



TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION  
DIVISION OF RADIOLOGICAL HEALTH

William R. Snodgrass Tennessee Tower 312 Rosa L. Parks Avenue, 15<sup>th</sup> Floor Nashville, Tennessee 37243  
615-532-0364

## RADIOACTIVE MATERIAL LICENSE

### Amendment 11

Pursuant to Tennessee Department of Environment and Conservation Regulations, 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 and regulations of the Tennessee Department of Environment and Conservation and orders of the Division of Radiological Health, now or hereafter in effect and to any conditions specified below.

LICENSEE

1. Name Ludlum Measurements, Inc. d/b/a Protean Instruments of TN		3. License number R-47214-K21
2. Address 10744 Dutchtown Road Knoxville, Tennessee 37932		4. Expiration date November 30, 2021
		5. File no. R-47214
6. Radioactive Material (Element and Mass Number)	8. Chemical and/or physical form	9. Maximum Radioactivity and/or quantity of material which licensee may possess at any one time.
SEE SUPPLEMENTARY SHEETS		

10. Authorized Use

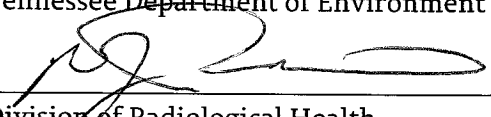
SEE SUPPLEMENTARY SHEETS

CONDITIONS

11. Unless otherwise specified, the authorized place of use is the licensee's address stated in Item 2 above.

For the Commissioner  
Tennessee Department of Environment and Conservation

Date of Issuance: February 20, 2019

By:   
Division of Radiological Health  
Ronald J. Parsons, Environmental Consultant



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### Supplementary Sheet

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| 6. Radioactive Material<br>(Element and<br><u>Mass Number</u> )  | 8. Chemical<br>and/or<br><u>Physical Form</u>                  | 9. Maximum Radioactivity<br>and/or Quantity of Material<br>Which Licensee May<br><u>Possess at Any One Time</u>  |
| A. Cesium 137  | A. Sealed source<br>(Amersham Models<br>CDC.800 or<br>CDC.803) | A. One (1) source not to<br>exceed 165 millicuries.<br>One (1) source not to<br>exceed 80 millicuries.<br>One (1) source not to<br>exceed 3 millicuries. |
| B. Plutonium 239   | B. Any   | B. Four (4) sources not to<br>exceed 10 nanocuries<br>each.  |
| C. Americium 241   | C. Any   | C. No single source to<br>exceed 10 microcuries.<br>Total not to exceed 1<br>millicurie.   |
| D. Americium 241   | D. Sealed source (QSA<br>Model AMC.36)                         | D. One (1) source not to<br>exceed 100 millicuries.  |
| E. Cesium 137  | E. Sealed source (3M<br>Model 4F6H)                            | E. One (1) source not to<br>exceed 735 millicuries.<br>One (1) source not to<br>exceed 762 millicuries.  |
| F. As specified in "State<br>Regulations for Protec-<br>tion Against Radiation"<br>0400-20-10-.38<br>Schedule RHS 8-3) | F. Sealed Sources  | F. In accordance with Item<br>10F.   |

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### 10. Authorized Use

- A. through D. For use in instrument calibration and efficiency of survey meter operation.



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- E. For use in instrument survey meter calibration in accordance with statements, representations, and procedures contained in letters dated October 22, 2013, with attachments, and October 31, 2013, with attachments.
- F. For possession only including storage in accordance with statements, representations, and procedures contained in letter February 7, 2019, with attachments.

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#### Conditions (continued)

- 12. The licensee shall comply with applicable provisions of 0400-20-04, 0400-20-05, and 0400-20-10 of "State Regulations for Protection Against Radiation."
- 13. A. Licensed material is only authorized for use by, or under the supervision of:
  - Jennifer Warren                      Gregory Watson
- B. The Radiation Safety Officer for this license is William King.
- 14. A. Sealed sources authorized by this license 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 (6) months prior to transfer, the sealed source shall not be put into use until tested.
- B. The test shall be capable of detecting the presence of 0.005 microcurie of radioactive material on the test sample. The test sample shall be taken from the sealed source or from the surface of the device in which the sealed source is permanently mounted or stored on which one might expect contamination to accumulate. Records of leak tests shall be kept in units of microcuries and maintained for inspection by the Department.
- C. If the test reveals the presence of 0.005 microcurie of more of removable contamination the licensee shall immediately withdraw the sealed source from use and shall cause it to be decontaminated and repaired or to be disposed of in accordance with Department regulations. A report shall be filed within five (5) days of the test with the Division of Radiological Health, Tennessee Department of Environment and Conservation, William R. Snodgrass Tennessee Tower, 15<sup>th</sup> Floor, 312 Rosa L. Parks Avenue Nashville, Tennessee 37243, describing the equipment involved, the test results, and the corrective action taken.



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- D. Tests for leakage and/or contamination shall be performed by persons authorized by this Department, the U.S. Nuclear Regulatory Commission or an Agreement State, to perform such services.
15. Notwithstanding the periodic leak test required by Condition 14, any licensed sealed source is exempt from such leak tests when the source contains 100 microcuries or less of Beta and/or gamma emitting material or 10 microcuries or less of alpha emitting material.
16. The licensee shall not open sealed sources containing radioactive material.
17. The licensee shall maintain complete and accurate records of the receipt and disposal of radioactive material. The licensee shall, for radioactive material no longer useful for any purpose and for any equipment or supplies contaminated with such material for which further use and decontamination is not planned, define those materials as radioactive waste and treat them as such in accordance with the following provisions:
- A. Radioactive waste material shall not be stored with non-radioactive waste.
  - B. A written record of all radioactive waste material shall be maintained until it has been determined by a suitable survey or radioassay that it has decayed to background levels or until it has been shipped to an authorized recipient in accordance with all applicable regulations. Accountability of radioactive waste material prepared for shipment but not yet shipped from the licensee's premises shall be maintained by the licensee by an internal record system such that the licensee is constantly aware of the material's location and the proposed time of shipment. Individuals who are involved in the shipping of such material and/or the storage of such material prior to shipment, shall be trained in the precautions necessary for such handling and storage.
  - C. For material which has decayed to background levels as determined by radioassay or external level as measured with appropriately calibrated instruments, records shall indicate that the material was determined to be no longer radioactive and will indicate the methods and results of the survey or analysis.
  - D. Shipment records of radioactive waste material shall be maintained and the licensee shall require written confirmation from the authorized recipient of such material that this material has been received.



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E. All records and written confirmations required by this condition shall be maintained for inspection by the Department.

The requirements for this condition are in addition to any other requirements for the handling and/or disposal of radioactive material contained in this license and "State Regulations for Protection Against Radiation."

18. The licensee shall conduct a physical inventory every six (6) months to account for all sources and/or devices received and possessed under this license. Records of inventories shall be maintained for inspection by the Department.
19. No provision of this license relieves the licensee from compliance with other Federal, State and local laws, ordinances, and regulations applicable to the licensee's activities.
20. Except as specifically provided otherwise by this license, the licensee shall possess and use radioactive material described in Items 6, 8, and 9 of this license in accordance with statements, representations, and procedures contained in the following:
  - Application dated August 16, 2011, with attachments
  - E-mail received January 11, 2013
  - Letters dated October 25, 2011, with attachments, January 20, 2012, with attachments, August 30, 2012, December 7, 2012, with attachments, January 8, 2013, with attachments, February 22, 2013, February 28, 2013, with attachments, October 22, 2013, with attachments, October 31, 2013, with attachments, June 16, 2014, with attachments, February 4, 2015, with attachments, April 20, 2015, June 9, 2016, with attachments, and February 7, 2019, with attachments.