U.S. NUCLEAR REGULATORY COMMISSION

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, 39, 40, and 70, 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 the letter dated January 14, 2011,
1. National Aeronautics and Space Administration George C. Marshall Space Flight Center	3. License No. 01-06571-10 is amended in its entirety to read as follows:
2. NASA, MSFC, AS10M Huntsville, Alabama 35812	4. Expiration Date: February 29, 2016
	5. Docket No. 030-03575

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
A. Any byproduct material with atomic numbers 3 through 83	A. Any	A. 0.6 millicuries per radionuclide and 2 millicuries total
B. Manganese 54	B. Sealed, foil or plated source (Isotope Products Laboratories Models GF-54-R or GF-54D)	B. 20 millicuries
C. Iron 55	C. Sealed, foil or plated source (Isotope Products Laboratories Models AN-55 or PHI-055; Amersham Model IEC.A1)	C. 100 millicuries
D. Cobalt 60	D. Sealed, foil or plated source (Isotope Products Laboratories Models GF-60-R, GF-60-D or 193)	D. 100 millicuries
E. Selenium 75	E. Sealed source (Isotope Products Laboratories Model R-75)	E. 20 millicuries
F. Strontium 90	F. Sealed, foil or plated source (Isotope Products Laboratories Models BF090; AEA Technology-QSA Inc. Model SIF.D1; Amersham/Searle Type SIC)	F. 500 millicuries
G. Cadmium 109	G. Sealed or plated source (Isotope Products Laboratories Models PHI-109, XFB-3, XFB-5, GF-109-R or FG-109-D)	G. 100 millicuries

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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
H. Barium 133	H. Plated source (Isotope Products Laboratories Model GF-133-D)	H. 20 millicuries
I. Cesium 137	I. Sealed source (Isotope Products Laboratories Models GF-137-R, GF-137-D or 193)	I. 100 millicuries
J. Gadolinium 153	J. Sealed source (Amersham Model GDC.CY1)	J. 100 millicuries
K. Radium 226	K. Sealed source (Isotope Products Laboratories Model GF-226-R)	K. 20 millicuries
L. Americium 241	L. Sealed source (Amersham Model AMC.2084; Monsanto Agricultural Company Model 2722-BT; Isotope Products Laboratories Model AF series)	L. 100 millicuries
M. Americium 241	M. Foil (AEA Model AMM.1001H)	M. 20 millicuries
N. Curium 244	N. Foil or plated source (Isotope Products Laboratories Models AF-244-C or AF-210-C)	N. 20 millicuries
O. Depleted Uranium	O. Unsealed source (powders, pellets and ceramics)	O. 24 kilograms
P. Krypton 85	P. Any	P. 40 curies

9. Authorized use:

A. through O. Research and development as defined in 10 CFR 30.4.
P. For use in a Iso Vac Engineering, Inc., Radiflo Model Mark V leak testing device.

CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at George C. Marshall Space Flight Center, Huntsville, Alabama.

11. The Radiation Safety Officer (RSO) for this license is Philip O. Brown.

12. A. Licensed material shall be used by, or under the supervision of, Philip O. Brown

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B. Licensed material in items 6.B through 6.N., may also be used by, or under the supervision of Mark J. Christi, John M. Davis, Laurel J. Karr, James H. Perkins (for gas chromatography), Brian D. Ramsey, J. Edwards Phillips, Gerald J. Fishman or Jeff McCracken.

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

14. The licensee shall not use licensed material in or on human beings.

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

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

B. Notwithstanding Paragraph A of this Condition, sealed sources designed to primarily emit alpha particles shall be tested for leakage and/or contamination at intervals not to exceed three 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 under equivalent regulations of an Agreement State, prior to the transfer, a sealed source received from another person shall not be put into use until tested and the test results received.

D. Sealed sources 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 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 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 0.005 microcurie (185 becquerels) of radioactive material on the test sample. If the test reveals the presence of 0.005 microcurie (185 becquerels) 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

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Commission regulations.

G. Tests for leakage and/or contamination, including leak test sample collection and analysis, shall be performed by the licensee or by 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 microcuries and shall be maintained for five years.

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

18. The licensee shall conduct a physical inventory every six months, or at other intervals approved by the U. S. Nuclear Regulatory Commission, to account for all sources and/or devices received and possessed under the license. Records of inventories shall be maintained for five 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.

19. Maintenance, repair, cleaning, replacement, and disposal of foils contained in detector cells shall be performed only by the device manufacturer or other persons specifically authorized by the U. S. Nuclear Regulatory Commission or an Agreement State to perform such services.

20. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

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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. 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 September 28, 2005 [ML052840321]
B. Letter dated January 4, 2006 [ML060120198]
C. Letter dated July 11, 2006 [ML062010457]
D. Letter dated September 18, 2006 [ML062690493]
E. Letter dated September 21, 2009 [ML092740230]
F. Letter dated October 14, 2009 [ML092880153]
G. Letter dated September 24, 2010 [ML102720059]
H. Letter dated January 20, 2011 [ML110250524]
I. Letter dated January 14, 2011 [ML110250591]

For the U. S. Nuclear Regulatory Commission

Date February 7, 2011

By ***Original signed by Thomas K. Thompson***

Thomas K. Thompson
Commercial and R&D Branch
Division of Nuclear Materials Safety
Region I
King of Prussia, Pennsylvania 19406