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May 31, 2006

Licensing Assistance Team
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission, Region I
475 Allendale Road
King Of Prussia, PA 19406-1415

SUBJECT: License amendment request

License No. 37-28329-02
Docket No. 030-34029

Dear Sir/Madam:

We recently received Amendment 11 to the above referenced radioactive materials license and conducted a thorough review of the license provisions. Our review prompts us to request three changes. All of these changes appear to be administrative in nature and are due to the multiple registries and model numbers by which many sources have been know over time. They do not affect radiological safety or add gauges with which we are unfamiliar.

- It appears there are a few erroneous references to sealed source model numbers. These are probably due to typographical or transcription errors.
- A review of the Sealed Source Device Registrations (SSDRs) in our possession indicates some additional sealed source model numbers should have been included.
- The copy of our radiation protection program contained an error in that it made an erroneous reference to a radiation safety committee, which is not required for this type of license. A corrected copy is enclosed for your review.

Following is a detailed description of the changes requested.

Item 7A (Hydrogen 3): Change ALYTAU-20 to ALYTAN-20

Item 7B (Iron 55): Add Amersham IEC.D1

Item 7F (Cesium 137): Change CDC.P3 to CDC.93

Item 7H (Americium-241): Change AMS5 to AMC5. Add Berthold Models AM1 and N09; AEA Models AMC.16, AMC.17, AMC.18, AMC.19, and AMN.PE1; BEBIG Model Am1.N09; and CESIO Model Am1.N09

Should you have any questions or require additional information, please do not hesitate to contact me at (865) 285-3018.

Sincerely,

A handwritten signature in black ink, appearing to read "Glenn R. Marshall". The signature is fluid and cursive, with the first name "Glenn" and last name "Marshall" clearly distinguishable.

Glenn R. Marshall
Philotechnics, Ltd
Radiation Safety Officer

Enclosures:
Radiation Protection Program
NRC Form 313

NRC FORM 313
(4-2004)
10 CFR 30, 32, 33,
34, 35, 36, 39, and 40

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0120

EXPIRES: 10/31/2005

Estimated burden per response to comply with this mandatory collection request: 7 hours. Submittal of the application is necessary to determine that the applicant is qualified and that adequate procedures exist to protect the public health and safety. Send comments regarding burden estimate to the Records and FOIA/Privacy Services Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0120), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

APPLICATION FOR MATERIAL LICENSE

INSTRUCTIONS: SEE THE APPROPRIATE LICENSE APPLICATION GUIDE FOR DETAILED INSTRUCTIONS FOR COMPLETING APPLICATION. SEND TWO COPIES OF THE ENTIRE COMPLETED APPLICATION TO THE NRC OFFICE SPECIFIED BELOW.

APPLICATION FOR DISTRIBUTION OF EXEMPT PRODUCTS FILE APPLICATIONS WITH:

DIVISION OF INDUSTRIAL AND MEDICAL NUCLEAR SAFETY
OFFICE OF NUCLEAR MATERIALS SAFETY AND SAFEGUARDS
U.S. NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001

ALL OTHER PERSONS FILE APPLICATIONS AS FOLLOWS:

IF YOU ARE LOCATED IN:

ALABAMA, CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, FLORIDA, GEORGIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS, MISSISSIPPI, NEW HAMPSHIRE, NEW JERSEY, NEW YORK, NORTH CAROLINA, PENNSYLVANIA, PUERTO RICO, RHODE ISLAND, SOUTH CAROLINA, TENNESSEE, VERMONT, VIRGINIA, VIRGIN ISLANDS, OR WEST VIRGINIA, SEND APPLICATIONS TO:

LICENSING ASSISTANCE TEAM
DIVISION OF NUCLEAR MATERIALS SAFETY
U.S. NUCLEAR REGULATORY COMMISSION, REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PA 19406-1415

IF YOU ARE LOCATED IN:

ILLINOIS, INDIANA, IOWA, MICHIGAN, MINNESOTA, MISSOURI, OHIO, OR WISCONSIN, SEND APPLICATIONS TO:

MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

ALASKA, ARIZONA, ARKANSAS, CALIFORNIA, COLORADO, HAWAII, IDAHO, KANSAS, LOUISIANA, MONTANA, NEBRASKA, NEVADA, NEW MEXICO, NORTH DAKOTA, OKLAHOMA, OREGON, PACIFIC TRUST TERRITORIES, SOUTH DAKOTA, TEXAS, UTAH, WASHINGTON, OR WYOMING, SEND APPLICATIONS TO:

NUCLEAR MATERIALS LICENSING BRANCH
U.S. NUCLEAR REGULATORY COMMISSION, REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TX 76011-4005

PERSONS LOCATED IN AGREEMENT STATES SEND APPLICATIONS TO THE U.S. NUCLEAR REGULATORY COMMISSION ONLY IF THEY WISH TO POSSESS AND USE LICENSED MATERIAL IN STATES SUBJECT TO U.S. NUCLEAR REGULATORY COMMISSION JURISDICTIONS.

1. THIS IS AN APPLICATION FOR (Check appropriate item)

- A. NEW LICENSE
- B. AMENDMENT TO LICENSE NUMBER 37-28329-02
- C. RENEWAL OF LICENSE NUMBER

2. NAME AND MAILING ADDRESS OF APPLICANT (Include ZIP code)

Philotechnics, Ltd.
600 state Street
Clairton, PA 15025

3. ADDRESS WHERE LICENSED MATERIAL WILL BE USED OR POSSESSED

Temporary job sites throughout the United States, either where NRC maintains jurisdiction or where regulated by Agreement state.

4. NAME OF PERSON TO BE CONTACTED ABOUT THIS APPLICATION

Glenn R. Marshall

TELEPHONE NUMBER

(865) 285-3018

SUBMIT ITEMS 5 THROUGH 11 ON 8-1/2 X 11" PAPER. THE TYPE AND SCOPE OF INFORMATION TO BE PROVIDED IS DESCRIBED IN THE LICENSE APPLICATION GUIDE.

5. RADIOACTIVE MATERIAL

a. Element and mass number; b. chemical and/or physical form; and c. maximum amount which will be possessed at any one time.

6. PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED.

7. INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING EXPERIENCE.

8. TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS.

9. FACILITIES AND EQUIPMENT.

10. RADIATION SAFETY PROGRAM.

11. WASTE MANAGEMENT.

12. LICENSE FEES (See 10 CFR 170 and Section 170.31)

FEE CATEGORY None AMOUNT ENCLOSED \$ 0.00

13. CERTIFICATION. (Must be completed by applicant) THE APPLICANT UNDERSTANDS THAT ALL STATEMENTS AND REPRESENTATIONS MADE IN THIS APPLICATION ARE BINDING UPON THE APPLICANT.

THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION ON BEHALF OF THE APPLICANT, NAMED IN ITEM 2, CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH TITLE 10, CODE OF FEDERAL REGULATIONS, PARTS 30, 32, 33, 34, 35, 36, 39, AND 40, AND THAT ALL INFORMATION CONTAINED HEREIN IS TRUE AND CORRECT TO THE BEST OF THEIR KNOWLEDGE AND BELIEF.

WARNING: 18 U.S.C. SECTION 1001 ACT OF JUNE 25, 1948 62 STAT. 749 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.

CERTIFYING OFFICER -- TYPED/PRINTED NAME AND TITLE

Glenn R. Marshall - Health Physicist

SIGNATURE

DATE

05/31/2006

FOR NRC USE ONLY

TYPE OF FEE	FEE LOG	FEE CATEGORY	AMOUNT RECEIVED	CHECK NUMBER	COMMENTS
			\$		
APPROVED BY				DATE	

Philotechnics, Ltd.

RADIATION PROTECTION PROGRAM FOR PHILOTECHNICS ACTIVITIES IN CLAIRTON, PA

PROCEDURE NO: AD-2.01

Rev. 4

November 2005

Prepared by: _____ Date: _____

Technical Review: _____ Date: _____

Quality Assurance
Review: _____ Date: _____

Radiation Safety
Officer Approval: _____ Date: _____

REVISION SUMMARY

Revision Number	Description of Change	Pages Affected
0	New Procedure	
1	Company name change, addition of procedure review page and assignment of new number IAW AD-1.01	All
2	Revised RSO duties and responsibilities	8,9
3	Complete program re-write	All
4	Delete reference to Radiation Safety Committee	9

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A. Overview

This program was developed to provide Philotechnics personnel with a corporate document containing the necessary requirements and guidelines to successfully conduct radiological operations.

B. Applicability

1. This program is applicable to activities performed at the Clairton, PA facility and field projects when such work is governed by an NRC License or Pennsylvania Agreement State License issued to Philotechnics. It contains the minimum requirements necessary for the safe handling of radioactive materials in accordance with License requirements.
2. Where contract documents/procedures address radiological controls programs specific to the associated work task, the contents of this manual should be used to minimize personnel exposures and prevent release of radioactivity to the environment. Customer-required procedures and controls may be implemented to meet contractual requirements provided they comply with the controls specified herein.
3. This program is applicable to all Philotechnics personnel who may perform radiological work, handle radioactive material, make entries into radiological areas, or prepare radiological work documents.
4. This document does NOT apply to work that is conducted at customer-operated sites or under the customer's radiation protection program.

C. References

1. 10 CFR 20, Standards For Protection Against Radiation
2. 10 CFR 30
3. 29 CFR 1910.134
4. Pennsylvania Chapter 219, Standards for Protection Against Radiation
5. NUREG 1556, Volume 4
6. NUREG 1556, Volume 18
7. 29 CFR 1910.134
8. 49 CFR 172, 173
9. NUREG 1400, Air Sampling in the Workplace

10. NUREG 1575, Multi-Agency Radiation Survey and Site Investigation Manual
11. NRC Regulatory Guide 1.86, Termination of Operating Licenses for Nuclear Reactors
12. NRC Regulatory Guide 8.7, Instructions for Recording and Reporting Occupational Radiation Exposure Data
13. NRC Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Reasonably Achievable
14. NRC Regulatory Guide 8.13, Instruction Concerning Prenatal Radiation Exposure
15. NRC Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection
16. NRC Regulatory Guide 8.25, Air Sampling in the Workplace
17. NRC Regulatory Guide 8.32, Criteria for Establishing a Tritium Bioassay Program
18. NRC Regulatory Guide 8.34, Monitoring Criteria and Methods to Calculate Occupational Radiation Doses
19. NRC Regulatory Guide 8.36, Radiation Dose to the Embryo/fetus
20. ANSI N323A-1997, Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments

D. Program Administration

1. Document hierarchy

Whenever conflicts are discovered among the several documents and procedures governing radiological work, the following hierarchy shall be used in descending order:

- a. Federal, state, and local regulations governing the work
- b. Applicable NRC or Agreement State Radioactive Materials license
- c. The Radiological Controls Program (this document)
- d. Implementing Procedure
- e. Radiological Work Permit
- f. Written instructions from supervisory of radiological control personnel
- g. Verbal instruction from supervisory or radiological control personnel

2. General principles

Activities involving the use of radiation and radioactive materials will be performed in a manner that meets the following objectives:

- a. Exposures to radiation and radioactive materials will be maintained as low as reasonably achievable (ALARA).
- b. The generation of radioactive contaminants and contamination should be maintained ALARA.
- c. The release of radiation and radioactive materials to the environment will be maintained ALARA.
- d. The activities will meet all applicable local, state and federal regulatory requirements.
- e. Where activities are not governed by specific regulations, the recommendations of eminent scientific bodies such as the National Council on Radiation Protection and Measurements (NCRP), International Commission on Radiological Protection (ICRP), or The American National Standards Institute (ANSI) should be followed.

E. Responsibilities

Procedure-specific responsibilities may be delegated. The individual assigned responsibility shall inform the RSO in writing or via email the individual (by name or position) to whom a responsibility is delegated. Overall responsibility of ensuring compliance with applicable regulatory requirements and License commitments regarding radiation protection shall rest with the Radiation Safety Officer and the management team. This shall not be delegated.

1. President

- a. Overall safe performance of radiological activities.
- b. Establishing policies to assure regulatory compliance and adherence to the ALARA principle

2. Radiation Safety Officer (RSO)

- a. Development of the radiological protection program.
- b. Conducting annual assessments to ensure effective implementation of this Plan.
- c. Ensuring corrective actions are developed and implemented in a timely manner.

- d. Verifying corrective actions have been effectively implemented, and determining the most effective means for complying with program requirements or regulations.
 - e. Ensuring that the license is maintained up-to-date, and that amendment and renewal requests are submitted in a timely manner.
 - f. Administering the radiation safety program, to include annual audits that review potential weaknesses or program omissions.
 - g. Establishing and implementing written procedures or permits commensurate with the radiological controls program and license conditions.
 - h. Demonstrating that occupationally exposed individuals are provided NVLAP approved dosimetry or dosimetry is not required.
 - i. Ensuring that licensed material is received, handled, stored, secured and disposed of in accordance with Program requirements.
3. Radiation Control Technicians
- a. Performing routine surveillance, testing, and control functions associated with program activities without direct supervision.
 - b. Preparing Radiological Work permits as required supporting planned activities.
4. Individual employees
- a. Performing work in accordance with the Radiological Protection program and implementing procedures.
 - b. Notifying Radiation Control Technicians of abnormal or unexpected conditions.
 - c. Compliance with radiological work permits.

F. Qualifications and Training

1. General requirements

Training in radiation protection is provided to Philotechnics, Ltd. Employees, contractors, and visitors prior to being authorized unescorted access to the restricted area. The level of training will be commensurate with each worker's job assignment. Requalification training shall be completed annually; however a grace period of up to 60 days may be permitted to enable scheduling.

2. Non-radiological workers will receive the following minimal training:

- a. Radiation and radioactivity concepts
 - b. Biological effects of radiation
 - c. Emergency response procedures
 - d. Individuals will receive information regarding the location(s) of radioactive material and radiological work areas.
3. Individuals with a need to enter the restricted area but without sufficient training for unescorted access shall be escorted by an individual having unescorted access.
 4. Radiological Workers will receive training commensurate with the activities they are likely to perform. Such training shall include the topics for non-radiological workers and cover the following additional areas:
 - a. Radiation detection and measurement;
 - b. Administrative and engineering controls to minimize exposure; and
 - c. Selection and use of personnel protective equipment.
 5. Radiation Safety Officer (RSO)
 - a. The RSO shall have the minimum training and experience specified in the applicable volume of NUREG 1556.
 - b. The RSO shall be familiar with the materials handled or used, processes and equipment employed, and facilities in which work is performed.
 6. Radiation Control Technicians (RCTs)
 - a. Senior RCTs
 - i. At least three years experience performing related radiological control functions, and successful completion of an oral or written exam; or
 - ii. BS or AS degree in Health Physics or related field, and one year of relevant experience, and successful completion of an oral or written exam; or
 - iii. Actively registered with the National Registry of Radiation Protection Technologists (NRRPT); or
 - iv. Certified by the American Academy of Health Physics (AAHP); or
 - v. Meeting the requirements of ANSI/ANS 3.1.

b. Junior RCTs

- i. At least one year of experience performing related radiological control functions, and successful completion of an oral or written exam; or
 - ii. BS or AS degree in Health Physics or related field, and successful completion of an oral or written exam.
- c. Individuals not meeting the requirements for RCT may be designated as Survey Technicians by the RSO. Survey Technicians may perform the following duties:
- i. Radiological surveys using instrumentation they have been specifically trained to use.
 - ii. Unconditional release surveys SHALL be performed under direct supervision of a Senior RCT.

7. Training received from other organizations

- a. Individuals having current RCT training from a nuclear power plant or a DOE site are qualified as RCTs.
- b. Individuals having current Radworker 2 training from a nuclear power plant or DOE site are qualified as radiological workers and may be granted unescorted access to the restricted area. They shall receive Philotechnics site training within 30 days.

G. ALARA Program

1. ALARA (acronym for “as low as reasonably achievable”) means making every reasonable effort to maintain exposures to radiation as far below the dose limits as is practical consistent with the purpose for which the activity is undertaken, taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations and in relation to utilization of nuclear energy and radioactive materials in the public interest.
2. Philotechnics is committed to the ALARA philosophy and will not handle radioactive materials unless necessary to do so consistent with our business plan, and unless such handling provides a valuable service to our customer.
3. Every reasonable effort will be made to minimize the time personnel are exposed to radioactive materials, maximize the distance between personnel and sources of radiation, and utilize shielding to the extent practicable to reduce exposures.

4. Engineering controls are the primary methods by which personnel radiation exposure is minimized. Examples of engineering controls are:
 - a. Physical barriers
 - b. Interlocks
 - c. Ventilation
 - d. Use of shielding
5. When engineering controls are ineffective or not feasible, administrative controls will be used to minimize personnel radiation exposure. Administrative controls may be used in conjunction with engineering controls. Examples of administrative controls are:
 - a. Radiological work permits (RWPs)
 - b. Training
 - c. Use of stay times
 - d. Key control for high radiation areas
6. When engineering controls and administrative controls are deemed ineffective in reducing radiation exposure, personnel protective equipment (PPE) will be prescribed. In particular, respiratory protection will not be prescribed except as a last resort, and then in accordance with Philotechnics' Respiratory Protection Program.

H. Posting and Labeling

1. Unless specifically exempted by applicable regulation or License, the following areas shall be posted, as applicable:
 - a. Any area having removable contamination levels in excess of the limits in NRC Regulatory Guide 1.86 for removable contamination shall be posted "Caution (or "Danger") Contamination Area."
 - b. Any area accessible to personnel having radiation levels greater than 5 mrem per hour but not more than 100 mrem per hour at 30 cm from the source (or the surface through which the radiation penetrates) shall be posted "Caution (or "Danger") Radiation Area."
 - c. Any area accessible to personnel having radiation levels greater than 100 mrem per hour at 30 cm from the source (or the surface through which the radiation penetrates) shall be posted "Caution (or "Danger") High Radiation Area."

- d. Any area accessible to personnel where airborne radioactivity levels exceed 1 DAC or where an individual present in the area without respiratory protection could receive an intake of 0.6% ALI (12 DAC-hours) in a week shall be posted "Caution (or "Danger") Airborne Radioactivity Area."
 - e. Any area in which radioactive materials are stored or used shall be posted "Caution Radioactive Materials."
 - f. Any area accessible to personnel having radiation levels greater than 500 rads per hour at 1 m from the source (or the surface through which the radiation penetrates) shall be posted "Grave Danger, Very High Radiation Area."
 - i. Philotechnics does not anticipate entry to a very high radiation area will be required.
 - ii. Very High Radiation Areas shall not be entered without specific written authorization of the Radiation Safety Officer and the President of Philotechnics.
 - g. All postings shall be black or magenta lettering on a yellow background, and shall include the 3-bladed radiation symbol.
 - h. All of the above areas are considered Radiologically Controlled Areas (RCA).
 - i. Supplementary instructions (inserts) should be used to alert personnel to specific entry requirements or radiological conditions.
2. Unless specifically exempted by regulation or License, each container of radioactive material shall be labeled "Caution Radioactive Material."
- a. Labels shall be applied as soon as practicable after radioactive material is placed in the container.
 - b. Each label shall be clearly visible, have black or magenta lettering on a yellow background, and display the 3-bladed radiation symbol.
 - c. Enough information should be included to provide workers with information as to the material, radiation dose rates, radionuclides, and other hazards.
 - d. Material received from transportation shall be monitored as appropriate and labeled as radioactive material. Labels and markings required by U.S. DOT are not appropriate to meet the labeling requirements of this section.
 - e. Material that is awaiting transportation and is packaged and labeled in accordance with U.S. DOT regulations is exempt from labeling.

I. Dosimetry

1. Dose Limits

- a. The following are legal exposure limits and SHALL not be exceeded in any calendar year:
 - i. 5000 mrem total effective dose equivalent (TEDE)
 - ii. 15,000 mrem lens of the eye dose equivalent (LDE)
 - iii. 50,000 mrem shallow dose equivalent to the extremities (SDE-ME) or to the skin (SDE-SK)
 - iv. 5000 mrem committed effective dose equivalent (CEDE)
 - v. 50,000 mrem committed dose equivalent (CDE)

- b. Philotechnics Administrative Control Levels

The following Administrative Limits shall not be exceeded without prior written authorization from the Radiation Safety Officer and the President of Philotechnics:

- i. 2000 mrem TEDE
 - ii. 6000 mrem LDE
 - iii. 20,000 mrem SDE
 - iv. 2000 mrem CEDE
 - v. 20,000 mrem CDE
- c. Occupationally exposed minors shall be limited to 10% of the Administrative Control Levels shown above.
- d. New employees
 - i. Limited to 500 mrem TEDE for the remainder of the calendar year until documentation of current year record dose from previous employer(s) has been received.
 - ii. Current year record dose from previous employer(s) shall be subtracted from the dose limits in this section.
- e. Exposure to member of the public shall be controlled as follows:

- i. The total effective dose equivalent at the restricted area boundary shall be less than 100 mrem in a year to the maximally exposed individual.
- ii. The radiation dose in any unrestricted area shall not exceed 2 mrem in any one hour.
- iii. In cases where Philotechnics performs licensed activities at a customer-owned site and the customer possesses a an NRC or Agreement State license for that site, then compliance with dose limits in this section shall normally be a shared responsibility between Philotechnics and the customer. In any event, the limits in i and ii above shall not be exceeded under any circumstances.

2. External Dosimetry

- a. Individuals having the potential to receive occupational radiation exposure in excess of 500 mrem in a calendar year (100 mrem per calendar year for minors and declared pregnant women) from external sources shall be issued a TLD.
- b. Radiation workers who routinely enter the Restricted Area shall be issued a TLD.
- c. Individuals entering a high radiation area shall wear a secondary dosimeter in addition to the TLD.
 - i. The secondary dosimeter shall be a direct reading dosimeter (DRD) or electronic alarming dosimeter.
 - ii. The secondary dosimeter shall be calibrated no less frequently than annually. Calibration shall be on at least two points (approximately 25% scale and 75% scale) and readings shall agree within 10% of true dose received.
 - iii. A documented investigation shall be performed if:
 - The TLD and secondary dosimeter readings over the same time period differ by more than 30% and the dose recorded on the TLD is greater than 100 mrem; or
 - The secondary dosimeter is lost or damaged; or
 - There is reason to believe the TLD reading is in error.
- d. Extremity monitoring shall be performed on:

- i. Individuals having the potential to receive a dose to the extremities in excess of 5000 mrem; and
 - ii. Individuals installing, removing, and repairing industrial gauges.
- e. Multiple whole body TLDs shall be issued to individuals if:
 - i. The dose rate at 30 cm from the source exceeds 100 mrem/hour
 - ii. The dose rate to various parts of the whole body varies by more than 50%, and
 - iii. The individual's dose to the whole body is expected to exceed 100 mrem in a day.
- f. The regular TLD shall not be worn with a multi-badge pack.
- g. TLDs shall be provided by a NVLAP accredited vendor.
- h. TLDs shall be exchanged no less frequently than quarterly.
- i. Neutron monitoring shall be provided if monitoring is required by a. above and:
 - i. The dose from neutrons is expected to be more than 5% of the total dose; or
 - ii. Individuals are installing, removing, or repairing gauges or other devices with Am-Be or Pu-Be sources.
- j. TLDs shall be provided by a NVLAP accredited vendor.

3. Declaration of Pregnancy

- a. A worker may declare or undecare her pregnancy at any time, and for any reason.
- b. Should a worker choose to declare her pregnancy, she must do so in writing to her direct supervisor.
- c. Declared pregnant workers shall have their radiation exposure limited as follows:
 - i. Dose to the fetus shall not exceed 500 mrem during the gestation period.
 - ii. If at the time of declaration the dose to the fetus already exceeds 450 mrem, then the dose to the fetus during the remainder of the gestation period shall not exceed 50 mrem.

- iii. The monthly dose to the fetus should be relatively constant. Limiting the monthly dose to less than 50 mrem is one way to satisfy this requirement.
 - iv. Declared pregnant workers shall not enter high radiation areas of airborne radioactivity areas.
 - v. To the extent practical, declared pregnant workers should be reassigned to work that does not require entry to any radiologically posted areas (except restricted areas).
- d. Declared pregnant workers shall have their TLDs exchanged monthly.
 - e. Declaration of pregnancy shall remain in effect until withdrawn or the worker is no longer pregnant.

4. Planned Special Exposures

Philotechnics will not use planned special exposures. Exposures received in emergencies resulting from life-saving efforts or efforts to save large pieces of property are not planned special exposures.

5. Internal Dosimetry

The following individuals shall be monitored for internal radiation exposure:

- a. Individuals likely to have an intake of radioactive materials in excess of 10% of the ALI shall be monitored for internal exposure;
 - b. Any individual working in an area where the airborne radioactivity concentration exceeds 0.1 DAC for a period of 8 or more continuous hours;
 - c. Any individual working in an area where the airborne radioactivity concentration exceeded 10 DAC at any time the individual was present, as evidenced by CAM alarm for high-volume grab air sample;
 - d. Individuals handling unsealed tritium in excess of 100 mC without containment and negative ventilation in a calendar quarter;
 - e. Individuals entering an area without respirator protection where respiratory protection was required for the purpose of limiting intake of radioactive materials;
 - f. Individuals using respiratory protection for the purpose of limiting intake of radioactive materials; and
 - g. As required by a Radiological Work Permit.
- #### 6. Monitoring methods

- a. Internal monitoring will be appropriate for the radionuclide(s) involved.
 - b. Internal exposure will typically be monitored with bioassay. Air sample data may be used if it can be determined that it is more accurate than bioassay data.
 - c. Bioassay may consist of in vitro, in vivo, or both, as appropriate. Typical bioassay monitoring will be by urinalysis.
7. Dosimetry records shall be updated no less frequently than annually.

J. Respiratory Protection

If engineering controls and administrative controls are deemed inappropriate, ineffective or unfeasible for protecting individuals from inhalation of radioactive material, respiratory protection may be specified by a Radiological Work Permit (RWP).

1. Use of respiratory protection devices shall be in accordance with the Philotechnics Respiratory Protection Program and 49 CFR 1910.134.
2. Only respiratory protection devices approved for use by National Institute of Occupational Safety and Health (NIOSH) and issued by Philotechnics shall be used.
3. Respiratory protection may be provided if an ALARA evaluation indicates use of such device is warranted to protect individuals from unnecessary intake of radioactive material and if such use is likely to maintain the total effective dose equivalent ALARA.
4. The following actions shall be taken prior to using respiratory protection:
 - a. The individual shall be trained in the use of respiratory protection equipment. Training shall be repeated at intervals not to exceed 12 months.
 - b. The individual shall be examined and medically qualified by a Physician. Examination shall be repeated at intervals not to exceed 12 months.
 - c. If using a tight-fitting respirator, the individual shall be fit tested for the specific facepiece type and size to be used. Fit test shall be repeated
 - i. At intervals not to exceed 12 months;
 - ii. Prior to using a new type of tight-fitting respirator;
 - iii. After oral or facial surgery;
 - iv. After significant weight loss or gain (more than 10% of body weight).

- d. Not fit test is required for loose-fitting hoods.
 - e. Failure to meet any one of the requirements in a, b, or c above shall disqualify the individual from respirator use until all requirements have been met.
5. Individuals experiencing duress while wearing a respirator shall not be prevented from leaving the work area and removing the respirator.
 6. Respirator use will be strongly discouraged if not specified on the RWP. However, respiratory protection will be provided to individuals requesting it if:
 - a. The individual is fully qualified in accordance with 3. above;
 - b. An evaluation of the work area is performed and it is determined use of respiratory protection does not increase existing hazards create additional hazards to personnel.

K. Access Control

1. Entry to any Radiologically Controlled Area (RCA) shall be governed by a radiological work permit (RWP).
2. RWPs are prepared by the Health Physics group with input from the individuals doing the work.
3. RWP Content
RWPs shall contain at least the following information:
 - a. Location(s) of work
 - b. Job description
 - c. Unique serial number
 - d. Expected radiological conditions
 - e. Effective dates/times of the RWP
 - f. PPE and dosimetry requirements
 - g. Limiting conditions
4. General RWPs
 - a. Written to cover routine jobs where the radiological conditions are known to be relatively constant.
 - b. No entry to an airborne radioactivity area.

- c. Radiation dose rates are generally less than 10 mrem per hour.
 - d. Removable contamination levels are generally less than 10 times the Regulatory Guide 1.86 limits.
 - e. General RWPs may be written for up to one year.
 - f. Individuals entering on a General RWP shall sign the RWP review sheet indicating they have read and understand the requirements of the RWP.
5. Specific RWPs
- a. Specific RWPs are written to cover specific jobs, work in areas exceeding conditions in 4. b. through d. above, and entry to areas having changing radiological conditions.
 - b. Specific RWPs may be written for up to one year, however that should be the exception. Specific RWPs are normally good for the duration of a specific job and should expire at that time.
 - c. Individuals using a Specific RWP shall be briefed on the requirements of the RWP by the job supervisor and shall sign the RWP briefing log.
 - d. Individuals using a Specific RWP shall sign in and out each entry and exit.
6. RWPs shall not be active until signed by the job supervisor and a member of the Health Physics staff designated by RSO or by procedure to approve RWPs.

L. Performance of Radiological Work

Philotechnics will only perform work that is authorized by General or Specific License, or is exempted from license requirements. Every employee has the right and responsibility to suspend or stop work if work is being performed unsafely or contrary to approved procedures or RWPs. Philotechnics shall not discipline workers for exercising such responsibility.

Licensed activities shall be performed only by, or under the direction of, an Authorized User named on the applicable License. This requirement shall be satisfied if an authorized user or RSO is on site and is aware of the activities being performed. Where permitted by the specific license, authorized users may be designated in writing by the RSO but need not be named on the license.

While impossible to list every action that will be performed to ensure radiological work activities are completed safely, the following good practices shall be adhered to:

1. Contamination Control

Every reasonable precaution shall be taken to minimize the spread of contamination outside of posted contamination.

- a. Maintain good housekeeping.
- b. Observe all boundaries and signs.
- c. Wear protective clothing prescribed by RWP.
- d. Minimize the amount of material that is taken into contamination areas.
- e. Sleeve or wrap items as necessary to prevent them from becoming contaminated.
- f. Use containments and negative ventilation systems when indicated to control contamination.
- g. Survey or control as radioactive material all items removed from a contamination area.
- h. Remove protective clothing and monitor for contamination at boundary or as indicated on RWP.
- i. Hoses, power cords, etc. should be secured at the point at which they penetrate a contamination area boundary.
- j. Keep containers of radioactive material closed to extent practicable.

2. Radiation Exposure

- a. Workers shall not loiter in radiation areas or radiologically controlled areas
- b. Perform as much work as practicable outside of radiation areas and radiologically controlled areas.
- c. Specific methods for maintaining individual radiation exposure ALARA should be included in RWPs; workers shall obey those instructions when provided.
- d. Individuals shall wear required dosimetry as specified in procedures or RWP.
- e. Entrances to high radiation areas shall be locked when access is not required. Positive control shall be maintained over each entry.
 - i. Each individual entering a high radiation area shall log onto a job-specific RWP.
 - ii. Secondary dosimetry shall be used for each entry; time of entry and exit, and secondary dosimetry readings at entry and exit shall be recorded.

- iii. An individual trained to monitor radiological conditions and authorized to control access and evacuate personnel if necessary shall be present to supervise the entry and to ensure all entrants have exited.
 - f. Locks and physical barriers utilized to prevent unauthorized access to high radiation areas shall not hinder personnel from exiting.
 - g. Physical hazards almost always take precedence over radiological protection concerns. If implementing the requirements in the Program will jeopardize the health and safety of the worker, then work shall be suspended and the RSO contacted for resolution.
3. Waste Minimization
- a. Maintain good housekeeping.
 - b. Sleeve or wrap items as necessary to prevent them from becoming contaminated.
 - c. Use containments and negative ventilation systems when indicated to control contamination.
 - d. Decontaminate and reuse tools and equipment.
 - e. Remove packaging from materials prior to bringing them into contamination areas.

M. Radioactive Material Control and Accountability

1. Each sealed source having activity greater than the limits of 10 CFR 30 Appendix B (or equivalent Agreement State regulation) shall be controlled as follows:
 - a. Each source shall be physically inventoried at a frequency not to exceed six months.
 - b. Each sealed source shall be signed out and back in when removed from the room in which it is stored.
2. Each source except for the following shall be leak tested upon receipt, prior to transfer, and at a frequency not to exceed six months.
 - a. Contain only tritium; or
 - b. Contain only a radioactive gas; or
 - c. Contain not more than 100 uCi of beta- or beta-gamma emitting material; or
 - d. Contain not more than 10 uCi of alpha emitting material.

3. Leak test shall be capable of detecting .005 μCi of removable radioactivity.
4. If any leak test indicates leakage by detection of .005 μCi of removable activity:
 - a. Immediately remove from service and package it to prevent further leakage,
 - b. Notify the RSO,
 - c. Perform contamination surveys in surrounding areas and in locations where the source has recently been used,
 - d. Conduct an investigation to determine the cause of leakage.
5. Sealed Source Accountability
 - a. All sealed sources, regardless of quantity, shall be kept in a locked storage area when not in use.
 - b. The Source Custodian shall be the RSO or shall be designated in writing by the RSO.
 - c. Alternate Source Custodians shall be designated in writing as necessary.
 - d. Individuals performing instrument response checks or otherwise using sealed sources shall be trained in safe handling of sealed sources.
6. Security of Licensed material
 - a. Access to radioactive material storage areas shall be limited to those individuals
 - i. Having a need to enter
 - ii. Possessing the proper training for unescorted access or escorted by an individual having unescorted access.
 - b. Members of the public shall not have access to radioactive materials under Philotechnics' control.
 - c. Commingling (storage of radioactive material and non-radioactive material with no separation) should be avoided.
 - d. Storage areas shall be locked or otherwise secured to prevent unauthorized access after normal working hours.
7. Radioactive material inventory control
 - a. A running total of each radionuclide possessed at each Philotechnics fixed-base facility shall be maintained.

N. Effluent Monitoring

1. Effluent water discharges

- a. Effluent water shall only be discharged from the Clairton, PA laundry facility to the sewer system.
 - i. Each batch of water shall be sampled and analyzed for gross alpha and gross beta
 - ii. Results of each analysis shall be entered into the Discharge Database. The database will scale in all radionuclides present in the applicable customer's laundry, calculate the total concentration of each radionuclide, and compare each to the applicable limit in 10 CFR 20, Appendix B, Table 3.
 - If the sum of fractions of each radionuclide to its limits is less than or equal to 0.25, the water may be discharged.
 - If the sum of fractions of each radionuclide to its limits is greater than 0.25 but less than 1, the Radiation Safety Officer shall approve or disapprove the discharge.
 - If the sum of fractions of each radionuclide to its limit is greater than equal to 1, the water shall not be discharged until reprocessed and reanalyzed.
 - iii. An aliquot from each sample of laundry water discharged shall be collected. A composite sample of each aliquot collected during a calendar quarter shall be analyzed to verify concentrations of radionuclides discharged to the sewer during the quarter did not exceed the limits. The RSO shall review results of composite sampling.
- b. Potentially radioactive water shall not be discharged to the sewer, public waterways, or storm runoff from any other Philotechnics facility.

2. Effluent air monitoring

- a. Effluent air shall be continuously sampled at the point of discharge.
 - i. Effluent air shall be discharged only through a stack.
 - ii. Continuous sampling shall be under isokinetic conditions.

O. Radiological Surveys

1. General requirements

- a. The number, type and frequency of survey points required for radiological surveys should be specified in Radiation Work Permits and written procedures.
- b. Only individuals who have been trained in the use, capabilities, and limitations of survey instrumentation shall perform radiological surveys.
- c. Surveys will be performed using calibrated instruments appropriate for the type(s), levels, and energies of the radiation to be encountered.

2. Radiation Surveys

- a. Performance of routine radiation surveys should include dose rate measurements of the general area and dose rates at a distance of 30 centimeters from a known source or surface of interest to evaluate potential whole body exposures.
- b. There should be enough measurement points spread adequately throughout the space to monitor areas with increased radiation levels and provide thorough coverage.
- c. Survey points need to be varied enough from survey to survey to avoid non-random results that could leave some space un-surveyed for long periods of time.

3. Contamination surveys

- a. A surface will be considered contaminated if removable contamination is detected above the levels of Attachment B.
- b. Surveys for contamination should be performed daily at boundaries of occupied contamination areas.
- c. Large area wipes should be used to supplement standard smear techniques in areas and on surfaces generally assumed not to be contaminated.

Note: If a large area wipe indicates that an area or item is contaminated, a thorough contamination smear survey should be performed.

- d. In addition to regular swipe surveys, air monitoring in the workplace should be used to evaluate and document the adequacy of containment wherever there is work with dispersible radioactive materials.
- e. Contamination and radiation surveys will be performed during radiological casualties such as a leak or spill of radioactive material.

4. Release for unrestricted use

- a. Tools, materials, and equipment that is potentially contaminated shall not be released for unrestricted use until it has been surveyed for removable and total contamination and contamination levels have been demonstrated to be less than the applicable limits of Regulatory Guide 1.86.
- b. Items having inaccessible areas shall be evaluated on case by case basis to determine whether or not the level of contamination on accessible surfaces is indicative of that on inaccessible surfaces.
- c. Before releasing large areas, buildings, and associated equipment, a Survey and Release Plan shall be developed in accordance with the protocols found in NUREG 1575.

5. Personnel contamination monitoring

- a. Individuals exiting Contamination Areas and Airborne Radioactivity Areas, or radiologically controlled areas established to control access to one or more of these areas shall perform a whole body frisk upon exit.
 - i. Automated monitoring equipment (such as PCM-1B) should be used where available to meet the frisking requirement.
 - ii. Performance of hand/foot/face frisk is permissible at the boundary provided the individual proceeds directly to the RCA boundary and performs a whole body frisk.
 - iii. If background levels are too high to perform an adequate frisk, specific controls shall be implemented to direct individuals to the nearest available frisking station, and to limit traffic through the area traversed until monitored for removable contamination.

6. Airborne radioactivity surveys

- a. Air samples shall be collected whenever:
 - i. Radioactive materials are directly handled in a posted airborne radioactivity area to verify the effectiveness of boundaries and/or enclosures
 - ii. Respiratory protection is used to prevent or minimize the amount of radioactive material inhaled.
 - iii. Radioactive material other than sealed sources is being directly handled in quantities that could cause airborne radioactivity concentrations to exceed 0.05 DAC.
 - iv. At other times as specified by work packages or RWP to monitor potential personnel intakes of radioactive material.

- b. When used to measure airborne radioactivity concentrations to which personnel are potentially exposed, air samples shall be representative of the air the individual is breathing.

7. Documentation

- a. Surveys shall be documented and signed as soon as practicable after completion of analysis, but in any event no later than the end of the next work day.
- b. Documentation shall include sufficient detail to indicate radiological conditions present in the work area, including locations of readings obtained. Detailed location description or area diagram (map) should be used.
- c. Surveys should be reviewed by the supervisor of the activity within 7 working days of documentation.
- d. Air samples need not be signed and reviewed until after the final count is completed to allow for decay of radon progeny.

8. Radiological units

Units for radiological surveys should be as follows:

- a. Gamma radiation: R/hour, mR/hour, uR/hour
- b. Neutron radiation: mrem/hour
- c. Airborne radioactivity: $\mu\text{Ci/ml}$
- d. Beta radiation: rad/hour or mrad/hour
- e. Results of large area wipes shall be reported in units of net cpm unless a conversion factor to dpm has been empirically determined.
- f. Contamination: $\text{dpm}/100 \text{ cm}^2$
- g. Other units may be used if required by contract or if they are more technically correct.

P. Instrumentation

1. A sufficient inventory of radiation detection instrumentation shall be maintained to meet expected needs.
2. No radiological work will be performed unless proper instrumentation is available.

3. Radiation detection instrumentation used shall be appropriate for the type, energy, and intensity of radiation expected to be encountered during normal and emergency conditions.
4. Instruments shall be calibrated
 - a. Prior to initial use
 - b. At least annually if in continuous or intermittent use
 - c. At more frequent intervals if recommended by the manufacturer or industry standard
 - d. After substantial repair.
5. Portable instruments should be source checked
 - a. Prior to initial use after calibration, and
 - b. Daily if in continuous use
 - c. Prior to each day's use if used intermittently
 - d. Daily response checks are not required if not feasible, such as neutron detectors or high-range gamma detectors. In such case alternative methods of verifying instrument operability shall be developed.
6. Readings obtained during source checks shall agree with readings obtained during initial source check within $\pm 20\%$.

Q. Emergency Response

1. Personal injuries

CAUTION: Life-threatening injuries ALWAYS take precedence over radiological control concerns. Never delay treatment or emergency transport because of real or potential radiological contamination.

- a. Provide first aid and comfort as needed.
 - b. If a contaminated individual must be transported, notify the hospital and ambulance crew of the potential for contamination. A representative of Philotechnics trained to monitor radiological conditions (an RCT if available) shall accompany or follow the ambulance.
 - c. The RSO shall be notified ASAP without delaying care.
2. Spill of radioactive material shall be promptly cleaned up using the acronym "SWIMS":

- a. STOP the spill;
- b. WARN others (Senior management and the RSO should be notified as soon as practicable);
- c. ISOLATE the area;
- d. MINIMIZE radiation exposure;
- e. SECURE or redirect unfiltered ventilation

3. Personnel contamination

- a. When contamination is indicated by a PCM alarm, the individual shall re-monitor.
 - i. If a second alarm occurs over the same location, Health Physics shall be notified.
 - ii. If a second alarm does not occur, then the individual may leave the area.
- b. Health Physics personnel shall be contacted in the event skin, hair, or personal clothing contamination is suspected or verified.
- c. Decontamination shall be done under supervision of Health Physics personnel.
- d. Abrasive decontamination techniques shall NOT be used on the skin except under the supervision or direction of qualified medical personnel.
- e. Wounds shall be decontaminated only by, or by direction of, qualified medical personnel.
- f. Hair shall not be cut without the individual's permission.
- g. To the extent possible, personnel decontamination shall be performed by an individual of the same gender as the contaminated individual.
- h. Every personnel contamination event shall be documented.
- i. In the event decontamination is unsuccessful, contact the RSO.

4. Fire or explosion

- a. Personal safety is paramount.

- b. If a fire or explosion is either detected or imminent, notify others of the fire, and ensure the Fire Department is called, BEFORE trying to put it out. Use of fire alarm is preferred.
- c. If a fire is too big to be put out with one fire extinguisher or cannot be safely combated for any reason, evacuate the area immediately.
- d. Health Physics personnel shall monitor radiological conditions as soon as possible. Fire-fighting activities should not be delayed by such monitoring.
- e. Once the fire is out, Health Physics personnel shall monitor radiological conditions in the area prior to allowing general access. Emergency workers, rescue personnel, etc. shall be granted access.
- f. Individuals who exited without monitoring, and emergency response personnel, shall be monitored by Health Physics personnel prior to leaving the site. Names of all affected individuals shall be recorded and forwarded to the RSO.

R. Transportation of Radioactive Material

Transportation of radioactive material shall be in accordance with U.S. Department of Transportation (DOT) regulations. Quantities of radioactive materials that may be exempt from licensing requirements may not be exempt from DOT hazardous material regulations.

1. Shipment surveys

- a. Each package offered for shipment shall be monitored for dose rate and removable contamination and shall not be shipped if any of the applicable limits of 49 CFR 173 are exceeded.
- b. Each package offered for shipment shall be inspected for obvious signs of damage or leakage.

2. Receipt of radioactive material

- a. Each package of radioactive material that is labeled as containing radioactive material in accordance with DOT regulations (White-I, Yellow-II, or Yellow-III), or is known to contain radioactive material and shows signs of leakage or damage, shall be monitored for dose rate and removable contamination as soon as practicable after receipt.
 - i. If received during normal working hours, the package shall be monitored within three hours of receipt.
 - ii. If received after normal working hours, the package shall be monitored no later than three hours after the beginning of the next working day.

3. Opening packages of radioactive material

a. Personnel protective clothing requirements

- i. Packages known or suspected to contain unsealed radioactive material shall be opened according to the requirements of a radiological work permit (RWP).
- ii. Individuals opening and removing contents of packages containing licensed material shall wear rubber gloves.

b. Radiological monitoring

- i. Monitor package internals and contents for removable radioactive contamination. Periodic monitoring is acceptable if opening more than one package in a posted contamination area or if the packages are known to contain only sealed radioactive material.
- ii. Monitor radiation dose rates as applicable
- iii. If the package is suspected to contain unsealed radioactive material, collect air samples as required by the RWP.

c. Inspect and remove contents

- i. Carefully remove contents.
- ii. Inspect inner packaging, if applicable.
- iii. Compare contents of package with manifest, bill of lading, or packing list, as applicable.

S. Records

Records that are required by any of the regulations included in Section C, "References," and those generated in accordance with the Radiation Protection Program or any of the radiation protection implementing procedures shall be maintained in accordance with the Philotechnics, Ltd. Quality Assurance Program.

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

5/31/2006, and to inform you that the initial processing which includes an administrative review has been performed.

Amendment 37-28329-02 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** 138953.
When calling to inquire about this action, please refer to this control number.
You may call us on (610) 337-5398, or 337-5260.