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MEMORANDUM FOR: Lidia A. Roche  
Fuel Cycle Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS

FROM: George H. Bidinger  
Uranium Fuel Section  
Fuel Cycle Safety Branch  
Division of Industrial and  
Medical Nuclear Safety, NMSS

SUBJECT: TRIP REPORT, VISIT TO URENCO PLANTS, MAY 19-20, 1991

Enclosed is a trip report for my visit to the Urenco plants in Gronau,  
Germany, and Almelo, The Netherlands.

Original Signed By:

George H. Bidinger  
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Enclosure: As stated

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Trip Report - Urenco Plants at Gronau, Germany and Almelo,  
The Netherlands, May 20-21, 1992

Persons Contacted:

Mr. Chris Andrews, Design Manager  
Mr. Jeoff Baggett, Manager, Criticality  
Mr. Joachim Christofzik, Deputy Plant Manager, Urenco, Gronau, Germany  
Dr. Norbert Hootsman, Managing Director, Urenco, Almelo, The Netherlands  
Mr. Brian Miles, Assistant to the Director (Operations), Urenco,  
Mr. Ben Dekker, Manager of Safety, Security, Safeguards (Criticality  
Specialist), Almelo

Tuesday

I met Mr. Andrews and Mr. Baggett at the Amsterdam airport and we drove together to the motel in the NRC car. We were joined at dinner by Messrs. Miles and Dekker. Schedules and meeting objectives for Wednesday and Thursday were discussed.

Wednesday

Mr. Christofzik conducted a tour of the Gronau facility and described the processes for enrichment of UF<sub>6</sub> and waste handling. Mr. Andrews highlighted similarities and differences in the Gronau and proposed Louisiana Energy Systems (LES) facility.

Thursday

Mr. Miles conducted a tour of the Almelo facility. The process of enriching UF<sub>6</sub> is the same as at Gronau. There are, however, some significant changes in equipment. Again, Mr. Andrews noted the differences between Almelo and LES. Mr. Dekker and Mr. Baggett discussed the safety bases for the Urenco plants, including the proposed LES plants.

General Observations

During the two days of plant visits, I observed most of the enrichment equipment that will be used in the LES. Certain pumps and traps may be changed, for LES to incorporate new technological developments. However, centrifuges, cascade halls, control valves, desubliners, cylinder handling equipment, and heating/cooling chambers which will be used for LES were observed.

Very few operators were observed during the tours. The control room was staffed in both plants. Other workers were observed moving about in the plant. Two workers provided a demonstration of a sampling autoclave. The plants were very clean and minimal protective clothing was required by the workers. In only one area of one plant were protective shoe covers required.

The control room operator at Almelo provided a demonstration of how the centrifuges are monitored. If water entered the enrichment system, a pressure alarm would be printed in the control room. This would allow Urenco to take corrective action. If a similar control room is used at LES, many of the safety issues will be easily treated. (The writer is not currently knowledgeable about control room plans for LES.)

### Criticality Safety

Most of the potential criticality safety scenarios are easily controlled by use of autoclaves or subatmospheric pressures in process equipment. The one area which remains troublesome is the waste handling areas. Historically, Urenco appears to rely on past practice to show there are no criticality problems in waste areas. Apparently, the National Authorities in Germany and The Netherlands agree. This issue was discussed at length during the Almelo visit. The writer suggested several approaches to Messrs. Andrews and Baggett, the consultants for LES.

In an earlier, brief review of the Criticality Engineering Report for LES, the writer had raised eight concerns. As a result of this trip, one concern was resolved by observations of a centrifuge valve. The other concerns remain valid. One concern was the LES use of limits in ANS-8.1. The writer views these limits as subcritical limits, not safe limits. Apparently the two plants at Almelo and Gronau were licensed using the subcritical values as safe values. As used by the writer, safe values include safety margins to allow for process upsets; subcritical values do not. The writer did not pursue this further.