

## MATERIALS LICENSE

Amendment No. 53

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

OFFICIAL RECORD COPY

## Licensee

1. Nuclear Research Corporation  
Warrington Industrial Park
2. 125 Titus Avenue, P.O. Box H  
Warrington, Pennsylvania 18976

In accordance with the letter dated  
April 1, 1997,  
3. License Number 37-02401-01 is amended in  
its entirety to read as follows:

4. Expiration Date January 31, 2001

5. Docket or  
Reference No. 030-06068

6. Byproduct, Source, and/or  
Special Nuclear Material7. Chemical and/or Physical  
Form8. Maximum Amount that Licensee  
May Possess at Any One Time  
Under This License

A. Any byproduct material with  
atomic number 1 through 96

A. Any

A. Not to exceed  
5 millicuries  
per radionuclide and 1  
curie total

B. Thorium 232  
C. Any byproduct material with  
atomic number 1 through 83

B. Any  
C. Sealed sources

B. 150 pounds  
C. Not to exceed 5 curies  
per radionuclide and 50  
curies total

D. Cesium 137  
E. Cobalt 60  
F. Americium 241  
G. Curium 244

D. Sealed sources  
E. Sealed sources  
F. Sealed sources  
G. Sealed sources

D. 1000 curies  
E. 25 curies  
F. 25 curies  
G. Not to exceed 160  
millicuries per source  
and 1.6 curies total

## 9. Authorized use



A. and B. For use in performing operational tests, calibration of instruments, and leak testing as a service for others.

- C. through G.
- 1) Research and development as defined in 10 CFR 30.4;
  - 2) Manufacturing of gauging, calibration, and radiation detection devices;
  - 3) Distribution to persons licensed to possess material pursuant to 10 CFR 30 or the equivalent regulations of any Agreement State.
  - 4) Calibration or operational tests of instruments.

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PDR ADOCK 03006068  
C PDR

CONDITIONS

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10. Licensed material may be used only at the licensee's facilities located at 125 Titus Avenue, Warrington Pennsylvania, except that the Nuclear Research Corporation generally licensed devices may be serviced and except that licensed material specified in Items 6.A. may also be used at temporary job sites of the licensee anywhere in the United States where the U.S. Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License Number

37-02401-01

Docket or Reference Number

030-06068

Amendment No. 53

11. A. Licensed material shall be used by, or under the supervision of, Earl M. Pollock, John Brochon, T. W. Schwager, John C. Miller, Jack Cooley, Sudhakar Pandey, Gary W. Robertson, Joseph B. Tomei or Bart A. Kaplan.  
B. The Radiation Safety Officer for this license is T. W. Schwager.
12. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material at a single location to quantities below the limits specified in 10 CFR 30.72 which require consideration of the need for an emergency plan for responding to a release of licensed material.
13. Licensed material shall not be used in or on human beings.
14. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.
15. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
16. A. Sealed sources and detector cells containing licensed material shall be tested for leakage and/or contamination at intervals not to exceed six months or at such other intervals as are specified by the certificate of registration referred to in 10 CFR 32.210, not to exceed three years.  
B. Notwithstanding Paragraph A of this Condition, sealed sources designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed three months.  
C. In the absence of a certificate from a transferor indicating that a leak test has been made within six months prior to the transfer, a sealed source or detector cell received from another person shall not be put into use until tested.  
D. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.  
E. Sealed sources and detector cells need not be leak tested if:
  - (i) they contain only hydrogen-3; or
  - (ii) they contain only a radioactive gas; or
  - (iii) the half-life of the isotope is 30 days or less; or
  - (iv) they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material; or

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- (v) they are not designed to emit alpha particles, are in storage, and are not being used. However, when they are removed from storage for use or transfer to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.
- F. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission and the source or detector cell shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations. The report shall be filed within five days of the date the leak test result is known with the U.S. Nuclear Regulatory Commission, Region I, ATTN: Chief, Nuclear Materials Safety Branch, 475 Allendale Road, King of Prussia, Pennsylvania 19406. The report shall specify the source or detector cell involved, the test results, and corrective action taken.
- G. The licensee is authorized to collect leak test samples for analysis by the licensee. Alternatively, tests for leakage and/or contamination may be performed by persons specifically licensed by the Commission or an Agreement State to perform such services.
17. The licensee shall not acquire licensed material in a sealed source or device unless the source or device has been registered with the U.S. Nuclear Regulatory Commission pursuant to 10 CFR 32.210 or equivalent regulations of an Agreement State.
18. The licensee shall conduct a physical inventory every six months to account for all sealed sources and devices containing licensed material received and possessed under the license.
19. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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20. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. The Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

- A. Letter dated April 29, 1983
- B. Letter dated October 31, 1983
- C. Letter dated July 17, 1984
- D. Letter dated October 17, 1986
- E. Letter dated September 13, 1988
- F. Letter dated January 25, 1990
- G. Letter dated June 14, 1990
- H. Letter dated October 18, 1990
- I. Letter dated August 18, 1992

For the U.S. Nuclear Regulatory Commission

Original Signed By:

John R. McGrath

By

Division of Nuclear Materials Safety  
Region I  
King of Prussia, Pennsylvania 19406

MAY - 8 1997

Date \_\_\_\_\_

MAY - 8 1997

Earl M. Pollock  
President  
Nuclear Research Corporation  
125 Titus Avenue  
Warrington, PA 18976

Dear Mr. Pollock:

This refers to your license amendment request. Enclosed with this letter is the amended license. Please note that as part of this amendment, in accordance with 10 CFR 30.36, effective February 15, 1996, the expiration date of your license has been extended by a period of five years. Your new expiration date is stated in Item 4 of the license. We have determined that License No. 37-02401-01 does not need to be amended to authorize you to manufacture gauging systems with the sources listed in your April 1, 1997 letter. When NRC's Sealed Source Safety Section of the Office of Nuclear Materials Safety and Safeguards issues an amendment to your sealed source and device registry certificates to incorporate these sources, you may begin distribution to specific licensees. At that time, we will amend License No. 37-02401-06G to authorize you to distribute these sources to general licensees.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5093 or 5239, so that we can provide appropriate corrections and answers.

Thank you for your cooperation.

Sincerely,

Original Signed By:  
John R. McGrath

John R. McGrath  
Senior Health Physicist  
Division of Nuclear Materials Safety

License No. 37-02401-01  
Docket No. 030-06068  
Control No. 124438

Enclosure:  
Amendment No. 53

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DOCUMENT NAME: R:\WPS\MLTR\L3702401.01

To receive a copy of this document, indicate in the box: "C" = Copy w/o attach/encl "E" = Copy w/ attach/encl "N" = No copy

OFFICE	DNMS/RI	<input checked="" type="checkbox"/> N	DNMS/RI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NAME	McGrath <i>gcm</i>						
DATE	05/08/97	05/ /97	05/ /97	05/ /97	05/ /97		

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# NUCLEAR RESEARCH CORPORATION

April 1, 1997

U.S. Nuclear Regulatory Commission  
Region 1  
475 Allendale Road  
King of Prussia, PA 19406-1415

Attention: Nuclear Materials Safety Branch 3  
Division of Nuclear Materials Safety

Reference: License No. 37-02401-01  
Docket No. 030-06068

Dear Sir:

Nuclear Research Corporation request an amendment to U.S. NRC License Number 37-02401-01 to include the following:

1. Addition of the following source capsules model numbers for storage and for manufacturing of gauging, calibration and radiation detection devices as described in our letter, dated July 17, 1984.

<u>Source Model Number</u>	<u>Maximum Activity Per Source</u>
Ohmart Models A2106 & A2102	4000 millicuries
Texas Nuclear Model 57157C	4000 millicuries
Bebig Model Cs7.P04	4000 millicuries
Kay Ray Model 7700	4000 millicuries

2. Please add the following people to Condition 11A (please see the enclosures for copies of the resumes):

Sudhakar Pandey  
Gary W. Robertson  
Joseph B. Tomei  
Bart A. Kaplan

Enclosed please find a check for \$580.00 to cover the cost of adding this amendment to our U.S. NRC license under fee category 3B.

124438

U.S. NRC, Region 1  
King of Prussia, PA 19406-1415

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April 1, 1997

Should you have any questions, please get in touch with the undersigned or the Radiation Safety Officer, Mr. T.W. Schwager, at 215-343-5900.

Sincerely,  
NUCLEAR RESEARCH CORPORATION



Earl M. Pollock  
President

Enclosures: Check # 31976  
Resumes of Sudhakar Pandey, Gary W. Robertson, Joseph B. Tomei and  
Bart A. Kaplan



RESUME

SUDHAKAR PANDEY

EDUCATION:

Ph.D - Nuclear Engineering, 1978  
Pennsylvania State University, State College, PA  
  
M. Tech - Radiophysics and Electronics, 1970  
Calcutta University, India  
  
MBA - Management Information System  
La Salle University, Philadelphia, PA

EMPLOYMENT  
HISTORY:

April 1987 to Present

Position: Director of Engineering  
Company: Nuclear Research Corporation, 125 Titus Avenue,  
Warrington, PA 18976

1980 - 1987

Position: Section Head, Project Manager  
Company: Franklin Research Center, Philadelphia, PA

1978 - 1980

Position: Engineer  
Company: Nuclear Research Corporation, 1105 Industrial  
Highway, Southampton, PA 18966

1974 - 1978

Position: Graduate Assistant  
School: Pennsylvania State University

1970 - 1974

Position: Scientific Officer  
Company: Department of Atomic Energy, India

EXPERIENCE:

- Design, First Article Testing, calibration and qualification for production in accordance with MIL-Standards, of Alpha Radiacmeter (AN/PDR-56F) and X-Ray Probe for U.S. Army.
- Design, calibration, and testing of reactor power and neutron flux monitoring channels.
- Health Physics and Radiation Shielding calculations.
- Design and calibration of fence line monitors for detection of very low levels of radioactive gases around nuclear power plants.
- Design and calibration of high range noble gas and iodine monitor for post-accident monitoring system (NUREG-0578).

RESUME

GARY W. ROBERTSON

EDUCATION: Completed Studies Electronic Technologies, DeVry Institute of Technology

115 semester hours, Majoring in Mathematics and Computer Science, Northern Kentucky University

EMPLOYMENT  
HISTORY:

November 1994 to Present

Position: Director of Nuclear Gauging  
Company: Nuclear Research Corporation, 125 Titus Avenue,  
Warrington, PA 18976

1988 to November 1994

Position: Manager of Product Engineering  
Company: The Ohmart Corporation, Cincinnati, Ohio

1984 to 1988

Position: Senior Sensor Engineer  
Company: The Ohmart Corporation, Cincinnati, Ohio

1978 to 1984

Position: Field Engineer  
Company: The Ohmart Corporation, Cincinnati, Ohio

1976 to 1978

Position: Junior Engineer  
Company: Actus Corporation, Florence, Kentucky

EXPERIENCE:

- Design of ruggedized scintillation detectors for industrial markets.
- Developed and managed a Backscatter Vessel Profiler to determine interface layers between various liquids in a vessel for the petroleum refining industry.
- Developed Neutron Backscatter Sensor for the petroleum coke drum industry.
- Radiation Safety Protection and Training for both in-house personnel and at customer's sites.

RESUME

JOSEPH B. TOMEI

EDUCATION:       B.S. Electrical Engineering, 1958  
                  Pennsylvania State University  
                  State College, PA

                  M.S. Electrical Engineering, 1966  
                  Drexel University  
                  Philadelphia, PA

EMPLOYMENT  
HISTORY:

1982 to Present

Position:   Principal Engineer  
Company:    Nuclear Research Corporation, 125 Titus Avenue,  
              Warrington, PA 18976

1978 to 1982

Position:   Director, Device Research  
Company:    Sperry-Univac

1967 to 1978

Position:   Manager, CMOS Engineering  
Company:    Solid State Scientific Corporation

1958 to 1967

Position:   Design Engineer  
Companies:   Vector Division of United Aircraft  
              Radio Corporation of America  
              Bell Aircraft Corporation

EXPERIENCE:

- Used alpha, beta, gamma, and neutron sources in conjunction with the design, development, and calibration of instrumentation and industrial gauges. These sources were of various strengths from small test buttons to large strength calibration sources.
- Received many nuclear instructions associated with on-site visits to both nuclear power plants and government nuclear test facilities.
- Participated in nuclear testing at Cornell University, The Pennsylvania State University, US Army Aberdeen Proving Ground, Oak Ridge National Laboratory, and Los Alamos National Laboratory.

RESUME

BART A. KAPLAN

EDUCATION:

Project Management Course, 1989  
The Engineer's Club of Philadelphia  
Philadelphia, PA

B.S. Mechanical Engineering, 1973 - 1977  
Carnegie-Mellon University  
Pittsburgh, PA

B.S. Electrical Engineering, 1977 - 1978  
Syracuse University  
Syracuse, NY

EMPLOYMENT  
HISTORY:

1988 to Present

Position: Program Manager  
Company: Nuclear Research Corporation, 125 Titus Avenue,  
Warrington, PA 18976

1982 to 1988

Position: Project Engineer  
Company: Nuclear Research Corporation, Dover Division,  
Dover, NJ

1980 to 1982

Position: Engineering Lab Manager  
Company: Nuclear Research Corporation, Dover Division,  
Dover, NJ

1978 to 1980

Position: Senior Manufacturing, Engineer Technician  
Companies: Atlas Sound, Parsippany, NJ

EXPERIENCE:

- Used alpha, beta, gamma gaseous, and neutron sources in conjunction with the design, development, and calibration of instrumentation and industrial gauges. These sources were of various strengths from small test buttons to large strength calibration sources.
- Received many nuclear instructions associated with on-site visits to both nuclear power plants and government nuclear test facilities.

BETWEEN:

License Fee Management Branch, ARM  
and  
Regional Licensing Sections

FOR LFMS USE)  
INFORMATION FROM LTS  
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Program Code: 03214  
Status Code: 0  
Fee Category: 3B 3P 2C  
Exp. Date: 20010131  
Fee Comments: 2C ADDED 11/10/92  
Decom Fin Assur Req'd: N  
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LICENSE FEE TRANSMITTAL

A. REGION

1. APPLICATION ATTACHED

Applicant/Licensee: NUCLEAR RESEARCH CORPORATION  
Received Date: 970402  
Docket No: 3006068  
Control No.: 124438  
License No.: 37-02401-01  
Action Type: Amendment

2. FEE ATTACHED

Amount: \$ 580.00  
Check No.: 31976

3. COMMENTS

Signed H. J. Brown  
Date 4-9-97

B. LICENSE FEE MANAGEMENT BRANCH (Check when milestone 03 is entered ☒)

1. Fee Category and Amount: (3B) 3P 2C 8580

2. Correct Fee Paid. Application may be processed for:

Amendment ☒  
Renewal ☐  
License ☐

3. OTHER \_\_\_\_\_

Signed \_\_\_\_\_  
Date \_\_\_\_\_

Log APR 10  
Remitter \_\_\_\_\_  
Check No 31976  
Amount 8580  
Fee Category (3B) 3P 2C  
Type of Fee Amo  
Check Rec'd 4/10/97  
Completed SSB

1997 APR 10 AM 8:03