

**RADIOLOGICAL HEALTH PROGRAM
MARYLAND DEPARTMENT OF THE ENVIRONMENT
2500 Broening Highway
Baltimore, Maryland 21224
(410) 631-3302**

RADIOACTIVE MATERIALS INSPECTION REPORT

Neutron Products, Inc.
22301 Mt. Ephraim Road
P.O. Box 68
Dickerson, MD 20842

License Number: MD-31-025-01

Phone Number: (301) 349-5001

FAX Number: (301) 349-5007

Introduction:

On March 25, March 26 and April 2, 1998, Messrs. Bob Nelson, Ray Manley, Ms. Donna Thim and I conducted a routine unannounced radioactive materials inspection at NPI's Dickerson facility. The inspection examined radiation safety, compliance with conditions of the above referenced license, adherence to procedures, proper maintenance of records, interviews with personnel, general observations and independent measurements. Five items of noncompliance and two issues of concern were identified. These findings were discussed with Messrs. Jackson Ransohoff, Jeffrey Williams and Michael Repp at the licensee management exit interview which was held on April 9, 1998. These findings will also be described in a Departmental Letter-Notice of Violation.

Program:

This license authorizes NPI to possess a maximum (b)(4) of cobalt-60 for the manufacturing of special form sealed sources, removal of encapsulation and melting of unsealed cobalt-60 to fabricate teletherapy sources. The licensee stated that for one day during the month of March 1998 they possessed (b)(4) which is the highest activity ever documented on the "01" license. NPI employs 00 persons at the Dickerson plant and also maintains three other Maryland radioactive materials licenses as described below:

- MD-31-025-03 Installation and Service of Teletherapy Sources
- MD-31-025-04 Dickerson II Pool Irradiator
- MD-31-025-05 Dickerson I Pool Irradiator

Purpose And Scope:

The purpose of the inspection was to examine the licensee's use and control of radioactive material relative to Maryland radiation protection regulations and specific license conditions. The inspection staff implemented a performance based inspection plan which emphasized the achievement of quality in all facets of inspected operations.

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Interviews:

Interviews were conducted with the following employees:

Jackson Ransohoff	President
Jeffrey Williams	Radiation Safety Officer
Michael Repp	Health Physicist
Jeffrey Corun	Hot Cell Manager
Joe Weedon	Manager-Limited Access Area (LAA)
Kathy Bupp	Health Physics Technician

Specific Areas of Review:

The following areas were inspected and reviewed: Dosimetry, Random Inspection Program, Quarterly Audits, Radiation Safety Committee Activities, Respiratory Protection Program, Inventory of Radioactive Materials, Daily Implementation of the Radiation Safety Program, General Operations in the LAA, Decommissioning Recordkeeping, Boundary Monitoring Program, One Kilometer Surveys, Shipping and Receiving (Cobalt-60), Cobalt-60 in Soil, Floor Monitoring, Health Physics Monthly Reports, Disposals, Training, Air Monitoring, Survey Meter Calibration, Water Monitoring, Emergency Generator Use and Operations, Status of Building Permit Application, Annual Reports and previous violations.

Results:

1. Monthly Audits **VIOLATION**

The Inspection Team reviewed records of monthly audits for the year of 1997 and year to date 1998. Several were missing. At the exit interview, NPI acknowledged that they did not conduct audits for the months of April 1997, July, 1997 and January, 1998. Furthermore, NPI management did not review the monthly audits at the required quarterly frequency. On October 31, 1997, NPI reviewed the monthly audits from August 1996 to October 1997. NPI management did not review the monthly audits for November 1997 and December 1997. This is a repeat violation from the April 1997 inspection. In NPI's Response Letter dated July 16, 1997 (which responded to violations and concerns identified during the 4/97 inspection), Mr. Williams indicated that they were in compliance with these requirements; however, they are still in violation.

2. Cobalt-60 Soil Concentration **VIOLATION**

NPI has still not removed contaminated soil from the adjacent railroad property to establish compliance with soil concentration limits describe in Condition 13.N. (Amendment 33). The Stipulation and Settlement (Civil Case No. 75639 in the Circuit Court for Montgomery County) dated January 3, 1994 required NPI to clean contaminated soils by June 15, 1994. NPI has missed this deadline and is refusing to remediate this property. Furthermore, NPI is refusing to inform this property owner regarding the cobalt-60 contamination that was released from their Dickerson facility. This is a repeat and ongoing violation.

3. Storage and Control of Licensed Radioactive Material **VIOLATION**

On April 2, 1998, I observed an unlocked Sea Land Container in NPI's parking lot. The

door to this container was open and it was not under surveillance. Mr. Repp and I inspected the contents of the container and identified Depleted Uranium which is possessed under NPI's MD-31-025-03 Radioactive Materials License. Specifically, we identified a "Picker Wheel" and a "Shield for a TEM Head". I informed NPI personnel that this was a violation of Section D. 801. titled "Security of Stored Sources of Radiation". The Depleted Uranium was not secured against unauthorized removal or access from the place of storage. Afterwards, I instructed NPI personnel to lock the Sea Land container and they did. On April 9, 1998 when I arrived at NPI for the exit interview, I found the Sea Land container unlocked. The door was open and the Depleted Uranium was not under surveillance. The door to the Sea Land container did not have a Caution-Radioactive Materials Sign on it and it was not identified as a restricted area. Section D. 802 titled, "Control of Sources of Radiation not in Storage", requires the licensee to control and maintain constant surveillance of licensed radioactive material that is in an unrestricted area. In addition, two TEM rings (which were found stored in the sea land container) contained approximately 17.0 kilograms of Depleted Uranium each and were not identified on the Depleted Uranium Inventory record.

4. Labeling Containers **VIOLATION**

On April 2 and April 9, 1998, I observed Depleted Uranium (which is possessed under NPI's MD-031-025-03 license) stored in the Sea Land Container in NPI' parking lot. The Sea Land Container, the box inside and the actual teletherapy parts which contained Depleted Uranium did not bear labels with the words, "Caution, Radioactive Material" or "Danger, Radioactive Material". At the exit interview, Messrs. Repp and Williams stated that they were certain that they are exempt from labeling requirements. I handed them a copy of the State Regulations, they reviewed it and could not identify an exemption which applied.

5. Recordkeeping for Decommissioning **VIOLATION**

The licensee's records of information important to safe and effective decommissioning of the facility were incomplete, missing, lost and/or not available for inspection. This is a repeat violation from the April 1997 Departmental Inspection. Specifically, records of spills, leaks, and other occurrences involving the spread of radioactive material in and around the facility were still not available for inspection by the Agency. The only records NPI could produce was records regarding the leaks in the canal and the main pool. Records involving the location of inaccessible radioactive contamination such as buried pipes and soil were still not available for inspection. In NPI's Response Letter date July 16, 1997, Mr. Williams stated that they were in substantial compliance with Section C.29(f) however they are still in violation. During the exit interview, Mr. Ransohoff talked at length about the volume, activity and location of approximately 2000 cubic feet of contaminated soil used as fill during construction which occurred from 1981 to 1983; however, there were no records available for inspection. In addition, NPI still cannot produce any records regarding buried contaminated drains and cobalt-60 soil concentrations of a partially remediated hole in the LAA. Current records regarding cobalt-60 soil concentration of the adjacent railroad property and other areas down grade were also not available for inspection.

6. Procedure For Exit From The LAA **ISSUE OF CONCERN**

On March 26, 1998, RHP Inspectors had completed the inspection of the LAA when Mr. Williams identified radioactive contamination on his left arm. Mr. Williams experienced

difficulty in decontaminating this area. At this time, a portal monitor technician was not available to operate the Helgeson Mini HECM Gas Proportional Booth Monitor. Mr. Williams walked passed the monitor twice while he was contaminated with cobalt-60 without "counting out". The first time, he walked passed the Booth Monitor so he could operate the Monitor's controls while Mr. Nelson was "counting out". The second time, a portal monitor technician was available however Mr. Williams again walked passed the Booth Monitor to obtain a scouring pad to remove the contamination from his shoulder. Afterwards, when Mr. Williams finally "counted out" in the Booth Monitor, he tripped the alarm which indicated that there still was contamination on his shoulder. Mr. Williams claims that this is not a violation because he never actually left the LAA without "counting out". It is the RHP's position that no person should ever physically pass the monitor prior to "counting out" and being free of cobalt-60 contamination. Upon further review, it was determined that NPI modified the procedure regarding "Exiting the LAA" on April 1, 1993 with out notification or permission from the RHP. This modified procedure allows a contaminated employee to bypass the Booth Monitor and operate it's controls as long as he remains in the LAA. Neither procedure is incorporated into the license or "tied down" by amendment. The RHP Inspection Staff considers this to be a poor health physics practice.

7. Survey Meter Calibration **ISSUE OF CONCERN**

NPI personnel could not demonstrate National Institute of Standards and Technology (NIST) traceability of their calibrator source (Cobalt-60, M-498, 6.10 mCi) which they use to calibrate 65 of their survey meters and 46 of their self reading dosimeters. No traceability or certification records were available for inspection. NPI's procedure for calibrating survey meters requires the source to be NIST traceable; however, this procedure is not "tied down" to the license by amendment. At the exit interview, NPI still could not explain or demonstrate how they know that their calibration procedure is accurate and NIST traceable.

8. Respiratory Protection Program **RECOMMENDATIONS**

The Inspection Team conducted a review of NPI's Respiratory Protection Program. I discussed their Respiratory Protection Program with Ms. Mardel Knight, a Certified Industrial Hygienist at MDE. Ms. Knight provided the following recommendations presented to NPI management at the exit interview:

- a. NPI should conduct an annual review of their respiratory protection program
- b. NPI's written Respiratory Protection Program needs more detail such as quantity and types of respirators, model number of respirators, serial numbers of respirators, type of fit testing which is conducted, names of service contractors, and names of the emergency responders.
- c. A log should be kept which documents the "30 day checks" of each respirator.
- d. The SCBAs need to be checked within the 30 day frequency.
- e. Each Emergency Responder is required to pass the medical examination within a 12 month frequency and the new forms must be maintained for inspection.

Licensee Management Exit Interview

The licensee management exit interview was held on April 9, 1998 at NPI. Messrs. Nelson, Repp, Ransohoff, Williams and I attended the exit interview and we discussed the

results of the inspection. Mr. Ransohoff disagreed with all of the violations found. Messrs. Williams, Repp and Ransohoff also disagreed with the Issue of Concern regarding the Procedure For Exit From The LAA. Messrs. Repp and Ransohoff stated that the recommendations regarding their Respiratory Protection Program were reasonable and would be implemented prior to the next melting campaign when respiratory protection will be necessary. Messrs. Ransohoff and Repp also agreed with the Issue Of Concern regarding Survey Meter Calibration. Mr. Repp stated that they would demonstrate NIST traceability within one week. We also discussed other issues including training of visitors who enter the LAA, dose to members of the general public for 1997, Sediment and Stormwater Management application, MNCPPC application, ALARA and the Maryland Radiation Control Advisory Board's future tour of NPI's Dickerson plant.

During the exit interview, Mr. Ransohoff also made the following comments:

1. Mr. Ransohoff stated that Depleted Uranium does not need to be secured against unauthorized removal from place of storage because he is entitled to a general license and nobody locks up general licensed material. He also stated that he resolved this issue years ago. He went on to state that Cobalt-60 exists in cosmic dust from meteors and he recently saw one near the plant. Mr. Ransohoff stated that as a result, he was concerned about the accuracy of his environmental monitoring.

2. Mr. Ransohoff offered Mr. Nelson and I tickets to the Washington Wizards Basketball game on April 9, 1998 at the MCI Center in Washington D.C. and we declined. He asked again if we wanted to go to the game, he held an envelope up in the air and stated that he had extra tickets. Again, we declined and he tossed this envelope on the table.

3. Mr. Ransohoff asked if Mr. Nelson and I could change the soil concentration limits described in Amendment 33 to levels which would put NPI in compliance. I stated that I could not do that and showed him a copy of the Stipulation and Settlement. I pointed out paragraph 13 which describes the agreement to clean contaminated soils to Amendment 33 criteria by June 15, 1994. NPI has failed to meet this deadline because they never cleaned up the adjacent railroad property to concentrations below 8 picocuries per gram. In addition, they never notified the property owner regarding the contaminated soil.

4. Mr. Ransohoff stated that he does not have to comply with the soil concentration limits described in Amendment 33 and the June 15, 1994 deadline for clean up of contaminated soils because he has an oral agreement with Judge Pincus which supersedes the Stipulation and Settlement of January 3, 1994.

5. Furthermore, he stated that he is not required to comply with the terms and conditions of the Stipulation and Settlement because MDE dropped the law suit against NPI and he won. I disagreed and showed him paragraph 11 of the Stipulation and Settlement which describes the \$75,000 payment plan. I informed Mr. Ransohoff that he is required to comply and that is why NPI is paying \$10,000 a year in fines. Mr. Ransohoff stated repeatedly that it is not a fine. He told me never to call it a fine again. He told me that if I ever called it a fine again that he was going to shoot me. He stated again that this is not a fine. He told me that this is very serious. He leaned over towards me and again told me that if I ever called it a fine again that

he was going to shoot me. Mr. Ransohoff then said that if I ever called it a fine, he would terminate me.

At the conclusion of the exit interview, Mr. Ransohoff and I signed the Radioactive Material Inspection Findings and Licensee Acknowledgement Form (MDER E-1) which indicates that a letter will be sent to NPI describing Agency requirements and that corrective actions must be immediately initiated for the violations identified during the inspection.

Miscellaneous Notes:

NPI has still not obtained the permits necessary to begin construction of the courtyard enclosure. Specifically, NPI has not even applied to the Montgomery County Department for Sediment Control and Stormwater Management for a required permit. At the exit interview, Mr. Ransohoff explained that it is not his fault. He stated that he has not applied for the permit because there is a property line dispute and "county red tape". NPI plans to melt (b)(4) (b)(4) curies of cobalt as soon as this application is accepted. NPI has still not obtained the permit necessary to install the fire suppression system required for the two pool irradiators.

The Inspection Team reviewed Dosimetry records for the year of 1997. One employee received over 2.0 REM (2098 mRem) and six employees received over 1.0 REM. The occupational doses for the year of 1997 were substantially lower than previous years. There was no melt or hot cell clean up in 1997. The highest extremity exposure for 1997 was 4.283 REM.

The results of the boundary monitoring program were reviewed and determined to be in compliance with the 500 mRem per year limit at all locations. Monitors have been move inside the fence to prevent theft and tampering. The highest result was 456.9 mRem for the year at the 2019 Dry Pond location. Background was measured to be 68.2 mRem at the Lytle Storage Facility.

On March 26, 1998, Mr. Nelson and I inspected the LAA. We interviewed Messrs. Corun and Weedon. We verified the physical location of Cobalt-60 and Depleted Uranium as identified on the inventory records. Mr. Weedon demonstrated and explained procedures regarding daily checks, weekly checks, air monitoring, water monitoring and survey meter calibration.

For the year of 1997, the average release to WSSC was 1.4 E-5 uCi/ml . No monthly average exceeded 3.0 E-5 uCi/ml . The total activity which was dumped was 13.9 mCi or approximately 1.4% of the 1.0 Curie limit.

On 2/16/98, NPI shipped 100 cubic feet, 524 pounds, 36.0 mCi of dry solid radioactive waste (which was removed from the waste storage) to Barnwell, South Carolina for disposal.

The Inspection Team reviewed NPI's One Kilometer Surveys for the year of 1997. NPI personnel surveyed 54 acres and found seven cobalt-60 particles in the Dickerson community.

On March 26, 1998 Mr. Manley and Ms. Thim conducted a radiological survey of two residential properties near the plant. No radioactive particles were found.

On September 19, 1997, the NPI Health Physicist changed the HEPA filter in the Hot Cell. The HEPA filter is usually replaced every one or two years. Currently NPI has 9 used HEPA filters in storage for decay because they are too hot to ship for disposal. The dose rates at contact with these used HEPA filters range from 2.0 R/hr to 9.0 R/hr.

Inspectors reviewed the Emergency Generator Log for the year of 1997 and year to date 1998. The generator is tested each week and automatically turns on during power failures. This generator only powers the Hot Cell exhaust fan and emergency lighting in the LAA.

The Inspection Team collected soil and water samples which were analyzed by the Maryland Laboratory Administration. Results are attached.

Independent Physical Measurements:

A dose rate survey was conducted using a Ludlum model 14-C, SN 141948 which was calibrated on October 3, 1997 by Ludlum.

Measured:

5.0 mR/hr	door by shoe rack in LAA
10.0 mR/hr	main pool, 1 meter above surface
40.0 mR/hr	south canal, 1 meter above surface
10.0 mR/hr	north canal, 1 meter above surface
25.0 mR/hr	door to the HEPA filter storage room
0.5 mR/hr	at contact with the Hot Cell window
5.0 mR/hr	radiation area signs and ropes in the courtyard of the LAA

Attachments:

Radioactive Material Inspection Findings and Licensee Acknowledgement Form (MDER E-1)
Radiological Survey Record of Two Dickerson Residential Properties 3/26/98
NPI Radioactive Respiratory Protection Program 5/1/92
Stipulation and Settlement, Montgomery County Circuit Court 1/3/94
Stipulation, Montgomery County Circuit Court 11/12/97
Depleted Uranium Inventory At Dickerson 3/20/98
Cobalt-60 Inventory At Dickerson 3/13/98
Health Physics Daily Checklist
Health Physics Weekly Checklist
NPI Notification Letter Regarding The Next Melting Campaign 2/25/98
Maryland Laboratory Administration, Results of Soil and Water Analysis 4/16/98

Lead Inspector: Alan Jacobson

Date of Report: April 16 1998

Reviewer: Alan E. Trump Jr. Program Manager

Date of Review: 4/22/98

State of Maryland

DEPARTMENT OF THE ENVIRONMENT
RADIOLOGICAL HEALTH PROGRAM
2500 Broening Highway
Baltimore Maryland 21224
(410) 631-3300

**RADIOACTIVE MATERIAL
INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGEMENT**

I. Licensee
Neutron Products, Inc.
22301 Mt. Ephraim Road
Dickerson, MD 20842

II. License No.
MD-31-025-01

III. Date of Inspection 3/25, 3/26 & 4/2/98

IV. Inspection Findings and Licensee Action

The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Code of Maryland (COMAR) 26.12.01 "Regulations for Control of Ionizing Radiation", and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The findings of this inspection are as follows:

- A. No current use or storage of licensed radioactive material (no program). The licensee was informed that upon receipt of radioactive material RHP must be notified.
- B. Issuance of an Agency E-1: Within the scope of the agency inspection no items of noncompliance or unsafe conditions were found. No action is required by the licensee.
- C. Issuance of an Agency E-2: Within the scope of the inspection, violations of minor significance were found. For any violation, corrective action must be immediately initiated. Within 20 calendar days of your receipt of this notice you are to provide the Department with written statements of explanation describing:
 - (1) corrective steps which have been or will be taken by you, and the results achieved or anticipated; (2) corrective steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved. Such a statement or explanation must be provided for each of the items listed.
- D. Issuance of an Agency E-1 with a letter sent to licensee further describing Agency requirements. For any violation, corrective action must be immediately initiated.

V. Licensee Acknowledgement

The inspector has explained and I understand any items of noncompliance identified during this agency inspection. Furthermore, I acknowledge that, if an Agency E-2 Description of Violations was issued, failure to comply may result in the revocation, suspension or modification of the license and possible fines for each day the violations continue.

April 9, 1998 Alan Jackson
 Date RHM Inspector Licensee Representative Title or Position
 J. O. Campbell - President