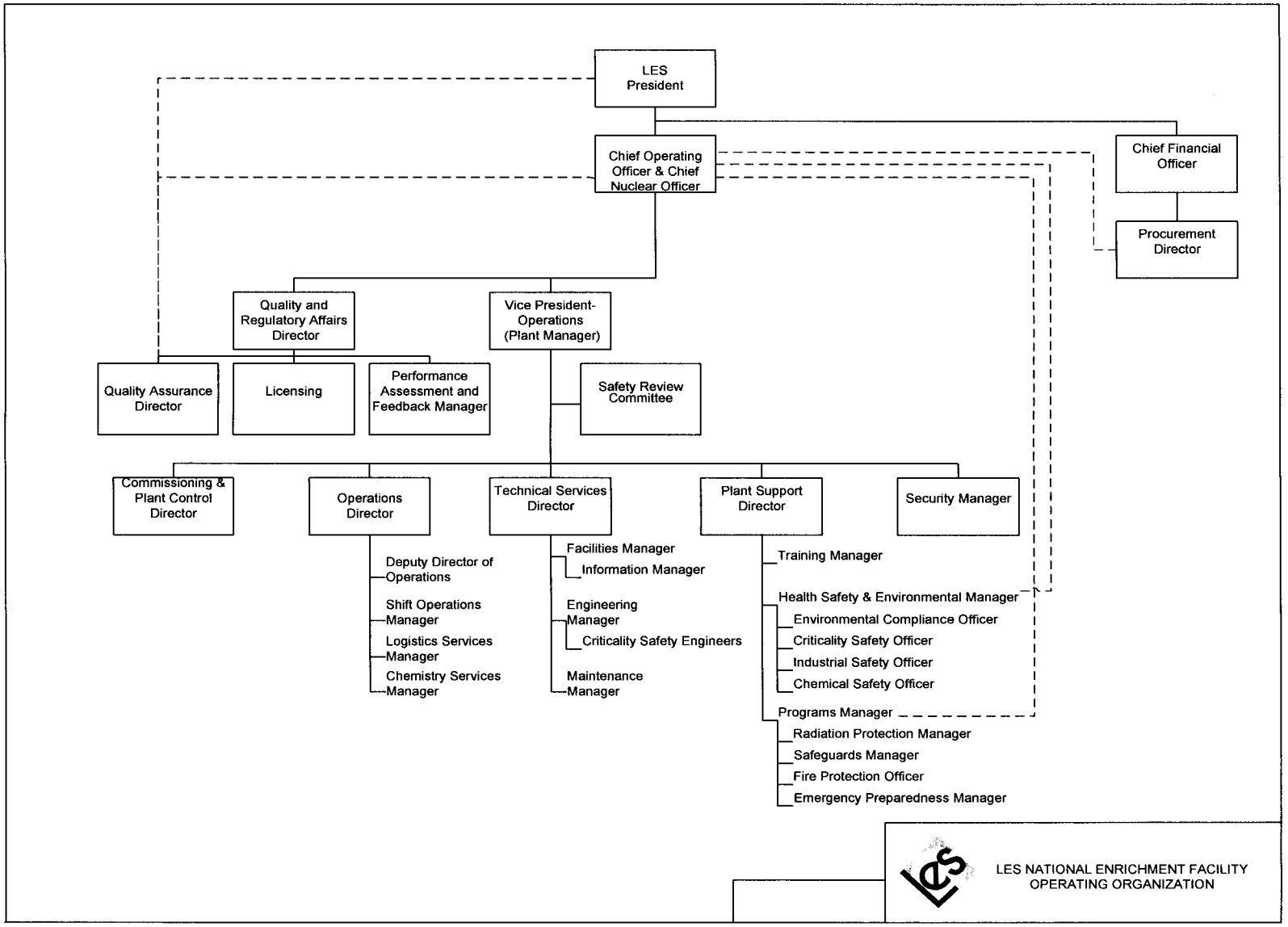

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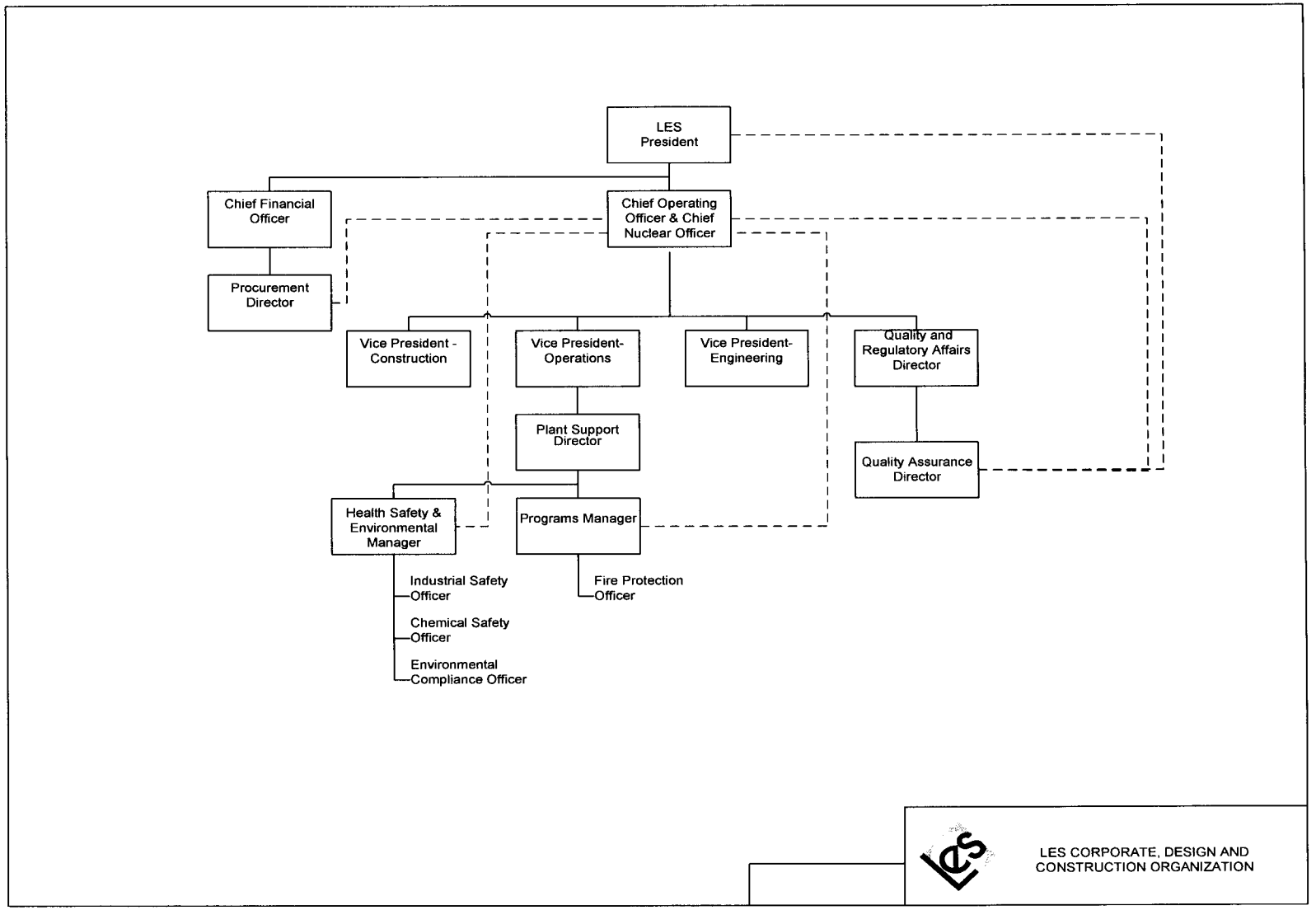
Figure 2.1-1 LES Corporate, Design and Construction Organization



LBDCR-08-0046

Figure 2.1-2 LES National Enrichment Facility Operating Organization

b. For reinforced concrete targets, the formulas used to establish the missile depth of penetration (x) and scabbing thickness (ts) are based on the Modified National Defense Research Committee Formula (NDRC) (ASCE, 58) and the Army Corps of Engineers Formula (ACE) (ASCE, 58) respectively.

c. Per Section C.7.2.1 of ACI 349, the concrete thickness required to resist hard missiles shall be at least 1.2 times the scabbing thickness, ts. Punching shear is calculated and checked against the requirements of ACI 349, Section C.7.2.3.

d. For steel targets, the formula used to establish the perforation thickness is the Ballistic Research Laboratory (BRL) Formula (ASCE, 58).

e. All buildings and structures, including such items as equipment supports, are designed to withstand the earthquake loads defined in Sections 1615 through 1617 of the International Building Code.

f. Extreme snow loadings on roofs of safety significant structures are based on a ground snow load of 32 lb/ft^2. The snow load for safety significant structures is enveloped by the general 40 psf roof live load with the exception of drift areas. Drift areas (where load can exceed 40 psf) are evaluated when required for each structure.

   Quality Level 3 structures will as a minimum, meet the IBC requirements for snow loading.

g. Load combinations for concrete structures and components for the safety significant structures are based on ACI 349. Load combinations for other concrete structures are based on (ACI 318). All concrete structures are designed using the ACI Strength Design Method (ACI, 318).

h. Load combinations for steel structures and components for all buildings are provided in ISAS Section 3.3.2.2.8. All structural steel is designed using the AISC Allowable Stress Method (AISC, Manual of Steel Construction).

i. Design live loads, including impact loads, used are in accordance with Section 4.0 and Table 4-1 of ASCE 7.

j. During detailed design of specific buildings and areas, pressure loads due to postulated truck and pipeline explosions will be considered. The pressure loads will be developed in accordance with the underlying assumptions used in the explosion hazard assessments described in Sections 3.2.1.2.1 and 3.2.2.4 of the ISA Summary. These buildings and areas include: Separations Building Modules (UF_6 Handling Area, Process Services Area and Cascade Halls), Blending and Liquid Sampling Area, Cylinder Receipt and Dispatch Building, and Technical Services Building ~~and the Centrifuge Test Facility~~. These buildings and areas are constructed of concrete. LAR-07-02

3.4.24 Natural UF_6 feed is received at the NEF in Department of Transportation (DOT) 7A, Type A cylinders from a conversion plant. The cylinders are ANSI N14.1, 48Y or 48X cylinders.

The facility corrective action process is implemented if (1) personnel dose monitoring results or personnel contamination levels exceed the administrative personnel limits; or if an incident results in airborne occupational exposures exceeding the administrative limits or (2) the dose limits in 10 CFR 20 (CFR, 2003b), Appendix B or 10 CFR 70.61 (CFR, 2003e) are exceeded.

The information developed from the corrective action process is used to improve radiation protection practices and to preclude the recurrence of similar incidents. If an incident as described in item two above occurs, the NRC is informed of the corrective action taken or planned to prevent recurrence and the schedule established by the facility to achieve full compliance. The corrective action process and incident investigation process are described in Section 11.6, Incident Investigations and Corrective Action Process.

4.1.1 Responsibilities of Key Program Personnel

In this section the Radiation Protection Program's organizational structure is described. The responsibilities of key personnel are also discussed. These personnel play an important role in the protection of workers, the environment and implementation of the ALARA program. Chapter 2, Organization and Administration, discusses the facility organization and administration in further detail. Section 2.2, Key Management Positions of Chapter 2, presents a detailed discussion of the responsibilities of key management personnel.

4.1.1.1 Plant Manager

The Plant Manager is responsible for all aspects of facility operation, including the protection of all persons against radiation exposure resulting from facility operations and materials, and for compliance with applicable NRC regulations and the facility license.

4.1.1.2 Health, Safety and Environment ~~Director~~Manager and Programs Manager

LBDCR-08-0046

The Health, Safety, and Environment (HS&E) ~~Director~~ Manager and Programs Manager reports to the Plant ~~Manager~~ Support Director and ~~has~~ have the responsibility for directing the activities that ensure the facility maintains compliance with appropriate rules, regulations, and codes. This includes HS&E activities associated with nuclear safety, radiation protection, chemical safety, environmental protection, fire protection, and industrial safety. The HS&E ~~Director~~ Manager and Programs Manager works with the other facility managers to ensure consistent interpretations of HS&E requirements, performs independent reviews and supports facility and operations change control reviews.

LBDCR-08-0046

4.1.1.3 Radiation Protection Manager

LBDCR-08-0046

The Radiation Protection Manager reports to the ~~HS&E Director~~Programs Manager. The Radiation Protection Manager is responsible for implementing the Radiation Protection Program. In matters involving radiological protection, the Radiation Protection Manager has direct access to the Plant Manager. The Radiation Protection Manager and Operators are responsible for:

- Establishing the Radiation Protection Program
- Generating and maintaining procedures associated with the program
- Assuring that ALARA is practiced by all personnel

- Reviewing and auditing the efficacy of the program in complying with NRC and other governmental regulations and applicable Regulatory Guides
- Modifying the program based upon experience and facility history
- Adequately staffing the Radiation Protection group to implement the Radiation Protection Program
- Establishing and maintaining an ALARA program
- Establishing and maintaining a respirator usage program
- Monitoring worker doses, both internal and external
- Complying with the radioactive materials possession limits for the facility
- Handling of radioactive wastes when disposal is needed
- Calibration and quality assurance of all radiological instrumentation, including verification of required Lower Limits of Detection or alarm levels
- Establishing and maintaining a radiation safety training program for personnel working in Restricted Areas
- Performing audits of the Radiation Protection Program on an annual basis
- Establishing and maintaining the radiological environmental monitoring program
- Posting the Restricted Areas, and within these areas, posting: Radiation, Airborne Radioactivity, High Radiation and Contaminated Areas as appropriate; and developing occupancy guidelines for these areas as needed.

4.1.1.4 ~~Operations/Shifts~~Shift Operations Manager

LBDCR-08-0046

The ~~Operations/Shifts~~Shift Operations Manager is responsible for operating the facility safely and in accordance with procedures so that all effluents released to the environment and all exposures to the public and facility personnel meet the limits specified in applicable regulations, procedures and guidance documents.

4.1.1.5 Facility Personnel

Facility personnel are required to work safely and to follow the rules, regulations and procedures that have been established for their protection and the protection of the public. Personnel whose duties require (1) working with radioactive material, (2) entering radiation areas, (3) controlling facility operations that could affect effluent releases, or (4) directing the activities of others, are trained such that they understand and effectively carry out their responsibilities.

4.1.2 Staffing of the Radiation Protection Program

Only suitably trained radiation protection personnel are employed at the facility. For example, the Radiation Protection Manager's qualification requirements are described in Section 2.2.4. Other members of the Radiation Protection Program staff are trained and qualified consistent with the guidance provided in American National Standards Institute (ANSI) standard 3.1, Selection, Qualification and Training of Personnel for Nuclear Power Plants.

Sufficient resources in terms of staffing and equipment are provided to implement an effective Radiation Protection Program.

4.3 ORGANIZATION AND PERSONNEL QUALIFICATIONS

The regulation 10 CFR 70.22 (CFR, 2003h) requires that the technical qualifications, including training and experience of facility staff be provided in the license application. This information is provided in this section.

The Radiation Protection Program staff is assigned responsibility for implementation of the Radiation Protection Program functions. Only suitably trained radiation protection personnel are employed at the facility. Staffing is consistent with the guidance provided in Regulatory Guides 8.2 and 8.10.

As previously discussed, the Radiation Protection Manager's qualification requirements are described in Section 2.2.4. As stated in Section 4.1.2, Staffing of the Radiation Protection Program, other members of the Radiation Protection Program staff are trained and qualified consistent with the guidance provided in American National Standards Institute (ANSI) standard 3.1, Selection, Qualification and Training of Personnel for Nuclear Power Plants.

The Radiation Protection Manager reports to the ~~HS&E Director~~Programs Manager and has the responsibility for establishing and implementing the Radiation Protection Program. These duties include the training of personnel in use of equipment, control of radiation exposure of personnel, continuous determination and evaluation of the radiological status of the facility, and conducting the radiological environmental monitoring program. The facility organization chart establishes clear organizational relationships among the radiation protection staff and the other facility line managers. The facility operating organization is described in Chapter 2, Organization and Administration. | LBDCR-08-0046

In all matters involving radiological protection, the Radiation Protection Manager has direct access to the Plant Manager. The Radiation Protection Manager is skilled in the interpretation of radiation protection data and regulations. The Radiation Protection Manager is also familiar with the operation of the facility and radiation protection concerns relevant to the facility. The Radiation Protection Manager is a resource for radiation safety management decisions.

The Radiation Protection Manager is responsible for establishing and maintaining the radiation protection training for all personnel, including contractor personnel who may be working at the facility. Records are maintained for each employee documenting the training date, scope of the training, identity of the trainer(s), any test results and other associated information by the Training Manager.

Individuals requiring unescorted access to a Restricted Area receive annual retraining. Contents of the formal radiation protection training program are reviewed and updated as required at least every two years by the ~~HS&E Director~~ Programs Manager or Radiation Protection Manager to ensure that the programs are current and adequate. | LBDCR-08-0046

The safe values of geometry/volume define the characteristic dimension of importance for a single unit such that nuclear criticality safety is not dependent on any other parameter assuming 6 $^{w}/_{o}$ ^{235}U for safety margin.

Moderation

Water and oil are the moderators considered in NEF. At NEF the only system where moderation is used as a control parameter is in the product cylinders. Moderation control is established consistent with the guidelines of ANSI/ANS-8.22 and incorporates the criteria below:

- Controls are established to limit the amount of moderation entering the cylinders.
- When moderation is the only parameter used for criticality control, the following additional criteria are applied. These controls assure that at least two independent controls would have to fail before a criticality accident is possible.
  - Two independent controls are utilized to verify cylinder moderator content.
  - These controls are established to monitor and limit uncontrolled moderator prior to returning a cylinder to production thereby limiting the amount of uncontrolled moderator from entering a system to an acceptable limit.
  - The evaluation of the cylinders under moderation control includes the establishment of limits for the ratio of maximum moderator-to-fissile material for both normal operating and credible abnormal conditions. This analysis has been supported by parametric studies.
- When moderation is not considered a control parameter, either optimum moderation or worst case H/U ratio is assumed when performing criticality safety analysis.

Mass

Mass control may be utilized to limit the quantity of uranium within specific process operations, vessels, or storage containers. Mass control may be used on its own or in combination with other control methods. Analysis or sampling is employed to verify the mass of the material. Conservative administrative limits for each operation are specified in the operating procedures.

Whenever mass control is established for a container, records are maintained for mass transfers into and out of the container. Establishment of mass limits for a container involves consideration of potential moderation, reflection, geometry, spacing, and enrichment. The evaluation considers normal operations and credible abnormal conditions for determination of the operating mass limit for the container and for the definition of subsequent controls necessary to prevent reaching the safety limits. When only administrative controls are used for mass controlled systems, double batching is conservatively assumed in the analysis.

Reflection

Reflection is considered when performing Nuclear Criticality Safety Evaluations and Analyses. The possibility of full water reflection is considered but the layout of the NEF is a very open design and it is highly unlikely that those vessels and plant components requiring criticality control could become flooded from a source of water within the plant. In addition, neither automatic sprinkler nor standpipe and hose systems are provided in the TSB, Separation Buildings, Blending and Liquid Sampling, and CRDB~~, CAB, and Centrifuge Post Mortem areas~~. | LAR-07-02

event. Although the NEF will be limited to 5.0 $^{w}/_{o}$ enrichment, as additional conservatism, the values in Table 5.1-2, represent the limits based on 6.0 $^{w}/_{o}$ enrichment.

Where there are significant in-process accumulations of enriched uranium as UF_6, the plant design includes multiple features to minimize the possibilities for breakdown of the moderation control limits. These features eliminate direct ingress of water to product cylinders while in process.

5.1.5 Organization and Administration

The criticality safety organization is responsible for implementing the Nuclear Criticality Safety Program. During the design phase, the criticality safety function is performed within the design engineering organization. The criticality safety function for operations is described in the following section.

The Criticality Safety Officer reports to the Health, Safety, and Environment (HS&E) ~~Director~~ Manager as described in Chapter 2, Organization and Administration. The HS&E ~~Director~~ Manager is accountable for overall criticality safety of the facility, is administratively independent of production responsibilities, and has the authority to shut down potentially unsafe operations. LBDCR-08-0046

Designated responsibilities of the Criticality Safety Officer include the following:

- Establish the Nuclear Criticality Safety Program, including design criteria, procedures, and training
- Assess normal and credible abnormal conditions
- Determine criticality safety limits for controlled parameters, with input from the Criticality Safety Engineers
- Develop and validate methods to support nuclear criticality safety evaluations (NCSEs) (i.e., non-calculation engineering judgments regarding whether existing criticality safety analyses bound the issue being evaluated or whether new or revised safety analyses are required)
- Specify criticality safety control requirements and functionality
- Provide advice and counsel on criticality safety control measures
- Support emergency response planning and events
- Evaluate the effectiveness of the Nuclear Criticality Safety Program using audits and assessments
- Provide criticality safety postings that identify administrative controls for operators in applicable work areas.

Criticality Safety Engineers will be provided in sufficient number to support the program technically. They are responsible for the following:

- Provide criticality safety support for integrated safety analyses and configuration control
- Perform NCS analyses (i.e., calculations), write NCS evaluations, and approve proposed changes in process conditions on equipment involving fissionable material

The minimum qualifications for the Criticality Safety Officer and the Criticality Safety Engineer are described in Section 2.2.4. The HS&E ~~Director~~ Manager has the authority and responsibility LBDCR-08-0046

7.1 FIRE SAFETY MANAGEMENT MEASURES

Fire safety management measures establish the fire protection policies for the site. The objectives of the fire safety program are to prevent fires from starting and to detect, control, and extinguish those fires that do occur. The fire protection organization and fire protection systems at the NEF provide protection against fires and explosions based on the structures, systems, and components (SSC) and defense-in-depth practices described in this chapter. Fire barriers and administrative controls are considered fire protection items relied on for safety (IROFS).

7.1.1 Fire Protection IROFS

IROFS associated with fire protection are specified in the NEF Integrated Safety Analysis Summary.

7.1.2 Management Policy and Direction

Louisiana Energy Services (LES) is committed to ensuring that the IROFS, as identified in the ISA Summary, are available and reliable, and that the facility maintains fire safety awareness among employees, controls transient ignition sources and combustibles, and maintains a readiness to extinguish or limit the consequences of fire. The facility maintains fire safety awareness among employees through its General Employee Training Program. The training program is described in Chapter 11, Management Measures.

The responsibility for fire protection rests with the Programs Manager who reports directly to the Plant Support Manager. The Programs Manager is assisted by the Fire Protection Officer. Fire protection engineering support is provided by the Engineering Manager in Technical Services. The personnel qualification requirements for the Programs Manager and the Fire Protection Officer are presented in Chapter 2, Organization and Administration. | LBDCR-08-0046

The Fire Protection Officer is trained in the field of fire protection and has practical day-to-day fire safety experience at nuclear facilities. The Fire Protection Officer is responsible for the following:

- Fire protection program and procedural requirements
- Fire safety considerations
- Maintenance, surveillance, and quality of the facility fire protection features
- Review of design changes as they relate to fire protection
- Documentation and record keeping as they relate to fire protection
- Fire prevention activities (i.e., administrative controls and training)
- Organization and training of the fire brigade
- Pre-fire planning.

The facility maintains a Safety Review Committee (SRC) that reports to the Plant Manager. The SRC performs the function of a fire safety review committee. The SRC provides technical and administrative review and audit of plant operations including facility modifications to ensure that fire safety concerns are addressed.

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)
- Security Building and Gatehouses
- 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 Security Buildings, Administration Building, Fire Water Pump Building and Tanks and CUB are independent of the rest of the plant main buildings. 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.

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 CAB, 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 Site Security Buildings are 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.

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Smoke control is accomplished by the Fire Brigade and off-site Fire Department utilizing portable smoke removal equipment.

7.3.6 Drainage

Water that may discharge from the fire water system or from fire fighting activities could be contaminated with radioactive materials. The water will be contained, stored, sampled, and treated if necessary. This also applies to areas containing flammable and combustible liquids. Wall and floor interfaces will be made watertight. Provisions will be made at all pertinent door openings to prevent fire protection water from migrating outside of the contained area. If there is a possibility that the water could be contaminated with fissile uranium compounds, the containment methodology will be designed to be safe with respect to criticality. The drainage system design and associated containment configuration will be addressed during the design phase and the Safety Analysis Report will be revised, as appropriate. Water runoff from the UBC Storage Pad will be collected in the UBC Storage Pad Stormwater Retention Basin. Liquid effluent monitoring associated with the UBC Storage Pad Stormwater Retention Basin is discussed in the Environmental Report.

7.3.7 Lightning Protection

Lightning protection for the facility is in accordance with NFPA 780.

7.3.8 Criticality Concerns

Criticality controls will be provided by employing the basic principals of criticality safety. The premise of nuclear criticality prevention is that at least two, unlikely, independent, and concurrent changes in process conditions must occur before a criticality accident is possible. This double contingency principal is described in ANSI/ANS-8.1. Controls or systems of controls are used to limit process variables in order to maintain safe operating conditions.

Moderation control is applied for criticality safety of UF_6 at this facility. Neither automatic sprinkler nor standpipe and hose systems are provided in the TSB, Separation Buildings, Blending and Liquid Sampling, and CRDB~~, CAB, and Centrifuge Post Mortem areas~~. Procedures and training for both onsite fire brigade and offsite fire department emphasize the need for moderator control in these areas. LAR-07-02

Fire protection concerns are addressed in the moderation control areas by fire protection IROFS. The IROFS define administrative controls which limit the transient and in-situ combustibles, the ignition sources in these areas and isolate these areas from other areas of the plant with appropriately rated fire barriers to preclude fire propagation to or from these areas. There are automatic detection and manual alarm systems located in these areas. Fires will be extinguished in these areas by the fire brigade and / or local fire department with the use of portable and wheeled fire extinguishers. In the unlikely event that extinguisher cannot control or extinguish the fire, then the fire brigade, local fire department and the Emergency Operations Center will work together to ensure that moderator control is maintained in these areas. If deemed appropriate, hose streams are available from fire hydrants located throughout the facility.

See Chapter 5, Nuclear Criticality Safety, for additional discussion on criticality control.

7.5 FIRE PROTECTION AND EMERGENCY RESPONSE

This section documents the fire protection systems and fire emergency response organizations provided for the facility.

7.5.1 Fire Protection System

The facility fire protection systems consist of a dedicated fire water supply and distribution system, automatic suppression systems (sprinklers and alternate systems), standpipe and hose systems, portable fire extinguishers, fire detection and alarm systems, fire pump control systems, valve position supervision, system maintenance and testing, fire prevention program, fire department/fire brigade response and pre-fire plans.

7.5.1.1 Fire Water Supply and Distribution System

A single Fire Protection Water Supply System provides storage and distribution of water to the Fire Protection System that protects the entire facility as shown in Figure 7.5-1, Exterior Fire Protection System Overall Site Plan, and Figure 7.5-2, Sprinkler System Coverage.

7.5.1.1.1 System Description

A reliable fire protection water supply and distribution system of adequate flow, pressure, and duration is provided based on the characteristics of the site and the FHA. The fire protection water supply and distribution system is based on the largest fixed fire suppression system demand, including a hose stream allowance, in accordance with NFPA 13. The fire protection water supply consists of two 946,354-lL (250,000-gal) (minimum) water storage tanks designed and constructed in accordance with NFPA 22. The tanks are used for both fire protection water supply and process water supply. A reserve quantity of 681,000 L (180,000 gal) is maintained in the bottom of each tank for fire protection purposes. The elevation of the suction line for the process water pump is above the level of the required fire protection water supply in each tank. Thus the process water pump cannot pump water required for fire protection purposes. The fire protection water supply in each tank is sized for the maximum anticipated water supply needed to control and extinguish the design basis fire at the facility. Two, 3785 l/min at 10.35 bar (1500 gpm at 150 psi) horizontal, centrifugal, fire pumps designed and installed in accordance with NFPA 20 are provided. For redundancy the capacity of the fire protection water supply is designed to ensure that 100% of the required flow rate and pressure are available in the event of failure of one of the water storage tanks or fire pumps. The maximum demand anticipated based on a design basis fire is 3785 l/min (1000 gpm) based on 1982 l/min (500 gpm) flowing from a building sprinkler system plus 1982 l/min (500 gpm) for hose streams for a duration of two hours. The tanks are arranged so that one will be available for suction at all times.

Fill and make up water for the storage tanks are from the city water supply to the site which is capable of filling ~~either storage tank in an 8-hour period~~the firewater reserve portion of either storage tank in an 8-hour period. LBDCR-08-0031

The fire water service main for the plant is designed and installed in accordance with NFPA 24. The distribution system, including piping associated with the fire pumps is looped and arranged so that a single pipe break or valve failure will not totally impair the system per the Fire Hazard Analysis and NFPA 801. Through appropriate valve alignment, either fire pump can take suction from either storage tank and discharge through either leg of the underground piping loop. The system piping is sized so that the largest sprinkler system demand (including hose

- All areas of the plant are sectioned off into Unrestricted and Restricted Areas. Restricted Areas limit access for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials. Radiation Areas and Airborne Contamination Areas have additional controls to inform workers of the potential hazard in the area and to help prevent the spread of contamination. All procedures for these areas fall under the Radiation Protection Program, and serve to minimize the spread of contamination and simplify the eventual decommissioning.
- Non-radioactive process equipment and systems are minimized in locations subject to potential contamination. This limits the size of the Restricted Areas and limits the activities occurring inside these areas.
- Local air filtration is provided for areas with potential airborne contamination to preclude its spread. Fume hoods filter contaminated air in these areas.
- Curbing, pits, or other barriers are provided around tanks and components that contain liquid radioactive wastes. These serve to control the spread of contamination in case of a spill.

10.1.5.3 Worker Exposure and Waste Volume Control

The following features primarily serve to minimize worker exposure to radiation and minimize radioactive waste volumes during decontamination activities. As a result, the spread of contamination is minimized as well.

- During construction, a washable epoxy coating is applied to floors and paint is applied to walls that might be radioactively contaminated during operation. The coating will serve to lower waste volumes during decontamination and simplify the decontamination process. The coating is applied to floors and walls that might be radioactively contaminated during operation that are located in the Restricted Areas. | LBDCR-08-0037
- Sealed, nonporous pipe insulation is used in areas likely to be contaminated. This will reduce waste volume during decommissioning.
- Ample access is provided for efficient equipment dismantling and removal of equipment that may be contaminated. This minimizes the time of worker exposure.
- Tanks are provided with accesses for entry and decontamination. Design provisions are also made to allow complete draining of the wastes contained in the tanks.
- Connections in the process systems provided for required operation and maintenance allow for thorough purging at plant shutdown. This will remove a significant portion of radioactive contamination prior to disassembly.
- Design drawings, produced for all areas of the plant, will simplify the planning and implementing of decontamination procedures. This in turn will shorten the durations that workers are exposed to radiation.
- Worker access to contaminated areas is controlled to assure that workers wear proper protective equipment and limit their time in the areas.

11.1 CONFIGURATION MANAGEMENT (CM)

This section describes the configuration management program for the NEF. Configuration management for the NEF is implemented through requirements of the QA Program and associated procedures.

The LES President is the executive responsible for quality assurance and is the highest level of management responsible for LES's QA policies, goals, and objectives. The President receives policy direction from the LES ~~Management Committee~~ Board of Managers. The LES organization during the design, construction and operation phases, including QA, is presented in Chapter 2, Organization and Administration. LAR-07-03

11.1.1 Configuration Management Policy

Configuration management is provided throughout facility design, construction, testing, and operation. Configuration management provides the means to establish and maintain a technical baseline for the facility based on clearly defined requirements. During design and construction, the Vice President - Engineering has responsibility for configuration management through engineering established design control process. Selected documentation, including the integrated safety analysis (ISA), is controlled under the configuration management system in accordance with procedures associated with design control, document control, and records management. Design changes undergo formal review, including interdisciplinary reviews as appropriate, in accordance with these procedures. This interdisciplinary review includes as a minimum the review for ISA impacts.

Configuration management provides the means to establish and maintain the essential features of the design basis of IROFS, including the ISA. As the project progresses from design and construction to operation, configuration management is maintained by the Engineering organization as the overall focus of activities changes. Procedures will define the turnover process and responsibilities since construction will continue on new work modules during operations.

During the design phase of the project, configuration management is based on the design control provisions and associated procedural controls over design documents to establish and maintain the technical baseline. Design documents, including the ISA, that provide design input, design analysis, or design results specifically for IROFS are identified with the appropriate QA level. These design documents undergo interdisciplinary review during the initial issue and during each subsequent revision. During the construction phase of the project, changes to drawings and specifications issued for construction, procurement, or fabrication are systematically reviewed and verified, evaluated for impact, including impact to the ISA, and approved prior to implementation. Proper implementation is verified and reflected in the design basis documentation.

In order to provide for the continued safe and reliable operation of the facility structures, systems and components, measures are implemented to ensure that the quality of these structures, systems and components is not compromised by planned changes (modifications). Upon acceptance by Operations, the Plant Manager is responsible for the design of and modifications to facility structures, systems or components. The design and implementation of modifications are performed in a manner so as to assure quality is maintained in a manner commensurate with the remainder of the system which is being modified, or as dictated by applicable regulations.

~~**11.2.4.2Procedure Content**~~

~~Test Procedures are sufficiently detailed that qualified personnel can perform the required functions without direct supervision. The content of test procedures is uniform to the extent practicable and consists of the following:~~

~~A. Title~~

~~Each procedure contains a title descriptive of the activities to which it applies.~~

~~B. Purpose~~

~~The purpose for which the procedure is intended is stated. This statement of applicability is as clear and concise as practicable.~~

~~C. References~~

~~References are made to specific material used in the preparation and performance of a procedure. This includes applicable drawings, instruction manuals, specifications, and sections of the facility's operating license. These references are listed in a manner as to allow ready location of the material.~~

~~D. Time Required~~

~~As applicable, estimates of the manpower and time requirements for performance of the specified testing activity are indicated.~~ LBDCR-08-0033

~~E. Prerequisites~~

~~Each procedure specifies those items that are required to be completed prior to the performance of the specified testing (e.g., a previous test or special operating conditions). This listing also includes any tests that are to be performed concurrently with the specified testing. Provisions are made to document verification of the completion of the specified prerequisite tests.~~

~~F. Test Equipment~~

~~Each procedure contains a listing of special test equipment required in performing the specified testing. Procedures contain information and/or references for the items listed such as instruction manuals or procedures.~~

~~G. Limits and Precautions~~

~~Limits on parameters being controlled and corrective measures necessary to return a parameter to its normal control band are specified. Procedures specifically incorporate limits and corrective measures for all operations affecting criticality safety.~~

~~Precautions are specified which alert the individual performing the task, of those situations for which important measures need to be taken early, or where extreme care must be used to protect personnel and equipment or to avoid an abnormal or an emergency situation.~~

~~H. Required Plant Unit Status~~

~~The procedure specifies the plant unit status necessary to perform the specified testing. Provisions are made to document compliance with the status specified.~~

11.2.4.2 Content and Format Requirements for Test Procedures

Test Procedures should be sufficiently detailed that qualified personnel can perform the required functions without direct supervision. Test procedures will be formatted in accordance with the LES procedure development process.

Minimum content of test procedures includes:

- Title
- Purpose
- Prerequisites
- Required System Conditions
- Limit and Precautions
- Acceptance Criteria
- Instructions on how to perform the test in the degree of detail necessary that qualified personnel can perform the required functions without direct supervision. LBDCR-08-0033

Test procedures applicable for NQA-1 SSCs (typically IROFS) shall be developed, formatted and executed in accordance with Section 11 of the NEF QAPD in its latest revision.

~~I. Prerequisite System Conditions~~

~~The procedure specifies the prerequisite system conditions necessary to perform the specified testing. Provisions are made to document compliance with the conditions specified.~~

~~J. Test Method~~ LBDCR-08-0033

~~Each procedure contains a brief descriptive section that summarizes the method to be used for performing the specified testing.~~

~~K. Data Required~~

~~Each procedure specifies any data that must be compiled in the performance of the specified testing in order to verify satisfactory completion of the specified testing. This includes a description of any calculations necessary to reduce raw data to a workable form.~~

~~L. Acceptance Criteria~~

~~Each procedure states the criteria for evaluating the acceptability of the results of the specified testing. Test results are reduced to a meaningful and readily understandable form in order to facilitate evaluation of their acceptability. Adequate provisions are made to allow documentation of the acceptability, or unacceptability, of test results.~~

~~M. Procedure~~

~~Procedures contain step-by-step directions in the degree of detail necessary for performing the required testing. References to documents other than the subject procedure are included, as applicable. However, references are identified within these step-by-step directions when the sequence of steps requires that other tasks (not~~

~~specified by the subject procedure) be performed prior to or concurrent with a procedure step. Where witnessing of a test is required, adequate provisions are made in the test procedure to allow for the required witnessing and to document the witnessing. Cautionary notes, applicable to specific steps, are included and are distinctly identified.~~

~~N. Enclosures~~

~~Data sheets, checklists and diagrams are attached to the procedure. In particular, checklists utilized to avoid or simplify lengthy or complex procedures are attached as enclosures.~~

11.2.4.3 Preoperational Testing Program

Preoperation functional tests are completed prior to UF_6 introduction. Other preoperational tests, not required prior to UF_6 introduction and not related to IROFS, such as office building ventilation tests, may be completed following UF_6 introduction. Tests (or portions of tests), which are not required to be completed before UF_6 introduction are identified in the test plan.

The Preoperational testing program comprises three parts:

- Constructor turnover
- Preoperational functional testing
- Initial start up testing.

Constructor Turnover

The constructor is responsible for completion of all as-built drawing verification, purging, cleaning, vacuum testing, system turnover and initial calibration of instrumentation in accordance with design and installation specifications provided by the architect engineers and vendors. As systems or portions of systems are turned over to LES, preoperational testing shall begin. The ~~Construction Projects Manager~~Director of Commissioning & Plant Control is responsible for coordination of the preoperational and startup test program. LBDCR-08-0046

The preoperational test plan including test summaries for all systems is available to the NRC at least 90 days prior to the start of testing. Subsequent changes to the preoperational test plan are also made available to the NRC. Preoperational testing as a minimum includes all system or component tests required by the pertinent design code which were not performed by the constructor prior to turnover. In addition, preoperational tests include all testing necessary to demonstrate that the IROFS are capable of performing their intended function.

Functional Testing

Preoperational functional testing at the facility consists of that testing conducted to initially determine various facility parameters and to initially verify the capability of SSC to meet performance requirements. The tests conducted are primarily associated with IROFS (QA Level 1) and certain QA Level 2 structures, systems and components, but may also include a number of other tests of a technical or financial interest to LES.

Preoperational functional tests are performed following constructor turnover. The major objective of preoperational functional testing is to verify that IROFS essential to the safe operation of the plant are capable of performing their intended function.

For structures, systems and components that are not QA Level 1, acceptance criteria are established to ensure worker-safety Occupational Safety and Health Administration (OSHA), reliable and efficient operation of the system and to demonstrate the performance of intended functions.

Initial startup testing at the facility consists of that testing which includes initial UF_6 introduction and all subsequent testing through the completion of Enrichment Setting Verification for each cascade. "Enrichment Setting Verification" is the verification of a selected enrichment weight percent by measurement of a physical sample collected during the "Enrichment Setting Verification" test run.

Initial startup testing is performed beginning with the introduction of UF_6 and ending with the start of commercial operation. The purpose of initial startup testing is to ensure safe and orderly UF_6 feeding and to verify parameters assumed in the ISA. Examples of initial startup tests include passivation and the filling phase.

Records of the preoperational and startup tests required prior to operation are maintained. These records include testing schedules and the testing results for all IROFS.

Initial Startup Testing

All aspects of initial startup testing are conducted under appropriate test procedures. See Section 11.4, Procedures Development and Implementation, for a detailed description of facility procedures. The use of properly reviewed and approved test procedures is required for all preoperational and startup tests. The results of each preoperational test are reviewed and approved by the responsible Functional Area Manager or designee before they are used as the basis of continuing the test program. The results of startup testing are reviewed and approved by the Commissioning & ~~Acceptance~~ Plant Control Director. In addition, the results of each individual startup test will receive the same review as that described for preoperation functional tests. All modifications to IROFS that are found necessary are subjected to an evaluation per 10 CFR 70.72 (CFR, 2003e) prior to making the change. | LBDCR-08-0046

The impact of modifications on future and completed testing is evaluated during the 10 CFR 70.72 (CFR, 2003e) evaluation process and retesting is conducted as required.

Copies of approved test procedures are made available to NRC personnel approximately 60 days prior to their intended use, and not less than 60 days prior to the scheduled introduction of UF_6 for startup tests.

The overall preoperational functional testing program is reviewed, prior to initial UF_6 introduction, by the Plant Manager and all Functional Area Managers to ensure that all prerequisite testing is complete.

The facility operating, emergency and surveillance procedures are use-tested throughout the testing program phases and are also used in the development of preoperation functional testing and initial startup testing procedures to the extent practicable. The trial use of operating procedures serves to familiarize operating personnel with systems and plant operation during the testing phases and also serves to ensure the adequacy of the procedures under actual or simulated operating conditions before plant operation begins.

Procedures which cannot be use-tested during the testing program phase are revised based on initial use-testing, operating experience and comparison with the as-built systems. This ensures that these procedures are as accurate and comprehensive as practicable.

11.2.4.4 Operational Testing Program

The operational testing program consists of periodic testing and special testing. Periodic testing is conducted at the facility to monitor various facility parameters and to verify the continuing integrity and capability of facility IROFS. Special testing which may be conducted at the facility is testing which does not fall under any other testing program and is of a non-recurring nature.

The Maintenance Manager has overall responsibility for the development and conduct of the operational testing program and in conjunction with the ~~Operations/Shifts~~Shift Operations Manager and the Quality and Regulatory Affairs Director ensures that all testing commitments and applicable regulatory requirements are met. | LBDCR-08-0046

The HS&E ~~Director~~ Manager and Programs Manager shall ensure that new surveillance requirements or testing commitments are identified to the Maintenance Manager. The Maintenance Manager shall make responsibility assignments for new testing requirements. | LBDCR-08-0046

Surveillance commitments, procedures identified to satisfy these commitments and surveillance procedure responsibility assignments for the facility are identified in a computer database. The database is also used to ensure surveillance testing is completed in the required time interval for all departments.

Test Coordinators are also used for operational testing. The Test Coordinator has the responsibility to be thoroughly familiar with the procedure to be performed. The Test Coordinator should have an adequate period of time in which to review the procedure and the associated system before the start of the test. It is the responsibility of the appropriate section or department head to designate and ensure that each Test Coordinator meets the appropriate requirements. Operational testing is usually performed by each shift. The Test Coordinator, as part of the shift personnel, also performs regular shift duties in performance of the tests.

The Test Coordinator has the following responsibilities regarding the conduct of testing:

A. Verification of all system and plant unit prerequisites

B. Observance of all limits and precautions during the conduct of the test

C. Compliance with the requirements of the facility license and any other facility directives regarding procedure changes and documentation

D. Identifying and taking corrective actions necessary to resolve system deficiencies or discrepancies observed during the conduct of the test

E. Verification of proper data acquisition, evaluation or results, and compliance with stated acceptance criteria

F. Ensuring that adequate personnel safety precautions are observed during the conduct of the test

G. Coordinating and observing additional manpower and support required from other departments or organizations.

Newly hired or transferred employees reporting for work prior to the next regularly scheduled training session must complete nuclear safety training prior to unescorted access into the Controlled Access Area.

Since contractor employees perform diverse tasks in the Controlled Access Area, formal training for these employees is designed to address the type of work they perform. In addition to applicable radiation safety topics, training contents may include Radiation Work Permits, special bioassay sampling, and special precautions for welding, cutting, and grinding in the Controlled Access Area.

These training programs are conducted by instructors assigned by the Training Manager as having the necessary knowledge to address criticality safety and radiation protection. Records of the training programs are maintained as described in Section 11.7, "Records Management."

C. Individuals requiring unescorted access to the Controlled Access Area receive annual retraining. Retraining for individuals is scheduled and reported by means of a computerized tracking system.

D. Contents of the formal nuclear safety training programs are reviewed and updated at least every two years by the ~~HS&E Director~~ Programs Manager, or designee, to ensure that the programs are current and adequate. In addition, at least annually, the contents of the radiation protection sections of the nuclear safety training program are reviewed and updated, as required, by the ~~HS&E Director~~Programs Manager or his designee. LBDCR-08-0046

E. Operational personnel are further instructed in the specific safety requirements of their work assignments by their immediate supervisor or delegate during on-the-job training. Employees must demonstrate understanding of work assignment requirements based on observations by their immediate supervisor or delegate before working without direct supervision. Changes to work procedures including safety requirements are reviewed with operational personnel by their immediate supervisor or delegate.

F. Radiation safety topics are also discussed and reviewed at least annually in roundtable safety meetings held by supervisors or delegates with their workers, and at other meetings held by managers with their employees.

11.3.3.1.2 Fire Brigade Training

The primary purpose of the Fire Brigade Training Program is to develop a group of facility employees skilled in fire prevention, fire fighting techniques, first aid procedures, and emergency response. They are trained and equipped to function as a team for the fighting of fires. The intent of the facility fire brigade is to be a first response effort designed to supplement the local fire department for fires at the plant and not to replace local fire fighters.

The Fire Brigade Training program provides for initial training of all new fire brigade members, semi-annual classroom training and drills, annual practical training, and leadership training for fire brigade leaders.