LOUISIANA ENERGY

January 17, 1994

Mr. John W. N. Hickey, Chief
Enrichment Branch
Division of Fuel Cycle Safety
and Safeguards Branch, NMSS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Re: Docket No.: 70-3070
Louisiana Energy Services
Claiborne Enrichment Center
Revisions to Proposed License Conditions
File: 6046-00-2001.01

Dear Mr. Hickey:

Enclosed are 5 copies of revised pages for the CEC Proposed License Conditions (PLC) (revision 6). Please update your copies of the PLCs following the enclosed Push-Pull Instructions. The changes include clarifications of the Projects Analyst responsibilities, the FSRC audit definition, and radiation air monitor locations.

If there are any questions concerning this, please call me at (704) 382-2834.

Sincerely,

Peter G. LeRoy

Peter G. LeRoy
Licensing Manager

HAH/LNRC94.001

Enclosures

240140

NF04

xc: (w/ one copy of enclosures)

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NOTE

The NRC requested that LES provide 5 complete Proposed License Condition documents for this submission, rather than simply sending the revised pages for insertion. Thus, the enclosed five copies of the CEC PLC are complete, and already include the pages affected by revision 6. The push-pull instructions are included only for information.

Louisiana Energy Services

Proposed License Conditions
Push-Pull Instructions
Revision 6, January 17, 1994

	Remove	Insert
•	"List of Effective Pages" - pages 1 through 4	"List of Effective Pages" - pages 1 through 4
•	pages 2-5 and 2-9	pages 2-5 and 2-9
•	page 3-5	page 3-5

Notes:

1) *Each page affected by this revision has the month and year of the revision printed in the lower right hand corner of the page.*

2) *The "List of Effective Pages" contains the latest revision and date of the revision affecting the page.*

3) *All changes or additions to text of each document are indicated by a sidebar (|) in the right hand margin. In the case of deletion of text, the sidebar appears in the right hand margin with a perpendicular line towards the text (⊣) indicating where material was deleted.*

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PROPOSED LICENSE CONDITIONS
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NOTE: p = page
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Proposed License Conditions
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INTRODUCTION

This document - Louisiana Energy Services (LES), Proposed License Conditions - provides proposed license conditions for the Claiborne Enrichment Center (CEC). These license conditions state to what performance requirements LES is committed. This document follows the format and content suggested for license conditions by Regulatory Guide 3.52, "Standard Format and Content for the Health and Safety Sections of License Renewal Applications for Uranium Fuel Fabrication" (Revision 1, November 1986). As provided in the Introduction to Regulatory Guide 3.52, "[i]nformation provided in previous submittals...filed with the NRC under the license may be incorporated by reference provided such references are clear and specific." Therefore, this document does not contain the detailed descriptive information that has been provided in the Safety Analysis Report (SAR). This document is written to permit inspection and verification of the stated performance requirements.

1.0 STANDARD CONDITIONS AND SPECIAL AUTHORIZATIONS

1.1 NAME, ADDRESS, AND CORPORATE INFORMATION

Louisiana Energy Services, L.P. (LES) is a Delaware limited partnership. LES has no subsidiaries or divisions.

LES' principal offices are located in Washington, D.C. The address is as follows:

2600 Virginia Ave., N.W., Suite 608
Washington, D.C. 20037

LES also has an information office located in Homer, Louisiana. Homer is the parish seat of Claiborne Parish where the facility is located. The information office address is:

518 East Main Street, PO Box 809
Homer, Louisiana 71040

The site address is:

Route #4
Homer, Louisiana 71040

1.2 SITE LOCATION

The facility is located in Claiborne Parish, Louisiana, approximately five miles to the northeast of Homer, Louisiana. It is located approximately in the center of 442 acres of land, on a 70 acre developed area. Licensed activities occur in the following areas of the developed 70 acres:

Separations Building which includes the Technical Services Area (TSA).
Cylinder Receipt and Dispatch Building
Product, Feed, and Depleted UF_6 Storage Areas.

1. 3 POSSESSION LIMITS

The following types, maximum possession quantities, and forms of byproduct, source, and special nuclear materials are authorized:

A. Special Nuclear Material:

- 1,543,000 kilograms (3,402,000 pounds)* of uranium (primarily in the form of uranium hexafluoride (UF_6)) enriched above natural but no more than 5.000 weight percent in the U^{235} isotope. This maximum enrichment value includes considerations of measurement uncertainty.

- This uranium possessed at the CEC will be in the form of UF_6 and other uranium compounds (e.g., uranium compounds in wastes) and will be present in all three physical forms - gas, liquid and solid.

B. Source material:

- The maximum quantity of source material possessed in any form shall not exceed of 62,585,000 kilograms (138,000,000 pounds) of uranium.

- The maximum quantity of source material possessed in the form of natural uranium feed material shall not exceed 8,526,000 kilograms (18,800,000 pounds) of uranium.

- The maximum quantity of source material possessed in the form of depleted UF_6 derived from enrichment of natural uranium shall be the quantity produced during 15 years of CEC operation, not to exceed 80,000 metric tons of depleted UF_6 (54,059,000 kilograms (119,200,000 pounds) of uranium). Specifically, no cylinder filled with depleted UF_6 shall be stored on site longer than 15 years following placement of that cylinder in the depleted UF_6 storage area.

* 1 kilogram ≈ 2.205 lbs.

- This uranium possessed at the CEC will primarily be in the form of UF_6, will include other uranium compounds (e.g., uranium compounds in wastes) and will be present in all three physical forms - gas, liquid and solid.

C. Byproduct material:

RADIONUCLIDE	CURIE LIMIT	USE
H-3	1.0	Instrument calibration and/or quality control
C-14	0.5	Instrument calibration and/or quality control
Cr-51	0.1	Instrument calibration and/or quality control
Mn-54	0.1	Instrument calibration and/or quality control
Fe-55	0.1	Instrument calibration and/or quality control
Fe-59	0.1	Instrument calibration and/or quality control
Co-57	0.1	Instrument calibration and/or quality control
Co-58	0.1	Instrument calibration and/or quality control
Co-60 (sealed only)	0.1	Instrument calibration and/or quality control
Co-60 (any form)	0.02	Instrument calibration and/or quality control
Ni-63	0.25	Instrument calibration and/or quality control and/or internal instrument standard
Ni-65	0.25	Instrument calibration and/or quality control and/or internal instrument standard
Zn-65	0.1	Instrument calibration and/or quality control
Sr-89	0.1	Instrument calibration and/or quality control
Sr-90	0.1	Instrument calibration and/or quality control
Y-90	0.1	Instrument calibration and/or quality control
Tc-99*	1.1	(See note *)
Ag-110m	0.1	Instrument calibration and/or quality control
Cd-115m	0.1	Instrument calibration and/or quality control
I-131	0.1	Instrument calibration and/or quality control
Ba-133	0.25	Instrument calibration and/or quality control and/or internal instrument standard
Cs-134	0.3	Instrument calibration and/or quality control and/or internal instrument standard

RADIONUCLIDE	CURIE LIMIT	USE
Cs-137 (sealed only)	0.3	Instrument calibration and/or quality control and/or internal instrument standard
Cs-137 (any form)	0.05	Instrument calibration and/or quality control and/or internal instrument standard
Eu-152	0.1	Instrument calibration and/or quality control
Ra-224	0.1	Instrument calibration and/or quality control
Ra-226	0.1	Instrument calibration and/or quality control
Ra-228	0.1	Instrument calibration and/or quality control
Ac-226	0.1	Instrument calibration and/or quality control
Ac-227	0.1	Instrument calibration and/or quality control
Ac-228	0.1	Instrument calibration and/or quality control
Th-228	0.1	Instrument calibration and/or quality control
Th-229	0.1	Instrument calibration and/or quality control
Th-230	0.1	Instrument calibration and/or quality control
Th-232	0.1	Instrument calibration and/or quality control
Th-234	0.1	Instrument calibration and/or quality control
U-233	0.1	Instrument calibration and/or quality control
U-234	0.1	Instrument calibration and/or quality control
U-235	0.1	Instrument calibration and/or quality control
U-236	0.1	Instrument calibration and/or quality control
U-238	0.1	Instrument calibration and/or quality control
Pa-231	0.1	Instrument calibration and/or quality control
Pa-232	0.1	Instrument calibration and/or quality control
Np-234	0.1	Instrument calibration and/or quality control
Np-235	0.1	Instrument calibration and/or quality control
Am-241	0.1	Instrument calibration and/or quality control

*Tc-99 shall not exceed 0.001 micrograms per gram of total uranium in accordance with ASTM Standard Specification for Uranium Hexafluoride for Enrichment (C 787-90). (This is included only to address trace impurities in UF_6 containers.)

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

1.4 AUTHORIZED ACTIVITIES

The following activities are authorized to be performed at the CEC:

A. Receive, possess, use, store and prepare for shipment authorized byproduct, source and special nuclear material in accordance with 10 C.F.R. Parts 19, 20, 21, 30, 40, 70, 71, 73, 74 and 75.

B. Receive, possess, use, store and ship classified information and matter in accordance with 10 C.F.R. Parts 10, 25 and 95.

C. Produce uranium enriched in the U^{235} isotope up to and including 5.000% by weight.

D. Chemical, spectrometric, radio-chemical and non-destructive assay analyses of source and special nuclear material, including effluents and stored waste.

E. Treatment, storage and/or preparation for off-site disposal of liquid and solid wastes produced or handled at the CEC. This includes mixed and radioactive wastes.

F. Decontamination of equipment before maintenance, repair or disposal and decontamination of contaminated wastes to reduce contamination levels.

1.4.1 Location Where Material Is Used

The cylinders are unloaded, weighed for inventory control and inspected for integrity and damage at the Cylinder Receipt and Dispatch Building. Cylinders are stored in the Feed, Product, and Tails Storage Areas.

Inside the Separations Building, the UF_6 is enriched to no more than 5.000 weight percent in the U^{235} isotope by mechanical separation.

All byproduct materials to be used for calibration or radiography purposes are used and stored inside the Separations Building.

1.5 EXEMPTIONS AND SPECIAL AUTHORIZATIONS

1.5.1 Safety Evaluation Process

LES shall be authorized to make facility, process, and procedural changes without prior NRC approval provided that any proposed change does not involve:

a) a change to the LES CEC License Conditions,

b) a significant increase in the probability of occurrence or consequences of an accident or malfunction of a structure, system, or component important to safety,

c) the creation of the possibility for an accident of a different type than any evaluated previously in the Safety Analysis Report,

d) a significant change in the types or significant increase in the amount of any radioactive effluents that may be released off site, or

e) a significant increase in individual or cumulative occupational radiation exposure.

All proposed changes to facilities, processes, and procedures shall be subjected to a safety evaluation prior to making the change. The analysis shall determine and document whether the change meets any of the above criteria requiring prior NRC approval, shall state the basis for the determination, shall be independently reviewed, and shall be approved by the CEC manager or designee. The approver shall be responsible for ensuring that the independent reviewer(s) are qualified to perform the review for all potentially affected areas of safety concern. Documentation of the safety evaluation shall include the bases for the determination. Records of these evaluations shall be maintained for the life of the plant in accordance with Section 2.9.

Any proposed change which involves any of the criteria in a) through e) above shall not be made without prior NRC approval.

Changes to the facility or to operations which involve chemical, radiation hazard, or criticality considerations shall be reviewed and approved in writing by the Technical Support Superintendent or designee prior to making the change. For changes which involve

modifications to the parameters on which criticality safety is established, review shall include completion of new or revised analyses. Changes which involve a change to the facility as described in the Safety Analysis Report shall be reviewed and approved by the Compliance Superintendent or designee.

The Safety Analysis Report will be updated at least biennially. LES shall implement the QA program as described in Chapter 10 of the SAR. Changes to the LES Quality Assurance Program as described in Chapter 10 of the SAR which do not decrease the effectiveness of the Quality Assurance Program will be submitted as part of the biennial update of the SAR. Proposed changes which decrease the effectiveness of the Quality Assurance Program shall not be implemented without prior approval of the NRC.

1.5.2 Exemptions And Special Authorizations

A. The following authorizations are based upon the finding that these arrangements are not inimical to the common defense and security of the United States. Entities may without individual application, or other action, create or transfer:

- lessor ownership interests through sale and simultaneous leaseback of the facility or a portion thereof where the lessor is a U.S. citizen or domiciliary organization;

- limited partnership interests in the facility, provided that licensee shall report changes to limited partnership interests as stated in the license application dated January 31, 1991, as amended, to the Commission; or

- the mortgage, pledge, or lien of or upon such leasehold or limited partnership interests.

Any such mortgage, pledge, lien, sale and leaseback or limited partnership interest must be entered into for the purpose of obtaining financing and such interest must not carry with it the present right to possession of the facility or control of licensed activities.

The rights of any creditor or the assignee of such creditor may be exercised only in compliance with and subject to the same requirements and restrictions as would apply

to the licensee pursuant to the provisions of the license, the Atomic Energy Act of 1954, as amended, and regulations issued by the Commission pursuant to said act.

No creditor or assignee of such creditor may take possession of the facility or purport to exercise control over licensed activities prior to the issuance of a license from the Commission authorizing such possession, or the consent of the Commission to the transfer of the license.

"Creditor" as used herein includes, without implied limitation:

- The trustee under any mortgage, pledge or lien of or upon a facility made to secure any creditor;

- Any trustee or receiver of the facility appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by such mortgage, pledge or lien or for the benefit of any lessor or trustee under a sale and leaseback transaction or limited partner;

- Any lessor or trustee under a sale and leaseback transaction or the legal representative or assignees of such lessor or trustee;

- Any limited partner or the assignee or legal representative of such limited partner;

- Any purchaser of such facility at the sale thereof upon foreclosure of such mortgage, pledge, or lien or any purchaser of such facility upon exercise of any power of sale contained in any such mortgage, pledge, or lien or in any sale and leaseback or limited partnership agreement; or

- Any assignee of any such purchaser.

Provided, however, that nothing in the foregoing conditions shall preclude the licensee from seeking Commission approval of the creation or transfer of a financial interest on a case-by-case basis. LES shall inform the NRC of any changes in LES ownership, liens, or limited partnership, within 60 days of the change(s).

B. Decontaminated material and equipment may be transferred to an unrestricted area and may be released from the facility for unrestricted use. Decontamination shall meet the guidelines of the NRC document "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material", U.S. NRC, Division of Fuel Cycle Safety and Safeguards, April, 1993. 4 pp. This reference is provided as Appendix A.

C. LES is exempted from the requirements of 10 CFR § 20.1904 "Labeling containers" for those areas within the Controlled Access Area in which radioactive materials are processed, used, or stored, where it is deemed impractical to label individual containers. Instead, a sign stating "Every container in this area may contain radioactive material" shall be posted.

1.6 FINANCIAL INFORMATION AND COMMITMENTS

A. LES shall submit annually to the NRC its financial statements, including statements of income, assets, liabilities, net worth, and cash flow. Any changes to construction and operating budgets and/or changes in ownership shall be included with this submission. The report for each calendar year shall be due by June 30th of the following calendar year.

B. LES shall establish and maintain a tails disposal fund based on expected tails disposal costs as tails are produced. LES shall determine and update expected tails disposal unit costs at least every five years.

C. Reductions of the nuclear liability insurance below the amount of $200 million shall not be made without prior NRC approval.

2.0 ORGANIZATION AND ADMINISTRATION

The requirements of Sections 2.1 through 2.8 shall be effective 60 days prior to receipt of source material at the CEC.

2.1 ORGANIZATIONAL RESPONSIBILITIES AND AUTHORITY

The following key managerial functions shall be performed at the CEC. Except where specifically noted, more than one function may be assumed by one individual. An organizational chart for the functions outlined below is provided in Figure 2.1-1. As a minimum, the CEC Manager and the below-listed superintendents have authority to shut down operations that threaten the health and safety of plant personnel, the public, or the environment.

A. CEC Manager

The CEC Manager shall report to the LES President and shall have direct responsibility for operation of the facility in a safe, reliable and efficient manner. The CEC Manager shall be responsible for proper selection of CEC staff for all key positions included in Section 2.1 and positions on the Facility Safety Review Committee. The CEC Manager shall be responsible for 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. The CEC Manager shall bear the responsibility for compliance with the facility license.

B. Quality Assurance Manager

The Quality Assurance (QA) Manager shall report to the CEC Manager and shall be responsible for implementing the Quality Assurance Program for the facility. This includes responsibility for ensuring all activities at the facility affecting quality are performed in accordance with appropriate regulations, codes and standards. This position shall be independent from other management positions at the facility to ensure the QA Manager has direct access to the CEC Manager for matters affecting quality.

C. Operations Superintendent

The Operations Superintendent shall report to the CEC Manager and shall have 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 periodic testing of equipment to ensure safe and efficient operation. In the event of the absence of the CEC Manager, the Operations Superintendent may assume the responsibilities and authorities of the CEC Manager.

D. Integrated Scheduling Superintendent

The Integrated Scheduling (IS) Superintendent shall report to the CEC Manager and shall have the responsibility of directing the scheduling of enrichment operations to ensure smooth operation of the facility. This includes activities such as ensuring proper feed material and maintenance equipment is available for the facility. The IS Superintendent shall also be responsible for the training program described in Section 2.5 and for providing administrative and human resource services to the facility. In the event of the absence of the CEC Manager, the IS Superintendent may assume the responsibilities and authorities of the CEC Manager.

E. Maintenance Superintendent

The Maintenance Superintendent shall report to the CEC Manager and shall have the responsibility of directing and scheduling maintenance activities to ensure proper operation of the facility. This includes activities such as repair and preventive maintenance of facility equipment. In the event of the absence of the CEC Manager, the Maintenance Superintendent may assume the responsibilities and authorities of the CEC Manager.

F. Compliance Superintendent

The Compliance Superintendent shall report to the CEC Manager and shall have the responsibility of directing the activities that ensure the facility maintains compliance with appropriate rules, regulations and codes. This includes activities associated with physical security, classified matter and information, licensing, emergency preparedness, safeguarding of special nuclear material and compliance with environmental

regulations. Changes to the facility or to operations which involve a change to the facility as described in the Safety Analysis Report shall be reviewed and approved by the Compliance Superintendent or designee. In the event of the absence of the CEC Manager, the Compliance Superintendent may assume the responsibilities and authorities of the CEC Manager.

G. Technical Support Superintendent

The Technical Support (TS) Superintendent shall report to the CEC Manager and shall have the responsibility of providing technical support to the facility. This includes activities associated with health physics, criticality safety, chemistry, industrial safety and engineering and computer support. Changes to the facility or to operations which involve chemical, radiation hazard, or criticality considerations shall be reviewed and approved in writing by the Technical Support Superintendent or designee prior to making the change. In the event of the absence of the CEC Manager, the Technical Support Superintendent may assume the responsibilities and authorities of the CEC Manager.

H. Security Manager

The Security Manager shall report to the Compliance Superintendent and shall have the responsibility for directing the activities of security personnel to ensure the physical protection of the facility. The Security Manager shall also be responsible for the protection of classified matter and information at the facility and obtaining proper 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 CEC Manager.

I. Safeguards Manager

The Safeguards Manager shall report to the Compliance Superintendent and shall have the responsibility for ensuring the proper implementation of the Fundamental Nuclear Material Control (FNMC) Plan. This position shall be separate from and independent of the operations, maintenance, and technical support departments to ensure a definite division between the safeguards group and the other departments. In matters involving safeguards, the Safeguards Manager has direct access to the CEC Manager.

J. Emergency Preparedness Manager

The Emergency Preparedness Manager shall report to the Compliance Superintendent and shall have 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 and facility support personnel and the conduct of periodic drills to ensure facility personnel training is maintained up to date.

K. Health Physics Manager

The Health Physics Manager shall report to the Technical Support Superintendent and shall have the responsibility for implementing the health physics program. Duties shall include the training of personnel in use of radiological program support equipment, control of radiation exposure of personnel, continuous determination of the radiological status of the facility, and conducting the radiological environmental monitoring program.

During emergency conditions the Health Physics Manager's duties shall 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, and
- taking prime responsibility for decontamination activities.

In matters involving radiological protection, the Health Physics Manager has direct access to the CEC Manager.

L. Projects Manager

The Projects Manager shall report to the Technical Support Superintendent and shall have the responsibility for the implementation of facility modifications and the approval of facility procedures and modifications for criticality safety. The Projects Manager also provides engineering support as needed to support facility operation and maintenance. This support includes performance testing of systems and equipment.

A Projects Analyst shall be on the staff of the Projects Manager. The Projects Analyst responsibilities shall include preparation or review of criticality safety evaluations, and conducting and reporting quarterly nuclear criticality safety inspections.

M. Chemistry Manager

The Chemistry Manager shall report to the Technical Support Superintendent and shall have the responsibility for the implementation of chemistry analysis and safety programs and procedures for the facility. This includes effluent sample collection, chemical analysis of effluents, comparison of effluent analysis results to limits, chemical safety programs, and reporting of chemical analysis of effluents to appropriate regulatory agencies.

N. Industrial Safety Manager

The Industrial Safety Manager shall report to the Technical Support Superintendent and shall have the responsibility for the implementation of facility industrial safety programs and procedures. This shall include programs and procedures for training individuals in safety and maintaining the performance of the facility fire protection systems.

2.2 PERSONNEL EDUCATION AND EXPERIENCE REQUIREMENTS

The minimum qualification requirements for the facility functions that are directly responsible for its safe operation shall be as outlined below. The nuclear experience of each individual shall be determined to be acceptable by the CEC 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

de mmissioning), and (b) experience with chemical materials and/or processes. Different ex ience requirements may be approved by the CEC Manager only as specified in the following requirements for key positions. This shall be done in writing and only on a case by case basis.

A. CEC Manager

The CEC Manager shall be appointed by the President of LES as the overall manager of the Claiborne Enrichment Center. This appointment reflects confidence in the individual's ability as an effective programs and business manager. The CEC 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 CEC Manager shall have, as a minimum, a bachelor's degree (or equivalent) in an engineering or scientific field and six years of responsible nuclear experience.

B. Quality Assurance Manager

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

C. Operations Superintendent

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

D. Integrated Scheduling Superintendent

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

E. Maintenance Superintendent

The Maintenance Superintendent 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. Compliance Superintendent

The Compliance Superintendent 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 Support Superintendent

The Technical Support (TS) Superintendent 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. Security Manager

The Security Manager shall have a minimum of five years of experience in the responsible management of physical security at a facility requiring security capabilities similar to those required for the CEC. No credit for academic training may be taken toward fulfilling this experience requirement.

I. Safeguards Manager

The Safeguards Manager shall have five years of experience in the management of a safeguards program for special nuclear material, including responsibilities for material control, material accountability, and physical security. No credit for academic training may be taken toward fulfilling this experience requirement.

J. Emergency Preparedness Manager

The Emergency Preparedness Manager shall have two years of experience in the implementation of emergency plans and procedures at a nuclear facility. No credit for academic training may be taken toward fulfilling this experience requirement.

K. Health Physics Manager

The Health Physics 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 health physics program. At least two years of experience shall be at a facility that processes uranium, including uranium in soluble form.

L. Projects Manager

The Projects Manager shall have, as a minimum, a BS degree (or equivalent) in an engineering or scientific field and three years of appropriate, responsible nuclear experience. The Projects Manager shall also have at least one year of experience in the administration of nuclear criticality safety reviews.

Within the Projects group shall be a Projects Analyst with a minimum of two years experience in the implementation of a criticality safety program. This individual shall hold a BS degree (or equivalent) in an engineering or scientific field and have successfully completed a training program, appropriate to the scope of operations, in the physics of criticality and in associated safety practices.

Should a change to the facility require a nuclear criticality safety evaluation, the analysis shall be performed by an individual who, as a minimum, possesses the qualifications of the Projects Analyst. An independent review of the analysis shall be performed by an individual who, as a minimum, has the education and training of a Projects Analyst. In addition, this individual shall have at least two years of experience performing criticality safety analyses and implementing criticality safety programs.

M. Chemistry Manager

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

N. Industrial Safety Manager

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

2.3 SAFETY COMMITTEE

The Facility Safety Review Committee (FSRC) shall report to the CEC Manager, and shall provide technical and administrative review of CEC operations which could impact plant worker and public safety. The scope of reviews conducted by the FSRC shall include, as a minimum, reviews of ongoing and proposed radiological, chemical, industrial and nuclear criticality safety activities and practices. Radiological, chemical, industrial and nuclear criticality safety investigation, audit and inspection reports shall be included in the reviews. FSRC reviews shall also address the following:

- Environmental protection
- ALARA policy implementation
- Changes in facility design or operations
- Training programs
- Incident reports, including root cause evaluations, and violations of regulations or license conditions.
- QA program

The FSRC shall conduct at least one facility audit per year for all of the above FSRC review areas. This audit is a management assessment/examination, not an audit that is performed by Quality Assurance personnel in accordance with section 2.7.

The Facility Safety Review Committee shall be composed of at least five (5) members, including the Director. Members of the FSRC may be from the LES corporate office or CEC technical staff. The five members shall include experts on operations and all safety disciplines (criticality, radiological, chemical, industrial). The Director, members and alternate members of the Facility Safety Review Committee shall be formally appointed by the CEC Manager; shall have an academic degree in an engineering or physical science field; and, in addition, shall have a minimum of three years of technical experience, of which a minimum of one year shall relate directly to one or more of the safety disciplines (criticality, radiological, chemical, industrial). At least one member of the FSRC shall have the

qualifications of the Projects Analyst specified in section 2.2L. Members of the FSRC shall receive training on possible error modes of management systems.

The Facility Safety Review Committee shall meet at least once per calendar quarter during the period of initial operation. (The period of initial operation is defined on a plant unit basis. It includes first-time operation of a plant unit beginning with initial fill of the first cascade until 1 month after steady-state operation of that unit's last cascade.) Subsequent to the period of initial operation, the meeting frequency shall not be less than three (3) each calendar year with a maximum interval of 180 days between any two consecutive meetings.

Review meetings shall be held within 60 days of any incident which is reportable to the NRC. These meetings may be combined with regular meetings. Following a reportable incident, the FSRC 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 FSRC meeting and review shall be forwarded to the station manager and superintendents within 30 days and be retained for the duration of the facility license.

2.4 APPROVAL AUTHORITY FOR PERSONNEL SELECTION

The assignment of individuals to assume the key functions and responsibilities described in Section 2.1 and the FSRC shall be approved by the CEC Manager. The personnel requirements specified in Section 2.2 shall be incorporated into administrative procedures for hiring of personnel.

2.5 TRAINING

Formal, planned training programs shall be established for CEC employees. Indoctrination training shall be provided to all employees before the employees perform work at the CEC and shall address:

- safety preparedness for all safety disciplines (i.e., criticality, radiological, chemical, industrial - including fire protection safety),
- ALARA practices,
- issues related to 10 CFR Part 19,

- environmental protection, and
- emergency procedures.

In depth training programs shall be provided to individuals depending on job requirements in the areas of radiological safety (for all personnel with access to restricted areas) and in criticality safety control. Nuclear criticality safety training shall satisfy the requirements of ANSI/ANS 8.20 - 1991 "Nuclear Criticality Safety Training." All LES employees engaged in QA related activities shall receive performance based QA training. All visitors and contractors shall receive appropriate training prior to visiting the facility and/or performing work at the facility. Retraining of personnel previously trained shall be performed for radiological, chemical, industrial, and criticality safety at least annually, and shall include procedure changes, and updating and changes in required skills. Changes to training shall be implemented if indicated due to incidents potentially compromising safety, or if changes are made to facilities or processes. Records of training successfully completed shall be maintained in accordance with Section 2.9 for all personnel.

The training program shall be evaluated at least every two years (no more than 27-month intervals), and the program content shall be reviewed to ensure the programs are current and adequate. The effectiveness of all required training shall be evaluated with appropriate measurement tools.

2.6 OPERATING PROCEDURES

Activities involving licensed materials shall be conducted through the use of approved written procedures. Applicable procedure and training requirements shall be satisfied prior to use of the procedure.

All procedures shall be reviewed for adequacy at least biennially. The Operations Superintendent shall be responsible for this review.

All new procedures or changes to existing procedures shall be subjected to the safety evaluation requirements as described in Section 1.5.1.

2.6.1 Preparation Of Procedures

Procedures shall be prepared, reviewed, and approved in accordance with written procedure requirements. Procedures shall identify limits and controls important to safety and environmental protection. Maintenance and testing, including calibration, procedures shall be written and implemented for structures, systems, and components important to safety. Procedures important to safety shall be subjected to an independent review. The designated approver shall determine whether or not any additional, cross-disciplinary review is required. The CEC Manager or designee shall approve all procedures. Policies shall be developed and implemented for an integrated approach to procedure development and approval.

2.6.2 Changes To Procedures

Changes to procedures shall be processed as described below.

A. The preparer documents the change as well as the reason for the change.

B. A safety evaluation shall be performed as specified in Section 1.5.1. If the safety evaluation reveals that a change to the license is needed to implement the proposed changes, the change is not implemented until prior approval is received from the NRC.

C. The procedure with proposed changes shall be reviewed by a qualified reviewer.

D. The CEC Manager, a superintendent, or a designee approved by the CEC manager shall be responsible for approving procedure changes, and for determining whether a cross-disciplinary review is necessary, and by which group(s). The independent review shall be by an individual outside of the group (i.e., responsibility of a different manager) that prepared the procedure change. The need for the following cross-disciplinary reviews shall be considered, as a minimum:

- For proposed changes having a potential impact on chemical or radiation safety, a review shall be performed for chemical and radiation hazards, including radiological effluents. Approved changes shall be so indicated in writing by the Technical Support Superintendent or designee.

- For proposed changes having a potential impact on criticality safety, a criticality safety review shall be performed. Approved changes shall be so indicated in writing by the Technical Support Superintendent or designee.

- For proposed changes potentially affecting Material Control & Accountability, a material control review shall be performed.

- The approver of a procedure change is responsible for ensuring the procedure change was prepared and reviewed by qualified individuals.

E. Records of completed cross-functional reviews shall be maintained in accordance with Section 2.9 for all changes to safety-related procedures.

2.6.3 Distribution Of Procedures

Originally issued approved procedures and approved procedure revisions shall be distributed in a controlled manner.

The CEC shall establish and maintain an index of the distribution of copies of facility procedures and manuals (e.g., Department Directives Manual, Operations and Maintenance Manuals). Revisions to facility manuals shall be controlled and distributed consistently with this index. Facility manual indexes shall be regularly reviewed and updated. Superintendents or their designees shall be responsible for ensuring all personnel doing work which require the use of the procedures have ready access to controlled copies of the procedures.

2.7 INTERNAL AUDITS AND INSPECTIONS

Audits and inspections are defined in Appendix C.

Audits and inspections shall be conducted by Quality Assurance group personnel and other individuals technically qualified to perform audits and inspections to determine that plant operations are conducted in compliance with regulatory requirements, license conditions, and written procedures. These audits and inspections are the responsibility of the QA Manager. As a minimum, they shall assess programs and activities related to:

- preventive maintenance,
- training,
- emergency planning,
- radiation protection,
- criticality safety control,
- hazardous chemical safety,
- fire protection,
- environmental protection, and
- quality assurance activities performed by personnel outside the QA organization

Audits shall be performed in accordance with a written plan which identifies and schedules audits to be performed. Audit team members shall not have direct responsibility for the function and area being audited. Team members shall have technical expertise or experience in the area being audited and shall be indoctrinated in audit techniques. Audits shall be conducted on an annual basis.

The results of the audits shall be provided in a written report within 30 days of the audit to the CEC Manager, the FSRC, and the superintendent responsible for the activities audited. Any deficiencies noted in the audits shall be responded to in writing by the Superintendent or designee within 30 days, tracked to completion by an individual designated by the QA organization, and re-examined during future audits to ensure corrective action has been completed.

Inspections shall be performed routinely by qualified staff personnel that are not directly responsible for production activities being inspected. Inspections shall be conducted at least semi-annually. Deficiencies noted during the inspection requiring corrective action shall be forwarded to the superintendent or designee of the applicable area or function for action. The responsible superintendent, or designee, shall respond in writing to deficiencies noted in inspections. Future inspections shall include a review to evaluate if corrective actions have been effective.

Inspections shall be performed in accordance with a written plan by qualified staff personnel that are not directly responsible for production activities being inspected. Inspections shall be conducted in accordance with a written plan with a frequency commensurate with the activity being inspected. Deficiencies noted during the inspection requiring corrective action shall be documented in a written report going to the appropriate level of management for follow-up

action. Future inspections shall include a review to evaluate if corrective actions have been effective.

2.8 INVESTIGATIONS AND REPORTING

To comply with the reporting requirements of 10 C.F.R. (e.g., 10 C.F.R. § 70.50), off-normal occurrences shall be reported to and investigated by the Compliance Superintendent. Depending upon the severity of the occurrence, the occurrence may be reportable to a governmental agency. Reporting any occurrence to the appropriate agency(s) shall be the responsibility of the Compliance Superintendent.

The process of incident identification, investigation, root cause analysis, environmental protection analysis, recording, reporting, and follow-up shall be addressed in and performed by written procedures. Radiological, criticality, hazardous chemical, and industrial safety requirements shall be addressed. Guidance for classifying occurrences shall be contained in facility procedures, including a list of threshold off-normal occurrences. Records of reports shall be maintained as specified in Section 2.9.

The Compliance Superintendent shall maintain a record of corrective actions to be implemented as a result of off-normal occurrence investigations. These corrective actions shall include documenting lessons learned, and implementing worker training where indicated, and shall be tracked to completion by the Compliance Superintendent or designee.

2.9 RECORDS

Records related to health and safety shall be maintained in accordance with the requirements of Title 10, Code of Federal Regulations. The following records shall be retained for at least the periods indicated:

The following shall be retained for at least 3 years:

A. Records of instrument calibrations;

B. Records of changes made to procedures;

C. Records of audits and inspections

D. ALARA findings

The following records shall be retained for the duration of the facility license:

E. Records of all Reportable Events;

F. Records and drawing changes reflecting design modifications made to systems and equipment important to worker or public safety (e.g., changes to criticality analyses);

G. Records of radioactive shipments;

H. Records of radiation exposure for all individuals entering radiation control areas (including for example, ALARA findings, routine radiation survey results);

I. Records of gaseous and liquid radioactive and hazardous material released to the environs;

J. Records of training, qualification, and requalification as required by Section 2.5 for current and past members of the CEC staff;

K. Records of safety evaluations described in Section 1.5.1;

L. Records of analyses required by the Radiological Environmental Monitoring Program that would permit evaluation of the accuracy of the analyses at a later date. These should include procedures effective at specified times and QA records showing that these procedures were followed;

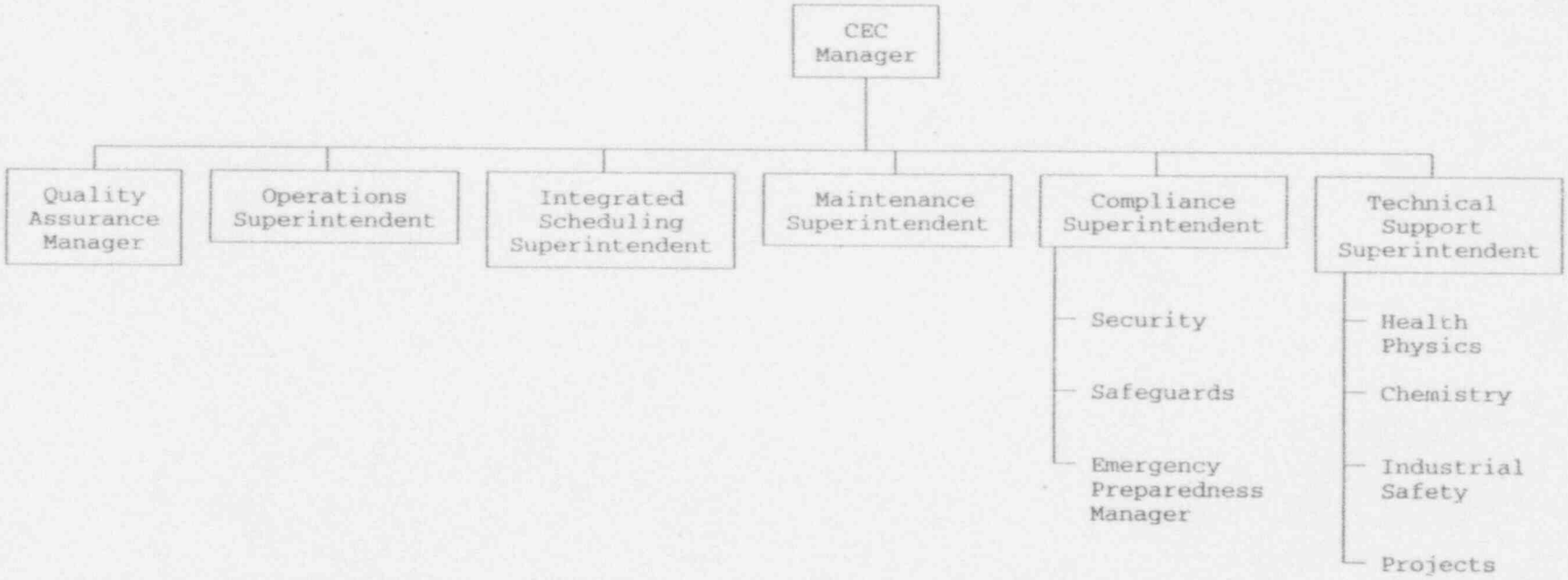
M. Records of quality assurance activities required by the Quality Assurance Program. These shall be retained for a period of time as recommended by NQA-1-1989;

N. Records of plant radiation surveys and environmental surveys.

O. Records of FSRC activities

Records shall be stored to permit easy retrievability. These records document the quality of items and activities performed at the CEC and shall be stored in cabinets or storage facilities which protect the records from damage from fire, water, dust, extreme humidity and extreme temperatures.

Figure 2.1-1
Louisiana Energy Services
Claiborne Enrichment Center
Key Managerial Functions



3.0 RADIATION PROTECTION

3.1 SPECIAL ADMINISTRATIVE REQUIREMENTS

3.1.1 ALARA Policy

LES shall maintain and implement a policy to keep occupational radiation exposures and radioactive contamination in effluents "As Low As Reasonably Achievable" (ALARA). Implementation of this policy shall be the responsibility of the Health Physics Manager. An ALARA report shall be prepared annually and shall address reviews of radiological exposure and effluent release data for trends, audits and inspections, and the use, maintenance, and surveillance of equipment for exposure and effluent control. The HP Manager shall be responsible for preparation of the report. Copies of the report shall be submitted to the CEC Manager and the Facility Safety Review Committee.

3.1.2 Radiation Work Permit Procedure

Radiation work permits (RWPs) shall be issued for activities involving licensed materials not covered by operating procedures and where radioactivity levels are likely to exceed *airborne radioactivity area* limits specified in 10 C.F.R. § 20.1003, or wherever deemed necessary by the HP Manager to maintain dose ALARA. Criteria for ensuring RWPs are issued and closed out properly shall be as follows:

- The HP Manager or designee is responsible for determining the need for, issuing, and closing out RWPs.

- Planned activities or changes to activities inside Radiation Control Areas (RCAs) and Radiation Control Zones (RCZs) or with licensed materials shall be reviewed by the HP Manager or designee for potential for causing radiation exposures to exceed action levels and radioactive contamination.

- RWPs shall include requirements for any necessary safety controls, personnel monitoring devices, protective clothing, respiratory protective equipment, air sampling equipment, and health physics coverage needed for the activity.

- Copies of current RWPs shall be posted at the location of the work area.

- RWPs shall clearly define and limit the work activities to which they apply. The RWPs shall be closed out when the applicable work activities are terminated.

3.1.3 Written Procedures

Activities related to radiation protection (e.g., decontamination and maintenance of processing equipment, radiation monitoring) shall be conducted in accordance with approved written procedures. Distribution of procedures is described in Section 2.6.

3.2 TECHNICAL REQUIREMENTS

3.2.1 Restricted Areas - Personnel Contamination Control

Radiological access zones shall be defined and marked to control contamination.

3.2.1.1 Radiation Control Areas

Radiation Control Areas (RCAs) are defined as follows:

- Area where airborne concentrations of radionuclides (corrected for background) are sufficient to have the area designated as an "Airborne Radioactivity Area" as defined in 10 CFR 20.1003.

- Area where the radiation levels (corrected for background) are sufficient to have the area designated as a "Radiation Area" as defined in 10 CFR 20.1003.

- Area where the contamination levels (sum of fixed and removable, corrected for background) exceed 150 dpm/100cm^2 alpha or 150 dpm/100cm^2 beta/gamma.

- Area where the intake of soluble uranium following a 40 hour exposure in one week is likely to reach 1 milligram.

Personnel that have not been trained in radiation protection procedures shall not be allowed access to the RCA without escort by trained personnel. Access to and egress from an RCA shall be through monitor stations at the RCA boundary. All personnel shall be required to

monitor themselves prior to exiting the RCA using monitoring instruments which detect gross alpha contamination.

3.2.1.2 Radiation Control Zones

Greater access control shall be provided by establishing Radiation Control Zones (RCZs) wherever any of the following conditions are likely to exist:

- Area where airborne concentrations of radionuclides (corrected for background) are sufficient to have the area designated as an "Airborne Radioactivity Area" as defined in 10 CFR 20.1003 and will result in a Committed Effective Dose Equivalent (CEDE) that is greater than 25% of the annual organ or total body 10 CFR 20 limit if respiratory protection is not utilized.

- Area where the radiation levels (corrected for background) are sufficient to have the area designated as a "High Radiation Area" as defined in 10 CFR 20.1003. Small areas within an RCA that meet the definition of an RCZ may be posted without having the entire area designated as an RCZ.

- Area where the removable contamination levels (corrected for background) exceed 1000 dpm/100 cm^2 alpha or 1000 dpm/100 cm^2 beta/gamma. This applies only to areas that are accessible to workers when no work intrusive to facility components is being performed. Small areas not accessed by workers and areas not accessible to workers may be posted without having the entire area designated as an RCZ.

- Area where the intake of soluble uranium following a 40 hour exposure in one week is likely to exceed 1 milligram, if respirator protection is not in use.

The RCZ may be permanent or temporary. Egress from each RCZ shall be specifically controlled using as a minimum a monitor (frisker), step-off pad and container for any discarded protective clothing.

3.2.1.3 Egress Limits

Action levels for skin and personal clothing contamination at the point of egress from RCAs and RCZs shall not exceed 150 dpm/100cm^2 alpha or 150 dpm/100 cm^2 beta/gamma (corrected for background). Clothing contaminated above egress limits shall not be released

unless it is laundered to within the limits. If skin or other parts of the body are contaminated above egress limits, reasonable steps (excluding abrasion or damage) shall be undertaken to effect decontamination.

3.2.2 Ventilation

Ventilation exhaust air shall be released through the plant exhaust stack. All ventilated air to be released from normally contaminated areas (Technical Services Area only) shall be filtered to remove radioactive particles before release. The air shall be filtered using both HEPA and activated carbon filters. HEPA filter design efficiency shall be ≥ 99.97% for particles > 0.3 microns; activated carbon filter design efficiency shall be ≥ 99% for hydrogen fluoride. Filter testing shall be performed to demonstrate required efficiencies; manufacturer's testing shall be acceptable. Efficiency (leak) tests for 0.3 μm AMAD particles in the GEVS and TSA HEPA filter systems shall be performed prior to first use of the filters.

Differential pressure across HEPA filters in potentially contaminated ventilation exhaust systems (i.e., TSA Ventilation System and the Gaseous Effluent Ventilation System) shall be monitored monthly, or shall be automatically monitored and alarmed. Operating procedures shall specify limits/setpoints on the differential pressure consistent with manufacturer's recommendations. Filters shall be changed out if they fail to function properly or if the differential pressure exceeds the manufacturer's ratings.

Ventilation equipment shall be designed such that normal air flow and leakage flow are generally from areas of lesser potential contamination to areas of higher potential contamination.

Filter inspection, testing, maintenance, and change-out criteria shall be specified in written procedures approved by the Technical Support Superintendent. Change-out frequency shall as a minimum be based on consideration of filter loading, including operating experience, differential pressure data, and any UF_6 releases indicated by HF alarms.

HVAC systems serving affected areas shall be shut down during any abnormal release of UF_6. This shall include, as a minimum, any unplanned release which activates an alpha-in-air or HF alarm.

3.2.3 Work-Area Air Sampling

Airborne activity in work areas shall be regularly determined in accordance with written procedures.

Alpha-in-air monitors shall be used to measure representative airborne concentrations of radionuclides due to facility operation. Active (i.e., on-line) monitoring for gross alpha shall be performed, assuming all alpha activity is due to uranium. For dose calculations, all activity shall be assumed to be due to U^{234} (D compound). The lower limit of detection shall be either 0.02 milligrams of uranium in the total sample or 1E-13 microCuries/ml gross alpha concentration. An action level is established at 1 mg of total uranium likely to be inhaled by a worker in seven days.

Monitors shall be permanently located in areas controlled for radiation. Permanent monitors shall be operated to collect continuous samples. Air sampling shall be conducted using continuous air sampling devices and filters changed and analyzed at the following frequencies:

- Weekly, and following any indication of release that may lead to airborne concentrations of uranium that 1) are likely to exceed 10% of the values listed in 10 C.F.R. § 20.1003, *Airborne radioactivity area*, or 2) are likely to exceed the total uranium action level of 1 mg inhaled by a worker in one week. This frequency shall apply to radioactive material shipping, receiving, inspection, and storage areas.

- Each shift, following changes in process equipment or process control, and following detection of any event (i.e., leakage, spillage, or blockage of process equipment) that 1) are likely to exceed 10% of the values listed in 10 C.F.R. § 20.1003, *Airborne radioactivity area*, or 2) are likely to exceed the total uranium action level of 1 mg inhaled by a worker in one week.

The representativeness of the work station air samplers shall be checked annually and when significant process or equipment changes have been made. Procedures shall specify how representativeness is to be determined.

Plant areas surveyed as described in this section shall include as a minimum UF_6 processing areas, decontamination areas, waste processing areas, and laboratories. Continuous air monitors (e.g., stationary samplers, personnel lapel samplers) may be substituted where

conditions favor periodic sampling in all areas where continuous monitoring may not be reasonably achieved.

Action levels shall be based on trending of data collected during plant operation. Investigations shall be performed if airborne activity:

a. exceeds 10% of the values listed in 10 CFR 20.1003 for *Airborne radioactivity area*, or
b. shows a short-term increase of a factor of 10 over historical data from the previous 12 months.

Corrective action shall include investigation and an evaluation of the need for changes, consistent with the principles of ALARA.

3.2.4 Radioactivity Measurement Instruments

Integrating personnel dosimeters shall be used for monitoring external dose. In addition, personnel shall be required to monitor themselves prior to exiting an RCA. Monitoring equipment including "frisker" count rate meters and/or hand and foot monitors shall be provided at RCA exit points.

Calibration on each air flow measurement and radioactivity measurement instrument shall be performed and documented prior to the initial use of that instrument. Calibration verifications shall be performed and documented on each air flow measurement and radioactivity measurement instrument at least annually. This verification shall provide assurance that the instrument is measuring relevant parameters within the tolerances stated in procedures. Calibration may be substituted for verification.

Unreliable instruments shall be removed from service until repairs have been completed. Portal monitors and friskers will have sufficient sensitivity to detect alpha contamination on personnel to ensure that the non-radiological areas of the facility (outside RCAs and RCZs) do not exceed the contamination limits specified in Section 3.2.1. Calibration sources shall be used which are ±5% of the stated value and traceable to NIST or equivalent.

The background and efficiency of laboratory counting instruments, when in use for radiation protection purposes, shall be determined on a daily basis. This determination may be less frequent only if necessary due to long counting intervals.

Where criticality monitoring is required, the monitoring system shall be provided in accordance with Regulatory Guide 8.12, Revision 2, "Criticality Accident Alarm Systems."

3.2.5 Radiation Exposures

Occupational exposures shall be determined, validated, and controlled in accordance with written procedures. Workers shall receive training regarding ALARA concepts such as time-distance-shielding to minimize their exposures. All personnel whose duties require them to enter the RCA shall be required to wear individual external dosimetry devices.

External dosimetry devices shall be evaluated at least quarterly to ascertain external exposures. If 25% of the annual administrative limit is exceeded in any quarter, then an investigation shall be performed and documented to determine what types of activities may have contributed to the worker's external exposure. This investigation may include, but not be limited to procedural reviews, efficiency studies of the air handling system, cylinder storage protocol, and work practices. Anytime the administrative limit is exceeded, the Health Physics (HP) Manager shall be informed. The HP Manager shall be responsible for determining the need for and recommending investigations or corrective actions to the responsible superintendent(s). Copies of these recommendations shall be provided to the Facility Safety Review Committee.

The administrative exposure limits shall be as indicated below.

Administrative Radiation Exposure Limits

Conditions of Exposure	Administrative Limit	NRC Limit
Total Effective Dose Equivalent (TEDE) internal + external (routine operations)	1 rem/year	5 rem/year

3.2.5.1 Barriers

The following design and operating considerations, as a minimum, shall be implemented at the CEC to reduce personnel radiation exposures:

- Except for inside the secondary containment of the autoclaves, the enrichment process shall be maintained below atmospheric pressure. Thus, the UF_6 requires constant containment. This containment precludes direct contact of radioactive materials by the operator.

- Self-monitoring is required upon exit from the controlled areas. Personnel shall be instructed to notify Health Physics if contamination is detected.

- All personnel working at the CEC are trained in emergency evacuation procedures in accordance with the CEC Emergency Plan.

- Glove boxes shall be designed to maintain 0.1 inches of water differential pressure. This differential pressure of 0.1 inches shall be maintained anytime that use of the glove box is likely to result in exceeding the limits of 10 CFR20.1003, *Airborne radioactivity area*. If the required differential pressure is lost, use of the glove box shall cease until required differential pressure is restored.

- A minimum face velocity of 100 fpm shall be maintained for hoods when in use. Additionally, air flow rates at other exhausted enclosures and close-capture points shall be adequate to preclude escape of airborne uranium and minimize the potential for intake by workers when in use. Air flow shall be checked monthly while in use, and after modification of any hood, exhausted enclosure, close-capture point equipment, or ventilation systems serving these barriers.

3.2.6 Surface Contamination

Contamination survey monitoring shall be performed for all UF_6 process areas. Surveys shall also include routine checks of non-UF_6 process areas, including areas normally non-contaminated. The type of monitoring shall include direct and removable contamination measurements, and shall be based on the potential for contamination in these areas and operational experience. RCA/RCZ areas shall be surveyed at least weekly, and the lunch and change rooms shall be surveyed at least daily.

Removable surface contamination shall be considered uranium contamination that can be present on a surface and transferred to a dry smear paper by rubbing with moderate pressure. Methods and instruments used in surveys of removable surface contamination shall be capable of detecting the alpha radiations at and below the alpha contamination levels specified in

Section 3.2.1 using proportional counters, alpha scintillation counters, thin window Geiger-Mueller tubes or other appropriate instruments.

Personnel working in areas that are classified as airborne radioactivity areas or in areas where removable surface contamination exceeds the RCZ limit must wear appropriate protective clothing. If the areas containing the surface contamination can be isolated from adjacent work areas via a barrier, such that dispersible material is not likely to be transferred beyond it, (with associated signs indicating the level and identity of contamination), personnel working in the adjacent area are not required to wear protective clothing.

Laundered protective clothing shall be periodically surveyed for gross alpha and gross beta contamination. Action levels shall correspond to the limits applicable to the area where the protective clothing will be used, i.e., < 150 dpm/100 cm^2 for release to unrestricted areas, and < 1000 dpm/100 cm^2 for use in RCAs.

Radiation Control Zones shall be established for any areas of the CEC that meet the criteria specified in Section 3.2.1. If surface contamination exceeds the following levels, clean-up of the contamination shall be initiated within 24 hours of the indicating analysis:

- Removable: 5000 dpm/100 cm^2 alpha or beta/gamma
- Fixed: 250,000 dpm/100 cm^2 alpha or beta/gamma

3.2.7 Bioassay Program

Internal radiological exposures shall be evaluated annually. Based on air sampling monitoring data, bioassays shall be performed for all personnel who are likely to have had an intake of one (1) milligram of uranium. The bioassay program shall be able to detect 5 micrograms per liter uranium concentration, assuming that the sample is taken within ten days of the postulated intake and that at least 1.4 liters of sample is available from a 24-hour sampling period.

If all reasonable attempts to obtain a 1.4 liter 24-hour sample within the 10 days fail, such that 5 µg/liter cannot be achieved, the sample shall be analyzed for uranium concentration (if measurable) and the worker's intake shall be estimated using other available data.

Continuous air monitoring in airborne radioactivity areas may be performed to complement the bioassay program. If a worker could have inhaled radionuclide concentrations that are likely to exceed 12 DAC hours in one week (7 days) as specified in 10 C.F.R. Part 20, Appendix B to §§ 20.1001-20.2402, Table 1, Column 3, then bioassay shall be conducted within 72 hours after suspected or known exposure. Follow-up bioassay measurements shall be conducted to determine committed effective dose equivalent. Until urinalysis results indicate less than 15 µg/liter uranium concentration, workers shall be restricted from activities that could routinely or accidentally result in internal exposures to soluble uranium.

3.2.8 Calibration Source Leak Tests

Leak testing of sealed calibration sources shall be performed in accordance with Appendix B.

4.0 NUCLEAR CRITICALITY SAFETY

4.1 ADMINISTRATIVE CONDITIONS

4.1.1 Design Philosophy

CEC criteria for criticality safety of systems and equipment shall include the double contingency principle as stated in the ANSI/ANS-8.1-1983 standard, entitled "Nuclear Criticality Safety In Operations with Fissionable Materials Outside Reactors." The adopted double contingency principle states that "process design shall incorporate sufficient factors of safety to require at least two unlikely, independent, and concurrent changes in process conditions before a criticality accident is possible." The general criticality safety approach shall be to prevent accidental uranium enrichment excesses, provide geometrical safety when practical, provide for moderation controls within the UF_6 processes and impose strict mass limits on containers of aqueous, solvent based, or acid solutions containing uranium.

4.1.2 Management Responsibilities

Management positions responsible for criticality safety shall be as described in Section 2.1.

The Projects Manager shall be responsible for initiating the performance of criticality safety analyses, for arranging for an independent review of these analyses, and for final approval of these analyses. Performance and independent review of analyses shall be performed by qualified individuals as described in Section 2.2.L. A process for determining the need for new or revised analyses shall be established and as a minimum include the safety evaluation process described in Section 1.5.1.

New analyses which involve criticality safety that rely on methods other than safe by favorable geometry shall require documented, explicit acknowledgement of this fact by the approver of the analysis.

4.1.3 Documentation Of Analyses And Reviews

Criticality safety of design and operations shall be established by controlled, documented analyses. Analyses shall be prepared in sufficient detail such that an independent reviewer can determine and verify the bases, assumptions, and conclusions without recourse to the originator. Analyses shall be prepared, independently verified, approved, and revised in

accordance with written procedures. Analyses shall be filed and shall be readily retrievable, as described in Section 2.9.

4.1.4 Operating Procedures

All operations involving licensed materials shall be performed in accordance with written and approved safety and safeguards procedures. Criticality safety department activities required by the license shall be conducted in accordance with written procedures approved by the Projects Manager. These procedures shall meet the requirements specified in Section 2.6. Procedures shall include nuclear criticality safety limits and controls derived from nuclear criticality safety evaluations. The procedures shall include corrective measures required to return criticality safety parameters to their normal control band.

4.1.4.1 UF_6 Handling Area Effluent Collection Tank Sampling

Two independent samples of each UF_6 Handling Area Effluent Collection Tank shall be analyzed weekly. Agreement between results shall be obtained or the sampling process shall be repeated until agreement is obtained. If the uranium content exceeds 100 mg/liter, corrective action shall include sampling and analysis each shift until the source of the uranium is identified and controlled.

4.1.4.2 TSA Effluent Collection Tank Sampling

Two independent samples of each TSA Effluent Collection Tank shall be analyzed when half-full and prior to discharge. Agreement between results shall be obtained or the sampling process shall be repeated until agreement is obtained. If the contents exceed 1000 grams of uranium, corrective action shall include hourly sampling until the source of the uranium is identified and controlled.

4.1.4.3 Citric Bath Sampling and Analysis

Two independent samples of the citric acid baths shall be analyzed when the tank contents reach estimated limits of 40%, 60%, and 85% of the bath safe mass limit. This sampling and analysis shall be performed at least weekly even if the estimated limits are not reached. Agreement between the two analyzed samples shall be obtained, or new samples shall be analyzed. If the estimated limits are exceeded, corrective actions shall include adjusting the bath inventory record and investigating the cause of the non-conservative estimate.

4.1.4.4 Chemical Laboratory Uranium Limits

The Chemical Laboratory, excluding sample bottle storage areas, shall be limited to 10.0 kg of uranium at any one time. This limit shall be ensured by maintaining a current inventory by logging transfers into and out of the laboratory area.

4.1.4.5 Active Ventilation Systems

At least every three years (maximum interval of 42 months), the licensee shall survey the ventilation ducts for uranium deposition. If uranium deposition (other than surface contamination) is found, corrective action shall include removal of the uranium. Alternatively, LES may choose to demonstrate with measurements that the total quantity of U^{235} in a ductwork system is less than half of the safe critical mass, based on safe critical values specified in Table 4.2-1. For this latter approach, U^{235} in any connected ductwork which could conceivably combine in normal or abnormal operating conditions, shall be added to determine the total U^{235} mass of the system. Corrective action shall be to remove U^{235} such that the total is less than half of the safe critical mass.

4.1.5 Posting

Materials labeling and area posting shall be maintained to specify materials limits which affect criticality safety and which are subject to procedural control. Determination of necessary posting requirements shall be the responsibility of the Technical Support Superintendent or designee.

4.1.6 Preoperational Testing And Inspection

Prior to start-up of new or modified systems, an inspection shall be performed to ensure the design, installation, and operating instructions are consistent with safety evaluations.

4.1.7 Design Procedures

Activities related to criticality safety design shall be performed in accordance with approved written procedures. New designs or design modifications shall be subjected to the safety evaluation process described in Section 1.5.1.

Wherever criticality safety is directly dependent on the integrity of a storage rack, tank, or other component or structure, the integrity of such structure or component shall be designed in accordance with appropriate codes and standards, or designed, tested, or otherwise confirmed by an engineer qualified to do so. The design, or the confirmation, shall be documented, reviewed by another qualified individual, and records of the confirmation and review maintained in accordance with Section 2.9.

A configuration control program shall be established which shall, as a minimum, include the following:

a. For all possession, use, and storage activities with enriched uranium at the facility, LES shall maintain written records of: (1) the current description of all enriched uranium processes at the facility, (2) a current identification of potential criticality accidents which were identified by a systematic accident analysis process for all current activities, (3) for each of the potential criticality accidents identified above, a current safety analysis which identifies all necessary limits on parametric controls to prevent an inadvertent critical configuration, and (4) administrative requirements to ensure that the engineered systems to limit the parametric controls will be installed, maintained, and operated as designed.

b. For each potential criticality accident identified above, LES shall implement and maintain independent engineered or administrative controls such that the double contingency principle of ANSI/ANS-8.1 is satisfied.

c. In addition to identifying the limits and controls in (a) above, LES shall document the requirements for maintenance, surveillance, personnel training, posting, and control of written procedures to ensure the effectiveness of the limits and controls.

4.1.7.1 Vacuum Pump Spacing

Prior to use of the vacuum pumps for transporting UF_6, LES shall provide to the NRC a safety analysis which demonstrates the criticality safety of vacuum pump configuration and operation.

4.2 TECHNICAL CRITERIA

4.2.1 Individual Units

Assumptions and design conditions used in criticality analyses are described in this section.

Criticality safety of individual units at the CEC is assured through various combinations of methods. The primary method shall be through geometrical limits, but methods may also include moderator control, mass control, and limits on enrichment level. No criticality safety arguments for individual units shall be based on consideration of poisons, or shall depend on concentration arguments based on maintaining optimum heterogeneity.

LES shall use the values provided in Table 4.2-1, along with the safety factors listed, for the basis for criticality safety where geometry or mass are used to ensure safety. The safe limits in Table 4.2-1 are validated as criticality safe when optimum light water moderation exists, reflection is considered and limited enrichment exists within isolated or interactive units, or arrays of units.

LES may also use the surface density method and/or the solid angle method to determine criticality safety; safe limits are provided in Table 4.2-1. LES may also use validated monte-carlo computer codes (e.g., UK MONK 06B, KENO5A-PC) run on verified software. Prior to using these codes for determining criticality safety, a summary report of the codes shall be provided to the NRC for approval. The report shall specify the range of applicability and other parameters specified in ANSI/ANS-8.1. The validation report shall be maintained at the CEC facility.

Duct work gamma ray surveys, routine filter pack changes and inspections shall be performed to ensure no unsafe accumulation of uranium. For those areas in which continuous uranium in air monitoring is performed, the time integration of the sampling results provides information on the maximum credible quantity of airborne uranium over the sampling interval. On a case by case basis a combination of these methods shall be used to ensure compliance with the adopted double contingency principle.

4.2.2 Multiple Units Or Arrays

Control of enrichment level, moderation, mass, and solid angle considerations precludes criticality for multiple units and arrays. LES may also use the surface density method, areal

density arguments and validated monte carlo criticality computer methods to determine criticality safety of multiple units or arrays. No criticality safety arguments for multiple units or arrays shall be based on consideration of poisons, nor shall depend on concentration arguments based on maintaining optimum heterogeneity.

Prior to using the MONK code for CEC process design changes which are made without NRC approval, a summary report of the MONK code shall be provided to the NRC for approval. The report shall specify the range of applicability and other parameters specified in ANSI/ANS-8.1. The validation report shall be maintained at the CEC facility.

A minimum 30-centimeter spacing, edge-to-edge, shall be maintained between units spaced by the surface density method.

4.2.3 Technical Data And Validation Of Calculational Methods

Table 4.2-1 specifies safe mass and geometrical values which have been validated and shall be used for criticality analyses for the CEC. The table also provides safety factors which shall be applied to the CEC designs and analyses. Calculational methods shall be based upon safe geometries derived from the critical geometries and the application of safety factors provided in Table 4.2-1. The critical geometries have been validated by means of a monte carlo criticality computer code. The safety factors are taken from Appendix B of Regulatory Guide 3.52, Revision 1, November 1986, "Standard Format and Content for the Health and

Safety Section of License Renewal Applications for Uranium Processing and Fuel Fabrication."

4.2.4 Special Controls

4.2.4.1 General

a. The plant design shall not include direct application of water to feed cylinders, product cylinders, and desublimers while in process.

b. The moderation within the product cylinders shall be controlled by operating features, including checks that the cylinder is clean and empty prior to the commencement of fill. Also, the moderator (H_2O, HF) entering the cylinder shall be monitored during the time the cylinder is connected to the plant UF_6 systems.

c. Where mass sampling is used to ensure that criticality safety limits are maintained, dual sampling and analysis shall be performed to establish mass amounts.

d. The maximum internal diameter of the centrifuge housings shall not exceed the safe diameter specified in Table 4.2-1.

e. No enriched uranium shall be introduced as feed material to the cascades.

f. The following parameters affecting the cascades shall be monitored by operations personnel from the control room:

- •Cascade header pressure
- •Centrifuge motor power
- •UF_6 Feed System supply pressure and valve positions
- •Contingency Dump System pressure and valve positions
- •Machine Cooling Water System temperature and flow
- •Product Take-Off System pressure and valve positions
- •Tails Take-Off System pressure and valve positions

Procedures shall describe corrective actions required (including shutdown requirements) for lost monitoring capability and unusual monitoring results.

g. No interconnections shall be provided which allow enriched uranium to flow to the feed system.

h. For each enrichment campaign, required valve settings shall be calculated and provided in written instructions to the operators. Valve positions shall be independently confirmed and recorded. If resulting pressures do not reasonably match predicted pressures, corrective actions shall be initiated.

i. For each new campaign, UF_6 product shall be analyzed for enrichment within 24 hours and results compared with predicted results. Required adjustments shall be performed in accordance with item h above.

4.2.4.2 Product Take-Off System Controls

a. Prior to use, empty product cylinders shall be checked to verify no internal contaminants are present. Verification shall include weighing, inspection by boroscope, and vacuum testing of each cylinder.

b. Product cylinder contents shall be limited to the authorized fill limit by use of the continuously monitored load cell system. A maintenance and test program for the load cell system shall be developed and implemented prior to initial use of the load cell system.

c. Volatile gases shall be vented to the Product Vent System. If a predetermined limit on vent cycles per cylinder is exceeded, investigations shall be conducted and corrective actions taken.

d. During and after filling cylinders in the product filling stations, and prior to moving the cylinders, UF_6 shall be solidified using only cool air as the cooling medium.

e. Product cylinders shall be heated for blending or sampling only in autoclaves, and only using electrically heated air as the heating medium. The autoclave pressure and temperature shall be automatically controlled, continuously monitored, and alarmed during the heating cycle. After blending or sampling, but prior to moving the cylinders, the UF_6 shall be solidified by circulating water in cooling coils external to the autoclave.

f. The hydrogen to uranium "in-process" ratio shall not exceed 1.0. The ratio also shall not exceed 1.0 in product cylinders unless it can be shown the cylinders contain less than 2 kg of hydrogen.

4.2.4.3 Product/Product Blending Desublimer Systems

a. The chemical traps, UF_6 pumps, and piping for the Product and the Product Blending Desublimer systems shall be designed to satisfy the geometric safe limits specified in Table 4.2-1.

b. Alarms shall be provided which indicate loss of a positive pressure nitrogen blanket between the desublimer vessel and the outer shell.

c. The desublimer vessel shall be designed for external heating and cooling, using closed loop heating and cooling coils containing refrigerant.

d. Inlet and outlet piping shall include two valves in series, one of which shall be automatically operated by signals from continuously monitoring pressure sensors. Procedures shall include instructions for loss of the sensors and/or failure of the valves.

e. Cylinder venting operations shall be recorded in sufficient detail to control desublimer inventory and to detect abnormal venting intervals. Abnormal venting shall be investigated.

f. Plant preventative maintenance and test programs shall include the nitrogen blanketing alarm system and the pressure sensor/control system of the desublimer inlet and outlet valves.

g. At least every four months, the product and product blending desublimers shall be surveyed to verify that greater than 25 kilograms of uranium compounds do not remain in any desublimer after the UF_6 is transferred to the product cylinders. If greater than 25 kg are present, the material shall be removed such that a maximum of 10 kg remains prior to reuse of the desublimer system.

4.2.4.4 Mobile Pump Set Components

Mobile pump set components shall be designed to meet requirements a through d below. Alternatively, mobile pump sets in isolation or in an infinite array with other mobile pump sets shall be shown by analysis to have a k_{eff} of <0.93. This criticality safety analysis shall be completed in accordance with Section 4.1.3 prior to implementing changes to items a through d below. The analysis shall be performed using a validated analysis method such as a Monte Carlo analysis, which has been approved by the NRC (as described in Section 4.2.2 above).

a. The design of the cold trap inside diameter shall not exceed 18.5 cm.

b. The chemical traps shall be designed with an internal diameter no greater than the safe diameter provided in Table 4.2-1.

c. The pumps shall be designed such that pump free volume shall not exceed 7 liters.

d. The k_{eff} for an infinite array of mobile pump sets shall not exceed 0.93.

For initial CEC operation, activated carbon in mobile pump set chemical traps shall be weighed and replaced when the traps reach 80% of their calculated adsorption capacity. Subject to approval by the CEC Manager, this amount may be increased once recorded CEC operating data is sufficient to justify such an increase.

4.2.4.5 Contingency Dump Traps

a. Design parameters of the contingency dump traps shall be based on a criticality safety analysis using validated, NRC-approved methodology (as described in Section 4.2.2 above). The analysis shall be performed in accordance with Section 4.1.3.

b. Following each fill or replacement of a contingency dump trap, use of the correct amount and type of NaF powder and pellets shall be independently verified and documented.

c. Contingency dump trap media shall be replaced immediately following a emergency dump involving significant amounts of UF_6.

4.2.4.6 Process Piping

The internal diameter of process piping shall not exceed the safe diameter provided in Table 4.2-1. Where the process requires pipe bends or pipe intersections, the piping shall fit inside a maximum 18 cm. diameter envelope.

4.2.4.7 Fomblin Oil Recovery System

Cleaned batches of Fomblin oil shall be visually inspected for cleanliness and sampled and tested for uranium content prior to releasing the batch from safe-by-geometry containers.

TABLE 4.2-1

Safe Values for Uniform Aqueous Solutions of 5% Enriched UO_2F_2

PARAMETER	CRITICAL VALUE	SAFETY FACTOR	SAFE VALUE
Volume	25 1	1.34	18.6 1
Cylinder Diameter	24.6 cm	1.12	21.9 cm
Slab Thickness	12.4 cm	1.18	10.5 cm
Mass (No Double Batching Possible)	35.5 kgU	1.34	26.4 kgU
Mass (Double Batching Possible)	35.5 kgU	2.23	15.9 kgU
Areal Density	11.5 gU per sq cm equivalent to 10.6 kgU per sq ft	2.23	4.6 kgU per sq ft
Solid Angle (for k_{eff} < 0.8)	-	-	9-10 k_{eff}

5.0 ENVIRONMENTAL PROTECTION

5.1 EFFLUENT CONTROL SYSTEMS

Radiation levels in effluent shall be controlled and minimized to meet NRC regulatory limits and the CEC ALARA policy. Specific limits, and corrective actions should these limits be exceeded, are detailed in the following sections.

5.1.1 Gaseous Effluents

Gaseous effluent releases shall be continuously monitored during CEC operation to verify concentration levels are within administrative and regulatory limits. HF monitors shall be provided in the Gaseous Effluent Vent System upstream of the filter train. Radioactivity of the discharge is continuously sampled.

Downstream of ventilation system discharge, each exhaust stack shall contain an isokinetic sampler for continuous sampling and subsequent analysis. The filter from the isokinetic sampler downstream of the ventilation filters is removed at least weekly and analyzed for gross alpha. Should the HF alarm be activated due to high HF levels in the GEVS, the isokinetic filter shall be removed and analyzed daily until gross alpha levels return to normal. The administrative limits for gaseous effluent shall be 5% of the regulatory limits, as specified in 10 C.F.R. Part 20, Appendix B to §§ 20.1001-20.2402, Table 2. Should the action levels for gross alpha (Table 5.1-1) be exceeded by the weekly filter analysis results, an investigation shall be performed to determine the source of the elevated activity. If the action levels are exceeded by the running quarterly average, further isotopic analyses shall be performed. Regardless of weekly or quarterly results, isotopic analyses shall be performed on semi-annual composites of the isokinetic samples. The lower limits of detection for gross alpha shall not exceed 1E-15 µCi/ml. The LLD for required alpha isotopic analyses in response to running quarterly analysis trends shall not exceed 1E-16 µCi/ml for each of the U^{234}, U^{235}, and U^{238} isotopes. The LLD for the semi-annual composite analysis shall not exceed 1E-17 µCi/ml for each of the U^{234}, U^{235}, and U^{238} isotopes.

If action levels are exceeded, the CEC Manager and the Compliance Superintendent shall be notified. The cause of exceeding the action levels shall be investigated and corrected. Investigation and corrective action is the responsibility of the Compliance Superintendent. Investigation results and corrective action shall be documented and a copy provided to the FSRC. Situations requiring reporting shall be handled as described in Section 2.8.

If a parameter changes which could significantly affect dose assessment, a report shall be submitted within 60 days which describes the change and includes an estimate of the resultant change in dose commitment. In the event the calculated dose to any member of the public in any consecutive 12-month period is about to exceed the limits specified in 40 CFR 190.10, immediate steps shall be taken to reduce emissions so as to comply with 40 CFR 190.10. A report shall be prepared and submitted to the Commission within 30 days which identifies the cause of exceeding the limit and the corrective actions to be taken to reduce release rates.

For initial CEC operation, activated alumina in chemical traps in gaseous effluent streams shall be weighed and replaced when the traps reach 80% of their calculated adsorption capacity. Subject to approval by the CEC Manager, this amount may be increased once recorded CEC operating data is sufficient to justify such an increase.

5.1.2 Liquid Effluents

The NRC shall be informed within 30 days if the state permitting agency revokes, supersedes, conditions, modifies, or otherwise nullifies the effectiveness of the state-issued permit for the discharge of liquid effluents.

The NRC shall be informed within 15 days if the state-issued permit for the discharge of liquid effluents is violated.

5.1.2.1 Liquid Waste Disposal System Effluent

Processing of potentially radioactive liquid effluent shall be performed such that the activity levels are within 5% of the limits specified in 10 C.F.R. Part 20, Appendix B to §§ 20.1001-20.2402, Table 2, prior to discharge to the CEC Sewage Treatment System. Should the limits for gross alpha (Table 5.1-2) be exceeded, the effluent shall be held up and returned for further processing, or further analysis shall be performed to show the 5% limit is not exceeded.

All potentially radioactive effluent is treated in the Liquid Waste Disposal (LWD) system, forwarded to the Sewage Treatment System for final treatment, and discharged to Bluegill Pond.

Lower limits of detection for liquid effluent gross alpha activity shall not exceed the values specified in Table 5.1-2. Lower limits of detection for further isotopic analyses of liquid effluent shall not exceed 1.0E-11 μCi/ml for each uranium isotope.

5.1.2.2 Sewage Treatment System Effluent

Sewage Treatment System effluent shall be sampled and analyzed to verify activity levels are below the administrative limit of 0.5% of the release limits listed in 10 C.F.R. Part 20, Appendix B to §§ 20.1001-20.2402, Table 2. Should the limits for gross alpha (Table 5.1-2) be exceeded, it shall be assumed the 0.5% limit has also been exceeded unless further analyses indicate otherwise. If the administrative limit of 0.5% is exceeded, the CEC Manager and Compliance Superintendent shall be notified. The cause of exceeding this limit shall be investigated and corrected. Investigation and corrective action is the responsibility of the Compliance Superintendent. Investigation results and corrective action shall be documented and a copy provided to the FSRC. Situations requiring reporting shall be handled as described in Section 2.8.

The Sewage Treatment System releases effluent continuously. Discharge to the environment is into Bluegill Pond, located within the CEC site boundary. Sewage Treatment System samples shall be collected, composited, and analyzed in accordance with the frequencies specified in the NPDES permit. Sampling shall be continuous. The Sewage Treatment System discharge samples shall be used to demonstrate compliance with 10 C.F.R. Part 20.

Lower limits of detection for liquid effluent gross alpha activity shall not exceed the values specified in Table 5.1-2. Lower limits of detection for further isotopic analyses of liquid effluent shall not exceed 1.0E-11 μCi/ml for each uranium isotope.

The CEC shall analyze a composite sample of the Sewage Treatment System liquid effluent for Tc^{99} on a semi-annual basis. The LLD shall not exceed 3E-7 μCi/ml. The composite sample shall also be analyzed for total uranium.

5.1.2.3 Sewage Treatment System Sludge

Sewage sludge shall be sampled semi-annually for uranium accumulation. Investigation and any necessary corrective action shall be performed if activity due to uranium is greater than 20 picoCuries/gram above background.

5.1.2.4 Stormwater Sampling

Stormwater samples taken in accordance with the NPDES permit shall also be analyzed for gross alpha. Investigation of the source and corrective action shall be performed if activity is greater than 20 picoCuries/liter above background.

5.2 ENVIRONMENTAL MONITORING

The CEC shall implement a radiological monitoring program in accordance with Table 5.2-1 for evaluating radioactivity released from the plant. The program shall specify sample locations, sampling methods, frequency of sampling, and types of analyses performed. Samples shall be taken of air, soil, sediment, vegetation, surface water, and ground water.

Sampling methods and frequency shall be as specified in Table 5.2-1. All samples shall be analyzed for gross alpha. Should the action levels (Table 5.2-2) be exceeded, further isotopic analysis shall be performed.

Additionally, if action levels are reached the CEC Manager and Compliance Superintendent shall be notified immediately. The cause of exceeding these limits shall be investigated and corrected. Investigation and corrective action is the responsibility of the Compliance Superintendent. Investigation results and corrective action shall be documented and a copy provided to the FSRC.

Environmental monitoring data shall be reviewed annually for trends and to evaluate impacts to the public and environment. A report shall be submitted to the NRC biennially that summarizes the monitoring program results.

Lower limits of detection for gross alpha for the environmental analyses shall not exceed the values provided in Table 5.2-2.

TABLE 5.1-1

CEC Stack Effluent Action Levels

STACK	AVERAGING PERIOD	ACTION LEVEL - GROSS ALPHA
Unit 1	Quarterly	1.2E-13 μCi/ml
Unit 2	Quarterly	1.5E-14 μCi/ml
Unit 3	Quarterly	1.5E-14 μCi/ml

TABLE 5.1-2

Liquid Effluent Action Levels and Lower Limits of Detection

Sample Location	Gross ∝ Action Level	Gross ∝ LLD
LWD Discharge Sample	1.5E-9 μCi/ml	1.5E-10 μCi/ml
Sewage Discharge Sample	1.5E-10 μCi/ml	1.5E-11 μCi/ml

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

Pathway/ Sample type	Preoperational Samples and Locations	Preoperational Sampling and Collections
*Airborne Particulate	AP1 - One sample located in the sector with the highest prevailing wind direction. To be located in the area with the highest Chi/Q for that sector near the site boundary. AP2 - One sample located in the sector with the second highest prevailing wind direction. To be located in the area with the highest Chi/Q for that sector near the site boundary. AP3 - One sample located near the resident who is maximally exposed from the gaseous pathway. AP4 - One sample located in the west sector. To be located near the site boundary corresponding to the highest Chi/Q in that sector. AP5 - One sample located in the east sector near the site boundary corresponding to the highest Chi/Q in that sector.	Air sampler with a particulate filter, operating continuously and collected and analyzed weekly.

NOTE: *Selection of initial sectors shall be based on Shreveport data. After five years (maximum 66 months) of onsite meteorological monitoring, the sector selection will be reevaluated. Sampling locations shall be modified to meet the criteria specified in this table. The reevaluation shall be performed every five years (maximum 66 months) after the initial and subsequent evaluations. Necessary changes shall be implemented within six months of the evaluation.

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

Pathway/ Sample type	Preoperational Samples and Locations	Preoperational Sampling and Collections
	AP6 - One sample located in the south sector near the site boundary, corresponding to the highest Chi/Q in that sector. If this sector is already represented by another air sampling site corresponding to the AP1 through AP4 sites above, then site AP6 is not needed.	
	AP7 - One sample located in the north sector near the site boundary, corresponding to the highest Chi/Q in that sector. If this sector is already represented by another air sampling site corresponding to the AP1 through AP4 sites above, then site AP7 is not needed.	
Airborne/ Soil	S1-S16 - Samples to be collected near the site boundary in each sector. One sample per site.	Collected and analyzed quarterly. Combine samples from sixteen sectors into four composites.
Airborne/ Vegetation	V1-V16 - Samples to be collected near the site boundary in each sector. One sample per site.	Collected and analyzed quarterly. Combine samples from sixteen sectors into four composites.
Liquid/ Ground Water	GW1 - Well #A1, Figure 5.2-2	Grab samples to be collected and analyzed quarterly.
	GW2 - Well #B1, Figure 5.2-2	
	GW3 - Well #C1, Figure 5.2-2	
	GW4 - Well #D1, Figure 5.2-2	
	GW5 - Well #E1, Figure 5.2-2	
	GW6 - Well #F1, Figure 5.2-2	

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

Pathway/ Sample type	Preoperational Samples and Locations	Preoperational Sampling and Collections
Liquid/ Shoreline Sediment	SS1 - To be collected near the outflow of Bluegill Pond.	Grab samples to be collected and analyzed quarterly.
	SS2 - To be collected near the inflow of Bluegill Pond from the Hold-Up Basin.	
	SS3 - To be collected near the south shore of Bluegill Pond.	
	SS4 - To be collected near the north shore of Bluegill Pond.	
	SS5 - To be collected at Lake Claiborne.	
Liquid/ Bottom Sediment	BS1 - To be collected from the east end of Bluegill Pond.	Grab samples to be collected and analyzed quarterly.
	BS2 - To be collected from the center of Bluegill Pond.	
	BS3 - To be collected from the west end of Bluegill Pond.	
	BS4 - To be collected from the center of the Hold-Up Basin.	
	BS5 - To be collected at Lake Claiborne.	
Liquid/Surface Water	SW1 - Inflow to Lake Avalyn.	Grab samples collected and analyzed quarterly.
	SW5 - Inflow to Bluegill Pond.	
	SW6 - Bluegill Pond, near the center.	

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

Pathway/ Sample type	Preoperational Samples and Locations	Preoperational Sampling and Collections
	SW7 - Outflow from Bluegill Pond.	
	SW8 - Site drainage stream.	
	SW9 - Outflow at the western property boundary.	
	SW11 - Hold-Up Basin.	
	SW12 - Lake Claiborne. Take sample at inflow point of Cypress Creek.	

Table 5.2-1

Radiological Environmental Monitoring Program

Operational Monitoring

Pathway/ Sample type	Operational Samples and Locations	Operational Sampling and Collections
*Airborne Particulate	AP1 - One sample located in the sector with the highest prevailing wind direction. To be located in the area with the highest Chi/Q for that sector near the site boundary. AP2 - One sample located in the sector with the second highest prevailing wind direction. To be located in the area with the highest Chi/Q for that sector near the site boundary. AP3 - One sample located near the resident who is maximally exposed from the gaseous pathway. AP4 - One sample located in the west sector. To be located near the site boundary corresponding to the highest Chi/Q in that sector. AP5 - One sample located in the east sector near the site boundary, corresponding to the highest Chi/Q in that sector.	Air sampler with a particulate filter, operating continuously and collected and analyzed weekly. Also, for site AP3, isotopic analysis shall be conducted on a composite sample on a semi-annual basis. The composite sample analysis shall be for U^{234}, U^{235}, and U^{238}.

NOTE: *Selection of initial sectors shall be based on Shreveport data. After five years (maximum 66 months) of onsite meteorological monitoring, the sector selection will be reevaluated. Sampling locations shall be modified to meet the criteria specified in this table. The reevaluation shall be performed every five years (maximum 66 months) after the initial and subsequent evaluations. Necessary changes shall be implemented within six months of the evaluation.

Table 5.2-1

Radiological Environmental Monitoring Program

Operational Monitoring

Pathway/ Sample type	Operational Samples and Locations	Operational Sampling and Collections
	AP6 - One sample located in the south sector near the site boundary, corresponding to the highest Chi/Q in that sector. If this sector is already represented by another air sampling site corresponding to the AP1 through AP4 sites above, then site AP6 is not needed.	
	AP7 - One sample located in the north sector near the site boundary, corresponding to the highest Chi/Q in that sector. If this sector is already represented by another air sampling site corresponding to the AP1 through AP4 sites above, then site AP7 is not needed.	
Airborne/ Soil	S1-S16 - Samples to be collected near the air boundary in each sector. One sample per site.	Collected and analyzed semi-annually. Combine samples from sixteen sectors into four composites.
Airborne/ Vegetation	V1-V16 - Samples to be collected near the site boundary in each sector. One sample per site.	Collected and analyzed semi-annually at the same time as soil sample collection. Combine samples from sixteen sectors into four composites.
Liquid/ Ground Water	GW1 - Well #B1, Figure 5.2-2 GW2 - Well #C1, Figure 5.2-2 GW3 - Well #E1, Figure 5.2-2	Grab samples to be collected and analyzed semi-annually.

Table 5.2-1

Radiological Environmental Monitoring Program

Operational Monitoring

Pathway/ Sample type	Operational Samples and Locations	Operational Sampling and Collections
Liquid/ Shoreline Sediment	SS1 - To be collected near the outflow of Bluegill Pond.	Grab samples to be collected and analyzed semi-annually.
	SS2 - To be collected near the inflow of Bluegill Pond from the Hold-Up Basin.	
	SS3 - To be collected near the south shore of Bluegill Pond.	
	SS4 - To be collected near the north shore of Bluegill Pond.	
	SS5 - To be collected near surface water site SW12 at Lake Claiborne.	
Liquid/ Bottom Sediment	BS1 - To be collected from the east end of Bluegill Pond.	Grab samples to be collected semi-annually.
	BS2 - To be collected from the center of Bluegill Pond.	
	BS3 - To be collected from the west end of Bluegill Pond.	
	BS4 - To be collected from the center of the Hold-Up Basin.	
	BS5 - To be collected at Lake Claiborne.	
Liquid/Surface Water	SW1 - Inflow to Lake Avalyn.	Collected continuously via integrating water sampling equipment to obtain monthly composites. Analyzed monthly.
	SW5 - Inflow to Bluegill Pond.	
	SW6 - Bluegill Pond, near the center.	

Table 5.2-1

Radiological Environmental Monitoring Program

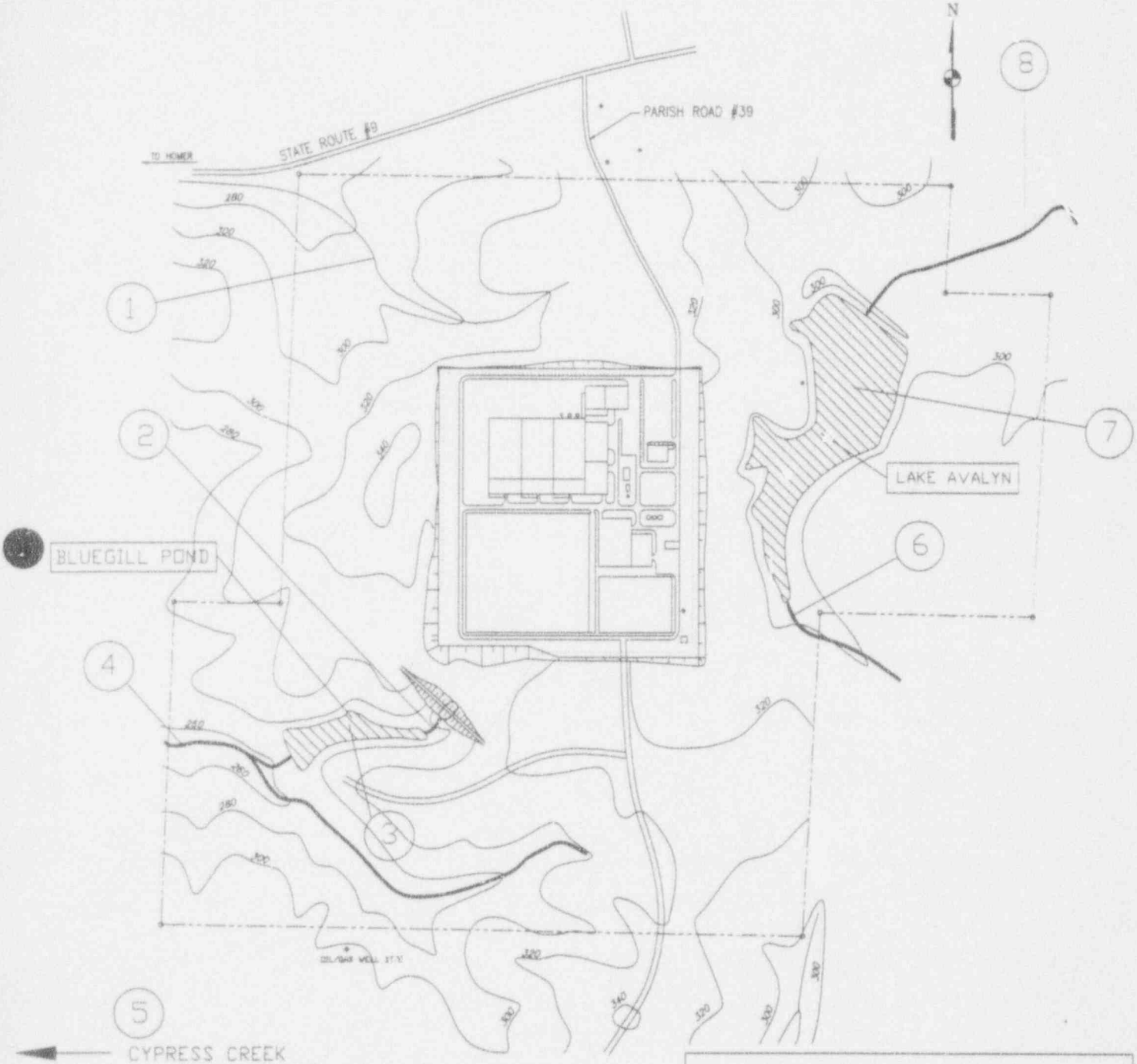
Operational Monitoring

Pathway/ Sample type	Operational Samples and Locations	Operational Sampling and Collections
	SW7 - Outflow from Bluegill Pond.	
	SW8 - Site drainage stream	
	SW9 - Outflow at the western property boundary.	
	SW12 - Lake Claiborne. Take sample at inflow point of Cypress Creek.	

TABLE 5.2-2

Action Levels and Lower Limits of Detection For Environmental Analyses

SAMPLE TYPE	GROSS ∝ ACTION LEVEL (ABOVE BACKGROUND)	GROSS ∝ LLD
Water	3.0E-10 µCi/ml	1.0E-12 µCi/ml
Air	3.0E-15 µCi/ml	1.0E-18 µCi/ml
Soil/Sediment	5.0E-6 µCi/g	3.0E-7 µCi/g
Vegetation	1.0E-8 µCi/g	1.0E-10 µCi/g



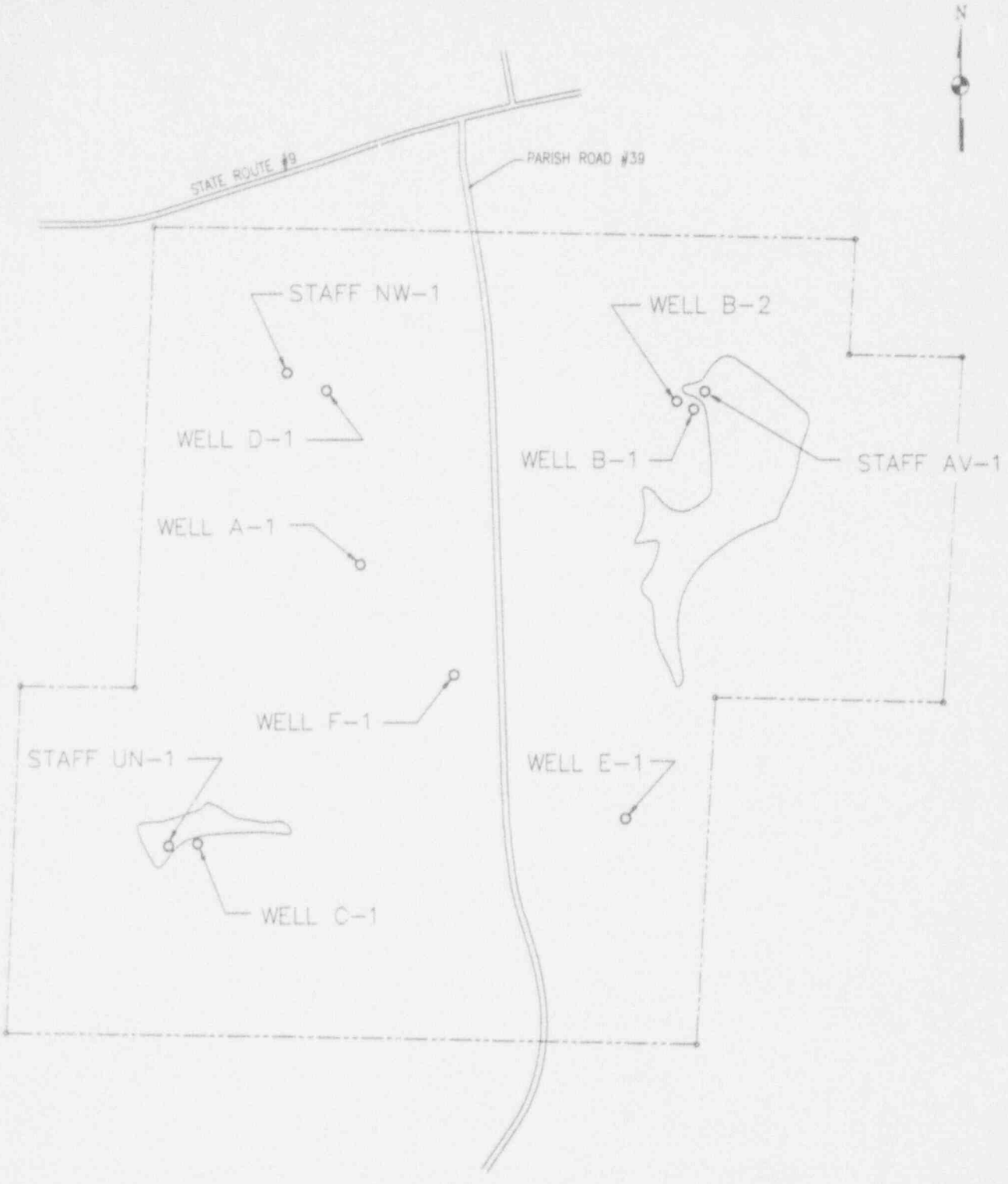
LOUISIANA ENERGY

CLAIBORNE ENRICHMENT CENTER

Surface Water Chemistry
Monitoring Locations

Figure 5.2-1

REVISION 4
DECEMBER 3, 1993



LOUISIANA ENERGY

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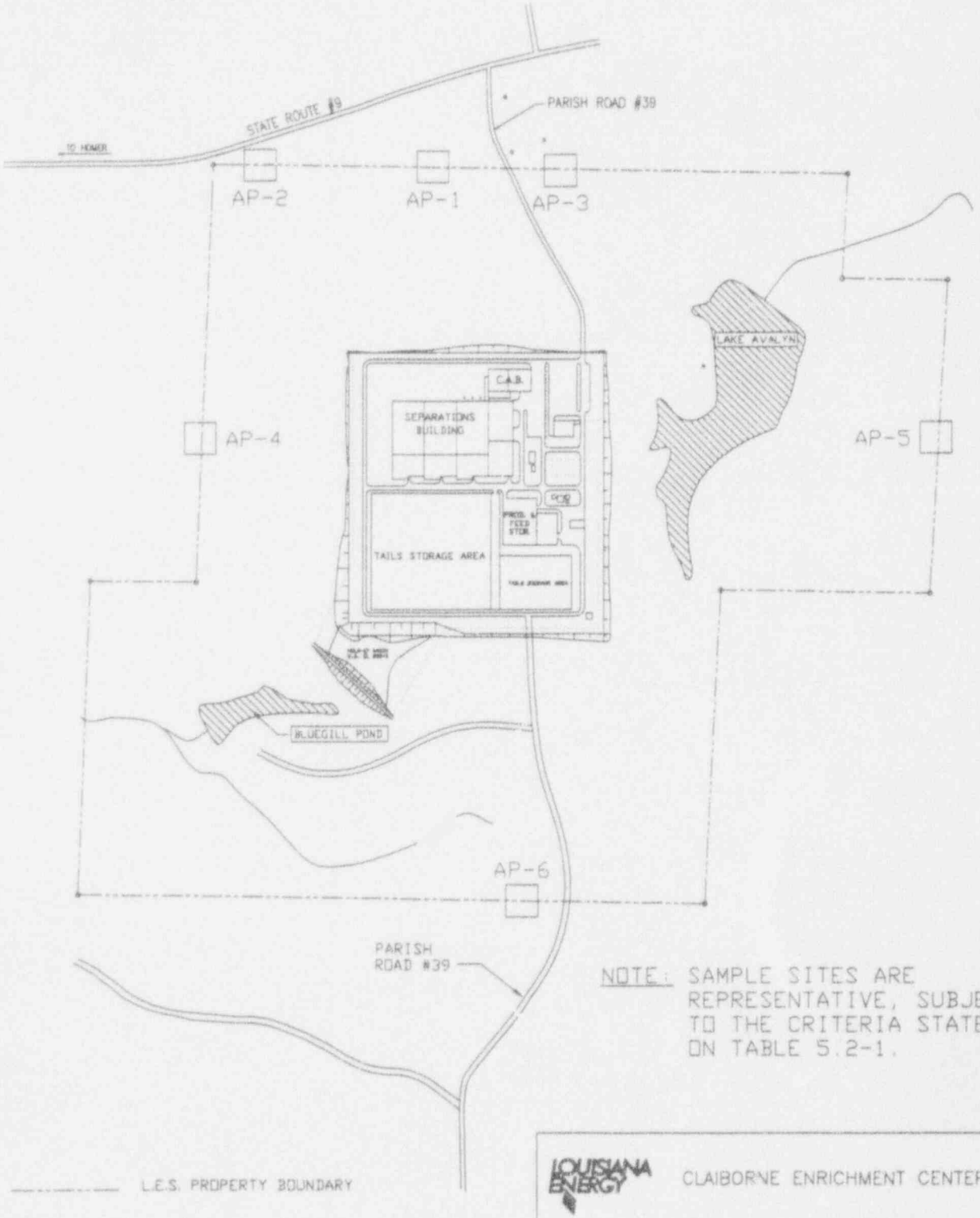
Locations of Site Monitoring Wells and Surface Water Staff Gauges

Figure 5.2-2

REVISION 4
DECEMBER 3, 1993



NOTE: SAMPLE SITES ARE REPRESENTATIVE, SUBJECT TO THE CRITERIA STATED ON TABLE 5.2-1.

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Air Particulate Sampler Locations

Figure 5.2-3

REVISION 4
DECEMBER 3, 1993

6.0 SPECIAL PROCESSES

6.1 PROPRIETARY INFORMATION

No proprietary information is applicable to these License Conditions.

6.2 OCCUPATIONAL SAFETY

Safe handling practices for hazardous chemicals shall be incorporated into everyday operation through the use of written procedures and/or postings. These shall include corrective actions to take should incidents occur. Personnel who routinely work with or around hazardous chemicals shall be trained in the safe practices and in the proper response to incidents involving these chemicals. Procedures/postings and training shall address, as a minimum, organic solvents and HF.

Personnel who access RCAs and RCZs shall be trained in safe practices and proper response to incidents in these areas. Training shall address topics including ALARA, time-distance-shielding, types and characteristics of hazards, doses, employee right-to-know laws, and toxicity. Evaluation of training program effectiveness and retraining requirements shall be handled as specified in Section 2.5.

Permanent alpha-in-air monitors shall have an alarm setpoint such that a UF_6 release will activate the alarm if calculated HF levels exceed 3 ppm. The calculated setpoint basis for alpha activity shall assume that the stoichiometric concentration of HF at the point of release is maintained throughout its dispersion, i.e., one molecule of U is equivalent to 4 of HF ($UF_6 + 2H_2O \rightarrow UO_2F_2 + 4HF$). Alternatively, instruments designed to measure HF directly shall be installed, with alarm setpoints of 3 ppm HF. Instruments set to alarm if HF is above 3 ppm shall be provided in the UF_6 Handling Areas and the Blending Area. If the alarm sounds, the Health Physics Manager shall be notified, who shall initiate immediate corrective actions. Workers shall not perform work in affected areas, other than to repair damage, and then only with suitable respiratory protection and protective clothing.

6.3 BACK-UP UTILITIES

Prior to receipt of licensed source material, an electric power supply shall be provided for backup during a loss of power event. Battery back-up shall power sufficient lighting for plant evacuation should this become necessary. Back-up power shall also be provided to criticality

alarms in the Technical Services Area (TSA), and shall last long enough to allow orderly ceasing of activities.

6.4 RADIOACTIVE WASTE MANAGEMENT

Radioactive wastes shall be collected, handled, packaged, stored, and transported in accordance with Title 10 and Title 49 of the Code of Federal Regulations. All processes shall be designed and operated in accordance with the CEC ALARA policy. Operations shall be in accordance with written procedures, and shall be reviewed as described in Sections 2.3 and 2.7. The Health Physics Manager shall be responsible for radioactive waste management.

6.5 LIMITING CONDITIONS FOR OPERATION

6.5.1 Autoclaves

A. The CEC shall not operate any autoclave with air temperature exceeding 260°F or air pressure exceeding 50 psia.

B. The CEC shall not operate such that UF_6 in a feed autoclave is raised to a pressure above 50 psia. The CEC shall not operate such that UF_6 in a product sampling nor blending autoclave is raised to a pressure above 100 psia.

6.5.2 Yard Transporters

Yard transporters shall not have a fuel capacity greater than 70 gallons.

6.6 OTHER SPECIAL COMMITMENTS

6.6.1 Depleted UF_6, Feed, and Product Cylinder Maintenance And Surveillance

A. All filled Depleted UF_6 (DUF_6), feed, and product cylinders shall be stored on concrete saddles, or other saddles made of materials that do not cause corrosion of the cylinders. These saddles shall be placed on stable surfaces such as concrete or compacted gravel.

B. DUF_6, feed, and product cylinders shall not be stacked. Storage array design shall permit visual inspection of all cylinders.

C. Depleted UF_6 cylinder valves shall be fitted with valve guards to protect the cylinder valve during transfer and storage.

D. Only designated vehicles with less than 70 gallons of fuel shall be allowed in the UF_6 storage yards.

E. Only trained and qualified personnel shall be allowed to operate vehicles in the UF_6 storage yards.

F. DUF_6 cylinders shall be inspected for damage prior to placing a filled cylinder in a storage yard. DUF_6 cylinders shall be reinspected annually for damage or surface coating defects. These inspections shall verify that:

1. Lifting points are free from distortion and cracking.

2. Cylinder skirts and stiffener rings are free from distortion and cracking.

3. Cylinder surfaces are free from bulges, dents, gouges, cracks or significant corrosion (e.g., rust).

4. Cylinder valves are fitted with the correct protector and cap, the valve is straight and not distorted, 2 to 6 threads are visible, and the square head of the valve stem is undamaged.

5. Cylinder plugs are undamaged and not leaking.

G. If inspection of a DUF_6 cylinder reveals significant deterioration (i.e., leakage, cracks, excessive distortion, bent or broken valves or plugs, broken or torn stiffening rings or skirts, or other conditions that may affect the safe use of the cylinder), the contents of the cylinder shall be transferred to another cylinder, and the defective cylinder properly discarded. The root cause of any significant deterioration shall be determined and if necessary additional inspections of cylinders shall be made.

H. Proper documentation on the status of each DUF_6 cylinder shall be available on site, including content and inspection dates.

6.6.2 Liquid UF_6

LES shall not transport any cylinder containing liquid UF_6.

6.6.3 Cylinder Fill Limits

A. UF_6 cylinders shall not be filled in excess of the shipping limit maximum specified in Appendix 1, "UF_6 Cylinder Data Summary," of ORO-651, Revision 6, "Uranium Hexafluoride: A Manual of Good Handling Practices."

B. The weight of all feed cylinders shall be checked prior to heating in the autoclaves.

6.6.4 Safety Analysis Report

Final design of the CEC shall involve the structures, equipment, equipment layout, control systems logic, and safety features presented and described in the Safety Analysis Report (SAR). The design, construction and operation shall be in accordance with standards and representations identified in the SAR. This shall not preclude the changing of the SAR in accordance with Section 1.5.1.

6.6.5 Quality Assurance Criteria

A. Quality assurance of software, and verification and validation of software important to safety and material control and accountability shall be in accordance with part 2.7, "Quality Assurance Requirements of Computer Software for Nuclear Facility Applications," of the NQA-2b-1991 Addenda to ASME NQA-2-1989, "Quality Assurance Requirements for Nuclear Facility Applications."

B. Quality assurance controls of System Class I items and activities important to safety shall be in accordance with the basic and supplemental provisions of ASME NQA-1-1989, "Quality Assurance Program Requirements for Nuclear Facilities," including the changes made by the ASME-NQA-1a-1990 Addenda and the ASME-NQA-1b-1991 Addenda.

C. Quality Assurance of System Class II items shall be in accordance with SAR Section 10.19. This condition shall not preclude making changes to SAR Section 10.19 in accordance with the provisions of Section 1.5.1.

6.6.6 Cylinder Transport

LES shall transport filled product cylinders using only LES-approved transport equipment.

6.6.7 Oil and Gas Wells

The development and production of oil and gas wells from the surface within the 179 hectare (442 acre) CEC site boundary shall be prohibited for the duration of license.

6.6.8 Load Cells

Feed autoclaves, feed purification cubicles, product and tails cylinder stations, and blending receiver cylinder stations shall be equipped with load cells to monitor cylinder contents. These load cells shall be operable at all times that the individual pieces of equipment are in use for UF_6 transfer.

7.0 DECOMMISSIONING PLAN

Upon cessation of operations at the CEC, the CEC shall be decommissioned in order to permit release of the CEC site and facilities for unrestricted use. Spills and contamination outside normally-contaminated plant areas shall be promptly cleaned. Enrichment equipment shall be removed; only building shells and the site infrastructure shall remain. All remaining facilities shall be decontaminated, where needed, to levels acceptable for unrestricted use. Confidential and Secret Restricted Data material, components, and documents shall be destroyed or disposed of in accordance with the LES CEC Security Plan for the Protection of Classified Matter and Information. In accordance with 10 C.F.R. § 95.53, a "Certification of Non-Possession" of classified information on the CEC site shall be submitted to the NRC Division of Security. Depleted UF_6 (tails), if not already sold or disposed of prior to decommissioning, shall be sold, or shall be converted to a stable, non-volatile uranium compound and disposed of offsite in accordance with applicable regulatory requirements. Radioactive, hazardous, and mixed wastes shall be disposed of in accordance with regulatory requirements.

Based upon an LES evaluation of decommissioning costs, financial arrangements shall be made to cover costs required for releasing the site and facilities for unrestricted use. Present estimates of costs and planned funding arrangements are provided in Exhibit I of the License Application. Updates on decommissioning costs and adjustments to funding levels shall be performed periodically and at least every five years, consistent with the requirements of Title 10 of the Code of Federal Regulations. These cost estimates along with their bases will be submitted, upon request, to the NRC for review.

A detailed plan for completion of decommissioning shall be submitted for the CEC in accordance with the requirements of 10 C.F.R. § 70.38.

8.0 EMERGENCY PLAN

LES shall maintain an NRC approved emergency plan. The plans for maintaining the capability to respond to off-normal occurrences at the CEC are detailed in the Louisiana Energy Services Claiborne Enrichment Center Emergency Plan. This plan conforms to the "Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities," Regulatory Guide 3.67, January, 1992.

GUIDELINES FOR DECONTAMINATION OF FACILITIES AND EQUIPMENT PRIOR TO RELEASE FOR UNRESTRICTED USE OR TERMINATION OF LICENSES FOR BYPRODUCT, SOURCE, OR SPECIAL NUCLEAR MATERIAL

U.S. Nuclear Regulatory Commission
Division of Fuel Cycle Safety
and Safeguards
Washington, DC 20555

April 1993

The instructions in this guide, in conjunction with Table 1, specify the radionuclides and radiation exposure rate limits which should be used in decontamination and survey of surfaces or premises and equipment prior to abandonment or release for unrestricted use. The limits in Table 1 do not apply to premises, equipment, or scrap containing induced radioactivity for which the radiological considerations pertinent to their use may be different. The release of such facilities or items from regulatory control is considered on a case-by-case basis.

1. The licensee shall make a reasonable effort to eliminate residual contamination.

2. Radioactivity on equipment or surfaces shall not be covered by paint, plating, or other covering material unless contamination levels, as determined by a survey and documented, are below the limits specified in Table 1 prior to the application of the covering. A reasonable effort must be made to minimize the contamination prior to use of any covering.

3. The radioactivity on the interior surfaces of pipes, drain lines, or ductwork shall be determined by making measurements at all traps, and other appropriate access points, provided that contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement shall be presumed to be contaminated in excess of the limits.

4. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated with materials in excess of the limits specified. This may include, but would not be limited to, special circumstances such as razing of buildings, transfer of premises to another organization continuing work with radioactive materials, or conversion of facilities to a long-term storage or standby status. Such requests must:

   a. Provide detailed, specific information describing the premises, equipment or scrap, radioactive contaminants, and the nature, extent, and degree of residual surface contamination.

   b. Provide a detailed health and safety analysis which reflects that the residual amounts of materials on surface areas, together with other considerations such as prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

5. Prior to release of premises for unrestricted use, the licensee shall make a comprehensive radiation survey which establishes that contamination is within the limits specified in Table 1. A copy of the survey report shall be filed with the Division of Fuel Cycle Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and also the Administrator of the NRC Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report shall:

   a. Identify the premises.

   b. Show that reasonable effort has been made to eliminate residual contamination.

   c. Describe the scope of the survey and general procedures followed.

   d. State the findings of the survey in units specified in the instruction.

   Following review of the report, the NRC will consider visiting the facilities to confirm the survey.

TABLE 1

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDES[a]	AVERAGE[b,c]	MAXIMUM[b,d]	REMOVABLE[b,e]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	5,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm $\beta\gamma$/100 cm^2	15,000 dpm $\beta\gamma$/100 cm^2	1000 dpm $\beta\gamma$/100 cm^2

[a]Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c]Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d]The maximum contamination level applies to an area of not more than 100 cm^2.

[e]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

[f]The average and maximum radiation levels associated with surface contamination resulting from beta-gamma emitters should not exceed 0.2 mrad/hr at 1 cm and 1.0 mrad/hr at 1 cm, respectively, measured through not more than 7 milligrams per square centimeter of total absorber.

LEAK-TESTING SEALED SOURCES

I. Sources Which Contain Alpha and/or Beta-Gamma Emitters

A. 1. Each sealed source containing more than 100 microcuries of beta and/or gamma emitting material or more than 10 microcuries of alpha emitting material, other than Hydrogen-3, with a half-life greater than 30 days and in any form other than gas, shall be tested for leakage and/or contamination at intervals not to exceed 6 months. In the absence of a certificate from a transferor indicating that a test has been made within 6 months prior to the transfer, a sealed source received from another person shall not be put into use until tested.

2. The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. Prior to any use or transfer to another person, the source shall be leak tested unless they have been tested within 6 months prior to the date of use or transfer.

B. The test shall be capable of detecting the presence of 0.005 microcuries of radioactive material on the test sample. The sample shall be taken from the sealed source or appropriate accessible surface of the container or from the device where the sealed source is mounted or stored in which one might expect contamination to accumulate. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.

If the test reveals the following:

1. The presence of 0.005 microcuries or more of removable contamination from the sealed sources other than described below, or

2. The presence of 0.05 microcuries or more of removable contamination from the teletheraphy sealed source, or

3. An indication that the irradiator sealed source which is stored in the water pool for shielding purposes is leaking.

The licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired by a person appropriately licensed to make such repairs or to be disposed of in accordance with the Commission regulations.

Within 5 days after determining that any source has leaked, the licensee shall file a report with the Division of Fuel Cycle Safety and Safeguards, U. S. Nuclear Regulatory Commission, Washington, DC 20555, describing the source, test results, extent of contamination, apparent or suspected cause of source failure, and corrective action taken. A copy of the report shall be sent to the Administrator of the NRC Regional Office having jurisdiction listed in Appendix D, Title 10, Code of Federal Regulations, Part 20.

II. Sealed Uranium Sources

A. Each uranium source shall be tested for leakage at intervals not to exceed 6 months. In the absence of a certificate from a transferor indicating that a test has been made within 6 months prior to the transfer, the sealed source shall not be put into use until tested.

B. The test shall be capable of detecting the presence of 0.005 microcurie of alpha contamination on the test sample. The test sample shall be taken from the source or from appropriate accessible surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored. Records of leak test results shall be kept in units of microcuries and maintained for inspection by the Commission.

C. If the test reveals the presence of 0.005 microcurie or more of removable alpha contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired by a person appropriately licensed to make such repairs or to be disposed of in accordance with the Commission's regulation. Within 5 days after determining that any source has leaked, the licensee shall file a report with the Division of Fuel Cycle Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, describing the source, test results, extent of contamination, apparent or suspected cause of source failure, and the corrective action taken. A copy of the report shall be sent to the Administrator of the nearest NRC Regional Office listed in Appendix D of Title 10, Code of Federal Regulation, Part 20.

D. The periodic leak test required by this condition does not apply to sealed sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within 6 months prior to the date of use or transfer.

DEFINITIONS

The defined terms of this section are applicable throughout these [Proposed] License Conditions.

Annually:
365 days ± 60 days.

Audits and Inspections:
Audits are formal examinations made to verify that operations are being conducted according to established criteria. Inspections are routine reviews to check that operations are being conducted according to approved procedures. Audits are more formal and less frequent than inspections.

Biennial:
24 months ± 90 days.

Designee:
A person authorized to carry out the responsibilities of another. Authorization shall be designated in writing and only to individuals determined to have the qualifications to carry out the designated responsibilities.

Equivalent to Bachelor's Degree:
Higher education completed in a country outside of the USA which meets requirements at least as rigorous and extensive as USA requirements for a bachlor's degree from an accredited college or university.

Important to Safety:
Those structures, systems and components necessary to prevent or mitigate events that could result in exposure to any offsite individual to 25 $mg/m^3(30\ min/t)^{0.5}$ [where t=time in minutes] of hydrogen fluoride and/or inhalation of 10mg of uranium.

Preoperational:
Beginning of site construction activities until receipt of licensed source material at the site.

Quarterly:
90 days ± 20 days.

Semi-annually:
183 days ± 30 days.

Total Effective Dose Equivalent:
Annual exposure with a 50-year committed internal dose component and an external dose component.