



United States Department of State

Washington, D.C. 20520

August 24, 2001

Ms. Janice Dunn Lee  
Director, International Programs  
United States Nuclear Regulatory Commission  
Rockville, Maryland

Dear Ms. Lee:

I refer to the August 24, 2000, Memorandum and Order CLI-00-16 in the Matter of Transnuclear, Inc., (Export of 93.3% Enriched Uranium) Docket No. 11004440, License No. XSNM02611, in which the Commission requested the Executive Branch to submit annual reports on the status of the conversion of the Petten High Flux Reactor (HFR) from the use of highly enriched uranium (HEU) fuel to low enriched uranium (LEU) fuel. This letter constitutes the first such annual report.

The Department of Energy/Argonne National Laboratory (DOE/ANL) has conducted a review of the Petten HFR conversion effort. The review notes that significant technical progress was made during the past year by the Joint Research Center (JRC) Petten, the Nuclear Research and Consultancy Group (NRG) Petten and the Reduced Enrichment Research and Test Reactors (RERTR) Program in completing the work needed to convert the Petten HFR from the use of HEU to LEU fuel. The DOE/ANL review concludes that the conversion schedule reported in my letter of July 31, 2000 is still valid and that work is progressing on schedule to complete LEU conversion of the reactor by May 2006. Enclosed is a list of technical tasks completed during the past year in support of Petten HFR conversion.

We hope the foregoing will be helpful to the Commission in its review of this matter. Should the Commission have any further questions, please do not hesitate to contact me.

Sincerely,

Richard J. K. Stratford  
Director  
Nuclear Energy Affairs

Enclosure: as stated.

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## Technical Tasks Completed

1. A joint paper with NRG comparing the performance of difference LEU fuel assembly designs was presented at the October 2000 RERTR meeting in Las Vegas. The design of the LEU fuel assembly for conversion of the core was finalized based on these results, completing Phase I of the conversion study.
2. JRC Petten issued specification for LEU uranium-silicide fuel assemblies and is procuring from CERCA and/or BWXT (Babcock Wilcox) two LEU prototype fuel assemblies for irradiation testing.
3. A validation report was completed on the methods and models used by ANL to calculate several key reactor parameters measured by NRG. This report was sent by NRG to Dutch Regulatory Authorities for review.
4. A project plan for Phase 2 "Technical Qualification" was prepared by NRG, reviewed and modified by ANL and NRG, and issued by NRG.
5. The REBUS-PC fuel cycle analysis code, the WIMS-ANL nuclear cross section generation code, and computer models of the reactor developed at ANL were provided to the Petten HFR operators for their use.
6. Two NRC engineers visited ANL on May 7-11, 2001 to discuss modeling of the HRF core using the REBUS-PC code and the MCNP Monte Carlo code, how to use these codes efficiently, and the strategy of the calculations for conversion of the HFR to LEU fuel.
7. The "Technical Safety Specification of the HFR" was translated from Dutch into English for use by ANL.
8. Reports on "Criticality Analysis of the Storage Facilities for HFR LEU Fuel and Control Elements" and "Structural Integrity of the Lower Grid" were completed by NRG.
9. Preparations are being made at Petten to perform hydraulic pressure drop measurements on the LEU prototype fuel elements when they are received. A historical overview of measurements on LEU fuel elements in the framework of the RERTR program is also being prepared.
10. JRC is currently reviewing two offers by potential suppliers of the two LEU prototype elements mentioned in item 2. Manufacturing of the prototypes will take at least six months. Irradiation testing of the elements will start at the earliest in the beginning of 2002, close to the date projected on the original schedule.
11. A collaborative effort between ANL and NRG is currently in progress to create detailed models of 17 in-core experiments prior to beginning operational and safety analyses for LEU conversion.