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|---|--|---|--|--------------------------------------|--|-------------------|--|
| FROM:<br>State of New York<br>Atomic Energy Coordinating Council<br>Committee on Licensing<br>P.O. Box 7036<br>Albany New York<br><br>Peter C. Murphy (cc: B. Hasebanner) |  | DATE OF DOCUMENT<br>4/2/63  |  | DATE RECEIVED<br>4/4/63              |  | NO.:<br>2439      |  |
| CLASSIF.:<br>U  |  | LIT.<br>X   |  | MEMO:                                |  | REPORT:<br>OTHER: |  |
| POST OFFICE<br>REG. NO:   |  | ORIG.:<br>X   |  | CC:                                  |  | OTHER:            |  |
| DESCRIPTION: (Must Be Unclassified)<br>Ltr. re application for a radioactive materials license to New York State.   |  | ACTION NECESSARY <input type="checkbox"/>   |  | CONCURRENCE <input type="checkbox"/> |  | DATE ANSWERED:    |  |
|   |  | NO ACTION NECESSARY <input checked="" type="checkbox"/>   |  | COMMENT <input type="checkbox"/>     |  | BY:               |  |
|   |  | FILE CODE:  |  |                                      |  |                   |  |
| ENCLOSURES:<br>Cj. of United Nuclear Corp. application to State of New York   |  | REFERRED TO   |  | DATE                                 |  | RECEIVED BY       |  |
|   |  | Hasebanner  |  | 4/4                                  |  | C / S             |  |
|   |  | Lane  |  | 4/4                                  |  |                   |  |
|   |  | <div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> File in 70-13 </div> |  |                                      |  |                   |  |
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| REMARKS:  |  |   |  |                                      |  |                   |  |
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U. S. ATOMIC ENERGY COMMISSION **MAIL CONTROL FORM** FORM AEC-326: (8-60)

☆ U. S. Government Printing Office: 1962 - 637308

ITEM # 11

B/11

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Atomic Energy Coordinating Council  
Committee on Licensing  
P. O. Box 7036  
Albany

April 2, 1963

Mr. Peter C. Murphy  
Manager of Administration  
United Nuclear Corporation  
Development Division - NDA  
5 New Street  
White Plains, New York

Dear Mr. Murphy:

This concerns your letter of March 29, 1963 and our telephone conversation of April 1, 1963, relating to your application for a radioactive materials license.

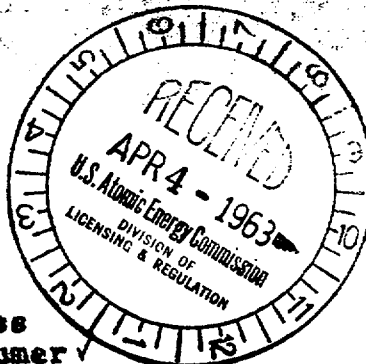
As you know, the State of New York licenses special nuclear materials in quantities that are not sufficient to form a critical mass. Special nuclear materials that are sufficient to form a critical mass will continue to be licensed by the U. S. Atomic Energy Commission. Rule 38-42.37, on page 30 of Industrial Code Rule No. 38, indicates that the combination of quantities of special nuclear materials requested in your application has reached the level where United Nuclear Corporation should apply for a special nuclear materials license from the U. S. Atomic Energy Commission rather than from the State of New York.

In accordance with your request, I am enclosing five copies of Industrial Code Rule No. 38. If I can be of any further assistance, please feel free to contact me.

Sincerely yours,

Enc.  
RDV:ctl

cc: Albert Abrahams  
Bennett L. Harless  
Donald A. Nussebaumer



Robert D. Vessels  
Secretary

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## APPLICATION FOR RADIOACTIVE MATERIALS LICENSE

INSTRUCTIONS. — Complete Items 1 through 16 if this is an initial application. If application is for renewal of a license, complete only Items 1 through 7 and indicate new information or changes in the program as requested in Items 8 through 15. Use supplemental sheets where necessary. Item 16 must be completed on all applications. Mail three copies to: New York State Coordinating Council on Atomic Energy, Alfred E. Smith State Office Building, P.O. Box 7036, Albany 1, New York, Attention: Committee on Licensing. Upon approval of an application, the applicant will receive a "Radioactive Materials License" issued pursuant to statutory and implementing regulatory authority and subject to all applicable rules, regulations and orders of all appropriate regulatory agencies now or hereafter in effect and to any conditions specified in the license.

1. (a) NAME AND STREET ADDRESS OF APPLICANT. (Institution, firm, hospital, person, etc.)  
 United Nuclear Corporation, Development  
 Division  
 5 New Street  
 White Plains, New York

(b) STREET ADDRESS(ES) AT WHICH RADIOACTIVE MATERIAL WILL BE USED. (If different from 1(a).)  
 Materials will also be used at our  
 Critical Experimental Laboratory and  
 Hot Laboratory  
 Route 55, Pawling, New York

2. DEPARTMENT TO USE RADIOACTIVE MATERIAL  
 Experimental Physics Section of the  
 Physics and Math Department  
 Materials Research Laboratory Department

3. PREVIOUS LICENSE NUMBERS AND ISSUING AGENCY. (If you have ever been denied a license or if your license has ever been revoked or suspended, describe details on an additional sheet. If this is a renewal, please indicate and state license number.)  
 AEC Byproduct Materials Lic. 31-350-6  
 AEC Byproduct Materials Lic. 31-350-7  
 AEC Byproduct Materials Lic. 31-350-2  
 AEC Byproduct Materials Lic. 31-350-4  
 AEC Special Nuclear Material Lic. SNM-12

4. INDIVIDUAL USER(S). (Name and title of individual(s) who will use or directly supervise use of radioactive materials. State training and experience in Items 8 and 9.)  
 Dr. Robert D. Schamberger, Chief, Experimental  
 Physics Section  
 Owen Sullivan, Supvr., Hot Laboratory  
 Hyman Steinmetz, Supvr., Chemistry Lab.

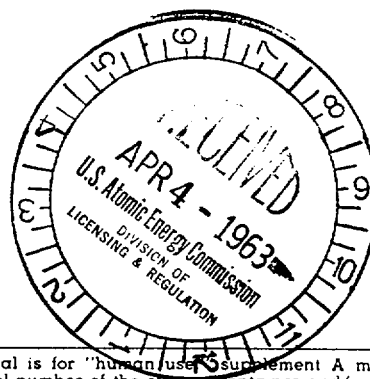
5. RADIATION SAFETY OFFICER (Name of person designated as radiation protection officer if other than individual user. Attach resume of his training and experience as in Items 8 and 9.)

Percy Clemons

6 (a). RADIOACTIVE MATERIALS. (Elements and mass number of each.)

(b) CHEMICAL AND/OR PHYSICAL FORM AND MAXIMUM AMOUNT OF EACH CHEMICAL AND/OR PHYSICAL FORM THAT YOU WILL POSSESS AT ANY ONE TIME. (If sealed source(s), also state name of manufacturer, model number, number of sources and maximum activity per source.)

See Appendix 1.



7. DESCRIBE PURPOSE FOR WHICH RADIOACTIVE MATERIALS WILL BE USED. (If byproduct material is for "human use," Supplement A must be completed in lieu of this item. If byproduct material is in the form of a sealed source, include the make and model number of the storage container and/or device in which the source will be stored and/or used.)

Materials will be used variously,

- (a) in research and development experiments, including shield testing, irradiation experiments, radio-chemical analysis of materials, fuel design studies, etc.,
- (b) as neutron sources,
- (c) as monitoring devices

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TRAINING AND EXPERIENCE OF EACH INDIVIDUAL NAMED IN ITEMS 4 AND 5 (Use supplemental sheets if necessary)

| a. TYPE OF TRAINING   | WHERE TRAINED   | DURATION OF TRAINING | ON THE JOB<br>(Circle answer) | FORMAL COURSE<br>(Circle answer) |
|---|-----------------|----------------------|-------------------------------|----------------------------------|
| a. Principles and practices of radiation protection . . . . .                             | See Appendix 2. |                      | Yes No                        | Yes No                           |
| b. Radioactivity measurement standardization and monitoring techniques and instruments    |                 |                      | Yes No                        | Yes No                           |
| c. Mathematics and calculations basic to the use and measurement of radioactivity . . . . |                 |                      | Yes No                        | Yes No                           |
| d. Biological effects of radiation . . . . .  |                 |                      | Yes No                        | Yes No                           |

9. EXPERIENCE WITH RADIATION. (Actual use of radioactive materials or equivalent experience)

| RADIOACTIVE MATERIALS | MAXIMUM AMOUNT | WHERE EXPERIENCE WAS GAINED | DURATION OF EXPERIENCE | TYPE OF USE |
|-----------------------|----------------|-----------------------------|------------------------|-------------|
|                       |                | See Appendix 2.             |                        |             |

10. RADIATION DETECTION INSTRUMENTS. (Use supplemental sheets if necessary.)

| TYPE OF INSTRUMENTS<br>(Include make and model number of each) | NUMBER AVAILABLE | RADIATION DETECTED | SENSITIVITY RANGE<br>(mr/hr) | WINDOW THICKNESS<br>(mg/cm <sup>2</sup> ) | USE<br>(Monitoring, surveying, measuring) |
|--|------------------|--------------------|------------------------------|---|---|
| Nuclear Chicago, 2612  | 5                |                    | S.R. 0-20                    | 30 mg.                                    | Monitoring and surveying                  |
| JUNO SR-J-3  | 3                |                    | 0-5000                       |   |   |

11. METHOD, FREQUENCY, AND STANDARDS USED IN CALIBRATING INSTRUMENTS LISTED ABOVE.

Instrument calibration at 2-month intervals with Cobalt 60 standard source.

12. FILM BADGES, DOSIMETERS, AND BIO-ASSAY PROCEDURES USED. (For film badges, specify method of calibrating and processing, or name of supplier.)

R. S. Landuer, Jr. & Company

INFORMATION TO BE SUBMITTED ON ADDITIONAL SHEETS

13. FACILITIES AND EQUIPMENT. Describe laboratory facilities and remote handling equipment, storage containers, shielding, fume hoods, etc. Explanatory sketch of facility is attached. (Circle answer) Yes No

See Appendix 3

14. RADIATION PROTECTION PROGRAM. Describe the radiation protection program including control measures. If application covers sealed sources, submit leak testing procedures where applicable, name, training, and experience of person to perform leak tests, and arrangements for performing initial radiation survey, servicing, maintenance and repair of the source.

See Appendix 3

15. WASTE DISPOSAL. If a commercial waste disposal service is employed, specify name of company. Otherwise submit detailed description of methods which will be used for disposing of radioactive wastes and estimates of the type and amount of activity involved.

See Appendix 3

CERTIFICATE (This item must be completed by applicant)

16. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATE ON BEHALF OF THE APPLICANT NAMED IN ITEM 1, CERTIFY THAT ALL INFORMATION CONTAINED IN THIS APPLICATION, INCLUDING ANY SUPPLEMENTS ATTACHED HERETO, IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE AND BELIEF.

United Nuclear Corporation

Development Division

5 New Street, White Plains, New York

Applicant named in Item 1

Date March 29, 1963

BY:

P. C. Murphy

Manager of Administration

Title of certifying official

NOTE: - Any misrepresentation or any material fact found to have been made in securing a license pursuant to this application shall be cause for the suspension or revocation of such license.

APPENDIX I  
Item 6

6(a). Radioactive Materials

Polonium 210

Cobalt 60

Strontium 90

Radium-Beryllium

Plutonium

U-235

Plutonium

Normal Uranium

Thorium

Hydrogen 3

Carbon 14

Cesium 147

Iron 59

Strontium 90

Promethium 97

Chromium 51

Tungston 185

Ruthenium 106

Zirconium 95

Phosphorous 32

Iodine 131

Gold 198

Cobalt 69

Cobalt 58

Iridium 198

6(b). Chemical and/or Physical Form and  
maximum amount in possession

Polonium-Beryllium sealed neutron sources  
(Mound Lab. type or Isotopes Specialties, Inc.  
type). Total 100 curies

Sealed source (Atomic Energy of Canada, Ltd.,  
design and CRNL design). Multiple sealed  
sources. Total 400 millicuries

Sealed source (Jordan Electronics Company  
model). Total 15 microcuries

Sealed source 15 millicuries

Plutonium-Beryllium sealed sources. 200 grams

Any form quantity 300 grams

Any form 175 grams

Any form 20 Kgs.

Any Form 20 Kgs.

Any 1 curie

Any 20 millicuries

Any 100 millicuries

Any 20 curies

Any 1 microcurie

Any 15 microcurie

Any 20 curies

Any 15 microcuries

Any 15 microcuries

Any 300 curies

Any 5 curies

Any 30 curies

Any 60 millicuries

Any 10 millicuries

Any 10 millicuries

Any 20 curies

APPENDIX 2  
Items 8 and 9

Dr. Robert D. Schamberger

Training and Experience: As a graduate student of the University of Rochester from 1946 to 1949, Dr. Schamberger acquired extensive knowledge as well as considerable practicable experience in the theory of radiation interaction and highly energy radiation.

From 1951 to 1958 he performed experimental reacting shielding studies and analysis as a full-time employee of Brookhaven National Laboratory.

From 1958 until the present time, as Chief of Experimental Physics Section of the Development Division of the United Nuclear Corporation (he held the same title with the predecessor company, United Nuclear Development Corporation of America). Dr. Schamberger has performed extensive work in radioactive measurements plus mathematical calculations, in the management of reactor experiment programs involving the use of large quantities of U-235, Normal Uranium, D<sub>2</sub>O and Multiple Byproduct Materials.

Owen Sullivan

Mr. Sullivan's training and experience includes 18 months at Knolls Atomic Power Laboratory and 7 years with United Nuclear Corporation Development Division. This broad experience has included extensive work involving the use of irradiated materials, U-235, Plutonium-Carbide, Normal Uranium and Byproduct Materials.

Hyman Steinmetz

Steinmetz' training and experience includes 3 years of studies at Columbia University in the field of Radio-Chemistry. As supervisor of the Chemistry Lab of the Development Division of United Nuclear Corporation during the last 4 years, he has had much experience in handling radioactive materials including Plutonium, Uranium and various Byproduct Materials.

APPENDIX 2 (Cont'd.)  
Items 8 and 9

Percy Clemons

Mr. Clemons' training and experience includes 9 months educational training plus experience with radioactive materials at the University of Rochester, 3 months formal study and job training at Brookhaven National Laboratory and 2 years at the Curtiss-Wright Corp. In the above institutions he was thoroughly trained in instrument calibration, radiation monitoring, decontamination procedures, radioactive materials waste disposal, bio-assay, environmental monitoring. His work and studies above included food irradiation.

During his 2 years as Health-Physics Radiation Officer of Development Division of United Nuclear Corporation, he has continued to work with large quantities of U-235, D<sub>2</sub>O, Normal Uranium, Plutonium and Byproduct Materials.

APPENDIX 3  
Items 13, 14 and 15

Item 13

Our laboratory facilities, etc., are described and illustrated in the enclosed brochures marked Exhibits I, II, III and IV.

Item 14

The Radiation Protection Program is as follows: Prospective users must submit a request form describing the intended use of such materials, including specific safety measures applicable to the proposed use. The details of the request are evaluated for feasibility and safety (henceforth such evaluations to be made by the new Radioactive Materials Committee) and the prospective user cannot acquire or use the material until written authorization is received.

Access to storage areas for such materials is controlled by the Health Safety Department. Performance of the Radiation Protection Program is controlled by a full-time Health Safety Officer. Techniques included in this safety monitoring include:

- (a) Room air sampling
- (b) The personnel monitoring devices are worn by all radiation workers
- (c) Bio-assays are scheduled and performed where applicable

Item 15

All waste to date has been disposed via AEC services and facilities and we believe that this arrangement will continue in effect.