

Region I
NMSS Licensee Event Report

License No. GL

Docket No. 99990001

MLER-RI 2002-013

LICENSEE: C. F. Martin & Co., (Martin)

EVENT DESCRIPTION Theft/Loss of Licensed Material

EVENT DATE February 2002 REPORT DATE Telephone Report 2/13/02

1. REPORTING REQUIREMENT

- | | |
|--|---|
| <input checked="" type="checkbox"/> 10 CFR 20.2201 Theft or Loss | <input type="checkbox"/> 10 CFR 35.33 Misadministration |
| <input checked="" type="checkbox"/> 10 CFR 20.2203 30 Day Report | <input type="checkbox"/> License Condition |
| <input type="checkbox"/> 10 CFR 30.50 Report | |
| <input type="checkbox"/> Other _____ | |

2. REGION I RESPONSE

- | | |
|---|---------------------------------------|
| <input type="checkbox"/> Immediate Site Inspection | Inspector/Date _____ |
| <input type="checkbox"/> Special Inspection | Inspector/Date _____ |
| <input type="checkbox"/> Telephone Inquiry | Inspector/Date _____ |
| <input type="checkbox"/> Preliminary Notification | <input type="checkbox"/> Daily Report |
| <input checked="" type="checkbox"/> Information Entered on the RI Log | |
| <input type="checkbox"/> Review at Next Routine Inspection | |
| <input type="checkbox"/> Report Referred to _____ | |

3. REPORT EVALUATION

- | | |
|--|--|
| <input checked="" type="checkbox"/> Description of Event | <input checked="" type="checkbox"/> Corrective Actions |
| <input checked="" type="checkbox"/> Levels of RAM Involved | <input type="checkbox"/> Calculation Adequate |
| <input type="checkbox"/> Cause of Event | <input type="checkbox"/> Letter to Licensee Requesting
Additional Information |

4. SPECIAL INSTRUCTIONS OR COMMENTS

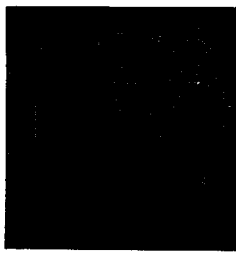
Sent memo to J. Wick concerning EGM 99-005
guidance.

Completed By: J. A. Joubert Date 3/19/02

Reviewed By: J. A. Joubert Date 3/19/02

RECEIVED
REGION 1

2002 MAR 12 PM 1: 53



THE MARTIN GUITAR COMPANY

C.F. MARTIN & CO., INC., NAZARETH, PENNSYLVANIA 18064-0329 USA • 610-759-2837 • FAX 610-759-5757

USNRC
Region 1
Mr. Hub Miller
Administrator
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Miller:

Pursuant to 10 CFR 20.2201(b) C. F. Martin & Co., Inc. (Martin) is providing this written report to the Nuclear Regulatory Commission (NRC) regarding the theft or loss of licensed material. The information contained in this report was submitted to the NRC previously in the telephone report provided by Martin Guitar on February 13, 2002 pursuant to 10 CFR 20.2201(a).

Description of Licensed Material (10 CFR Subpart M 20.2201(b)(i))

Martin uses Nucleocel Ionizer Air Guns (Model #2021) to clean guitars in its spray booths prior to, and following, the application of finishes. The guns are manufactured by NRD, Inc. which is located in Grand Island, NY and leased to Martin under a general license (1429-1811 GL) by a distributor (Amstat Industries, Inc. of Glenview, Illinois). The guns consist of three pieces. One of those pieces is an in-line cartridge containing Polonium-210 (approximately 10mCi) that generates alpha particles for the purposes of neutralizing static charges in the pressurized air stream. Please see attachment 1 for a description of the physical and chemical properties of Polonium and the specifications for the ionizing cartridge. The radioactive material is completely encapsulated in this device using a pressure welded metallurgy technique. The result is an encapsulation that is insoluble and inert to most chemicals.

Presently, Martin leases thirteen (13) Nucleocel Ionizer Air Guns on a rotating basis for use at thirteen (13) stations for the purposes described above. The guns are affixed to airlines in specific booths and tracked by serial number internally. Amstat contacts Martin to notify a designated person that the units must be replaced. New gun assemblies are sent to Martin by Amstat to replace the expended units. The guns are collected by the designated person in the plant at the end of their useful life (12 months) and are sent to the manufacturer (NRD) for destruction. Please see attachment 2 that contains an excerpt from the NRD guidance booklet regarding the leasing and return procedures, a copy of an Amstat notification letter, and a shipping document for returned units.

Description of Circumstances (10 CFR Subpart M 20.2201(b)(ii))

On February 13th, 2002, the Environmental, Health and Safety Manager was notified that the return package sent to NRD for unit number A2BG327 was incomplete, containing the gun assembly but not the in-line cartridge. After reviewing the shipping documents and interviewing personnel that used that particular unit, it was ascertained that the unit in question had separated from the gun assembly during normal use and was sent back to the manufacturer for replacement. It appears that at some point between the time of gun separation and shipment to NRD, the cartridge was lost, stolen, or inadvertently disposed of.

Disposition (10 CFR Subpart M 20.2201(b)(iii))

The disposition of the unit in question has not been determined. It is unknown whether the unit has been inadvertently disposed of, stolen by an employee, or is still located on the premises in some unknown location.

Martin contacted Chrin Brothers, Inc. and East Penn Sanitation, Inc. on February 19, 2002 to notify them of the possibility of the inadvertent disposal of the unit. Both entities act as haulers and maintain landfills that service Martin. Neither company was able to locate the unit in question. Based on the timeframe for possible disposal, both companies indicated that the unit would be in the landfill and not on a truck or at a transfer station if it was inadvertently disposed.

Potential Exposures (10 CFR Subpart M 20.2201(b)(iv))

Polonium is an alpha emitter that has a half-life of one hundred and thirty-eight (138) days. The activity level for the cartridge is 10 mCi (370 MBq). The decay rate for the active component is 0.7 seconds per ESD Association Standard 3.1 @ 30 PSIG, distance 12", 1000 to 100 volts.

The in service date for the unit in question was August 2001. Judy Joustra of the Industrial Applications Division of NRC calculated that the units remaining activity was less than 5 mCi at the time of notification. The concern associated with exposure to the unit in question is that of oral ingestion as it exceeds the ingestion action limit. However, the remaining activity is below the action limit for inhalation. Therefore, it is assumed that the only risk posed to an employee or the public would be the unlikely event of ingesting the encapsulated stainless steel cartridge.

Recovery Actions (10 CFR Subpart M 20.2201(b)(v))

Martin conducted a series of internal searches throughout the production and locker room area from February 13 to March 8, 2002. Martin also extensively interviewed the employees in the areas where guns are located to determine and document the course of events that transpired.

The unit in question was never found at the plant or by the vendors retained by the company to haul and dispose of waste.

Procedural Changes (10 CFR Subpart M 20.2201(b)(vi))

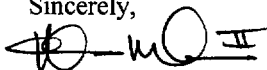
Martin has conducted a failure analysis of the management, handling, and documentation procedures associated with the Nucleocel Ionizer Air Guns.

The following corrective actions were taken:

1. A training session was conducted with all employees that handle the guns to reinforce the safe handling and proper procedures for the replacement of disabled guns.
2. All procedures and guidance from NRD were reinforced with management and personnel.
3. The system for tracking, accounting for, and shipping the units was evaluated. One change was instituted. The designated person will now be the Environmental, Health & Safety Manager rather than a production person.
4. We have instituted a weekly inspection of the guns for compliance with N.R.C. regulations.

If you have any questions or comments regarding this report or other related issues please call either Robert Baines or me at 610.759.2837.

Sincerely,



William J. Whalen II
Environmental, Health & Safety Manager

ATTACHMENT
1

Periodic Table



Polonium

For nuclear batteries.

Atomic Number:	84
Atomic Symbol:	Po
Atomic Weight:	209
Electron Configuration:	$[\text{Xe}]6s^2 4f^{14} 5d^{10} 6p^4$

History

(Poland, native country of Mme. Curie) Polonium, also called Radium F, was the first element discovered by Mme. Curie in 1898 while seeking the cause of radioactivity of pitchblend from Joachimsthal, Bohemia. The electroscope showed it separating with bismuth.

Sources

Polonium is a very rare natural element. Uranium ores contain only about 100 micrograms of the element per ton. Its abundance is only about 0.2% of that of radium.

In 1934, scientists discovered that when they bombarded natural bismuth (^{209}Bi) with neutrons, ^{210}Bi , the parent of polonium, was obtained. Milligram amounts of polonium may now be prepared this way, by using the high neutron fluxes of nuclear reactors.

Polonium is available commercially on special order from the Oak Ridge National Laboratory.

Properties

Polonium-210 is a low-melting, fairly volatile metal, 50% of which is vaporized in air in 45 hours at 55°C. It is an alpha emitter with a half-life of 138.39 days. A milligram emits as many alpha particles as 5 g of radium.

The energy released by its decay is so large (140W/g) that a capsule containing about half a gram reaches a temperature above 500°C. The capsule also presents a contact gamma-ray dose rate of 0.012 Gy/h. A few curies ($1 \text{ curie} = 3.7 \times 10^{10} \text{ Bq}$) of polonium exhibit a blue glow, caused by excitation of the surrounding gas.

Polonium is readily dissolved in dilute acids, but is only slightly soluble in alkali. Polonium salts of organic acids char rapidly; halide amines are reduced to the metal.

Uses

Because almost all alpha radiation is stopped within the solid source and its container, giving up its energy, polonium has attracted attention for uses as a lightweight heat source for thermoelectric power in space satellites.

Polonium can be mixed or alloyed with beryllium to provide a source of neutrons. The element has been used in devices for eliminating static charges in textile mills, etc.; however, beta sources are both more commonly used and less dangerous. It is also used on brushes for removing dust from photographic films. The polonium for these is carefully sealed and controlled, minimizing hazards to the user.

Isotopes

Twenty five isotopes of polonium are known, with atomic masses ranging from 194 to 218. Polonium-210 is the most readily available. Isotopes of mass 209 (half-life 103 years) and mass 208 (half-life 2.9 years) can be prepared by alpha, proton, or deuteron bombardment of lead or bismuth in a cyclotron, but these are expensive to produce.

Metallic polonium has been prepared from polonium hydroxide and some other polonium compounds in the presence of concentrated aqueous or anhydrous liquid ammonia. Two allotropic modifications are known to exist.

Handling

Polonium-210 is very dangerous to handle in even milligram or microgram amounts, and special equipment and strict control is necessary. Damage arises from the complete absorption of the energy of the alpha particle into tissue.

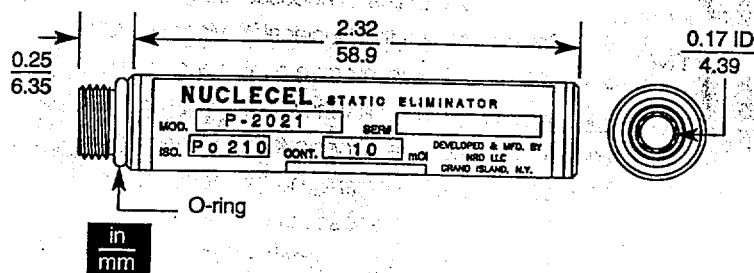
The maximum permissible body burden for ingested polonium is only 0.03 microcuries, which represents a particle weighing only 6.8×10^{-12} g. Weight for weight it is about 2.5×10^{11} times as toxic as hydrocyanic acid. The maximum allowable concentration for soluble polonium compounds in air is about 2×10^{-11} microcuries/cm³.

Sources: CRC Handbook of Chemistry and Physics and the American Chemical Society.

Last Updated: 12/19/97, CST Information Services Team

Model P-2021

Nuclecel™ In-Line Ionizer



Specifications

Diameter:	0.50" (12.7 mm)
Weight:	1.3 oz. (37 g)
Material:	Stainless steel
Gas:	Clean, dry compressed air or inert gas
Pressure:	Normal: <40 psig (2.8 Bar) Maximum: 100 psig (6.9 Bar)
Temperature:	Maximum Temperature 310° F (155° C)
Isotope:	Polonium-210
Emission:	Alpha
Activity:	10 mCi (370 MBq)
Line	
Connections:	1/8" - 27 NPSM thread male/female
Decay Rate:	0.7 sec. (per ESD Association Standard 3.1 @ 30 psig, distance 12," 1000 to 100 volts).

Available options and accessories:

(See Data Sheet 2021ACC)

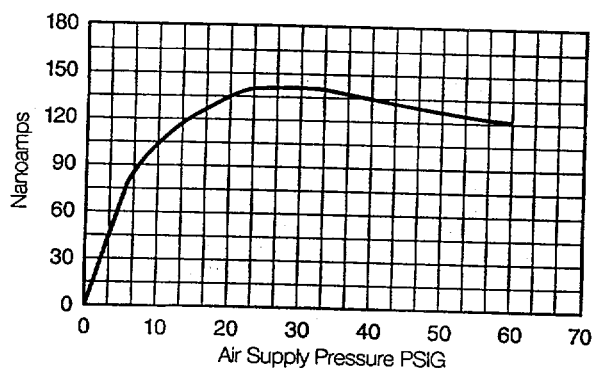
P-2021-1000, 316 stainless

P-2021-8000, 303 stainless

AD4, Adapter to 1/4" NPT, brass

AD8, Adapter to 1/8" NPT, 316 stainless

Ion Flux



*Ion Flux Monitor 5" dia. electrodes spaced at 1" with 2 KV applied.
Device to IFM 6". Pos. & neg. polarities balanced within $\pm 0.1\%$.
Data corresponds to model P-2021-1000, as pictured.

Air Flow Rates

PSIG (Bar)	SCFM (m³/hr)
10 (0.7)	7.6 (12.9)
20 (1.4)	11.0 (18.7)
30 (2.1)	14.4 (24.5)
40 (2.8)	17.8 (30.2)
50 (3.4)	21.2 (36.0)
60 (4.1)	24.6 (41.8)
70 (4.8)	28.0 (47.6)

Note on Ion Source

All NRD ion sources are encapsulated in precious metals by means of a special patented process. This results in a static eliminator which resists oxidation, solvents, heat, cold and vibration.

Note on Ordering

To maintain peak performance and conform to government regulations, ionizers are available on a **one-year lease**. Notification of lease expiration and an offer to renew will be given prior to the end of each year's lease. Upon arrival of a replacement, the expired ionizer is returned to NRD LLC.



Advanced Static Control Solutions

NRD LLC, 2937 Alt Blvd • PO Box 310 • Grand Island, NY 14072-0310 • Phone: 800/525-8076
716/773-7634 • Fax: 716/773-7744 • Web site: www.nrdinc.com • email: sales@nrdinc.com

Data Sheet P2021.1/00

ATTACHMENT
2

Static Eliminator Lease Agreement

NRD Inc. subsidiary of Mark IV Industries Inc. (hereinafter called NRD) hereby leases to the lessee named herein (hereinafter called Customer) the Static Eliminator (hereinafter called Device) described below according to the following terms and conditions:

1. NRD hereby agrees to lease to the Customer the Device for a period of one (1) year beginning on the date of delivery of the Device to the Customer.

2. The Lease Agreement shall be renewed each successive year for a one (1) year period each time unless NRD or the Customer gives the other party written notice at least thirty (30) days prior to the end of the initial or any subsequent one (1) year period.

3. Upon renewal of the Agreement, NRD will, prior to the end of the preceding term, deliver a new Device or replacement cartridge to replace each used Device or cartridge.

4. Upon receipt of the new Device, the Customer will return the used Device in the original regulation type shipping container prepaid insured to:

NRD Inc. subsidiary of Mark IV Industries, Inc.
2937 Alt Boulevard North
Grand Island, New York 14072-1292

Should the Customer fail to return said Device within the specified time he will be subject to payment of another year's rental fee for same.

5. Should the Customer decide to terminate the Lease and not renew same, the Device still must be returned in the original regulation type shipping container prepaid insured to address shown above within fifteen (15) days from the end of the one (1) year period, and should the Customer fail to return said Device within the specified time, he will be subject to payment of another year's rental fee for same.

6. Should the Customer desire to return the Device for any reason other than the above, NRD must first be notified so that a return authorization number can be issued. No return Device will be accepted by NRD at Grand Island unless the shipping container bears this identification.

7. The annual rental fee for the Device described shall be payable within thirty (30) days after the commencement date of this Agreement and annually thereafter on the same date provided the Lease is renewed.

8. NRD hereby warrants that the leased Device will meet the specifications described in the NRD literature relating to this Device, but shall not be liable to the Customer in excess of the fair market value of the Device.

9. The Customer hereby agrees to return the Device at the end of the rental period in the same condition that he received it except for reasonable wear and tear. The Customer also assumes all risk of damage and or loss of the Device (not to exceed the fair market value of the Device at the time of damage or loss) from any cause whatsoever.

10. Title to the Equipment shall remain at all times with NRD, and the Customer hereby agrees that the labels attached to the Device will not be removed.

11. The Customer hereby agrees to pay any and all taxes and/or assessments that may be levied against the Device or the use thereof.

12. The Customer hereby acknowledges the receipt of a copy from NRD of the State of New York, Department of Labor, Division of Occupational Health and Safety Rules and Regulations and the regulations of the U.S. Nuclear Regulatory Commission (N.R.C.) relative to making the customer a general licensee for the use of the Device under the State of New York Code Rule #38 or equivalent provisions of the regulations of the N.R.C. or other agreement state and agrees to conform to the aforementioned rules and regulations.

13. This Agreement shall be construed in accordance with the laws of the State of New York.

14. This Agreement shall be binding upon the heirs, legal representatives, successors, or assigns of the parties hereto.

The regulations of the NRC are similar to the regulations that Agreement States require. They require that you be licensed in order to have the device in your possession. To make things easy, no formal application for a license need be filed,

simply the receipt of the static elimination device gives you an automatic license. In NRC - Agreement State terminology you are called a *general licensee*.

As a general licensee you must follow certain simple requirements:

- (1) YOU MUST MAINTAIN THE DEVICE LABEL IN LEGIBLE CONDITION, SECURELY ATTACHED TO THE DEVICE LABEL TO BE VISIBLE AT ALL TIMES.
- (2) THE DEVICE SHOULD NOT BE TRANSFERRED TO ANOTHER LOCATION, PERSON OR COMPANY.
- (3) SHOULD A DEVICE BECOME DAMAGED, LOST OR STOLEN YOU SHOULD CONTACT NRD, INC. AT 716/773-7634 IMMEDIATELY. YOU WILL BE ADVISED AS TO REPORTING REQUIREMENTS, IF NECESSARY.
- (4) YOU MUST RETAIN ACCURATE RECORDS OF THE RECEIPT, TRANSFER AND DISPOSAL OF EACH DEVICE IN YOUR POSSESSION.
- (5) THE DEVICE MUST BE TESTED FOR LEAKAGE. THIS TESTING IS REQUIRED EVERY 13 MONTHS. RETURN OF THE DEVICE TO NRD, INC. WITHIN 15 DAYS OF THE EXPIRATION OF THE LEASE WILL SATISFY THIS REQUIREMENT. AN ORIGINAL (TYPE A) SHIPPING CONTAINER IS AVAILABLE, UPON REQUEST, AT NO CHARGE TO YOU. PLEASE CALL NRD 1-800-525-8076 MONDAY-FRIDAY. DO NOT USE YOUR OWN PACKAGING OR CORRUGATION.
- (6) THE DEVICE SHOULD NOT BE ABANDONED OR DISPOSED OF EXCEPT BY RETURN TO:



2937 Alt Blvd., Grand Island, NY 14072
(716) 773-7634 FAX # (716) 773-7744

- (7) SOME AGREEMENT STATES REQUIRE THE INITIAL RECEIPT OF A DEVICE BE REPORTED, BY THE GENERAL LICENSEE, TO THE APPROPRIATE AGENCY IN THAT STATE.

FOR EXAMPLE, IF YOU ARE IN NEW YORK STATE, NEW YORK STATE REQUIRES THE FILING, UPON RECEIPT OF A "REGISTRATION OF A GENERALLY LICENSED RADIATION DEVICE" FORM: DOSH-240.4.



3012 N. Lake Terrace • Glenview, IL 60025-5794 • (847) 998-6210 • FAX (847) 998-6218

June 14, 2001

Mr. Fred Everett
C.F. MARTIN & CO., INC.
510 Sycamore Street
Nazareth, PA 18064

Dear Mr. Everett,

It is time to advise you that the NUCLECEL static eliminators (S/N A2AH627 thru A2AH638) that you leased under your purchase order 68467 will be coming due for replacement August 16, 2001.

We are enclosing replacement lease forms to assure you continuity of service. Please fill in the Customer Order Number line and the two lines marked with an "X" on both copies, and return BOTH of the signed copies to us along with your confirming purchase order. As before, a signed acceptance copy of the lease will be returned to you after the shipment goes forward.

When the new order is received, the old devices should be returned to

NRD, Inc.
2937 Alt Blvd., North
Grand Island, NY 14072

Marks: RETURN-3102-LJ For Disposal

Please be sure to write FOR DISPOSAL as well as the model and serial numbers of the devices you are returning on your packing slip. Also, if you wish NRD's acknowledgement of receipt and disposal to be mailed to a particular person in your office, be sure to state that on the packing slip as well. We would appreciate your mailing us a photostat of your packing slip once the return shipment has gone forward.

Feel free to call us at (800) 783-9999 if any questions arise.

Thank you again.

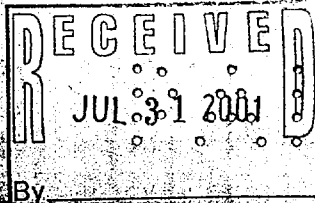
Yours truly,

Larry Jacobson
Sales Manager

LJ:ms
encl.

214310 / 0013

NRD Inc



Represented by AMSTAT INDUSTRIES, INC.
3012 N. Lake Terrace
Glenview, IL 60025-5794
(847) 998-6210
FAX: (847) 998-6218

Lease Number

Customer Order Number

73073

The undersigned hereby certifies that the information furnished herein is true and correct and that the lessee is not a minor and is of legal age and is not under any legal disability.

The undersigned hereby certifies that the information furnished herein is true and correct and that the lessee is not a minor and is of legal age and is not under any legal disability.

Quantity Item

Active Length Annual Lease Price Per Unit

12 Items P2021-8203

197.80

Lessee (Customer):

C.F. MARTIN & CO., INC.

Shipping Address:

510 SYCAMORE STREET
NAZARETH, PA 18064

Invoicing Address:

510 SYCAMORE STREET
NAZARETH PA 18064

X

Lessee's Authorized Signature

7/23/01
Date

X

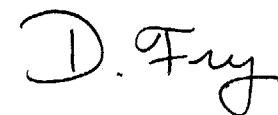
DAVID EVANS
Name (Print or type)

PURCHASING MANAGER
Title

(Please note that this equipment cannot be shipped until receipt of the signed Lease Agreement.)

Kelly G. Walck/dg
NRD Authorized Signature

8-6-01
Date



SHIPPING ORDER

DATE:

Page 1 of 1

SHIPPING ORDER #

P10

SHIP VIA:

UPS ZONE# 3

This merchandise must be examined immediately. Carriers allow 15 days for you to make a written request for an inspection of any loss or damage. A copy of the carrier's report must be sent to the shipper. Failure to comply with the above will result in an unpaid claim for which we will not be responsible.

CTN	1	2	3	4
INS VAL				
CHRG				
INS FEE				
MISC				
COD FEE				
COD AMT				

Office use only

RAZ 8/16/01

Bill To:

C.F.MARTIN & CO.,INC.
510 Sycamore Street * P. O. Box 329
Phone 610.759.2837

Ship To:

NRD,LLC
2937 ALT BLVD
GRAND ISLAND, NY 14072

ACCOUNT #

REFERENCE #

SPECIAL INSTRUCTIONS:

ITEM NO.	QUAN.	U/M	DESCRIPTION	CTN NO.	WGT.	UNIT PRICE	AMOUNT
	12	EA	RETURNING OLD STATIC ELIMINATOR AIRGUNS AIRGUNS LEASE IS UP FOR ONE YEAR THIS PACKAGE CONFORMS TO THE CONDITIONS AND LIMITATIONS SPECIFIED IN 49CFR 173.424 FOR RADIOACTIVE MATERIAL, EXCEPTED PACKAGE INSTRUMENTS AND ARTICLES UN2910 DENNIS FRY				
						PAGE TOTAL	