

JAN 12 2011

LES-11-00004-NRC

ATTN: Document Control Desk
Director
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: Response to NRC Request for Additional Information for Review of Interim License Basis Documents

Reference: 1) NRC Letter from B. Smith (NRC) to G. Sanford (LES), Request for Additional Information for Interim License Basis Documents (TAC NO. L33014), dated December 14, 2010
2) LES letter LES-10-00166-NRC, Interim License Basis Document Update, dated July 26, 2010

Pursuant to the NRC's Request for Additional Information (RAI) (Ref. 1) on the Ref. 2 document, URENCO USA (UUSA) herewith submits the enclosed response (Enclosure).

Should there be any questions concerning this submittal, please contact Mr. Wyatt Padgett, LES Licensing Manager, at 575.394.5257.

Sincerely,



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

Enclosure: UUSA Response to NRC's Request for Additional Information for Interim License Basis Documents

NM5501

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ENCLOSURE

Response to NRC's Request for Additional Information for Interim License Basis Documents

NRC RAI No. 1:

Provide your evaluation of the consequences to the facility worker for the uncontrolled or unmitigated scenario (without implementation of items relied on for safety [IROFS]). Demonstrate that your analysis is conservative and accounts for uncertainty.

Section 6.3.2.1.1 of the Safety Analysis Report, "Worker Exposure Assumptions", describes all the assumptions used to demonstrate that a facility worker would not receive any significant exposure after a release near his/her vicinity. All the assumptions relied on a worker action immediately after a release has occurred (IROFS 39c). The current analysis does not factor in the time that the worker takes to realize that a release has occurred. Dermal exposure or other external factors that could affect the availability of IROFS 39c were not considered in the analysis.

NUREG-1520 Chapter 3, "Integrated Safety Analysis (ISA) and ISA Summary", states that the primary purpose of process hazard analysis is to identify all uncontrolled and unmitigated accident sequences. To establish the chemical consequence severity categories (e.g. high, intermediate, low), no IROFS can be credited in the analysis. Also Appendix 3B of NUREG-1520 Rev 01, stated that the applicant needs to demonstrate that there is a dependable amount of conservatism in ISA methods that offsets the uncertainty arising from lack of rigor.

UUSA Response No. 1:

The "Worker Exposure Assumptions" described in Safety Analysis Report Section 6.3.2.1.1 provide the justification for treating the local worker in the vicinity of the chemical release as a facility worker. The uncontrolled or unmitigated worker consequences prior to worker evacuation from the immediate area of a release do not rely on IROFS39c or any IROFS as an initial condition. An error exists in Section 6.3.2.1.1 of the Safety Analysis Report; accordingly, the paragraph regarding IROFS39c is being removed from the Safety Analysis Report. (CR-2011-129) was written to document and correct this issue.

Dermal factors were not considered in the analysis as dermal exposure to hydrogen fluoride occurs when aqueous hydrogen fluoride comes in contact with skin; this exposure is not expected from hydrogen fluoride gas [ATSDR, Medical Management Guideline for Hydrogen Fluoride]. Reaction with UF₆ and atmospheric moisture would not create aqueous hydrogen fluoride; and neither is it used as a process chemical. Therefore, no limits exist for hydrogen fluoride dermal exposure.

The worker consequence severity category is defined by the quantitative standard of chemical consequence established by the National Advisory Committee for Acute

Exposure Guideline Levels (AEGLs) for Hazardous Substances, and accepted in the NRC Safety Evaluation Report (NUREG-1827, Table A.1-3). The use of this standard is acceptable as NUREG-1520 (March 2002, p.3-23) allows the use of values from national or international accepted standards. The AEGL values are based on inhalation or intake or the airborne chemical concentration which is more limiting than external exposures such as dermal exposures.

Conservative assumptions that have been used in the integrated safety analysis (ISA) for evaluation of the uncontrolled or unmitigated worker consequences are preserved, including:

- Instantaneous release and mixing of UF₆ with room free volume results in immediate exposure to all workers and ignores cloud dispersion time.
- Use of conservatively low mixing efficiency reduces effective mixing volume.
- Assuming 20% of room volume is occupied by equipment further reduces effective mixing volume.
- Complete confinement of the release in the room without leakage through openings or HVAC, produces a constantly increasing concentration with time.
- Full reaction of UF₆ with humid air in the room completely converts released UF₆ to UO₂F₂ particulate matter and HF vapor.
- No credit for HF reaction with building materials to reduce concentration.
- Use of the 10-min AEGL limits for worker exposure durations that are conservatively low for exposures of less than 10 minutes.

The consequence analysis methodology accounts for worker response time by assuming the facility worker is at the greatest possible distance from an exit and adding time to recognize and respond to the hazard.

Uncertainty is accounted for by conservative assumptions used in the consequence analysis. High UF₆ release rates are used in each specific application of the consequence analysis method. Compared to room volume and exposure duration, the release rate is the least certain input parameter. Therefore, theoretical maximum release rates are used in the specific applications of the consequence analysis method.