December 23, 1992

Docket No. 70-3070

Louisiana Energy Services, L.P.
ATTN: W. Howard Arnold
President
2120 K Street, N.W.
Suite 850
Washington, DC 20037

Gentlemen:

We have completed our detailed review of the Criticality Safety Engineering Report dated June 30, 1992. Based on our review, we have prepared a list of questions and requests for additional information. The list is enclosed.

Sincerely,

/S/

Lidia A. Roché
Fuel Cycle Safety Branch
Division of Industrial and
Medical Nuclear Safety, NMSS

Enclosure: Criticality questions

cc: Attached list

DISTRIBUTION: Docket No. 70-3070

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ENCLOSURE

CRITICALITY QUESTIONS

In the review of the Safety Analysis Report (SAR) and the Criticality Safety Engineering Report (CSER), we have identified several problems with the safety analysis. The SAR/CSER should be revised to describe an adequate administrative and technical nuclear criticality safety program. The problem areas which need revision or supporting justification are:

1. In Section 11.1.4.1 of the SAR, education and experience qualifications are provided (paragraph 1) for a Projects Individual. The adequacy of these qualifications cannot be assessed because the responsibilities and authority for this individual were not specified in Section 11.1.2.

   If an applicant proposes to make changes in the facility which would require new nuclear safety analyses, the staff requires that a trained individual perform the analysis and that a second trained individual with at least 2 years of experience in analyses and safety program implementation independently review and approve the analysis.

2. In Sections 11.2 and 11.4 of the SAR, the application states that plant procedures will specify limits on control parameters and corrective measures to return a parameter to its control band, as appropriate. Limits and corrective measures must be specified for all operations. Exceptions, if any, must be explicitly identified in the application.

3. In addition to the operating procedures discussed in Section 11, written procedures must be established and implemented for activities of the nuclear criticality safety function.

4. In Section 4.5 of the SAR, safety factors are provided for reducing critical mass or dimensions for process equipment. Safety factors or practices must be provided also to ensure that specified geometric configurations are maintained.

5. In Sections 4.2 and 2.1 of the CSER, the proposed limits for UF_6 product cylinders, i.e., 2 kg of hydrogen or $H/U < 1$, do not ensure nuclear criticality safety. In particular, a large array of cylinders, filled with UF_6 moderated such that $H//U = 1$, would not be subcritical. As shown by your evaluation in the CSER, 570 g of hydrogen corresponds to $H/U = 0.088$. Accordingly, for 2000 g of hydrogen, the corresponding H/U is 0.3. This H/U can be shown to provide a greater margin for nuclear criticality safety.

6. In Section 2.1 of the CSER, the feed cylinders have been assumed to contain only natural UF_6. However, the feed cylinders can be used for enriched as well as natural UF_6. Provisions must be established and implemented to ensure that enriched UF_6 is not introduced as feed material.

7. In Section 4.3 of the CSER, criticality safety of the desublimers requires control room monitoring of instruments measuring pressure and pressure changes. The monitoring and control system must be calibrated and functionally tested periodically.

8. In Section 4.4 of the CSER, the neutron interaction analyses from the chemical traps on mobile pumps and for mobile vacuum pumps must be provided.

9. In Section 4.7 of the CSER, criteria for process pipe bends and joints must be provided.

10. In Section 4.8 of the CSER, the Fomblin oil recovery equipment should be described. A nuclear criticality safety analysis must be provided for the array of equipment in the hood.

11. In Section 4.10 of the CSER, certain waste treatment processes will be undertaken by a licensed contractor. However, if such processes are to be taken on the CEC site, the activities must be authorized by the CEC license. The appropriate waste treatment process descriptions and nuclear safety analyses must be provided for such activities.

12. In Section 4.11 of the CSER, positive controls to limit the uranium accumulative in the effluent collection tanks has not been demonstrated. If enriched uranium can collect in these tanks, positive controls, e.g., multiple inline monitors or inline favorable geometry collection and sampling tanks, must be provided.

13. In Section 4.11 of the CSER, the basis for nuclear safety of the effluent pits must be provided. For example, floor leakage into a pit and multiple tank spills into a pit must be evaluated.

14. In Section 4.11 of the CSER, positive controls to limit the uranium accumulation for each citric acid bath has not been demonstrated. The daily sampling does not provide high assurance that a critical mass accumulation will not occur. Therefore, the limit for each bath must be reduced significantly below a safe mass to allow for the poor quality of controls over the uranium accumulation in the baths.

15. An array analysis for all waste liquid process and collection tanks must be provided.

16. In Section 4.12 of the CSER, the potential deposition of uranium in the ductwork prior to the filter system must be controlled by either favorable geometry ducts, frequent inspections, or other safety features.

17. A description of processing and waste handling for all areas such as the chemistry area should be provided. The basis for nuclear criticality safety of all areas must be provided in the application.

18. In Section 6.0 of the CSER, the requested exemption from the criticality monitoring system requirements of 10 CFR 70.24 has not been justified for the TSA. The lack of positive controls in the waste handling area does not support the request. On the otherhand, the combination of process and safety controls does provide justification for an exemption for the enrichment halls.

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