NEUTRON PRODUCTS INC
22301 Mt. Ephraim Road, P. O. Box 68
Dickerson, Maryland 20842 USA
301-349-5001 FAX: 301-349-5007
e-mail: neutronprod@erols.com

March 14, 2001

Ms. Cheryl Villar
U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Re: License MD-31-025-01

Dear Ms. Villar:

Per our telephone conversation of March 13, 2001, enclosed is a copy of Neutron's license MD-31-025-01.

Neutron submitted an application for renewal of the reference license in accordance with the provision of "Timely Renewal."

If you have any questions or problems, please call me or Mr. Jeff Williams, who is RSO of the referenced license.

Sincerely,

Marvin M. Turkanis, (M)

Marvin M., Turkanis
Vice President

NMSS/RGN-002

State of Maryland

DEPARTMENT OF THE ENVIRONMENT

RADIOLOGICAL HEALTH PROGRAM

RADIOACTIVE MATERIAL LICENSE

License No: MD-31-025-01	Amendment No.: 44 CODE 02305

Neutron Products Inc.
22301 Mount Ephraim Road
P.O. Box 68
Dickerson, Maryland 20842-0068

In accordance with letters and attachments dated June 30, 1999, March 15, 2000, April 11, 2000 and June 7, 2000 Radioactive Material License Number MD-31-025-01 is amended as follows:

Condition 21A to read:

The compaction of radioactive waste prior to storage or disposal is approved by the Department in accordance with NPI procedure titled, "Radwaste Compaction Start-up Protocol", Revision 0, dated June 7, 2000. RHP approval for NPI's use of this commercial compactor is contingent on the following:

1. All compaction of radioactive material waste generated at NPI prior to August 24, 1999 shall be labeled as old radioactive waste. This radioactive waste shall be disposed of by NPI prior to August 24, 2004.

2. All other compacted radioactive waste shall be disposed of in accordance to License Condition 21B and specific to those dates that waste was initially generated.

3. Each container of compacted radioactive waste must bear a durable, clearly visible label identifying:

   (i) The container identification number;

   (ii) The date the radioactive waste was generated; and

   (iii) The date of compaction.

4. If a compacted container includes radioactive waste generated after August 24, 1999 and has different dates of waste generation, NPI will use the oldest date of generation to establish a shipping date.

5. NPI shall not mix in a container compacted radioactive waste generated prior to August 24, 1999 with compacted radioactive waste generated after August 24, 1999.

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License No: MD-31-025-01	Amendment No.: 44 CODE: 02305

Neutron Products Inc.
22301 Mount Ephraim Road
P.O. Box 68
Dickerson, Maryland 20842-0068

Condition 37 to add letters with attachments dated June 30, 1999, March 15, 2000, April 11, 2000 and June 7, 2000 regarding NPI's use of the S&G Enterprises, Inc., Model 55AR-HY RAM FLAT Compactor.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

June 13, 2000

Roland G. Fletcher

Roland G. Fletcher
Radiological Health Program Manager

REM REM 6/13/2000
CET 6/15/2000

State of Maryland

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License No. MD-31-025-01	Amendment No. 48 CODE 02305

Neutron Products Inc.
22301 Mount Ephriam Road
P.O. Box 68
Dickerson, Maryland 20842

In accordance with letter with attachments dated November 12, 1997, Radioactive Material License MD-31-025-01 is amended as follows:

Condition 13 to add letter with attachments correcting errors in Appendix II, Procedure NR2024.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date November 24, 1997

Roland H. Fletcher

RADIOLOGICAL HEALTH PROGRAM MANAGER II

NAO

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MDER-L1 (supp) (11/90)

State of Maryland

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License No. MD-31-025-01	Amendment No. 47 CODE 02305

Neutron Products Inc.
22301 Mount Ephriam Road
P.O. Box 68
Dickerson, Maryland 20842

In accordance with letter with attachments dated September 11, 1997, Radioactive Material License MD-31-025-01 is amended as follows:

Condition 13 is amended as follows: Letter with attachments dated September 11, 1997 requesting authorization to package sealed sources and transfer the sources from Army Research Laboratory, Adelphi, Maryland to Neutron Products Dickerson Facility for use in fabrication of radiation processing sources.

NOTE: This amendment is TEMPORARY. It is valid only for the duration of the removal, packaging and transferring of the sources. Upon completion of removal, packaging and transfer this amendment becomes invalid.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date October 27, 1997

Roland McAllister

RADIOLOGICAL HEALTH PROGRAM MANAGER II

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MDER-L1 (supp) (11/90)

State of Maryland

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License No. MD-31-025-01	Amendment No. 46 CODE 02305

Neutron Products Inc.
22301 Mount Ephriam Road
P.O. Box 68
Dickerson, Maryland 20842

In accordance with facsimile dated August 4, 1997 and facsimile with attachments dated November 21, 1995 and December 4, 1985 (Quality Assurance Program) received September 10, 1997, Radioactive Material License MD-31-025-01 is amended as follows:

Condition 10 to permit possession of cobalt-60 sealed sources at temporary job sites of the licensee throughout Maryland for the purpose of shipping. License Condition 23 shall remain in effect.

Condition 13 to add facsimile with attachments dated November 21, 1995 and December 4, 1995 including the licensee's Quality Assurance Program. The licensee's Quality Assurance Program shall be implemented in accordance with COMAR 26.12.01.01 Section T.20. Any modification of the Quality Assurance Program pursuant to COMAR 26.12.01.01 Section T.9 shall be submitted to and approved by the Radiological Health Program prior to implementation.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date September 10, 1997

Robert J. Fletcher

RADIOLOGICAL HEALTH PROGRAM MANAGER II

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MDER-L1 (supp) (11/90)

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License No. MD-31-025-01	Amendment No. 45

Neutron Products Inc.
22301 Mount Ephriam Road
P.O. Box 68
Dickerson, Maryland 20842

In accordance with Maryland Department of the Environment (MDE) letters dated January 31, 1997, "Proposed Revised Approval for Neutron Products, Inc. (NPI) Courtyard Enclosure", and February 12, 1997, "Revised Agency Approval for Courtyard Enclosure" and Neutron Product, Inc. (NPI) letter dated February 7, 1997, Condition 13 of Radioactive Material License Number MD-31-025-01 is amended as follows:

Condition 13:

Until NPI complies with Paragraphs 3.B and 5 of the Stipulation and Settlement Agreement, including but not limited to having an approved plan for off-site shipment of radioactive material waste and decommissioning, NPI's possession limit for dry storage of radioactive material waste is limited to 800 Curies.

RECEIVED
MAR - 4 1997
N.P.I.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date February 18, 1997

Roland H. Fletcher

RADIOLOGICAL HEALTH PROGRAM MANAGER II

NAO

MDER-L1 (supp) (11/90)

State of Maryland

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License No. MD-31-025-01	Amendment No. 43

Neutron Products Inc.
22301 Mount Ephriam Road
P.O. Box 68
Dickerson, Maryland 20842

In accordance with letter dated July 10, 1996, Radioactive Material License Number MD-31-025-01 is amended as follows:

Condition 13 to add letter dated July 10, 1996 authorizing the exchange frequency of monitoring dosimeters to quarterly.

FOR THE MARYLAND DEPARTMENT OF THE ENVIRONMENT

Date July 16, 1996

Roland H. Fletcher

RADIOLOGICAL HEALTH PROGRAM MANAGER II

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MDER-L1 (supp) (11/90)

State of Maryland

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Pursuant to the Maryland Radiation Act, 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 radioactive material listed below; and to use such radioactive material for the purpose(s) and at the place(s) designated below. This license is subject to all applicable rules, regulations and orders of the Maryland State Department of the Environment, now or hereinafter in effect and to any conditions specified below. In accordance with application dated August 01, 1994 with attachments and Departmental revisions, Radioactive materials license MD-31-025-01 is renewed its entirety.

LICENSEE	
1. Name	Neutron Products, Inc.
2. Address	22301 Mt. Ephraim Road P.O. Box 68 Dickerson, Maryland 20842-0068

3. License No.	MD-31-025-01
4. Amendment No.	43
5. Expiration Date	January 31, 2001

6. Radioactive material (element and mass number)	7. Chemical and/or physical form	8. Maximum amount of radioactivity which licensee may possess at any one time
A. Cobalt-60 with small quantities of activation products from impurities in encapsulation materials.	A. [1]Sealed sources, singly or doubly encapsulated. [2]Stellite bearings and axle rods mounted in stainless steel corners sheared from the top end of BWR control rod assemblies.	A. 2,000,000 curies.
B. Cobalt-60.	B. Sealed Sources.	B. No source to exceed 10 curies; total 30 sources.
C. Cesium-137.	C. Sealed sources (3M models 6D6C).	C. 6 sources total; No source to exceed 14 millicuries.

9. Authorized Use

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6. Radioactive material element & mass number:	7. Chemical and/or physical form:	8. Maximum amount of radioactivity which licensee may possess at any on time:
D. Cesium-137.	D. Sealed source (U.S. Nuclear irradiator model GR 8A).	D. 475 curies.
E. Any radioactive material of atomic numbers 3 to 92 as activation products.	E. Encapsulated thermal and flux monitors.	E. No more than 10 millicuries each radionuclide; total possession 100 millicuries.
F. Any radioactive material of atomic number 3 to 92 except special nuclear material.	F. Sealed sources.	F. No source to exceed one millicurie; total possession 10 millicuries.
G. Cobalt-60.	G. Sealed source in AECL Gamma Cell 220.	G. 2,000 curies.

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9. Authorized use:

A. [1]Manufacture of special form cobalt-60 sealed sources. Sealed source fabrication and manufacturing operations shall be conducted only in the hot cell. Operations involving bare cobalt-60 shall be performed in the hot cell. Sources distributed shall meet the current American National Standards Institute (ANSI) standard. The receipt of unencapsulated cobalt-60 is not permitted.

[1]The source fabrication process permits the removal of an encapsulation to create a newly encapsulated source and the encapsulation of cobalt-60 as waste.

[1]Removal of encapsulation and melting of unsealed cobalt-60 to fabricate solid slugs containing up to 12,000 curies per slug.

[1]Radioactive sources distributed by NPI shall be doubly encapsulated according to specification authorized by the registry of radioactive source and device sheet numbers MD-474S108S and MD-474S109S.

[1]Research and development irradiation in the main pool, canals, and hot cell of material other than explosives, food, or materials whose degree of flammability hazard exceeds specification 0,1, or 2 of the National Fire Protection Association's Fire Protection Guide on Hazardous Materials (latest published edition).

[2]Radioactive material authorized in Item 7.a(2) is for possession and storage only. No additional receipt of stellite is authorized.

B. For use in attenuation studies and as calibration sources.

C. Instrument calibration.

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D. Possession and storage only until disposed of as waste.

E. For removal of components from surveillance capsules and distribution to authorized licensees in accordance with letters dated August 2, 1977, October 12, 1977, and October 18, 1977.

F. Calibration sources.

G. Possession and storage only.

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CONDITIONS

10. The authorized place of use is the licensee's address stated in Item 2. The licensee must notify the Radiological Health Program 30 days prior to vacating a permanent use address as is required by Section D.1301 of COMAR 26.12.01.01.

11. A. The radiation protection program shall be under the supervision of Jeffrey D. Williams.

B. Radioactive material shall be used by, or under the supervision of Jeffrey D. Williams, Jeffrey W. Corun, Donald S. Franklin, James R. Demory, Jackson A. Ransohoff, Dale L. Repp, and/or Marvin Turkanis.

12. A. Upon receipt or transfer of sealed sources in items 6,7, and 8 line A, the licensee shall perform leak testing in accordance with NPI procedures Q-3 and current ANSI Standards. In lieu of conducting six (6) month leak tests on the above sources, the licensee may use radioactive water concentration to evaluate the radioactive material leakage from sealed sources while stored in the main pool or canals. Samples shall be analyzed daily. If the radioactive material water concentration in the pool exceeds 5×10^{-4} microcuries per milliliter, then the licensee's documented evaluation should include the following:

(1.) An evaluation to determine if the increased pool water concentration is the result of leakage from sealed sources stored in the pool.

(2.) If leakage of sources is determined, describe the extent and methodology of remediation necessary.

(3.) The methodology used to return pool parameters to those levels specified in license condition 27 C.1.

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CONDITIONS CONTINUED

B. Each sealed source as defined in items 6,7,and 8, line B, C, D, & F, containing radioactive material, shall be tested for leakage and/or contamination at intervals not to exceed six (6) months. In the absence of a certificate from a transferor indicating that a test has been made within six months prior to the source transfer, the sealed source shall not be used until tested. If the test reveals the presence of 0.005 microcuries or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or disposed of in accordance with Departmental regulations. A report shall be filed within five days with the Maryland Department of the Environment, Radiological Health Program, 2500 Broening Highway, Baltimore, Maryland 21224, describing the equipment involved, the test results, and the corrective action(s) taken.

C. The test shall be capable of detecting the presence of 0.005 microcuries of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surfaces of a device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate.

D. Records of leak tests shall be kept in units of microcuries and maintained for inspection by the Department in the records room.

E. If the test of singly encapsulated cobalt-60 sources reveals the presence of 0.05 microcuries or more of the removable contamination, the licensee shall immediately withdraw the sealed source from use or storage and shall cause it to be decontaminated and repaired. Records of such leak tests shall be maintained for inspection by the Department in the records room.

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F. If the test of doubly encapsulated cobalt-60 or any other doubly encapsulated radioisotopic sources reveals the presence of 0.005 microcuries or more of removable contamination, the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired. Records of such leak tests shall be maintained for inspection by the Department in the records room.

G. Tests for leakage and/or contamination shall be performed by the licensee or by other persons specifically authorized by the Department, the U.S. Nuclear Regulatory Commission or another Agreement State to perform such services.

13. Ownership, possession, or control of radioactive materials authorized in Item 7.A.(2) including incidental activation products, shall not be transferred to other persons, (as "person" is defined in COMAR 26.12.01.01.) except to a licensed burial site.

14. A. Neutron Products, Inc. may receive cobalt-60:

(1.) From a vendor who has produced cobalt-60 in a reactor (after approval of the specifications by the Department); or

(2.) From a teletherapy unit when Neutron Products, Inc. installs a replacement source.

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B. Neutron Products, Inc. may not receive cobalt-60:

(1.) That is contaminated with other isotopes; other than activation products normally present in activated materials e.g., (manganese-54) and received from a reactor.

(2.) As any material contaminated with cobalt-60; or

(3.) As a sealed source which is not received in exchange for a replacement source unless prior approval has been granted by the Radiological Health Program. Such prior approval may be granted only after a thorough review of a specific proposal that describes the source of cobalt, the total activity and quantity involved, other isotopes involved, the proposed use and the potential market of any product thus produced and the plan for disposal of any waste generated.

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CONDITIONS CONTINUED

15. A. A gas proportional portal monitor equivalent to the Helguson HECM-2 capable of detecting 2500 dpm at one inch and 5000 dpm at three inches shall be utilized in a location approved by the Department. The monitor shall be used by all personnel who exit the Limited Access Area ("LAA"). They shall remain standing in the sensitive detection zone of the monitor for at least two full minutes. Each person shall expose his/her back, front, right and left sides to the detectors for thirty seconds each. The monitor shall be maintained and used in accordance with the manufacturer's specifications at all times. At a minimum, this monitor shall be inspected by the manufacturer in accordance with the terms of the Agency approved, service contract dated September 15, 1989, Agreement #SA/89/1. The monitor shall be maintained and used in such a manner as to ensure its ability to accurately detect levels of radioactivity of 2500 dpm on the hands and 5000 dpm on the whole body. The monitor must be fully operational and kept free from contamination at all times unless unforeseeable and unavoidable operational problems arise. The Department must be notified by telephone within one workday in the event that the portal monitor is not operational. The contingency plan describing personnel monitoring procedures for use during downtime shall be conducted as submitted in referenced letter of May 26, 1989. The portal monitor must be located in the access and egress area as identified in Attachment 7 to plans submitted by the licensee on April 21, 1989.

B. Background radiation levels at the portal monitor shall not exceed 50 micro/R per hour unless otherwise authorized by the Department.

C. The Radiation Safety Officer shall perform monthly evaluations of the portal monitoring area, the use of the portal monitor by employees, its functioning and the radiation safety training of employees, and submit monthly reports to the Department based upon such evaluations. These reports shall include the review of incidents of radioactive contamination above 22,000 dpm detected on personnel.

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16. A health physics consultant shall be retained by the licensee. This consultant shall be retained subject to the approval of the Department concerning qualifications. The licensee shall be deemed responsible for any failure of the consultant to submit reports or perform required evaluations and analyses. The health physics consultant shall perform, but not be limited to, the following functions:

A. Submit monthly evaluations to the Department regarding the health physics/radiation safety status of the facility as it relates to on going and future operations under this license. Monthly reports by the licensee's consultant shall be submitted to the Department by the last day of the next calendar month. Such evaluations shall be in accordance with NPI letter dated January 13, 1995 and RHP letter dated February 9, 1995.

B. Ensure that the portal monitor is properly installed and maintained;

C. Oversee the maintenance of the portal monitor area as required in order to assure that background radiation levels do not exceed 50 micro/R per hour;

D. Oversee and evaluate the RSO report in Item 14.C and submit this evaluation to the Agency as part of Item 15.A.

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17. A full-time trained health physics technician or full-time equivalent health physics technicians shall be retained subject to the approval of the Department concerning their qualifications. The licensee shall maintain a log which documents the work of the health physics technician. The health physics technician shall perform the following functions:

A. During working hours the technician shall ensure the proper use of the portal monitor, hand-held frisker and any other devices employed to detect levels of radioactivity present on persons or items which exit the LAA;

B. Ensure that all persons log in and out upon entering and exiting the LAA;

C. Ensure the proper use of hand-held friskers by all persons who incur levels of contamination detected by the portal monitor;

D. Report immediately to the Radiation Safety Officer any contamination levels above 10,000 dpm which are detected by the portal monitor, or if the portal monitor is inoperative, under contingency monitoring procedure date [put date in license]. In the event that contamination is detected above 22,000 dpm such incidents must be evaluated by the RSO and must be reported to the Department in monthly reports submitted to the Department by the health physics consultant. Evaluations of such incidents of contamination detected shall include the name of the person contaminated and the activity of contamination detected. The Department shall be notified within two hours concerning all contaminations above 50,000 dpm which are detected by the portal monitor, or if inoperative, under contingency monitoring. During non-work hours, call (410) 243-8700 and ask the operator for "Radiation Assistance."

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CONDITIONS CONTINUED

E. Document, for evaluation by the RSO all sources of radioactive contamination of employees in excess of 22,000 dpm.

F. Conduct radiation surveys within the entire facility in accordance with documented procedures set forth elsewhere in this license.

G. Conduct water sampling of the main source pool, canals and waste water generated in the LAA in accordance with NPI's documented procedures set forth elsewhere in this license.

H. Conduct radiation surveys of soil and water contamination levels in accordance with NPI's plan titled, "Environmental Surveillance Plan", Procedure R1004, July 6, 1989, for the surveillance of radioactive contamination in surface and ground water at the plant's boundary and within a one kilometer radius of the licensee's facility. This plan shall include but not be limited to a decontamination plan, a schedule for remedial action and contingencies for obtaining access to private dwellings and commercial property.

I. Conduct radiation surveys of all personnel, vehicles, equipment, and personal belongings exiting the gate of the courtyard area in accordance with the limits specified in Condition 13A of this license, NPI Procedure R 1011, and U.S. Department of Transportation Regulations.

18. Following any detection of contamination by the portal monitor, hand-held friskers capable of measuring levels of radioactivity as low as 500 dpm shall be used to detect the precise areas of contamination. Upon discovery of a level of contamination at or above 500 dpm, contaminated individuals must be promptly decontaminated to a level as low as reasonably achievable and remonitored.

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CONDITIONS CONTINUED

19. A. NPI shall maintain an established "clean room " which shall be operated and maintained so that radioactive contamination shall be limited to less than 500 dpm per 100 cm^2 smearable, removable contamination on any surface area. The clean room shall be located immediately inside the entrance door to the LAA and shall provide storage space for all street clothing and equipment which shall not be worn or transported into other areas of the LAA.

B. Any clothing worn outside the LAA shall not be worn in the LAA except in the clean room. Conversely, any clothing worn in other areas of the LAA shall not be worn outside the area. Such clothing may be worn in the clean room if a thorough frisking of a person detects no contamination in excess of 2500 dpm on the hands and 5000 dpm on the whole body.

C. An NPI random inspection plan shall be conducted in accordance with NPI's "Random Inspection Program" revision dated May 14, 1993.

1. Each documented monthly inspection shall be completed by the second week of the next month.

2. Quarterly inspections shall be documented and available for RHP inspector review within six (6) weeks of the end of each calendar quarter.

D. All tools, containers, materials, equipment and facilities in the restricted area shall be maintained in a clean, orderly manner and properly identified to prevent unnecessary risk of personnel contamination or injury. Radioactive contaminated material(s) not properly maintained shall be declared waste and properly disposed of accordingly.

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20. The licensee shall maintain and implement a detailed Radiation Safety Training Program as approved by the Department. At a minimum, this Program shall provide, on a quarterly basis, training sessions provided by the Health Physics Consultant to all employees who, under any circumstances, may have access to the LAA. Attendance at such training sessions shall be mandatory and documented.

21. A. The compaction of radioactive waste prior to storage or disposal is prohibited unless the Department approves of a plan submitted by the licensee for conducting this activity in a safe manner.

B. Within 90 days from the issuance of this license, NPI shall submit to the Department for approval a comprehensive plan for disposal of all low level radioactive wastes in accordance with the following:

(1.) Any radioactive waste storage, either temporary or long term shall only be located in the LAA with the only exception being the underground waste water storage tank. Waste storage not in the main pool/canals shall not exceed a period of two (2) years. Waste storage in the main pool/canals shall not exceed four (4) years from date of placement in the pool.

(2.) Radioactive waste inventory not in the main pool/canals shall not exceed 600 curies and not more than 200 cubic feet at any one time. Radioactive waste inventory and any waste like materials at NPI located in the main pool/canals shall not exceed 5000 curies.

(3.) All radioactive waste must be identified and dated as to when generated and containerized.

(4.) All radioactive waste shipments shall be composed of the oldest waste first.

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(5.) Copies of radioactive waste shipment records shall be provided to RHP and Hazardous and Solid Waste Management Administration within 14 days of shipment dates.

(6.) Procedures for radioactive waste handling, packaging and transportation must include personnel and equipment that will be used.

Failure to meet this schedule may result in the possession and storage of radioactive materials until actual shipment schedules are met.

22. A. Environmental thermoluminescent dosimeters (TLDs) shall be placed at the facility's boundaries. Such dosimeters shall be affixed to existing boundary structures (i.e., wall or fence) and shall be replaced on a monthly basis. Dosimeters shall be placed a maximum of one hundred feet apart along each boundary structure. The boundary radiation exposure limit shall not exceed 500 millirem per year at any point.

B. Evaluation and remediation of unrestricted areas, drypond and ground areas surrounding the facility shall be conducted in accordance with NPI procedure "R 1004" titled "Neutron Products, Inc. - Environmental Surveillance Plan" dated July 6, 1989. The criteria for acceptability of cobalt-60 contamination of ground areas are:

(1.) The gamma exposure at one (1) meter above the ground surface shall not exceed 10 microR/hr above background for an area greater than 900 sq. ft. and shall not exceed 20 microR/hr above background for any discrete area (i.e. less than 900 sq. ft.).

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(2.) The concentration limit for cobalt-60 soil contamination is 8 picocuries per gram above background for an area. All soil exhibiting levels of radioactivity in excess of the above, wherever found, shall be removed and properly stored/disposed of as radioactive waste by the licensee. The Department shall be furnished with documentation of the discovery, survey dates and disposition of such radioactive material found off-site on a monthly basis.

C. A floor radiation monitor of a type approved by the Department shall be used on a weekly basis to detect surface levels of radioactive contamination on all surfaces within the facility outside of the LAA. The licensee shall maintain records regarding the use of this monitor, the contamination found and any decontamination performed.

23. Licensee shall, with employee permission, conduct or cause to be conducted employee home and vehicle surveys on an annual frequency, utilizing NPI procedure "Guideline for NPI Home Contamination Survey" R-8010 dated June 29, 1988.

24. NPI shall establish a records room in an unrestricted area within 90 days from the issuance of this license. The records in this room shall be inclusive of but not limited to legible copies of all health physics records, copies of bound logs, TRC and Radiation Safety meeting, radioactive waste inventories, surveys, environmental surveillance records, pool/ canal conditions, radioactive material inventories, plant and personnel radiation incidents, calibrations performed, source melts conducted, personnel monitoring, NPI policies, procedures and drawings, and employee training and exposure records.

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25. NPI shall perform and document a radioactive material inventory within 90 days of the issuance of this license. Thereafter these inventories shall be performed on a six month basis (January and July each year) for review by the Department.

26. NPI shall develop and issue within 90 days of the issuance of this license for Agency approval a procedure specific to the clean-up of the cell following a cobalt-60 melt. The procedure shall include at least the following:

    A. Pre-entry cell dose-rate assessments.

    B. Hot cell personnel entry requirements.

    C. LAA health physics requirements.

    D. Methods of radioactive waste handling and removal.

    E. Management oversight.

    F. Record keeping requirements.

    G. Written post melt assessment.

27. A. Components used below water level in the main pool and canals which would compromise the integrity of the radiation shield during procedures such as maintenance, servicing or source addition or removal should be material with a specific gravity of 1.000 or more. All tools, vacuum tubing, or equipment which may reduce the shielding provided by the water, shall be monitored for direct radiation during introduction to the main pool or canals.

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All items removed from the storage pool and canals as well as the area above the pool and canals shall be monitored during the source handling or pool operations.

B. The main pool and canals shall be cleaned on an annual basis beginning on or before 90 days following the issuance of this license in order to remove all foreign material which accumulates on the bottom and sides of the pool. Any vacuum system used for this purpose shall be equipped with an in-line filter(s). The licensee shall develop procedures and equipment prior to performing this operation. These procedures shall be submitted for approval by RHP 90 days following the issuance of this license.

C. Pool Operating Parameters:

1. Main pool/canal water activity must not exceed $5x10^{-4}$ uCi/cc.

2. Main pool/canal water conductivity must not exceed 10 micro siemens-cm.

3. Main pool/canal water must be within a pH range of 6 to 8.

4. Main pool/canal water temperature must exceed 95 F.

When pool/canal water exceed these values for a period greater than 72 hours, all operations must cease until water quality is restored and maintained at these levels.

28. A. All LAA facility equipment, controls, piping and filters etc. dealing with RAM, shall be clearly labelled as to its purpose or function.

B. The licensee shall maintain a log for review by the Department, of facility maintenance

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that has been performed. This log shall include repairs, replacement of safety equipment or building, plumbing and electrical equipment under areas affected by this license.

29. NPI shall notify RHP in writing a minimum of 30 calendar days prior to any melt operation.

30. NPI shall provide a written plan, within 90 days of the issuance of this license, describing the company's capability for fire fighting and prevention.

31. NPI shall afford to this Agency at all reasonable times opportunity to inspect materials, machines, activities, facilities, premises and records pursuant to the regulations of Section J 14(a) of Part J.

32. NPI shall conduct Radiation Safety Committee Meetings as often as necessary but not less than once per calendar quarter. These meetings shall be attended by at least the Radiation Safety Officer, Health Physicist Consultant, and Waste Management Coordinator.

33. The licensee shall install audible alarms both for high and low level water conditions to prevent overflow of pool/canals and/or lack of water shielding for sources. These alarms shall be incorporated into the off-site emergency notification system. Alarms shall be tested and documented for operation at least once each calendar quarter.

34. The number of existing radiation area monitors shall not be reduced without RHP approval and all such equipment shall have spares and operable backup instruments on hand to immediately replace any monitors.

35. NPI employees shall be monitored via a whole body counter at least once annually for those individuals performing tasks in the Limited Access Area. Additionally, individuals

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found with internal contamination following an incident of inhalation or ingestion of radioactive material shall have additional whole body counting performed within a time period necessary to determine the activity and personnel exposure.

36. Financial assurance and record keeping for decommissioning of the licensee's facility shall be conducted in accordance with Section C.29 of these regulations.

37. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material authorized by this license in accordance with statements, representations, and procedures contained in application dated August 1, 1994 and the documents as submitted by the licensee and approved by the RHP for safe operation of the facility. As currently constructed, the facility and equipment utilizing radioactive material under this license are considered a part of this license and any changes must have prior approval by RHP. Additionally, all changes in procedures, forms and checklists used under this license shall be submitted to RHP for approval and are also a part of this license. COMAR 26. 12. 01.01. "Regulations for Control of Ionizing Radiation" shall govern the licensee's statements in applications, letters or procedures unless these requirements are more restrictive than the regulations. The following documents are hereby incorporated as binding/mandatory parts of this license:

NEUTRON PRODUCTS, INC.
REFERENCES

A. 1. NPI Sealed Source and Device evaluation of NPI radiation processing sources (February and March) 1984, and references contained therein MD 474S108S-2/29/84, per ANSI Standard N542, NPI drawing and test results.

2. NPI Fabrication and Installation and Testing of Main Storage and Canal Transfer Tanks Spec. E-4, 8/21/74 with drawings.

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3. NPI Fabrication of Canal Tank Sections - Spec. E-2, Rev. 0-1/25, 1974 Assembly of Canal Tank - E-3, 1/74.

4. NPI SS&D Registry MD 474S1095 Teletherapy Sources - NPII Series
NPI SS&D Registry MD 474S108S Radiation Processing Sources.

5. NPI Specification Q-1, 6/93 "Q.C. and Procedures for Welded Covers of Stainless Steel Encapsulated Cobalt-60 Sources" with attachment.

6. NPI Specification Q-2, 2/73 "Procedure for Measuring Radiation Output from Cobalt-60 Sources".

7. NPI Specification M-1, 6/93 "Specification for Stainless Steel Testing for Encapsulation of Radioactive Sources."

8. NPI Specification P-1, 6/93 "Specifications, Procedures, and Quality Control for Sealed Cobalt-60 Sources."

9. NPI Specification P-4, 1/71 "Procedure For Encapsulation of Teletherapy Sources."

10. NPI Drawings:
200200 - 3/19/81 - 9/16" x 18" source
200190 - 7/08/77 - 9/16" x 14" source
200173(A) - 12/15/75 teletherapy source
200057 - 1/10/71 teletherapy source

11. NPI Document 1/22/86 - Quality Assurance Program for Transport.

12. NPI Document 12/4/85 - Quality Assurance Program for Transportation.

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13. NPI letter 7/30/85 - Leaking Picker Sources - repair.

14. Letter 1/27/89 from Frederick Memorial Hospital for facility care of NPI employees.

15. NPI letter dated 11/7/90, additional Hot Cell Work procedures.

16. NPI letter dated 1/22& 29/91 with Drwg. No. 120055 Rev. D - "Decon area" doors.

17. NPI letters dated 9/25/90 and 12/20/90 - Hot Cell interlock and detector.

18. ANSI Standard N449 - 1974

B. Neutron Products, Inc. (NPI) Procedures

		TITLE	Revision
1.	R1001	"Counting Procedures"(March 14, 1977)	2
2.	R1002	"Sampling Procedures"(June 7, 1989)	5
3.	R1003	"Procedure for Entrance to and Exit from Contamination Control Areas"(June 6, 1989)	1
4.	R1004	"NPI - Environmental Surveillance Plan"(July 6, 1989)	0
5.	R1006	"Procedure for Disposal of Liquid Waste"(March 1, 1977)	3

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6.	R1007	"NPI - Radiation Detection Instruments Calibration Procedure"(April 25, 1991)	5
7.	R1010	"NPI - Procedure for Reporting of Radiation and Contamination Levels"(May 4, 1982)	0
8.	R1011	"Procedure for the Limits for Decontamination and Release of People and Personal Effects from Limited Access Area"(January 31, 1991)	1
9.	R1012	"Procedure for Daily Operational Checkout for Routine Maintenance of the Helguson Mini HECM Booth Monitor" (October 19, 1989)	2
10.	NR1013	"Procedure For Changing Spent Pool Resin"(April 28, 1993)	1
11.	NR2001	"Procedure for Loading and Removal of Radioactive Shipping Containers from the Main Storage Pool"(February 11, 1977)	1
12.	NR2002	"Procedure for Dry Transfer of Sources from Pool to Hot Cell"(February 11, 1977)	1
13.	R2003	"General Procedures for In-Pool Source Operations"(March 1, 1977)	2

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14.	R2004	"Procedure for In-Pool Irradiations" (November 26, 1973)	0
15.	NR2005	"Procedure for Decanning Cobalt-60 Sources from Zircaloy Tubes"(February 23, 1977)	0
16.	R2006	"Leak Testing in the Pool"(February 17, 1977)	1
17.	R2007	"Calibration of Effective Activity by Area Method"(January 19, 1979)	2
18.	NR2008	"Procedure for Placing and Unloading Casks in Main Storage Pool"(no date)	1
19.	NR2010	"Procedure for Loading and Unloading NPI Large Radioactive Shipping Containers" (January 13, 1983)	1
20.	R2014	"Unloading and Loading of NPI-20WC-6 Teletherapy Shipping Package at the Dickerson Hot Cell"(June 7, 1985)	0
21.	R2015	"Transportation of NPI-20WC-6 Teletherapy Shipping Package In NPI Vehicle Or Exclusive Use"(May 24, 1985)	0
22.	R2016	"Preparation for Shipment of the Model 500 Shipping Package, Dryloading"(April 26, 1994)	0

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23.	NR2025	"Transportation of NPI-WR-1 Shipping Containers" (October 1, 1985)	0
24.	NR2027	"Special Procedure Unloading Cobalt-60 Shipment From Savannah River and Similar Authorized Locations"(July 8, 1986)	1
25.	R2028	"Procedure for Entrance to the Limited Access Area"(February 7, 1991)	1
26.	R2029	"Procedure for Exit From the Limited Access Area"(June 14, 1989)	0
27.	NR2501	"NPI - Procedure for Decontamination of AECL/Theratronics Teletherapy Machines" (February 5, 1990)	1
28.	NR3001	"Procedure for Changing Spent Pool Resin"(January 21, 1991)	0
29.	NR3002	"Dewatering, Sealing and Shipping 60-Gallon Polyethylene "HICS" Provided by Chem-Nuclear Systems, Inc." (January 22, 1991)	0
30.	NR3003	"Procedure for Use of the Drum Storage Vault"(January 22, 1991)	0
31.	R4000	"Procedure for Canal Operations"(October 20, 1975)	1

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32.	NR4001	"Procedure for Canal Entry"(January 28, 1974)	1
33.	R4002	"Monitoring of Water Loss in the NFI Main Pool and Canal"(January 31, 1974)	0
34.	R4003	"Procedure for Monitoring Canal Tanks"(February 11, 1977)	1
35.	R4004	"Procedure for Monitoring Main Pool Tank"(February 10, 1977)	1
36.	R4005	"Procedure for Testing Canal and Main Pool Leak Detection Channels" (February 11, 1977)	0
37.	R5001	"General Procedure for Hot Cell Operations"(December 15, 1988)	3
38.	R5001A	"General Procedure for Hot Cell Source Operations Where the Canal is Isolated from the Hot Cell"(May 16, 1974)	1
39.	R5002	"Opening the Hot Cell Door After Processing Single and Double Encapsulated Cobalt-60"(July 15, 1976)	1
40.	NR5003	"Opening Hot Cell Door After Processing Exposed Cobalt-60"(July 15, 1976)	1

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41.	R5004	"Transfer of Sources Between Hot Cell and Canal Tanks"(October 20, 1975)	0
42.	R5005	"Loading of Encapsulated Sources in Transfer and Shipping Containers From Hot Cell"(November 26, 1973)	0
43.	R5006	"Processing single and double Encapsulated Cobalt-60 Sources" (November 26, 1973)	0
44.	NR5007	"Procedure for Processing Exposed Cobalt-60"(April 4, 1978)	1
45.	NR5008	"NPI - Procedure for Changing the Primary Hepa Filter in the NPI Hot Cell Ventilation System"(April 12, 1982)	2
46.	R5009	"Procedure for Testing of Hepa Filter in Ventilation System of Hot Cell"(February 17,1994)	2
47.	R5010	"NPI - Procedure for Changing the Roughing Filter in the Hot Cell Ventilation System"(April 21, 1982)	0
48.	NR5012	"Opening Hot Cell Door After Special Processing Operations with Exposed Cobalt-60"(July 28, 1986)	0

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49.	R5013	"Procedure for the Use and Control of Radioactive Material in Teletherapy Operations"(July 29, 1986)	0
50.	R7901	"NPI - Procedure for Environmental Qualification Testing"(August 9, 1984)	0
51.	R7902	"NPI - Procedure for Reporting Defects and Non-Compliance in Environmental Qualification Testing"(August 9, 1984)	0
52.	R7903	"NPI - Procedure for Correcting Non-Conformances in Radiation Testing" (August 9, 1984)	0
53.	R7904	"NPI - Procedure for Retention of Documents pertaining to Environmental Qualification Testing"(August 9, 1984)	0
54.	R7905	"NPI - Procedure for Analytical Methods used in Radiation Testing"(August 9, 1984)	0
55.	R7906	"NPI - Procedure for Correcting Non-Conformances in the Quality Assurance Plan for Environmental Qualification Testing or Any of Its Implementing Procedures" (August 9, 1984)	0

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56.	R7907	"NPI - Procedure for Control of Documents Pertaining to Environmental Qualification Testing" (August 9, 1984)	0
57.	R8010	"Guideline for NPI Home Employee Contamination Survey" (June 29, 1988)	0
58.	S1	"Special Procedure for Removal and Encapsulation of Failed and Other Selected Sources from Water Storage Facilities" (June 24, 1977)	0
59.	PR 001	"NPI - Program Radiation Protection Employee Exposure"(June 30, 1983)	3
60.	PR 002	"NPI - Radioactive Respiratory Protection Program and Implementing Procedure RP-01" (December 28, 1989)	7
61.	PR 003	"NPI - Requirements for the Documentation of Evaluations of Radiation Exposures" (October 10, 1980)	1
62.	PR 004	"Supplemental Training Program for Radiation Protection Participants"(July 6, 1989)	1

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C. Neutron Products Inc. Drawings

1. Location of Dickerson Site, Drwg. No. 120042, dated June 11, 1979
2. Layout of Dickerson Facility, Restricted Area, Drwg. No. AL-120086, 2 sheets dated June 17, 1991
3. Layout of Limited Access Area, Drwg. No. AL-120084, 2 sheets dated June 17, 1991
4. Contamination Control Zones in Limited Access Area, Drwg. No. AL-120085, 2 sheets dated June 17, 1991
5. Shielding Water Systems, Drwg. No. D-220036, Rev. B dated July 10, 1991
6. Limited Access Area Safety Circuits, Drwg. No. N-180012 dated July 18, 1991
7. Pool & Canal Layout, Drwg. No. N-1210055, 2 sheets Rev. E dated June 25, 1991
8. Drum Storage Vault, Drwg. No. N-220033 dated September 28, 1994
9. Resin Storage Vault, Drwg. No. A-220034 dated September 29, 1994
10. Hot Cell Exhaust Filtration System, Drwg. No. D-220037 dated June 26, 1991
11. Area Monitor Locations, Drwg. No. 220035-N Rev. B dated June 21, 1991
12. Location of Environmental Test Wells, Drwg. No. AL-120087 Rev. B dated June 17, 1991

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Roland G. Fletcher

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CET, REM, TDF, DKM