



70-3070

Post Office Box 1004
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December 17, 1993

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 Licensing Documents
File: 6046-00-2001.01

Dear Mr. Hickey:

Enclosed are five copies of changed pages for the Proposed License Conditions, revision five, and 23 copies of changed pages for the Safety Analysis Report (SAR), revision 18, for the Claiborne Enrichment Center (CEC). Please update your copies of these documents following the enclosed Push-Pull Instructions. These minor changes have been made to correct and supplement information contained in these documents. The changes are described in Attachment A to this letter.

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

Sincerely,

Peter G. LeRoy
Licensing Manager

PGL/N109.123

Enclosures

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December 17, 1993
Mr. John W. N. Hickey, Chief
Page 2

xc: (w/ one copy of enclosures)

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Safety Analysis Report (SAR) Changes

SAR section 8.1.1, p. 8.1-1

Change first sentence of the third paragraph to indicate depleted uranium will be present at the facility.

SAR section 8.1.1, p. 8.1-1

Change fourth sentence of the third paragraph to delete the statement that gamma energies are in the lower energy range.

SAR section 8.1.2.2g., p. 8.1-3

Add "radiation safety training program"

SAR section 8.2.1.1, p. 8.2-1

In the first sentence of the third paragraph add "airborne radioactivity area"

SAR section 8.2.1.1, p. 8.2-1

In the first sentence of the fourth paragraph add "or where surface contamination levels"

SAR section 8.2.1.1, p. 8.2-2

Add at the end of the last sentence under Radiation Control Zone "if respiratory protection is not utilized"

SAR section 8.2.1.1, p. 8.2-2

Delete "the radiochemistry laboratory" as an example of an RCZ in the sixth paragraph.

SAR section 8.2.2.4.2, p. 8.2-6

In the first and second paragraphs change "administrative limit" to "action limit" (the places).

SAR Figure 8.2-1

Remove Radiation Control Area (RCA) markings from Utility Area.

SAR Table 8.4-1

Clarify that the alpha in air monitors (numbers 22, 24, 26, and 28) are located in the UF₆ Handling Area and Blending Area, not necessarily in the ventilation returns.

Proposed License Conditions (PLC) Changes

PLC section 2.3, p. 2-9

In the third paragraph, clarify that the audits conducted by the Facility Safety Review Committee (FSRC) are management assessment type audits, reviews, not the Quality Assurance audits performed in accordance with section 2.7 of the PLC.

PLC section 3.2.1.1, p. 3-2

In the fourth bullet clarify that intake exposures are based upon a 40 hour exposure.

PLC section 3.2.1.2, p. 3-3

In the fourth bullet clarify that intake exposures are based upon a 40 hour exposure and are applicable if respirator protection is not in use.

PLC section 3.2.5.1, p. 3-8

In the fifth bullet add "air flow will be checked following modification to a ventilation system serving these barriers."

PLC Table 5.2-1, p. 5-8 and 5-12

Both the AP6 and AP7 sampling site descriptions have been clarified to indicate if the site is already represented by sites AP1 through AP4, then the site is not needed.

Louisiana Energy Services
Proposed License Conditions
Push-Pull Instructions
Revision 5, December 17, 1993

Remove

- "List of Effective Pages"
- pages 1 through 4
- page 2-9
- pages 3-2, 3-3, and 3-8.
- Table 5.2-1 (pages 5-7
through 5-14)

Insert

- "List of Effective Pages"
- pages 1 through 4
- page 2-9
- pages 3-2, 3-3, and 3-8.
- Table 5.2-1 (pages 5-7
through 5-14)

Notes:

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**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Page/Table/Figure Number*

Revision Number, Date of Revision

Table of Contents

i	Rev. 4, 12/03/93
ii	Rev. 4, 12/03/93
iii	Rev. 4, 12/03/93
iv	Rev. 4, 12/03/93
v	Rev. 4, 12/03/93
vi	Rev. 4, 12/03/93
vii	Rev. 4, 12/03/93
viii	Rev. 4, 12/03/93
ix	Rev. 4, 12/03/93

Introduction

p 1-1	Rev. 4, 12/03/93
-------	------------------

Section 1.0

p 1-1	Rev. 4, 12/03/93
p 1-2	Rev. 4, 12/03/93
p 1-3	Rev. 4, 12/03/93
p 1-4	Rev. 4, 12/03/93
p 1-5	Rev. 4, 12/03/93
p 1-6	Rev. 4, 12/03/93
p 1-7	Rev. 4, 12/03/93
p 1-8	Rev. 4, 12/03/93
p 1-9	Rev. 4, 12/03/93

*NOTE: p = page
F = Figure
T = Table*

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 2.0

p 2-1	Rev. 4, 12/03/93
p 2-2	Rev. 4, 12/03/93
p 2-3	Rev. 4, 12/03/93
p 2-4	Rev. 4, 12/03/93
p 2-5	Rev. 4, 12/03/93
p 2-6	Rev. 4, 12/03/93
p 2-7	Rev. 4, 12/03/93
p 2-8	Rev. 4, 12/03/93
p 2-9	Rev. 5, 12/17/93
p 2-10	Rev. 4, 12/03/93
p 2-11	Rev. 4, 12/03/93
p 2-12	Rev. 4, 12/03/93
p 2-13	Rev. 4, 12/03/93
p 2-14	Rev. 4, 12/03/93
p 2-15	Rev. 4, 12/03/93
p 2-16	Rev. 4, 12/03/93
p 2-17	Rev. 4, 12/03/93
F 2.1-1 (p 2-18)	Rev. 4, 12/03/93

Section 3.0

p 3-1	Rev. 4, 12/03/93
p 3-2	Rev. 5, 12/17/93
p 3-3	Rev. 5, 12/17/93
p 3-4	Rev. 4, 12/03/93
p 3-5	Rev. 4, 12/03/93
p 3-6	Rev. 4, 12/03/93
p 3-7	Rev. 4, 12/03/93
p 3-8	Rev. 5, 12/17/93
p 3-9	Rev. 4, 12/03/93
p 3-10	Rev. 4, 12/03/93

NOTE: p = page
F = Figure
T = Table

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 4.0

p 4-1	Rev. 4, 12/03/93
p 4-2	Rev. 4, 12/03/93
p 4-3	Rev. 4, 12/03/93
p 4-4	Rev. 4, 12/03/93
p 4-5	Rev. 4, 12/03/93
p 4-6	Rev. 4, 12/03/93
p 4-7	Rev. 4, 12/03/93
p 4-8	Rev. 4, 12/03/93
p 4-9	Rev. 4, 12/03/93
p 4-10	Rev. 4, 12/03/93
T 4.2-1 (p 4-11)	Rev. 4, 12/03/93

Section 5.0

p 5-1	Rev. 4, 12/03/93
p 5-2	Rev. 4, 12/03/93
p 5-3	Rev. 4, 12/03/93
p 5-4	Rev. 4, 12/03/93
T 5.1-1 (p 5-5)	Rev. 4, 12/03/93
T 5.1-2 (p 5-6)	Rev. 4, 12/03/93
T 5.2-1 (p 5-7 through 5-14)	Rev. 5, 12/17/93
T 5.2-2 (p 5-15)	Rev. 4, 12/03/93
F 5.2-1 (p 5-16)	Rev. 4, 12/03/93
F 5.2-2 (p 5-17)	Rev. 4, 12/03/93
F 5.2-3 (p 5-18)	Rev. 4, 12/03/93

NOTE: p = page
F = Figure
T = Table

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 6.0

p 6-1	Rev. 4, 12/03/93
p 6-2	Rev. 4, 12/03/93
p 6-3	Rev. 4, 12/03/93
p 6-4	Rev. 4, 12/03/93
p 6-5	Rev. 4, 12/03/93

Section 7.0

p 7-1	Rev. 4, 12/03/93
-------	------------------

Section 8.0

p 8-1	Rev. 4, 12/03/93
-------	------------------

Appendix A

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93
p 3	Rev. 4, 12/03/93
p 4	Rev. 4, 12/03/93

Appendix B

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93

Appendix C

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93

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F = Figure
T = Table*

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 (i.e., review) per year for the above areas. This audit/review is a management assessment type review, 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

- 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/100cm² alpha or 150 dpm/100cm² 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 cm² alpha or 1000 dpm/100 cm² 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/100cm² alpha or 150 dpm/100 cm² beta/gamma (corrected for background). Clothing contaminated above egress limits shall not be released

- Except for inside the secondary containment of the autoclaves, the enrichment process shall be maintained below atmospheric pressure. Thus, the UF₆ 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 UF₆ process areas. Surveys shall also include routine checks of non-UF₆ 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

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

Pathway/ Sample type	Preoperational Samples and Locations	Preoperational Sampling and Collections
* Airborne Particulate	<p>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.</p> <p>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.</p> <p>AP3 - One sample located near the resident who is maximally exposed from the gaseous pathway.</p> <p>AP4 - One sample located in the west sector. To be located near the site boundary corresponding to the highest Chi/Q in that sector.</p> <p>AP5 - One sample located in the east sector near the site boundary corresponding to the highest Chi/Q in that sector.</p>	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
	<p>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.</p>	
	<p>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.</p>	
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	<p>GW1 - Well #A1, Figure 5.2-2</p> <p>GW2 - Well #B1, Figure 5.2-2</p> <p>GW3 - Well #C1, Figure 5.2-2</p> <p>GW4 - Well #D1, Figure 5.2-2</p> <p>GW5 - Well #E1, Figure 5.2-2</p> <p>GW6 - Well #F1, Figure 5.2-2</p>	Grab samples to be collected and analyzed quarterly.

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	<p>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.</p> <p>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.</p> <p>AP3 - One sample located near the resident who is maximally exposed from the gaseous pathway.</p> <p>AP4 - One sample located in the west sector. To be located near the site boundary corresponding to the highest Chi/Q in that sector.</p> <p>AP5 - One sample located in the east sector near the site boundary, corresponding to the highest Chi/Q in that sector.</p>	<p>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 U²³⁴, U²³⁵, and U²³⁸.</p>

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
	<p>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.</p> <p>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.</p>	
Airborne/ Soil	<p>S1-S16 - Samples to be collected near the air boundary in each sector. One sample per site.</p>	<p>Collected and analyzed semi-annually. Combine samples from sixteen sectors into four composites.</p>
Airborne/ Vegetation	<p>V1-V16 - Samples to be collected near the site boundary in each sector. One sample per site.</p>	<p>Collected and analyzed semi-annually at the same time as soil sample collection. Combine samples from sixteen sectors into four composites.</p>
Liquid/ Ground Water	<p>GW1 - Well #B1, Figure 5.2-2 GW2 - Well #C1, Figure 5.2-2 GW3 - Well #E1, Figure 5.2-2</p>	<p>Grab samples to be collected and analyzed semi-annually.</p>

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.	
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Push-Pull Instructions
Revision 5, December 17, 1993

<u>Remove</u>	<u>Insert</u>
• "List of Effective Pages" - pages 1 through 4	"List of Effective Pages" - pages 1 through 4
• page 2-9	page 2-9
• pages 3-2, 3-3, and 3-8.	pages 3-2, 3-3, and 3-8.
• Table 5.2-1 (pages 5-7 through 5-14)	Table 5.2-1 (pages 5-7 through 5-14)

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**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Page/Table/Figure Number*

Revision Number, Date of Revision

Table of Contents

i	Rev. 4, 12/03/93
ii	Rev. 4, 12/03/93
iii	Rev. 4, 12/03/93
iv	Rev. 4, 12/03/93
v	Rev. 4, 12/03/93
vi	Rev. 4, 12/03/93
vii	Rev. 4, 12/03/93
viii	Rev. 4, 12/03/93
ix	Rev. 4, 12/03/93

Introduction

p I-1	Rev. 4, 12/03/93
-------	------------------

Section 1.0

p 1-1	Rev. 4, 12/03/93
p 1-2	Rev. 4, 12/03/93
p 1-3	Rev. 4, 12/03/93
p 1-4	Rev. 4, 12/03/93
p 1-5	Rev. 4, 12/03/93
p 1-6	Rev. 4, 12/03/93
p 1-7	Rev. 4, 12/03/93
p 1-8	Rev. 4, 12/03/93
p 1-9	Rev. 4, 12/03/93

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F = Figure
T = Table

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 2.0

p 2-1	Rev. 4, 12/03/93
p 2-2	Rev. 4, 12/03/93
p 2-3	Rev. 4, 12/03/93
p 2-4	Rev. 4, 12/03/93
p 2-5	Rev. 4, 12/03/93
p 2-6	Rev. 4, 12/03/93
p 2-7	Rev. 4, 12/03/93
p 2-8	Rev. 4, 12/03/93
p 2-9	Rev. 5, 12/17/93
p 2-10	Rev. 4, 12/03/93
p 2-11	Rev. 4, 12/03/93
p 2-12	Rev. 4, 12/03/93
p 2-13	Rev. 4, 12/03/93
p 2-14	Rev. 4, 12/03/93
p 2-15	Rev. 4, 12/03/93
p 2-16	Rev. 4, 12/03/93
p 2-17	Rev. 4, 12/03/93
F 2.1-1 (p 2-18)	Rev. 4, 12/03/93

Section 3.0

p 3-1	Rev. 4, 12/03/93
p 3-2	Rev. 5, 12/17/93
p 3-3	Rev. 5, 12/17/93
p 3-4	Rev. 4, 12/03/93
p 3-5	Rev. 4, 12/03/93
p 3-6	Rev. 4, 12/03/93
p 3-7	Rev. 4, 12/03/93
p 3-8	Rev. 5, 12/17/93
p 3-9	Rev. 4, 12/03/93
p 3-10	Rev. 4, 12/03/93

*NOTE: p = page
F = Figure
T = Table*

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 4.0

p 4-1	Rev. 4, 12/03/93
p 4-2	Rev. 4, 12/03/93
p 4-3	Rev. 4, 12/03/93
p 4-4	Rev. 4, 12/03/93
p 4-5	Rev. 4, 12/03/93
p 4-6	Rev. 4, 12/03/93
p 4-7	Rev. 4, 12/03/93
p 4-8	Rev. 4, 12/03/93
p 4-9	Rev. 4, 12/03/93
p 4-10	Rev. 4, 12/03/93
T 4.2-1 (p 4-11)	Rev. 4, 12/03/93

Section 5.0

p 5-1	Rev. 4, 12/03/93
p 5-2	Rev. 4, 12/03/93
p 5-3	Rev. 4, 12/03/93
p 5-4	Rev. 4, 12/03/93
T 5.1-1 (p 5-5)	Rev. 4, 12/03/93
T 5.1-2 (p 5-6)	Rev. 4, 12/03/93
T 5.2-1 (p 5-7 through 5-14)	Rev. 5, 12/17/93
T 5.2-2 (p 5-15)	Rev. 4, 12/03/93
F 5.2-1 (p 5-16)	Rev. 4, 12/03/93
F 5.2-2 (p 5-17)	Rev. 4, 12/03/93
F 5.2-3 (p 5-18)	Rev. 4, 12/03/93

*NOTE: p = page
F = Figure
T = Table*

**LOUISIANA ENERGY SERVICES
PROPOSED LICENSE CONDITIONS
LIST OF EFFECTIVE PAGES**

Section 6.0

p 6-1	Rev. 4, 12/03/93
p 6-2	Rev. 4, 12/03/93
p 6-3	Rev. 4, 12/03/93
p 6-4	Rev. 4, 12/03/93
p 6-5	Rev. 4, 12/03/93

Section 7.0

p 7-1	Rev. 4, 12/03/93
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Section 8.0

p 8-1	Rev. 4, 12/03/93
-------	------------------

Appendix A

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93
p 3	Rev. 4, 12/03/93
p 4	Rev. 4, 12/03/93

Appendix B

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93

Appendix C

p 1	Rev. 4, 12/03/93
p 2	Rev. 4, 12/03/93

*NOTE: p = page
F = Figure
T = Table*

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 (i.e., review) per year for the above areas. This audit/review is a management assessment type review, 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

- 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/100cm² alpha or 150 dpm/100cm² 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 cm² alpha or 1000 dpm/100 cm² 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/100cm² alpha or 150 dpm/100 cm² beta/gamma (corrected for background). Clothing contaminated above egress limits shall not be released

- Except for inside the secondary containment of the autoclaves, the enrichment process shall be maintained below atmospheric pressure. Thus, the UF₆ 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 UF₆ process areas. Surveys shall also include routine checks of non-UF₆ 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

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

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

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 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	Grab samples to be collected and analyzed quarterly.

Table 5.2-1

Radiological Environmental Monitoring Program

Preoperational Monitoring

<u>Pathway/ Sample type</u>	<u>Preoperational Samples and Locations</u>	<u>Preoperational Sampling and Collections</u>
Liquid/ Shoreline Sediment	SS1 - To be collected near the outflow of Bluegill Pond. 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.	Grab samples to be collected and analyzed quarterly.
Liquid/ Bottom Sediment	BS1 - To be collected from the east end of Bluegill Pond. 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.	Grab samples to be collected and analyzed quarterly.
Liquid/Surface Water	SW1 - Inflow to Lake Avalyn. SW5 - Inflow to Bluegill Pond. SW6 - Bluegill Pond, near the center.	Grab samples collected and analyzed quarterly.

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	<p>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.</p> <p>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.</p> <p>AP3 - One sample located near the resident who is maximally exposed from the gaseous pathway.</p> <p>AP4 - One sample located in the west sector. To be located near the site boundary corresponding to the highest Chi/Q in that sector.</p> <p>AP5 - One sample located in the east sector near the site boundary, corresponding to the highest Chi/Q in that sector.</p>	<p>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 U²³⁴, U²³⁵, and U²³⁸.</p>

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
	<p>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.</p> <p>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.</p>	
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

<u>Pathway/ Sample type</u>	<u>Operational Samples and Locations</u>	<u>Operational Sampling and Collections</u>
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.	