MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 70 and 71, 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 byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	In accordance with letter dated September 30, 2020,	4. Expiration Date: November 30, 2023
1. South Dakota Science & Technology Authority (SDSTA)		
2. 630 E. Summit Street Lead, SD 57754	3. License No.: 40-35101-01 is amended in its entirety to read as follows:	5. Docket No.: 030-38681 Reference No.:

6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license	9. Authorized use
A. Any byproduct material specified in section 33.100, Schedule A, Column 2, 10 CFR Part 33 (Type C Broad License)	A. Any	A. See Condition 12	A. For research and development as defined in 10 CFR 30.4 including teaching and training of students; and calibration and checking of the licensee's instruments.
B. Thorium-228	B. Sealed Sources (Eckert & Ziegler, Model GF-228D)	B. 1 microcurie per source and 7 microcuries total	B. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
C. Americium-241	C. Sealed Sources (Eckert & Ziegler, Model GF-241D)	C. 25 microcuries per source and 100 microcuries total	C. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license	9. Authorized use
D. Cobalt-60	D. Sealed Sources (Eckert & Ziegler, Model GF-060D)	D. 2 microcuries per source and 10 microcuries total	D. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
E. Californium-252	E. Sealed Sources (Isotope Product Laboratories, Model AF Series)	E. 0.1 microcuries per source and 1 microcurie total	E. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
F. Thorium-228	F. Sealed Sources (Eckert & Ziegler , Model AC Series, Product code RLRB17538)	F. 0.14 microcuries per source and 1.68 microcuries total	F. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
G. Americium-241/ Beryllium	G. Sealed Neutron Source (Eckert & Ziegler, Model UL 849, product code AMNB3423)	G. 100 microcuries total	G. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
H. Rubidium-83	H. Sealed Sources (Model Activated charcoal inside a ¼" stainless steel tubing)	H. 10 microcuries total	H. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
I. Iodine-131	I. Sealed Sources (Custom source, Model capsule inside a ¼" stainless steel tubing)	I. 100 microcuries per source and 100 microcuries total	I. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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6. Byproduct, source, and/or special nuclear material	7. Chemical and/or physical form	8. Maximum amount that licensee may possess at any one time under this license	9. Authorized use
J. Lead-210	J. Sealed Sources (Eckert & Ziegler, Model product code VZ-478-001)	J. 10 microcuries per source and 50 microcuries total	J. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
K. Americium-241/ Beryllium	K. Sealed Neutron Source (Eckert & Ziegler, Model product code VZ-478-001)	K. 10 microcuries per source and 50 microcuries total	K. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
L. Radium-226	L. Sealed Sources (Eckert & Ziegler, Model product code VZ-3293-001)	L. 10 microcuries per source and 50 microcuries total	L. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
M. Americium-241	M. Sealed Sources (Eckert & Ziegler, Model GF-241-M)	M. 2 microcuries per source and 10 microcuries total	M. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
N. Bismuth-207	N. Sealed Sources (Eckert & Ziegler, Model GF-207-M)	N. 2 microcuries per source and 10 microcuries total	N. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
O. Thorium-228	O. Sealed Sources (Isotope Product Laboratories, Model AF Series)	O. 1 microcurie per source and 5 microcuries total	O. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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P. Cobalt-56	P. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-3636-002)	P. 0.162 microcuries per source and 0.162 microcuries total	P. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
Q. Barium-133	Q. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-477-001)	Q. 1 microcurie per source and 1 microcurie total	Q. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
R. Cesium-137	R. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-477-001)	R. 1 microcurie per source and 1 microcurie total	R. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
S. Cobalt-60	S. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-477-001)	S. 1 microcurie per source and 1 microcurie total	S. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
T. Europium-152	T. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-477-001)	T. 1 microcurie per source and 1 microcurie total	T. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
U. Sodium-22	U. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-477-001)	U. 1 microcurie per source and 1 microcurie total	U. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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V. Lead-210	V. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-478-001)	V. 5.5 microcuries per source and 5.5 microcuries total	V. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
W. Americium-241	W. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-478-001)	W. 1 microcurie per source and 1 microcurie total	W. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
X. Radium-226	X. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-3293-001)	X. 1 microcurie per source and 1 microcurie total	X. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
Y. Americium-241	Y. Calibration and Standard Reference Sources (Eckert & Ziegler, Model VZ-1679-001)	Y. 1.08 microcuries per source and 1.08 microcuries total	Y. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
Z. Thorium-228	Z. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ2115)	Z. 0.54 microcuries per source and 0.54 microcuries total	Z. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
AA. Thorium-228	AA. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ2121)	AA. 0.2 microcuries per source and 0.2 microcuries total	AA. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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AB. Thorium-228	AB. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ2121)	AB. 0.097 microcuries per source and 0.097 microcuries total	AB. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
AC. Californium-252	AC. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ-2121)	AC. 0.081 microcuries per source and 0.081 microcuries total	AC. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
AD. Californium-252	AD. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ2121)	AD. 0.041 microcuries per source and 0.041 microcuries total	AD. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
AE. Californium-252	AE. Calibration and Standard Reference Sources (Eckert & Ziegler, Model RFQ1789)	AE. 0.041 microcuries per source and 0.041 microcuries total	AE. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.
AF. Americium-241/Lithium	AF. Custom Sealed Source (Custom Source, Model UA AmLi S12, S13, S14)	AF. 1.6 millicuries per source and 4.8 millicuries total	AF. For calibration of licensee's instruments and/or for use as reference sources during research and development as defined in 10 CFR 30.4.

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CONDITIONS

10. Licensed material may be used or stored at the licensee's facilities located at 630 E. Summit Street, Lead, South Dakota, 57754.

11. A. Licensed material shall only be used by or under the supervision of individuals meeting the requirements stated in 10 CFR 33.15(b) for the materials and uses as indicated.

    B. The Radiation Safety Officer (RSO) for this license is David G. Rynders.

12. If only one radionuclide is possessed, the possession limit is the quantity specified for that radionuclide in 10 CFR 33.100, Schedule A, Column II. If two or more radionuclides are possessed, then the possession limit is determined as follows: For each radionuclide, determine the ratio of the quantity possessed to the applicable quantity specified in 10 CFR 33.100, Schedule A, Column II, for that radionuclide. The sum of the ratios for all radionuclides possessed under the license shall not exceed unity.

13. In addition to the possession limits in Item 8, the licensee shall further restrict the possession of licensed material to quantities below the limits specified in 10 CFR 30.72 which require consideration of the need for an emergency plan for responding to a release of licensed material.

14. In addition to the possession limits in Condition 8, the licensee shall further restrict the possession of to quantities below the minimum limit specified in 10 CFR 30.35(d), 40.36(b), and 70.25(d) for establishing financial assurance.

15. The licensee shall conduct a physical inventory every 6 months, or at other intervals approved by the U.S. Nuclear Regulatory Commission, to account for all source s and/or devices received and possessed under the license. Records of inventories shall be maintained for 3 years from the date of each inventory and shall include the radionuclides, quantities, manufacturer’s name and model numbers, and the date of the inventory.

16. A. Sealed sources and detector cells shall be tested for leakage and/or contamination at intervals not to exceed the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by an Agreement State.

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B. Notwithstanding Paragraph A of this Condition, sealed sources and detector cells designed to emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed 3 months.

C. In the absence of a certificate from a transferor indicating that a leak test has been made within the intervals specified in the certificate of registration issued by the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or by an Agreement State, prior to the transfer, a sealed source and/or detector cell received from another person shall not be put into use until tested and the test results received.

D. Sealed sources and detector cells need not be tested if they contain only hydrogen-3; or they contain only a radioactive gas; or the half-life of the isotope is 30 days or less; or they contain not more than 100 microcuries of beta and/or gamma emitting material or not more than 10 microcuries of alpha emitting material.

E. Sealed sources and detector cells need not be tested if they are in storage and are not being used. However, when they are removed from storage for use or transferred to another person, and have not been tested within the required leak test interval, they shall be tested before use or transfer. No sealed source and/or detector cell shall be stored for a period of more than 10 years without being tested for leakage and/or contamination.

F. The leak test shall be capable of detecting the presence of 185 becquerels (0.005 microcuries) of radioactive material on the test sample. If the test reveals the presence of 185 becquerels (0.005 microcuries) or more of removable contamination, a report shall be filed with the U.S. Nuclear Regulatory Commission in accordance with 10 CFR 30.50(c)(2), and the source shall be removed immediately from service and decontaminated, repaired, or disposed of in accordance with Commission regulations.

G. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or other persons specifically licensed by the U.S. Nuclear Regulatory Commission or an Agreement State to perform such services.

H. Records of leak test results shall be kept in units of becquerels (microcuries) and shall be maintained for 3 years.

17. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.

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18. This license does not authorize commercial distribution of licensed material.

19. The licensee is authorized to hold radioactive material with a physical half-life of less than or equal to 120 days for decay-in-storage before disposal in ordinary trash provided:

    A. Before disposal as ordinary trash, the waste shall be surveyed at the container surface with the appropriate survey instrument set on its most sensitive scale and with no interposed shielding to determine that its radioactivity cannot be distinguished from background. All radiation labels shall be removed or obliterated, except for radiation labels on materials that are within containers and that will be managed as biomedical waste after they have been released from the licensee.

    B. A record of each such disposal permitted under this license condition shall be retained for 3 years. The record must include the date of disposal, the date on which the byproduct material was placed in storage, the radionuclides disposed, the survey instrument used, the background dose rate, the dose rate measured at the surface of each waste container, and the name of the individual who performed the disposal.

20. The licensee shall not use licensed material in field applications where activity is released except as provided otherwise by specific condition of this license.

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21. Except as specifically provided otherwise in this license, the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in the documents, including any enclosures, listed below. This license condition applies only to those procedures that are required to be submitted in accordance with the regulations. The U.S. Nuclear Regulatory Commission's regulations shall govern unless the statements, representations, and procedures in the licensee's application and correspondence are more restrictive than the regulations.

A. Application dated August 2, 2013 (ML13247A785)
B. Letter dated March 28, 2014 (ML14090A103)
C. Letter dated March 31, 2016 (ML16110A072)
D. Application dated January 5, 2018 (ML18031A993)
E. Letter with attachments dated January 13, 2020 (ML20022A199)
F. Letter with attachments dated April 24, 2020 (ML20120A396)
G. Letter with attachments dated August 10, 2020 (ML20230A120)

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Date: December 7, 2020

By: Michelle M. Hammond
Digitally signed by Michelle M. Hammond
Date: 2020.12.07 09:21:44 -06'00'

Michelle M. Hammond
Region IV