1768

IL.17

THE AEROSPACE CORPORATION

IL.17-3

INTEROFFICE CORRESPONDENCE

7117-01.85.aw.17

TO: File

CC: F. Hoch, S. Jones, H. Bauer, M. Kahal, C. Young, B. Fritz

DATE: 19 March 1985

SUBJECT: Elimination of ARF, Chicago, IL

FROM: A. Wallo

BLDG: WDC ROOM:

EXT: 6320

The enclosed summary was prepared on the basis of a review of NRC files.

This site was fully licensed. Based on DRAP policy, no additional FUSRAP investigations are warranted.

AW/sb

Enclosure

IL.17-3 enclosure

IL.17

ELIMINATION SUMMARY FOR THE ARMOUR RESEARCH FOUNDATION

SUMMARY:

Records searches of Chicago Operations and Argonne National Laboratory files identified the Armour Research Foundation (ARF) as a potential FUSRAP site. Records were identified that indicated the facility operated a research reactor and conducted associated research for the AEC. ARF was also contracted by the AEC Raw Materials Division to develop analytical techniques and for geochemical research. There were also records of a minor contamination incident and related cleanup at the site. Follow up searches of NRC records indicated that the site held several licenses which appeared to cover the radioactive material they received from the AEC. On the basis of the NRC records it appears that the site activities were covered by the licenses and no DOE FUSRAP actions are needed at this site.

BACKGROUND:

The Armour Research Foundation was part of the Illinois Institute of Technology whose address was identified as 10 West 35th Street, Chicago, Illinois. The Institute's facility went from 35th to part of 30th Streets and was primarily between State Street and the Dan Ryan Expressway. ARF was located at 31st and Dan Ryan. The major portion of the work supporting the Foundation was government sponsored. The August 1961 financial report for the institute indicated that more than three quarters of their operational funding was government derived.

NRC records indicate that irradiated source, and special nuclear materials were received through Argonne or AEC Albuquerque Operations Office and was covered under AEC licenses. Licenses identified in NRC Docket 70-00054 included SNM-49 and SNM-1210 for special nuclear materials, SMB-444 for source material, and R-3 reactor license. In 1963, ARF's name was changed to IIT Research Institute. The last license identified under IIT Research Institute was 12-00171-03. All license files after 1980 were kept with the 12-00171-03 docket. The IIT reactor was dismantled May 1976 and the final decontamination report was issued in October 1978 and revised in December. It was prepared by Hittman and Associates. The last amendment to the licenses in the NRC docket was dated October 1983. The current license status of the site is unknown.

CONCLUSION:

No additional DOE investigations of this site appear warranted in light of the license history. Responsibility for nuclear materials at the site, the reactor and associated research would appear to be NRC's.

Location of Records:

1) Chicago Operations Health and Safety Files at Argonne National Laboratory, Chicago, Illinois.

2) NRC Docket 70-00054 (Retired), NRC, Silver Spring, Maryland

3) Raw Materials Division Records at Suitland, Maryland.

Material Attached:

NRC to IIT Research, 12/20/79, Amended License Approval
D. Nussbaumer (NRC) to Armour Research, 4/15/63, Name Change
J. DeLaney (NRC) to Armour Research, 4/18/61, License SNM-49
J. DeLaney (NRC) to Armour Research, 10/21/59, License Requests
E. Conti (ARF) to L. Johnson (NRC), 1/27/59, Summary of Licenses
E. Conti (ARF) to J. Novak (ANL), 12/1/58, Contamination Incident
L. Johnson (NRC) to Armour Research, 10/10/58, License SNM-49

FORM NRC-374A
(5-76)

MATERIALS LICENSE
Supplementary Sheet

License Number SUB-49

Docket or Reference No. 070-00854

Amendment No. 07

IIT Research Institute
10 West 35 Street
Chicago, Illinois 60616

In accordance with letter dated November 29, 1979, License Number SUB-49 is amended as follows:

The expiration date in Item 4 is changed to January 31, 1980.

Current Phone #
(312) 567-3000

St. 11 at same Address

Date DEC 20 1979

Date

12/20/79

For the U. S. Nuclear Regulatory Com.

Material Licensing Branch

by

Division of Fuel Cycle and Material Safety
Washington, D.C. 20555

14854

APR 15 1963

DLR:RLL
70-54
Lo-1207

Armour Research Foundation of
Illinois Institute of Technology
Technological Center
10 West 35th Street
Chicago 16, Illinois

Attention: Mr. E. H. Schulz
Vice President for Research
Operations

Gentlemen:

As requested in your letter dated April 2, 1963, the Armour Research Foundation Radiation Safety Procedures Manual has been made a part of the files for Special Nuclear Material License No. SNM-49 and Source Material License No. SMB-444.

It was noted on the cover of this manual that the name of Armour Research Foundation of Illinois Institute of Technology will be changed to IIT Research Institute effective June 1, 1963. In order that your AEC licenses may properly reflect this name change, you should notify the Commission prior to such change.

In order for us to complete our files we require two additional copies of this procedures manual.

Distribution:
Doc. Rm. (2)
Formal (2)
Suppl. (2)
Br. and Div. rfs
Compl. (1-40 docket)
Compl., Field, 1 cy
outgoing, w/o inc.
(1 cy 70 docket)
RLLayfield, LR

Very truly yours,

Donald A. Nussbaumer, Chief
Source & Special Nuclear Materials Branch
Division of Licensing and Regulation

OFFICE ▶	LR	LR				
SURNAME ▶	RLLayfield:rl	DNussbaumer				
DATE ▶	4/10/63	4/12/63				

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62751-3

DLR:TCM
Docket No. 70-54

APR 18 1961

Armour Research Foundation of Illinois
Institute of Technology
Technology Center
10 West 35th Street
Chicago 16, Illinois

Attention: Mr. R. C. Barrall
Chief Health Physicist
Physics Research Division

Gentlemen:

Enclosed is Special Nuclear Material License No. SNM-49, as amended.

Very truly yours,

J. C. Delaney
Chief, Nuclear Materials Branch
Division of Licensing and Regulation

Enclosure:
SNM-49, as amended

Form AEC-401
(1-56)

UNITED STATES
ATOMIC ENERGY COMMISSION

SPECIAL NUCLEAR MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Part 70, "Special Nuclear Material Regulations," a license is hereby issued authorizing the licensee to receive and possess the special nuclear material designated below; to use such special nuclear material for the purpose(s) and at the place(s) designated below; and to transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 70.32(a) of said regulations, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee

1. Name Armour Research Foundation of Illinois Institute of Technology

2. Address Technology Center
10 West 35th Street
Chicago 16, Illinois

3. License No. SNM-10, as amended

4. Expiration Date October 31, 1962

5. Docket No. 70-5

6. Special Nuclear Material

Plutonium and uranium enriched in the U-235 isotope.

7. Maximum quantity of special nuclear material which licensee may possess at any one time under this license 300 grams of U-235 as contained in uranium enriched in the U-235 isotope. 112.1 grams of plutonium encapsulated as a Pu-Be neutron source and(cond

8. Authorized use For use in accordance with the procedures described in the licensee's application dated Sept. 5, 1956, Sept. 29, 1959, Feb. 4, 1960, and Feb. 10 & 27 and Mar. 17, 1961, and in accordance with the procedures and statements referenced in condition 15 of Byproduct Material License No. 12-171-3 dated Dec. 4, 1959.

9. Quantity of special nuclear material allocated to licensee pursuant to Section 70.31(b) of said part

None herein allocated

CONDITIONS

10. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above. Licensed material may be also used at the licensee's Chemistry and Physics Research Department at 33rd and South State Streets and at 3440 South State Street, Chicago, Illinois.

7.(Con'd) the plutonium produced by the irradiation of 1 kg. of uranium.

For the U. S. ATOMIC ENERGY COMMISSION

Date of issuance _____

☆ U.S. GOVERNMENT PRINTING OFFICE : 1959—O-471648

[illegible] J. C. Delaney

L&R:JCD
70-54

OCT 21 1959

Armour Research Foundation
of Illinois Institute of Technology
Technology Center
10 West 35th Street
Chicago 16, Illinois

Attention: Mr. R. C. Barrall

Gentlemen:

Reference is made to (a) your application of January 27, 1959, requesting a license to receive 200 grams of highly enriched uranium, (b) our reply of February 6, 1959, requesting additional information in support of your application, (c) your telegram of September 29, 1959, requesting renewal of License SNM-49 without change. Since we have received no reply to reference (b) above, and in view of your request for renewal in (c) above, unless we hear from you within thirty days, we will consider your request for license to receive 200 grams of highly enriched U-235 to be abandoned.

Very truly yours,

J. C. Delaney
Chief, Nuclear Materials Section
Licensing Branch
Division of Licensing and Regulation

OFFICE ▶	L&R					
SURNAME ▶	[signature]					
DATE ▶	10-21-59					

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62751-3

DOCKET NO. 70-54

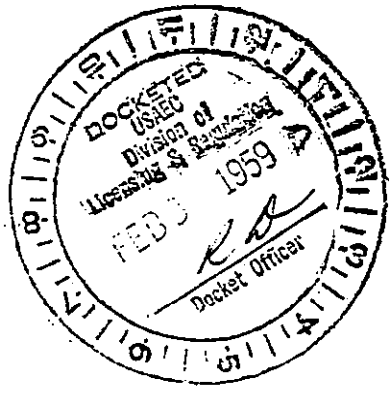
File 4.

ARMOUR RESEARCH FOUNDATION OF ILLINOIS INSTITUTE OF TECHNOLOGY

TECHNOLOGY CENTER · 10 WEST 35TH STREET · CHICAGO 16, ILLINOIS · CAlumet 5-9600

January 27, 1959

PHYSICS RESEARCH DEPARTMENT
3440 SOUTH STATE STREET



Mr. Lyall Johnson
Chief, Licensing Branch
Division of Licensing and Regulation
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Johnson:

Armour Research Foundation currently has need for the possession of up to 200 grams of Uranium, fully enriched in U-235. The work will be performed in the Metals Research Division's radioisotope facilities. However, to facilitate possible future changes in the Foundation research program, we request that the license be applicable to all properly safeguarded laboratories at Armour Research Foundation. We request that we be licensed for any chemical and/or physical form of the above stated quantity of special nuclear material.

The Foundation presently holds the following licenses:

(1). Byproduct Material License No. 12-171-3, Amendment No. 1, (G60).

(2). Byproduct Material License No. 12-171-4.

(3). Source Material License No. C-4136, Amendment No. 1.

(4). Special Nuclear Material License No. SNM-49.

(5). Utilization Facility License No. R-3 (as amended) on the Armour Research Reactor.

I hope that the above information is sufficient and would greatly appreciate your expediting the approval of this license application.

Yours truly,

Enrico F. Conti

Enrico F. Conti,
Health Physicist

IL-17

ARMOUR RESEARCH FOUNDATION OF ILLINOIS INSTITUTE OF TECHNOLOGY
TECHNOLOGY CENTER · 10 WEST 35TH STREET · CHICAGO 16, ILLINOIS · CALUMET 5-8600

December 1, 1958

PHYSICS RESEARCH DEPARTMENT
3440 SOUTH STATE STREET

J. Novak,
Radiation Safety Supervisor
Argonne National Laboratories
Lemont, Illinois

Dear John:

Enclosed is the report on the contamination incident of November 7, 1958 at Armour Research Foundation.

We would like to thank you again for the help and cooperation we received from you and your staff.

If there are any points you would like to have clarified, I would be glad to discuss them with you.

Yours truly,

Enrico F. Conti

Enrico F. Conti,
Health Physicist
Physics Research Department

EFC:sr

Enclosure

DISTRIBUTION LIST

Copy No.	
1	Director, Division of Civilian Application U. S. Atomic Energy Commission Washington 25, D. C.
2	R. Hageman, Director Inspection Division U. S. Atomic Energy Commission Chicago Operations Office Lemont, Illinois
3	N. J. Hilberry, Director Argonne National Laboratories Lemont, Illinois
4	J. Novak, Radiation Safety Supervisor Argonne National Laboratories Lemont, Illinois
5	H. T. Walworth, Director Industrial Hygiene Lumbermens Mutual Casualty Company Chicago, Illinois
6	F. Kremer, ARF
7	L. Santoro, ARF
8	E. H. Schulz, ARF
9	L. Reiffel, ARF
10	C. A. Stone, ARF
11	C. W. Terrell, ARF
12	W. McElroy, ARF
13	E. F. Conti, ARF
14 - 16	Health Physics File

CONTAMINATION INCIDENT OF NOVEMBER 7, 1958

I. INTRODUCTION

On Friday, November 7, 1958, a contamination incident occurred in the PER building. This report will list the chronological chain of events, give an evaluation of the hazard involved, and discuss the procedures to be instituted to prevent a reoccurrence of this type of incident.

II. CHRONOLOGICAL EVENTS

At 11:30 AM, on Friday, November 7, a lead lined wooden container with metal side handles and a removable top (hereinafter referred to as a "pig") was delivered to the loading dock by a driver employed by Argonne National Laboratory. Since this was an "empty" container, having no warning tags or markings indicating that it contained radioactivity, the Reactor Operations group allowed it to remain just inside the doors leading from the loading dock, even though they had been notified by the receptionist of its delivery. This was not contrary to our operating procedure.

At approximately 1:30 PM, D. Krebes and A. Brauner of the Reactor Operations Section went to the loading area, opened the "empty" container, and D. Krebes fitted a standard Al irradiation container into the central cavity to test its fit. The Al can was pushed all the way to the bottom of the pig, removed, and placed in Krebes' front lab coat pocket. The pig was then picked up by Brauner and Krebes, carried to the Nuclear Physics Section first floor hallway, and set down on the floor directly opposite the bulletin board. Krebes then started to enter the reactor room, causing the alarm on the Hand and Foot Monitor located outside the Health Physics office to sound off as he passed by. D. Soldan, technician in the Health

Physics group, immediately had Krebes remove the Al container from his pocket. Soldan found high level contamination on the bottom of the Al container (surface dose rate of approximately 15 rep/hr), but no detectable contamination inside the pocket. The estimated time that the container was in Krebes' pocket was at the very most about 5 minutes. Soldan and Krebes then proceeded to the first floor and marked off a floor area around both the pig and the vicinity in the loading area where the pig had been placed upon delivery.

At this point, E. F. Conti, Health Physicist for the Physics Research Department, who was in the reactor control room, was called in and notified of what had occurred up to that time. The remainder of the loading area was checked and appeared to be free of contamination. A person was left there to keep people from stepping in the contaminated area until it could be cleaned up. At this point, it seemed that the main source of contamination was in the Nuclear Physics Section. The pig was placed inside a plastic bag and taken to the Waste Disposal Room in the Hot Laboratory Area by way of a two-wheeled handtruck. Checks on the floor area in the Nuclear Physics Section hallway indicated that the contamination had been tracked around rather extensively. At this point, C. A. Stone, Supervisor of the Nuclear Physics Section, was notified by phone and immediately returned to the building.

A check point was established at the entrance to the Nuclear Physics Section to check shoes for contamination at approximately 1:50 PM. Several peoples' shoes in Nuclear were found to be contaminated. They were given plastic shoe covers to wear to the decontamination room in the Hot Laboratory Area, while they decontaminated their shoes. At this time a shoe

cover rack was set up at the entrance to the Nuclear Section, making the whole section a rubber area for incoming personnel, since it was felt that the major source of contamination was in this area.

C. A. Stone entered the building at this time and assumed the overall direction of the ensuing operations. It was decided at this time that the whole building should be segregated until the actual extent of the contamination could be ascertained. At approximately 2:00 PM the traffic through the reception area was essentially stopped and a detailed floor survey made to clear a "clean" floor path through the area. Two hot spots were found in the reception area, one by the front door and the other at the gate by the desk, which were readily decontaminated. As soon as this was accomplished, the people that had accumulated at the different hallway entrances to the reception area had their feet checked for contamination before they were allowed to leave the building. At approximately 2:30 PM a permanent check point was set up by the reception desk and used to check the shoes of all exiting personnel for contamination.

At about 2:45 - 3:00 PM, Brauner called E. Brink, at Special Materials of Argonne National Laboratory, to try to obtain available information on the contents of the pig. The information gained at this time did not appreciably clarify the situation. During this time, the hot spots in the general area were found and decontaminated. One hot spot was found on the elevator floor, two were found along the hallway connecting the reception area to the loading dock, and three or four were found along the east-west hallway on the north side of the building. Besides those found on the first floor, three or four hot spots were found on the stairway leading to the upper floors. The biggest problem during all this time was the

restriction of movement of personnel within the building.

At about 3:15 PM, E. Brink from Argonne called Brauner and gave him the available information on the pig. The pig had been returned to Special Materials from an outside organization and had been in Argonne's reactor room for a considerable period of time (~2 weeks). The pig apparently missed Argonne's routine check procedure.

At approximately 4:00 PM, in discussing the traffic problem with R. Benson, Assistant Manager, Physics Research Department, it was decided to ask the people in the building to start leaving for home from 4:30 on. This was done in a cooperative manner and relieved the traffic load on the foot checking station by the front door. It should be noted that the front entrance is the only entrance normally used and so was truly a control point for the building. By about 5:15 PM the building was cleared of all personnel not directly involved in the clean-up.

A general survey of the floors was made at this time and except for a few more hot spots, which were readily cleaned up, it was determined that all that remained was possible low-level contamination. Several hot spots were found on the stairs and on the second floor of the Nuclear Physics Section, which is separated from the rest of the building by emergency crashdoors. The hot spots initially found on the first floor hallway of Nuclear and in the loading area had been cleaned up prior to this time. A crew of janitors came in and cleaned all the floor area in the building with wet mops. Since the total amount of activity involved was probably much less than 500μc, the water used was released to the sewer. The building was kept closed to personnel until the clean-up operation by the janitors had been completed. The mops

used for this clean-up were discarded in the dry-active waste to minimize the chance of cross contamination following the clean-up.

III. EVALUATION OF HAZARD

The following information was obtained during the evening of November 7, as well as information that had been gathered during the afternoon which has not been recorded before.

There was apparently no contamination on the outside of the pig, however, a few particles were found on the inside of the plastic bag containing the pig at this time. It should be noted that the general indication all day had been that the activity was due to tiny chips of metal, which were easily cleaned up by a single washing operation. There was general, low-level contamination on the inside surface of the pig, with the inner shield plug not removed, which seemed to be pieces of metal. High level contamination was found inside the central pig cavity, which again seemed to be small pieces of metal.

Dose rate readings were obtained with a Tracerlab Cutie Pie Survey Meter held vertically and in contact with the entrance to the central cavity. The distance from the bottom of the cavity to the center of the detection chamber was about 7 inches. However, on the following Monday morning, it was found that a large piece of material having a very high level of activity was inside the cavity the cap screwed into, but not in the central cavity. Hence, the dose rate readings were actually taken with this very hot particle about an inch from the front surface of the Cutie Pie chamber. The actual readings were:

90 mr/0.5 min open window

34 mr/min closed window.

The indicated dose rates for this case were then, 2 r/hr γ, and 8.8 rep/hr β. No area correction was made, since the geometry involved was not clear.

A β absorption curve run on one of the chips resulted in an estimate of 1.6 Mev for the maximum β energy. The activity of individual chips was determined by counting in a 6 percent geometry (assuming maximum β energy to be ~1.6 Mev) and gave an indicated count on the scaler of:

3064 cps or ~5μc

2765 cps or ~4μc.

Hence, the activity of each chip was of the order of a few microcuries. A rough estimate of the specific activity resulted in a value of ~15 mc/gm. No α activity was noted from the chips. An air sample indicated approximately 10^{-12} μc/cc of β activity after the Radon daughter products had decayed. Hence, there was no hazard from either α activity or air-borne contamination. A rapid γ-spectrum run on one of the chips on Friday evening indicated four strong gamma peaks in the range 100-800 kev. A later, more detailed analysis of samples of the contamination by both Argonne and the Nuclear Physics staff has indicated that the largest proportion of the activity was due to Cd^{115} - In^{115}. A mass spectrographic analysis run by Argonne indicated that 90 percent of the activity was due to the cadmium isotope. The other elements present were calcium, chromium, and nickel. Since the total body burden is much greater than the amount of activity that could possibly have been ingested by a person, it is considered that no appreciable hazard existed or exists due to the contamination released.

The greatest possible exposure that Krebes could have received from the container carried in his pocket was about 100 mr.

Approximately 12 shoes were found to be contaminated and about 8 hot spots were found on the floor area during the time involved in the incident.

On Monday, November 10, a loose piece of material about the size of a pea was found inside the receptacle for the screw cap. This looked like a piece of iron welded material. A measurement on this with a Cutie Pie held about 1/2 inch above the piece, gave 100 mr/0.25 minutes, open window, or 24 r/hr $\beta + \gamma$. The representative from the Health and Safety Div. at Argonne, G. T. Lonergan, measured about 8 to 10 r/hr at about the same distance from the piece, using a Jordan Radector.

The chips were easily picked up with a magnet.

By this time, it was determined that the activity released was largely on tiny metallic chips, the total number being of the order of 50 or so, which came from the inside of the pig at the time that Krebes tried the fit of an Al container in the pig, and were subsequently tracked about. Five non-Foundation personnel left the building between 1:30 and 2:30 PM, that is, before a check station had been established at the reception desk. They were: Donald G. Walton, 2342 N. Clark St., to see R. Heidelmeier; V. Deulofeu, Buenos Aires, to see M. E. Nelson; W. E. Hansen, property assistant for the Air Force, located at ARF; V. Johnson, secretary to the Biology Dept., IIT; E. Kita, Cardox Corporation, delivering dry ice. It is felt that the few people that left the building before the checking station was established would have had only a small amount of activity on their shoes.

IV. PROCEDURES UNDER STUDY

This incident indicated several shortcomings in our procedures and equipment which are being studied in order to arrive at the best solution for safeguards in any future problem of this type.

A rapid technique for both stopping traffic and checking the heavily traveled passageways for contamination with a large area "floor sweeper" will be initiated upon discovery of contamination in areas on the cold side of the contamination check station. The desirability of a second contamination check station in the Nuclear Section is being considered.

It was found that the rapid area survey equipment was inadequate in handling the large area that needed to be checked in a short time. Modifications on the existing unit and additional standby units are anticipated.

All incoming containers that contain or have contained radioactivity will be assumed to be contaminated. They will be placed in a sealed enclosure upon arrival at the loading dock, taken to the Waste Disposal Room in the Hot Laboratory, and immediately be checked for contamination before release for general usage in the building. No empty containers for radioactive materials will be opened outside of the Hot Laboratory Area.

It is felt that these procedures will minimize the problems to be encountered in any possible future occurrences of contamination.

Respectfully submitted,
ARMOUR RESEARCH FOUNDATION
of Illinois Institute of Technology

E. F. Conti

E. F. Conti, Health Physicist
Nuclear Physics Section

APPROVED:

L. Reiffel, Manager
Physics Research

C. A. Stone, Supervisor
Nuclear Physics Section

CAL:JCD

OCT 10 1956

Armour Research Foundation of
Illinois Institute of Technology
Technology Center
10 West 35th Street
Chicago 16, Illinois

Attention: Dr. L. Beiffel, Manager
Physics Research

I HEREBY CERTIFY THAT THE ... QUANTITY WILL NOT EXCEED ... APPROVED FOR THIS DIVISION FOR FISCAL YEAR 1957.

for O. F. Musser, Director
Division of Nuclear
Materials Management

OCT 9 1956

Gentlemen:

Enclosed is Special Nuclear Material License SNM-49.

This letter is your authorization to procure the licensed special nuclear material from the Commission. For details regarding procurement of the neutron sources (up to a total of 32 grams Pu) you should communicate with the Albuquerque Operations Office, U. S. Atomic Energy Commission, P. O. Box 5400, Albuquerque, New Mexico, Attention: Mr. E. C. Stewart.

We are, by copy of this letter and your license, also advising our Chicago Operations Office that you are authorized and licensed to receive the irradiated source material (up to one kilogram of irradiated normal uranium). For details of procurement of this material you should communicate with the Chicago Operations Office, U. S. Atomic Energy Commission, P. O. Box 59, Lemont, Illinois, Attention: Mr. Milton Klein.

Very truly yours,

SIGNED

and

Dispatched

Lyall Johnson
Chief, Licensing Branch
Division of Civilian Application

Document Room Copy Dispatched by Document Transmittal No. _____

OCT 11 1956

Approved: SNM - Concur

H. L. Price, Director, DCA

CC: ALOO, Attn: E.C. Stewart, w/encl.
COO, Attn: Milton Klein, w/encl.
M. M. Mann, INS, w/encl.
D. F. Musser, NMM, w/encl.
J. C. Ryan, FIN, w/encl. (2)
L. Hydeman, OGC, w/encl.
H. Steele, CA, w/encl.
Docket File, w/encl.

Enclosure:
License No. SNM-49

OFFICE ▶	CAL	CAL	CAL	FIN	NMM	OGC
SURNAME ▶	D[illegible]	C.T.Edwards	L.Johnson			
DATE ▶	10-8-56		10/10	10/9	10/9	10/9

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

AEC-401
(7-56)

UNITED STATES
ATOMIC ENERGY COMMISSION

SPECIAL NUCLEAR MATERIAL LICENSE

Pursuant to the Atomic Energy Act of 1954 and Title 10, Code of Federal Regulations, Chapter 1, Part 70, "Special Nuclear Material Regulations," a license is hereby issued authorizing the licensee to receive and possess the special nuclear material designated below; to use such special nuclear material for the purpose(s) and at the place(s) designated below; and to transfer such material to persons authorized to receive it in accordance with the regulations in said Part. This license shall be deemed to contain the conditions specified in Section 70.32(a) of said regulations, and is subject to all applicable rules, regulations, and orders of the Atomic Energy Commission now or hereafter in effect and to any conditions specified below.

Licensee	3. License No.
1. Name Armour Research Foundation of Illinois Institute of Technology	SNM-49, Renewal No. 1
2. Address Technology Center, 10 West 35th Street, Chicago 16, Illinois	4. Expiration Date October 1, 1959 Oct 31, 1962
	5. Docket No. M-54 70-54

6. Special Nuclear Material	7. Maximum quantity of special nuclear material which licensee may possess at any one time under this license
Plutonium	32.1 grams plutonium

8. Authorized use

Two Pu-Be sources for use in dosimetry studies and as neutron source for reactor and Pu produced by neutron irradiation of up to 1 kg uranium for studies as described in licensee's applications of September 5, 1956 and September 28, 1959

9. Quantity of special nuclear material allocated to licensee pursuant to Section 70.31(b) of said part

None herein allocated

(32.1 grams plutonium)

CONDITIONS

10. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above. Licensed material may also be used at the licensee's Chemistry and Physics Research Departments at 33rd and South State Streets and at 3440 South State Street, Chicago, Illinois.

11. Except as hereinafter provided the licensee shall comply with provisions of the Atomic Energy Commission's proposed standards for protection against radiation as published in the Federal Register July 16, 1955 (10 CFR 20), until such time as said propsed regulations or revisions thereof become effective regulations of the Commission. Notwithstanding Section 20.24(f) of said standards, labeling shall not be required for laboratory containers such as beakers, flasks and test tubes, used transiently in laboratory procedures during presence of the user.

Document Room Copy Dispatched by Document Transmittal No. _____

OCT 11 1956

For the U. S. ATOMIC ENERGY COMMISSION

Oct. 1, 1959

Date of issuance OCT 10 1956

Lyall Johnson
Chief, Licensing Branch

U. S. GOVERNMENT PRINTING OFFICE: 1956—O-385852