

UNITED STATES GOVERNMENT

Memorandum

TO : Donald A. Nussbaumer, Chief
Source & Special Nuclear Materials Branch, DLR

DATE: February 13, 1964

FROM : Charles D. Luke, Chief
Criticality Evaluation Branch, DLR

SUBJECT: UNITED NUCLEAR CORPORATION, WOOD RIVER JUNCTION, RHODE ISLAND -
APPLICATION FOR SCRAP RECOVERY PLANT - DOCKET NO. 70-820, DATED
JANUARY 31, 1964

REFERENCE: UNC ltr, dtd 11/27/63
Ltr to UNC dtd 1/22/64

SYMBOL: DLR:RHO

In order to continue our review of the nuclear safety of the applicant's letters of November 27, 1963 and January 31, 1964, we will require the following questions be resolved to our satisfaction by the applicant (at this time, we have not completed our review of Sections 302.1 through 302.5):

- "1. We request you revise the last paragraph in Section 207.2 to provide that all revisions to equipment, piping or procedures involving special nuclear material will be described in writing and subject to approval by the Supervisor, Nuclear Safety, before such modification or changes are made. We would not require such approval for repairs or replacements with like equipment in the same location. Any modification of existing equipment, piping or procedures which the Supervisor, Nuclear Safety, considers a significant change in nuclear safety will be submitted as a request for license amendment and subject to approval of the Commission before such changes are made.
- "2. We require the Drawing No. A-706 referred to in Section 302.2.7, which is missing from your application.
- "3. In Section 302.2.3, how will the dummy ball be identified by the operator?
- "4. Confirmation that the water lines and other sources of moderators will be excluded from blender loading hood (1-L-6).
- "5. During our recent visit to your plant, we observed that it was physically possible to place the assay tanks (1-D-34A, B, C) closer together than the specified 24" surface-to-surface distance. Please revise your nuclear

B-154

safety analysis based on the minimum spacing or inform us of the steps you have taken to correct this possibility.

- "6. Your general statements that solutions will overflow to the floor before flowing to unsafe geometry equipment should insure nuclear safety in your plant concerning this type of problem. However, if an operator or supervisor notices a vessel overflowing, what precautions will you take to attempt to insure he will not use unsafe geometry vessels to collect this material during overflow or during cleanup operations.
- "7. From the information that we have received in your November 27, 1963 and January 31, 1964 letters, we have been unable to ascertain the nuclear safety of the evaporator in case of a tube bundle failure. One concern is the nuclear safety of the expansion joint in case the shell side can become flooded. Also, please state specifically the lines and vessels used to dispose of the steam condensate and submit a detailed nuclear safety analysis justifying this method of collecting and disposing of the condensate.
- "8. Describe the corrosion resistance and structural integrity of the support screen that will be used to contain the Raschig Rings within the evaporator mist separator, and provide assurance that the rings will be held in place.
- "9. The general statement in Section 503.1, ". . . and/or by limited safe mass amounts in each container with limited safe array spacing", should be expanded to include the information requested in Section II-B, Renewal Application Guide.
- "10. In Section 504.3, references to a safe dry mass of 12 ~~and 12.8~~ kg uranium should be revised to 10 kg U-235 which provides a safety factor of at least 2.3; or, you should demonstrate that the 12 ~~and 12.8~~ kg uranium is safe by at least a factor of 2.3, because of additional nuclear safety controls. Upon receipt of this information, we will be in a position to agree with you that your proposed storage procedures based upon the information presented in Section 504.3 are acceptable.
- "11. The isolation criteria given in Section 501 should be revised according to Section III-A, Renewal Application Guide.

- "12. We do not have sufficient information to determine from Section 501 that incoming special nuclear material will be safely stored inside the building. Storing in its birdcage does not insure nuclear safety if it can interact with other special nuclear material.
- "13. The shipping container identified as BE Permit 1351 has an inner container volume of 2.3 liters. From Figures 1 and 2 of TID-7016, Rev. 1, your inner container volume would be safe for H/U-235 greater than 2.0, and a 10 kg U-235 mass limit would be safe for H/U-235 less than 2.0. We request that you confirm that the maximum U-235 mass loading will not exceed 10 kg.
- "14. With reference to your array determinations for the shipping containers identified as "BE Permit 1351" we must emphasize that the solid angle method is not applicable to metal units containing more than 2 kg U-235. Such shipments may be based upon Figure 23 and Table IV of TID-7016, Rev. 1 (as revised in the Renewal Application Guide). This same criterion may be used in justifying nuclear safety of shipping compounds in the 2.3 liter Schedule 40 pipe inner container provided in the BE Permit 1351 package.
- "15. The maximum weight loading of both shipping containers (BE Permit 1351 and 1483) should be specified to permit structural analyses."
- (D. A. Nussbaumer - Please insert criticism of C. Beck who states that United Nuclear should demonstrate that the 1351 container will meet the current 30' drop test specification for a side drop, between supports.)
- (Insert judgment of C. Beck regarding the "BE Permit 1483" when used for shipping solutions. In this connection, where solutions or soluble compounds are shipped in safe diameter inner containers, we require that safe geometry be maintained and no material will leak from the inner container as a result of a 30' drop and one-hour fire test.)
- "16. Please revise the statement in Section 701 to specify that a certificate obtained from a carrier will be in accordance with Section V-E(3), Renewal Application Guide.

Donald A. Nussbaumer

- 4 -

February 13, 1964

"17. Please submit your plans to protect outside storage areas in order to guard against accidental dislocations of the storage arrays by vehicles, forklift trucks and similar accident conditions. For inside storage areas within work areas, please describe plans for protection against accidental dislocation."

cc: Christian Beck, DLR

"17. Please submit your plans to protect outside storage areas in order to guard against accidental dislocations of the storage arrays by vehicles, forklift trucks and similar accident conditions. For inside storage areas within work areas, please describe plans for protection against accidental dislocation."

cc: C. F. Lock, DLR

OFFICE ▶	DLR	DLR				
SURNAME ▶	<i>RH Odegaarden</i> Odegaarden:bar	<i>CD Luke</i> CDLuke				
DATE ▶	2/13/64	2/14/64				