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June 18, 1964

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UNITED NUCLEAR CORPORATION, CHEMICALS DIVISION, RENEWAL APPLICATION DOCKET NO. 70-36, APRIL 23, 1964

SYMBOL: ML:RHO

In the subject application, United Nuclear has replied to your letters of December 13, 1963, and March 26, 1964, except for those questions dealing with shipment. Probably information on shipping procedures will come later and I hope that this problem can be reconciled at an early date. Our comments on the April 23 letter from UNC are outlined below. The paragraph numbers are the same as our previous questions and the UNC reply of April 23.

"2. With regard to your procedures for confirming the uranium content and the U-235 enrichment of incoming shipments, you have not stated that the sample of uranium materials (other than UF_6 and scrap) will be representative of the entire shipment. We request that your samples be representative of the shipment, and taken in accordance with generally accepted procedures for obtaining composite samples. With regard to isotopic assay and chemical analysis of incoming shipments of uranium hexafluoride, if you do not sample and analyze each shipment you should establish the accuracy of the isotopic and chemical analyses with your supplier. Insofar as incoming scrap shipments are concerned, we are convinced that you must independently confirm the uranium content and isotopic assay of each package as received in order that the scrap will be stored, handled and processed safely in accordance with the procedures set forth in your application. Please submit procedures which consider these comments.

"4. We request your procedures for periodic inspection of ducts, vent lines and connected equipment to insure against unsafe accumulation of special nuclear material.

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- "8. Your assumption of minimal reflection for the mixer-settlers does not appear justified, particularly when the various inlet and outlet pipes are considered. We request that you consider nominal reflection for this equipment.
- "17. Please submit a nuclear safety analysis which demonstrates each dissolution batch will be safe by at least a factor of 2.3 when the batches are moderated and reflected by concentrations of uranium solutions encountered in the dissolver, Section 303.7. Also, demonstrate that the digester will be safe if uniform uranium precipitation were to occur, or describe administration controls to assure against accidental precipitation.
- "18. With regard to your proposed procedures for assuring nuclear safety of the filtrate collection system, we request that you furnish additional information on your procedures for inspecting tanks 240-3-4 and 240-3-5 in order to detect promptly any precipitate which for any reason by-passes the filters.
- "23. We require in the event of a general power failure to the monitor alarm system either emergency power will be automatically provided to the system or emergency evacuation plan instituted until power is restored. Your proposed cessation of movement of fissionable materials reduces the probability of accidental criticality, but does not provide for protection of personnel in case of coincident power failure and criticality incident.
- "24. Describe the operation and nuclear safety of all incinerators used in conjunction with the special nuclear material, and describe your procedures for inspection and cleanup of all associated equipment to assure against undetected accumulation of special nuclear material.
- "Added" Please confirm that the density correction factor described in Section 203 will only be applied to homogeneous systems and not heterogeneous systems (rods, tubes, pellets, etc.). For uranium of low enrichment,

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a heterogeneous system is more reactive than a homogeneous system of the same over-all composition, even though the actual U-235 density may not exceed the reference density."

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