

Exelon

PowerLabs®

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NHUB3

September 28, 2007

Licensing Assistance Team
US NRC Region I
475 Allendale Rd.
King of Prussia, PA 19406-1415

03036111

RECEIVED
REGION I
2007 OCT -4 PM 1:02

Subject: Revision for Radioactive Materials License, Number 37-30768-01

Dear Ms. Modes:


This letter is a request to revise the PowerLabs license in the area of page 1 section 6,7,8 and 9. PowerLabs is asking for a revision to add a 12-milliCurie Cs-137 Sealed Source Dosimeter Calibrator/Irradiator model IRD-2000 manufactured by MGP Instruments. (Sealed Source Model Designation: AEA Technology Model CDC.700 (SS&D Registry IL-1059-S-204-S). This calibrator will be used to perform calibrations of dosimetry, which cannot be calibrated effectively with our current sources. The new calibrator will be stored and utilized in the secure room currently housing our two J.L. Shepherd Model 89-400 calibrators.

In addition to the above, I am also requesting another change. I would like to expand an existing Lab by approximately 200 square feet to facilitate storage. The area contains cement block exterior wall with no windows. The floor is a concrete slab. No sealed sources will be maintained in this area.

Finally, in sections 6,7 and 8, I would like to add a possession limit of 500 microcuries for Cs-137 Calibration and Reference Sources in anticipation of future calibration opportunities.

If you have any questions or need any additional information regarding this application please contact myself, or Mr. John Moore, directly, at your convenience at (610) 380-2464. We would be happy to support a meeting to quickly resolve any further questions that may arise.

Very Truly Yours,


Frank Cebular
President Exelon PowerLabs

141151

NMSS/RGN1 MATERIALS-002

**REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE**

NO. GA-1147-D-102-S

DATE: March 25, 2004

PAGE: 1 of 9

DEVICE TYPE: Dosimeter Calibrator/Irradiator

MODEL: IRD-2000

DISTRIBUTOR: MGP Instruments, Inc.
5000 Highlands Parkway
Suite 150
Smyrna, GA 30082

MANUFACTURER: MGP Instruments SA
Route D'Eyguieres
BP1
13113 Lamanon
FRANCE

SEALED SOURCE MODEL DESIGNATION:

AEA Technology Model CDC.700 (SS&D Registry IL-1059-S-204-S)

ISOTOPE:

Cesium 137

MAXIMUM ACTIVITY:

12 millicuries (444 MBq), [10 millicuries (370 MBq) \pm 20%]

LEAK TEST FREQUENCY:

6 Months

PRINCIPAL USE:

(J) Gamma Irradiation, Category I (Self-shielded Irradiator)

CUSTOM DEVICE:

___ YES

 X NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES

SAFETY EVALUATION OF DEVICE

NO. GA-1147-D-102-S

DATE: March 25, 2004

PAGE: 2 of 9

DEVICE TYPE: Dosimeter Calibrator/Irradiator

DESCRIPTION:

The IRD-2000 irradiator is designed to check physical and electronic response of electronic dosimeters manufactured by MGP Instruments. The irradiation sequence is controlled in part by manual loading of the dosimeters and opening/closing of the shutter, hands-free (wireless) communication with the dosimeters by the LDM-2000 reader and subsequent communication to the computer and software. The device is capable of irradiating up to three dosimeters at a time.

The overall dimensions of the IRD-2000, when installed with the LDM-2000 reader assembly, are 350 mm in width, 443 mm in height, and 529 mm in depth (13.79 in. x 17.45 in. x 20.84 in.). The completed unit will weigh approximately 80 kg (177 lb.).

The IRD-2000 consists of the sub-assemblies listed below and is arranged on a metal base (four lifting eye-bolts are provided). Refer to Figures 1 – 3 for the following device views: for a front view, showing the dosimeter carriage in the UP position; a rear view, indicating the source access location; and a top view, showing the carriage and the shutter both in the DOWN positions.

Irradiation Module:

The irradiation module consists of a source holder, shielding with a recess forming the irradiation beam, a manually-operated steel shutter that can be locked in the closed (shielded) position, and a spring-loaded carriage for placement of the dosimeters.

The source is inserted into a source holder and is held in place by a setscrew. The source holder is then threaded onto a rod to position the source at the middle of the device, surrounded by 5 cm of lead in all directions. Access to the source holder is via a bolted flange at the rear of the shield that requires a special tool. The shutter sits in front of the source and is operated by pulling the lever up to expose the source. Refer to Figures 4 and 5 for assembled and exploded views of the source holder

The dosimeter carriage is located on top of the device and is semi-circular in shape. The carriage can move vertically on two spring-loaded rails. Three recessed slots are arranged in a 120° arc for the placement of the dosimeters. The slots are narrow enough to prevent the presence of an operator's body parts (i.e., hands or fingers) from gaining access to the radiation beam. When empty, each recess has a thin layer of lead to prevent the streaming of radiation when the shutter is opened. When loaded, the dosimeter moves the lead and allows the dosimeter to be irradiated.

A typical irradiation sequence is as follows:

- Dosimeters are inserted into the carriage
- The carriage is pushed down to the exposure position
- The manual shutter is raised, exposing the source
- At the end of the exposure time (determined either manually or by the reader and control software), the shutter is closed, the carriage is raised, and the dosimeters are removed.

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NO. GA-1147-D-102-S

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DEVICE TYPE: Dosimeter Calibrator/Irradiator

DESCRIPTION: (continued)

Reader System:

The LDM-2000 reader utilizes a hands-free (wireless) process to communicate with the dosimeters. An infrared sensor (3 total per device) aligns with the dosimeter in the carriage to indicate the presence of each dosimeter. An electrical contact signals that the carriage is in the down (closed) position. The reader is connected to the Irradiation Module via a control cable that enables the transmission of data from the dosimeters. Additional cables connect the reader to the main control computer. The reader also provides a means of data entry for the operator.

Control System and Software:

A computer is loaded with MGP's exposure and dose calculation software. This software receives information from the dosimeters via the LDM-2000 reader and processes the irradiation data. Based on the exposure data, the software will then program the dosimeters after irradiation. The software will also display on the monitor input and status screens that indicate when an irradiation is being performed.

NOTE: The LDM-2000 reader is capable of connecting with two (2) IRD-2000 irradiator modules. For licensing purposes, this would constitute 2 devices.

LABELING:

The device is labeled in accordance with Georgia Rules and Regulations for Radioactive Material, Chapter 391-3-17-.03(11), which is equivalent to 10 CFR 20.1901. The labels contain the radiation symbol, isotope, activity, model number, serial number, name of the distributor, and the words "CAUTION-RADIOACTIVE MATERIAL".

The labels are made of adhesive plastic or vinyl, are rectangular in shape, 3 inch x 4 inch (7.62 cm x 10.16 cm), and utilize permanent, indelible ink to prevent fading, discoloration, or smearing.

DIAGRAMS:

- | | | |
|----------|----|---|
| Figure 1 | -- | IRD-2000 front view, showing carriage in the UP position |
| Figure 2 | -- | IRD-2000 rear view, showing source access location |
| Figure 3 | -- | IRD-2000 top view, showing carriage and shutter in DOWN positions |
| Figure 4 | -- | source holder, assembled (one piece) |
| Figure 5 | -- | source holder, exploded (two pieces) |

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SAFETY EVALUATION OF DEVICE

NO. GA-1147-D-102-S

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DEVICE TYPE: Dosimeter Calibrator/Irradiator

CONDITIONS OF NORMAL USE:

The IRD-2000 is used in environments typically found in laboratories and office buildings occupied by humans. In its storage or use location, the device will not be subjected to vibration, shock, or excessive movement, nor is it subjected to varying temperature or natural elements (i.e., wind, direct sunlight, moisture, or extreme particulate environment) beyond initial set-up.

The device will normally be used at facilities where a large number of dosimeters (i.e., greater than 200) are in use, such as nuclear power facilities, large academic and industrial research settings, and emergency response units.

The source manufacturer states that the recommended working life of the source is 15 years. The device should be operable for at least that amount of time.

PROTOTYPE TESTING:

The IRD-2000 Irradiator was designed and manufactured in accordance with procedures submitted and maintained by MGP Instruments, SA, which conform to ISO 9001 quality requirements. The device has been in use in Canada for 5 years with no reports of malfunction or loss of shielding or containment integrity. The sealed source remains contained within the device at all times.

The sealed source contained in the device has achieved an ISO-2919 (equivalent to ANSI N542-1977) classification of C66445, which exceeds the requirements for a category I irradiator listed in the standard (a classification of C43323).

EXTERNAL RADIATION LEVELS:

The applicant submitted radiation profiles for the IRD-2000 in the shielded and unshielded configurations, including the "shutter open, carriage open (no dosimeters loaded)" configuration, which results in the highest exposure rates. The highest exposure rate, 0.4 mRem/hr (4.0 μ Sv/hr), was recorded in contact with the rear of the unit, around the source access plate. This value was the same in all shutter configurations. Exposure rates in contact with the dosimeter slots in the carriage were 0.3 hr/hr (3.0 μ Sv/hr) or less. At a distance of 30 cm, no exposure rates greater than 0.1 hr/hr (1.0 μ Sv/hr) were recorded. At 100 cm, exposure rates could not be distinguished from background.

QUALITY ASSURANCE AND CONTROL:

The manufacturer maintains a certified Quality Assurance and Control program in accordance with ISO 9001, certificate number 1996-6770. The distributor maintains a Quality Assurance and Control program in accordance with 10 CFR 50, Appendix B.

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SAFETY EVALUATION OF DEVICE

NO. GA-1147-D-102-S

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DEVICE TYPE: Dosimeter Calibrator/Irradiator

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- The device shall be distributed to persons specifically licensed by the NRC or an Agreement State. The device is used for test and source check of electronic dosimeters.
- The LDM-2000 reader is capable of connecting with two (2) IRD-2000 irradiator modules. For licensing purposes, this would constitute two devices.
- Handling, storage, use, transfer, and disposal: To be determined by the licensing authority.
- The device shall be leak tested at intervals not to exceed 6 months using techniques capable of detecting 0.005 microcurie (185 Bq) of removable contamination.
- The device should only be installed in areas where access to the device can be secured and limited to persons authorized to operate the device.
- The device should only be used in accordance with the manufacturer's operating manual. The user should follow the manufacturer's recommendations for preventative maintenance and operational testing.
- Maintenance and servicing of the device shall only be performed by the manufacturer or persons specifically licensed by the NRC or an Agreement State to perform such activities.
- The device has not been approved for calibration of non-MGP Instruments dosimeters.
- This registration sheet and the information contained within the references shall not be changed without the written consent of the Georgia Department of Natural Resources, Radioactive Materials Program.

SAFETY ANALYSIS SUMMARY:

The IRD-2000 is stored in a locked configuration, within a restricted area. The device provides sufficient shielding to reduce external radiation levels at contact with the device to less than 0.5 mRem/hr (5 μ Sv/hr).

The source always remains within the irradiation unit. The shutter mechanism is manually operated, and the device has a minimal number of moving parts.

Based on review of the Model IRD-2000 Calibrator/Irradiator, and the information and test data cited in the references below, we conclude that the device is acceptable for licensing purposes. Furthermore, we conclude that the device would be expected to maintain its containment integrity for normal conditions of use and accidental conditions that might occur during uses specified in this certificate.

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SAFETY EVALUATION OF DEVICE

NO. GA-1147-D-102-S

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DEVICE TYPE: Dosimeter Calibrator/Irradiator

REFERENCES:

The following supporting documents for the Model IRD-2000 irradiator are hereby incorporated by reference and are made a part of this registry document.

- MGP Instruments' application with enclosures dated August 14, 2003.
- Electronic letter from Keith Spero received at March 25, 2004, 12:31 hours.

ISSUING AGENCY: Georgia Department of Natural Resources
Radioactive Materials Program

This document is not a license to receive, possess or distribute radioactive material. Receipt, possession and distribution of radioactive material, sources and devices containing radioactive material, are subject to the terms and conditions of applicable regulations and licenses issued by NRC or Agreement States.

Date: March 25, 2004

Reviewer: 
Eric T. Jameson

Date: April 1, 2004

Concurrence: 
Rodriquez E. Harrell

**REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE**

NO. GA-1147-D-102-S

DATE: March 25, 2004

Attachment 1

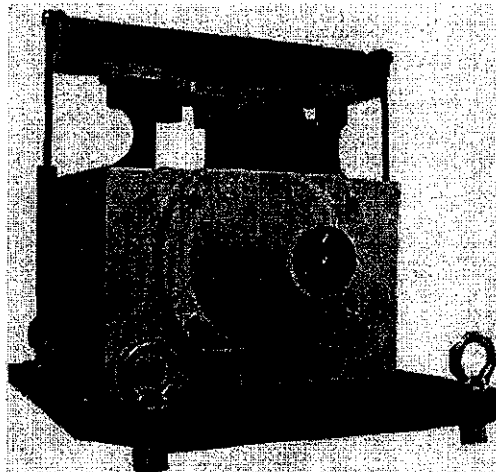
carriage UP



**Front View
Dosimeter Carriage**

Figure 1

carriage UP



**Rear View
Source Loading**

Figure 2

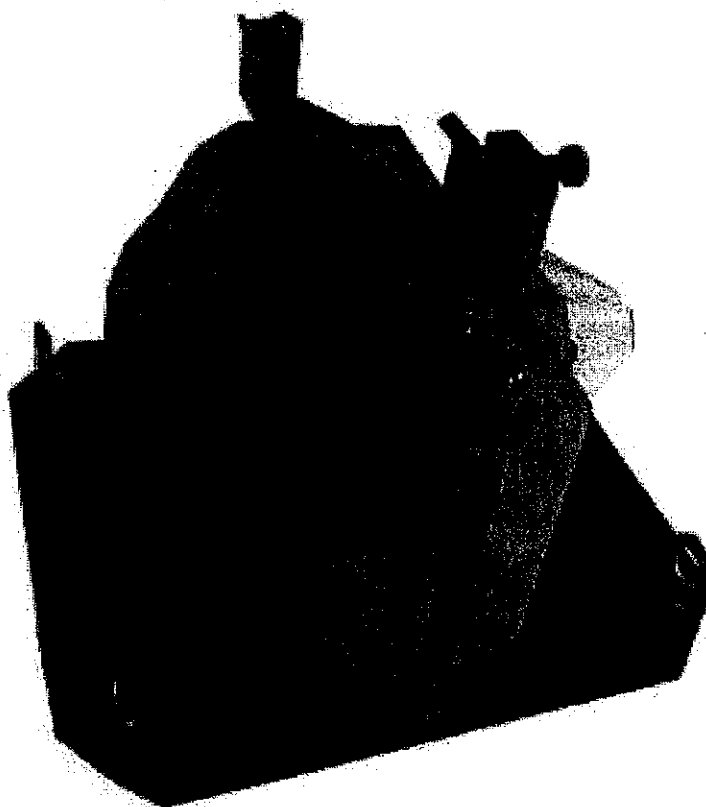
**REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
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Attachment 2

carriage and shutter both DOWN



**Top-Side View
Dosimeter Carriage & Shutter**

Figure 3

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES

SAFETY EVALUATION OF DEVICE

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DATE: March 25, 2004

Attachment 3

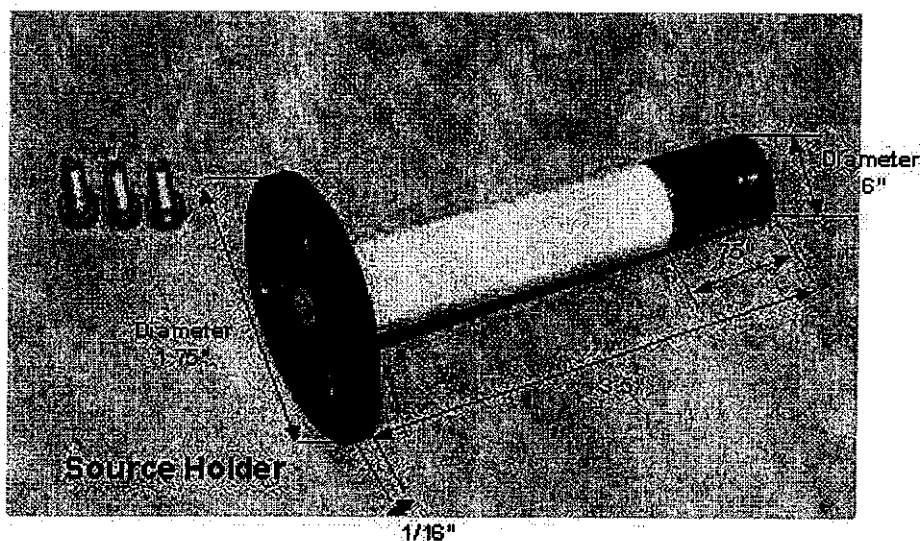


Figure 4

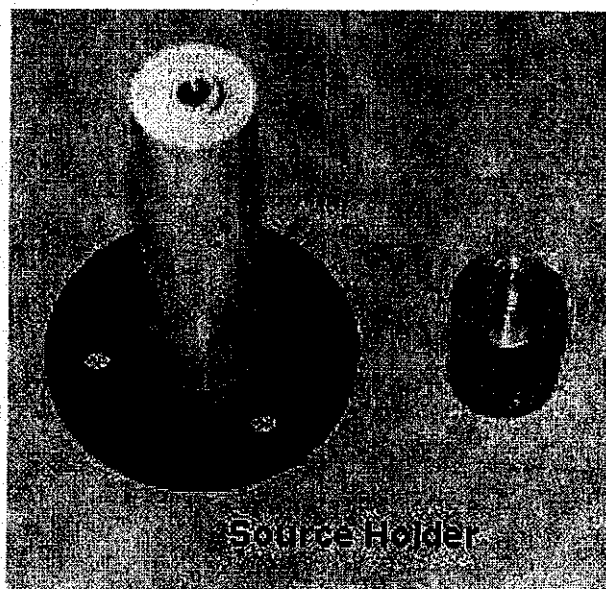


Figure 5

two pieces: source in capsule on right (inverted)

This is to acknowledge the receipt of your letter/application dated

9/28/2007, and to inform you that the initial processing which includes an administrative review has been performed.

☒ Amend. 37-30762-01
There were no administrative omissions. Your application was assigned to a technical reviewer. Please note that the technical review may identify additional omissions or require additional information.

☐ Please provide to this office within 30 days of your receipt of this card

A copy of your action has been forwarded to our License Fee & Accounts Receivable Branch, who will contact you separately if there is a fee issue involved.

Your action has been assigned **Mail Control Number** 14151.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.