



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

December 27, 2004

Docket No. 030-03575  
Control No. 136118

License No. 01-06571-10

Pete Allen  
Manager, Integrated Customer Support Dept.  
National Aeronautics and Space Administration  
George C. Marshall Space Flight Center  
NASA, MSFC, AS60  
Huntsville, AL 35812

SUBJECT: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, ISSUANCE OF  
LICENSE AMENDMENT, CONTROL NO. 136118

Dear Mr. Allen:

This refers to your license amendment request. Enclosed with this letter is the amended license.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5239, so that we can provide appropriate corrections and answers.

Please also note that Mr. J. E. Phillips is no longer listed as an alternate Radiation Safety Officer (RSO). This was done because our policy no longer allows us to list more than one RSO on an NRC license.

*An environmental assessment for this action is not required, since this action is categorically excluded under 10 CFR 51.22(c)(14).*

Please note that on October 25, 2004, the NRC suspended public access to ADAMS, and initiated an additional security review of publicly available documents to ensure that potentially sensitive information is removed from the ADAMS database accessible through the NRC's web site. Interested members of the public may obtain copies of the referenced documents for review and/or copying by contacting the NRC Public Document Room pending resumption of public access to ADAMS. The NRC Public Document Room is located at NRC Headquarters in Rockville, MD, and can be contacted at 800-397-4209 or 301-415-4737 or [pdr@nrc.gov](mailto:pdr@nrc.gov).

P. Allen 2  
National Aeronautics and Space Administration

Thank you for your cooperation.

Sincerely,

***Original signed by Bryan A. Parker***

Bryan A. Parker  
Health Physicist  
Commercial and R&D Branch  
Division of Nuclear Materials Safety

Enclosure:  
Amendment No. 36

cc:  
William C. Hutchison, Radiation Safety Officer

DOCUMENT NAME: E:\Filenet\ML050050172.wpd

To receive a copy of this document, indicate in the box: "C" = Copy w/o attach/encl "E" = Copy w/ attach/encl "N" = No copy

OFFICE	DNMS/RI	N	DNMS/RI		DNMS/RI			
NAME	BParker/BAP							
DATE	12/27/04							

OFFICIAL RECORD COPY

**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 December 2, 2004,
1. National Aeronautics and Space Administration George C. Marshall Space Flight Center	3. License No. 01-06571-10
2. NASA, MSFC, AS60M Huntsville, Alabama 35812	is amended in its entirety to read as follows:
	4. Expiration Date: October 31, 2005
	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. Americium 241	A. Plated sources, foils and/or sealed sources	A. Not to exceed 10 millicurie (mCi) per source
B. Barium 133	B. Plated sources, foils and /or sealed sources	B. Not to exceed 2 mCi per source
C. Cadmium 109	C. Plated sources, foils and/or sealed sources	C. Not to exceed 5 mCi per source
D. Curium 244	D. Plated sources, foils and/or sealed sources	D. Not to exceed 5 mCi per source
E. Cobalt 60	E. Plated sources, foils and/or sealed sources	E. Not to exceed 5 mCi per source
F. Cesium 137	F. Plated sources, foils and/or sealed sources	F. Not to exceed 100 mCi per source
G. Gadolinium 153	G. Plated sources, foils and/or sealed sources	G. Not to exceed 10 mCi per source
H. Iron 55	H. Plated sources, foils and/or sealed sources	H. Not to exceed 10 mCi per source
I. Nickel 63	I. Plated sources, foils and/or sealed sources	I. Not to exceed 20 mCi per source
J. Hydrogen 3	J. Plated sources, foils and/or sealed sources	J. 100 mCi

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License No.  
01-06571-10

Docket No.  
030-03575

Amendment No.  
36

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
K. Strontium 90	K. Plated sources, foils and/or sealed sources	K. 100 mCi
L. Selenium 75	L. Plated sources, foils and/or sealed sources	L. Not to exceed 5 mCi per source
M. Rubidium 86	M. Plated sources, foils and/or sealed sources	M. Not to exceed 5 mCi per source
N. Tin 117m	N. Plated sources, foils and/or sealed sources	N. Not to exceed 10 mCi per source
O. Tellurium 123m	O. Plated sources, foils and/or sealed sources	O. Not to exceed 5 mCi per source
P. Antimony 125	P. Plated sources, foils and/or sealed sources	P. Not to exceed 5 mCi per source
Q. Cerium 144	Q. Plated sources, foils and/or sealed sources	Q. Not to exceed 10 mCi per source
R. Californium 252	R. Sealed neutron source registered either with the U.S. Nuclear Regulatory Commission under 10 CFR 32.210 or with an Agreement State (Frontier Model 10)	R. 30 mCi
S. Cadmium 115	S. Metal	S. Not to exceed 1 mCi per foil
T. Strontium 90	T. Plated sources, foils and/or sealed sources	T. 100 mCi

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**License No.  
01-06571-10Docket No.  
030-03575Amendment No.  
36

## 9. Authorized use:

- A. - R. To be used in calibration and testing of radiation detection equipment, including Teledyne Model C thermoluminescent irradiator. For research and development as defined in 10 CFR 30.4.
- S. Impurities in plated sources.
- T. Storage pending disposal.

## CONDITIONS

10. Licensed material may be used or stored only at the licensee's facilities located at the George C. Marshall Space Flight Center, Huntsville, Alabama.
11. The Radiation Safety Officer (RSO) for this license is William C. Hutchison, III.
12. Licensed material shall be used by, or under the supervision of, William C. Hutchison, III, Arnauld Orsak, Robert A. Austin, Fred A. Berry, Jr, Mark J. Christi, John M. Davis, David L. Edwards, B. Alan Harmon, John M. Horack, Laurel J. Karr, Craig Kundrot, James H. Perkins (for gas chromatography), Brian D. Ramsey, Robert C. Richmond, Charles R. Sisk, Robert B. Wilson, or Ronald B. Young.
13. A. Sealed sources 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 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. Each sealed source fabricated by the licensee shall be inspected and tested for construction defects, leakage, and contamination prior to any use or transfer as a sealed source.

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**License No.  
01-06571-10Docket No.  
030-03575Amendment No.  
36

- D. 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.
- E. 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 3.7 MBq (100 microcuries) of beta- and/or gamma-emitting material or not more than 0.370 MBq (10 microcuries) of alpha-emitting material.
- F. 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.
- G. The leak test shall be capable of detecting the presence of 185 becquerels (Bq) (0.005 microcurie) of radioactive material on the test sample. If the test reveals the presence of 185 Bq 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.
- H. 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.
- I. Records of leak test results shall be kept in units of microcuries and shall be maintained for five years.
14. The licensee shall not use licensed material in or on human beings or in products distributed to the public.
15. Sealed sources or detector cells containing licensed material shall not be opened or sources removed from source holders by the licensee.
16. The licensee is authorized to transport licensed material in accordance with the provisions of 10 CFR Part 71, "Packaging and Transportation of Radioactive Material."

**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**License No.  
01-06571-10Docket No.  
030-03575Amendment No.  
36

17. 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.
18. This license does not authorize the launch of licensed materials.
19. The licensee shall not use licensed material in field applications where it is released except as provided otherwise by specific condition of this license.
20. 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.
21. 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.
22. The licensee is authorized to hold byproduct material with a physical half-life of less than 120 days for decay-in-storage before disposal without regard to its radioactivity if it:
- A. Monitors byproduct material at the surface before disposal and determines that its radioactivity cannot be distinguished from the background radiation level with an appropriate radiation detection survey meter set on its most sensitive scale and with no interposed shielding.
  - B. remove or obliterates all radiation labels, 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 license; and
  - C. Maintains records of the disposal of licensed materials or three years. The record must include the date of the disposal, the survey instrument used, the background radiation level, the radiation level measured at the surface of each waste container and the name of the individual who performed the disposal.



**MATERIALS LICENSE  
SUPPLEMENTARY SHEET**

License No.  
01-06571-10

Docket No.  
030-03575

Amendment No.  
36

23. 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 6, 1994
- B. Letter dated July 28, 1995
- C. Letter dated September 29, 1995
- D. Letter dated January 2, 1996
- E. Letter dated July 30, 1996
- F. Letter dated November 26, 1997
- G. Letter dated January 14, 1998
- H. Letter dated March 2, 1999
- I. Letter dated January 26, 2000
- J. Letter dated March 28, 2000
- K. Letter dated September 1, 2000
- L. Letter dated March 29, 2001
- M. Letter dated November 20, 2002
- N. Letter dated June 15, 2004



For the U. S. Nuclear Regulatory Commission

Date December 27, 2004

By **Original signed by Bryan A. Parker**

Bryan A. Parker  
Commercial and R&D Branch  
Division of Nuclear Materials Safety  
Region I  
King of Prussia, Pennsylvania 19406-1415