DLR:RLL
70-820

January 22, 1964

United Nuclear Corporation
Chemicals Division
Route 21-A
Hematite, Missouri

Attention: Mr. L. J. Swallow

Gentlemen:

This refers to your application dated November 27, 1963, and confirms the information requested at the meeting on January 9, 1964, at AEC Bethesda between Messrs. R. Householder, R. Shearer, and L. Swallow, and personnel of this Division.

It was noted that some of the drawings transmitted in this application were designated as 'company confidential'. If it is your intent to have these drawings withheld from public disclosure then, pursuant to Section 2.810, 10 CFR 2, "Rules of Practice", you must submit information showing why such drawings are not required in the public interest and how such public disclosure would adversely effect the Corporation.

The information that we require to continue the review of this application is contained in Attachment I of this letter. The review of the nuclear safety aspects of this application has not been completed at this time. However, in order to expedite the review of this application, we have identified those areas where clarification or additional information will be required.

Distribution:
Compliance
C. D. Luke
Doc. Room
Suppl.
L&R reading
S&SNM reading
R. L. Layfield

Very truly yours,

Robert L. Layfield, Acting Chief
Source & Special Nuclear Materials Branch
Division of Licensing & Regulation

Enclosure:
Attachment I

OFFICE		DLR	DLR			
SURNAME		RLLayfield:bar	C.D.Luke			
DATE		1/22/64	1/22/64			

Form AEC-318 (Rev. 9-53) U.S. GOVERNMENT PRINTING OFFICE 2-16-62701-3

B-145

ATTACHMENT 1

United Nuclear Corporation
Scrap Plant Facilities
Wood River Junction
Rhode Island

Docket No. 70-820

General Information Manual

1. Section 207.2.2, page 7 of 10 - In the third paragraph of this Section, you indicated that the words ". . . before introducing enriched uranium and . . ." would be deleted.

2. Section 207.3, page 10 of 10 - What will be the maximum quantity of special nuclear material on hand at any one time.

3. Section 800, page 3 of 4 - More detailed description of the emergency power system. Does the emergency generator start up automatically or must it be started manually. If the generator does not start automatically, please confirm that the plant will be evacuated until power is restored to the monitor alarm system. Also, please describe the procedures and frequency for testing the emergency power system.

4. Section 1604 - An evaluation of the probability and effects of the release of radiation or radioactive materials as a result of accidents such as fire, explosion or nuclear incident.

Health Physics Manual

5. Section VIII, page 3 of 3 - (a) In this license application you have requested authorization to process source material as well as special nuclear material. Since this would include thorium, as well as uranium, the MPC's for air and water specified in subsection B and C of this page should be determined in accordance with the appropriate notes in Appendix B, for mixtures of radionuclides. (b) In subsection F on this page you specify that personnel exposure to external radiation will be limited to 3 rem per quarter. This exposure is permissible when the conditions specified in Sections 20.101 and 20.102 of 10 CFR20 are met.

6. Section IX, page 1 of 2 - (a) In subsections A and B of this page, you state that scheduling of routine sampling is given in the Appendix. In the Appendix you state that the initial frequency for air and water sampling in non-process areas will be monthly in some places and weekly in others. Further, you state that air and water sampling in all process areas (stations) will be obtained once per week when operations are

performed. Please describe in more detail your procedures for evaluating exposure of individuals to concentrations of radioactivity in process and non-process areas including the type of air samples that will be taken - breathing zone or general air, and procedures for controlling personnel exposure in the event that air concentrations are above the applicable MPC. (b) Method and frequency of calibrating air samplers. (c) In subsection c of this page, you state that the radioactivity of the liquid waste effluent is measured at the lagoon discharge on a continuous basis. Please describe in more detail the equipment for sampling and its reliability.

7. Section IX, page 2 of 2 - More detailed description of your procedures for determining the concentrations of airborne radioactivity released from the exhaust stacks including type equipment, frequency and location of such surveys.

8. Section XI, page 1 of 2 - It is stated that full face air line masks and "Dust Foe" respirators may be used under certain conditions; please note that no allowance shall be made for the use of respiratory protective equipment except as specifically authorized pursuant to Section 20.103(c), 10 CFR 20. This does not mean that such protective equipment may not be used to reduce further below the allowable concentrations specified in Appendix B, 10 CFR 20.

9. Section XIII, page 1 of 1 - What is the fire resistance rating of the absolute filters to be used in the hoods and glove boxes.

10. It was noted on Drawing Y101 that a septic tank and leaching bed were to be installed. Will there be any radioactive materials discharged to this tank or leaching.

11. More detailed description of the liquid waste disposal lagoon including the following: (a) Is the polyethylene liner one solid sheet or is it several over-lapping sheets. If there is over-lapping, how are the sheets joined; (b) At what frequency is the polyethylene liner inspected for voids; and (c) Hydrological and geological description of the land where the lagoon is situated and your evaluation of the possibility of radioactive material reaching subterranean waters.

Emergency Control Plan

12. Page 10 - Emergency equipment storage location. Type of survey instruments and air sampling equipment. Frequency of calibrating such equipment.

13. Page 15 - More detailed description of post nuclear incident procedures including the following: (a) Method of accounting for all personnel; and (b) Procedures for collecting and monitoring indium foils on personnel film badges.

14. The term "limited safe . . ." is used throughout the license application. Please define what is meant by this terminology.

15. The safe volume, k = 0.71, applies to 4.8 liter containers only. This has an allowable solid angle of 1.9 steradians.

16. Please confirm that special nuclear material not held under this license will be isolated from material under this license in accordance with Section III-A of the renewal application guide; or no distinction shall be made between this licensed material and other special nuclear material (not isolated), and the material shall be received, possessed, stored, and shipped as provided for in this license.

17. In order to ensure nuclear safety of the entrainment separator (Section 304.2.1) under accident conditions which could cause them to be flooded, it would appear necessary that the entire entrainment separator be of safe geometry or be filled with Raschig rings or other suitable fixed neutron poisons.

18. The nuclear safety analysis of the evaporator should include the expansion joint in case of failure of the tube bundle.

19. A nuclear safety analysis should be submitted of all lines and vessels employed to collect steam condensate from the heat exchanger of the evaporator which will demonstrate that they will be safe from accidental criticality in case of a possible tube bundle failure.

20. Since uranium salts may form within the condenser from entrained uranium in the off gas and because of possible flooding of the evaporator, we request a nuclear safety analysis of the condenser (1-X-1), related piping and the vessel shown at position F-1.5 on Figure A-901. Also, it appears possible from Figure A-903 to accidentally valve-off all venting to evaporator 1-M-2 creating a hazardous condition during operation of the evaporator.

21. It appears that Section 304.2.1(b) should be corrected referring to nominal reflection, not minimal. Also, your reference to 1 1/2" of steel applies to metal systems and, therefore, should be corrected to read 1" steel corresponding to solutions.

22. A nuclear safety analysis of all overflow bottles used in the facility, e.g., from Filtrate tanks, 1-D-24, and UX Liquor tanks, 1-D-16.

23. A nuclear safety analysis which takes into account all pumps used to transfer solutions containing or potentially containing special nuclear material.

24. In Section 304.10, it is stated that 10 kg uranium is "limited safe" at H/U ≤4. From Figure 1, TID-7016, Rev. 1, 10 kg uranium (93% U-235) is safe at an H/U not exceeding 2.

25. Further information relating to the responsibilities of the plant superintendent regarding nuclear safety, including the method of training and issuing instructions to operators and conduct of internal inspection audits to assure that approved procedures are followed. Administrative channels of communication with Supervisor, Nuclear Safety/Health Physics, who evidently will be located off-site.