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LES-10-00115-NRC

Attn: Document Control Desk  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Louisiana Energy Services, LLC  
NRC Docket No. 70-3103

Subject: Revision to License Amendment Request to Revise Chapter 5 of Safety Analysis Report (LAR-10-07)

Reference: 1. Telecommunication between the NRC and URENCO USA on LAR-10-07, June 3, 2010  
2. LES-10-00113-NRC, License Amendment Request to Revise Chapter 5 of Safety Analysis Report (LAR-10-07), June 2, 2010

As follow-up to the Ref. 1 telecommunication with the NRC Staff, URENCO USA (UUSA) herewith submits the subject revision to the Ref. 2 license amendment request (LAR-10-07). The LAR revision consists solely of a change to Safety Analysis Report (SAR) Page 5.1-5 wherein the discussion on "Neutron Absorbers" (in Section 5.1.2) has been modified to add clarification. The replacement page for SAR Page 5.1-5 is provided in the Enclosure.

UUSA appreciates the efforts of the NRC staff in supporting the review of this license amendment request; and looks forward to the NRC's timely approval of same. Should the NRC Staff have any questions regarding this submittal, please have them contact Gary Sanford, LES Director of Quality and Regulatory Affairs, at 575.394.5407.

Respectfully,



David E. Sexton  
Chief Nuclear Officer and Vice President of Operations

Enclosure: Revised Mark-up of Safety Analysis Report Page 5.1-5

NMSS01

## 5.1 The Nuclear Criticality Safety (NCS) Program

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### Reflection

Reflection is considered when performing Nuclear Criticality Safety Evaluations and Analyses. The possibility of full water reflection is considered but the layout of the NEF is a very open design and it is highly unlikely that those vessels and plant components requiring criticality control could become flooded from a source of water within the plant. In addition, automatic sprinklers are excluded from Separations Buildings and the CRDB. Fire protection standpipes are located in enclosed stairwells, or are arranged such that flooding from these sources is highly unlikely. Therefore, full water reflection of vessels has therefore been discounted. However, some select analyses have been performed using full reflection for conservatism. Partial reflection of

2.5 cm (0.984 in) of water is assumed where limited moderating materials (including humans) may be present. It is recognized that concrete can be a more efficient reflector than water; therefore, it is modeled in analyses where it is present. When moderation control is identified in the ISA Summary, it is established consistent with the guidelines of ANSI/ANS-8.22.

### Interaction

Nuclear criticality safety evaluations and analyses consider the potential effects of interaction. A non-interacting unit is defined as a unit that is spaced an approved distance from other units such that the multiplication of the subject unit is not increased. Units may be considered non-interacting when they are separated by more than 60 cm (23.6 inches).

If a unit is considered interacting, nuclear criticality safety analyses are performed. Individual unit multiplication and array interaction are evaluated using the Monte Carlo computer code MONK8A to ensure  $k_{\text{eff}} = k_{\text{calc}} + 3 \sigma_{\text{calc}} < 0.95$ .

### Neutron Absorbers

Neutron Absorption is a factor in almost all of the materials at the NEF. The normal absorption of neutrons in standard materials used in the construction and processes at the NEF (uranium, fluorine, water, steel, etc.) is not specifically excluded as a criticality control parameter.

Models incorporate conservative values (e.g., material compositions and equipment dimensions), which are validated at receipt, after installation or during surveillances.

Additional materials such as cadmium and boron for which the sole purpose would be to absorb neutrons are not incorporated in NEF processes. Solutions of absorbers are not used as a criticality control mechanism.

### Concentration, and Density and Neutron Absorbers

NEF does not use ~~mass~~either concentration, or density, or neutron absorbers as a criticality control parameter.

### **5.1.3 Safe Margins Against Criticality**

Process operations require establishment of criticality safety limits. The facility UF<sub>6</sub> systems involve mostly gaseous operations. These operations are carried out under reduced atmospheric conditions (vacuum) or at slightly elevated pressures not exceeding three