



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY 20TH SUPPORT COMMAND
5183 BLACKHAWK ROAD
ABERDEEN PROVING GROUND MD 21010-5424

Chief of Staff

A-2

APR 10 2006

Mr. Sattar Lodhi:
US Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, Pennsylvania 19406-1415

19-31127-01
03037133

Dear Mr. Lodhi:

Per the phone conversation between Mr. Sheldon Orr, US Army 20th Support Command (Chemical, Biological, Radiological, Nuclear, and High Yield Explosive (CBRNE)) and Mr. Sattar Lodhi, NRC Region I, the enclosed changes are submitted to the original material application dated Jan 27, 2006, as requested. The changes are submitted on a page for page basis and highlighted in bold type. Mail Control Number for this submittal is 138352.

Please contact Mr. Orr, CBRNE Radiation Safety Officer (410) 436-0370, if you have any questions.

Sincerely,


Barrett F. Lowe DCD
Colonel, US Army
Chief of Staff

Enclosure

138352

NMSS/RONI MATERIALS-002

Item 5
Radioactive Material

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. Californium-252	A. Sealed source, Special form, Model 100, Frontier Technology Corp.	A. Maximum of 24 sources not to exceed 2.70 millicuries per source
B. Uranium-238	B. Sealed source, Special form	Maximum of 10 sources, not to exceed 1 nanocurie per source
C. Thorium-232	C. Sealed source, Special form	C. Maximum of 15 sources, not to exceed 1 nanocurie per source
D. Thorium 230	D. Sealed source, Special form	D. Maximum of 10 sources, not to exceed 5 nanocurie per source
E. Plutonium-238	E. Sealed source, Special form	E. Maximum of 10 sources, not to exceed 100 nanocurie per source
F. Plutonium-239	F. Sealed source, Special form	F. Maximum of 10 sources, not to exceed 1 nanocurie per source
G. Americium-241	G. Sealed source, Special form	G. Maximum of 10 sources, not to exceed 1 nanocurie per source
H. Strontium-90/Yttrium-90	H. Sealed source, Special form	H. Maximum of 10 sources, not to exceed 10 nanocurie per source
I. Technicium-99	I. Sealed source, Special form	I. Maximum of 10 sources, not to exceed 1 microcurie per source
J. Cesium-137	J. Sealed source, Special form	J. Maximum of 30 sources, not to exceed 1 microcurie per source
K. Europium-152	K. Sealed source, Special form	K. Maximum of 10 sources, not to exceed 1 microcurie per source
L. Europium-154	L. Sealed source, Special form	L. Maximum of 10 sources, not to exceed 1 microcurie per source

Item 9 Facilities and Equipment

1. Permanent Sites. There are four permanent sites for the storage and use of Cf-252 (PINS) and one permanent site for the storage and use of the NDT radioactive sources. The three permanent sites for the Cf-252 (PINS) are:

- a. 22D CM BN (TE) Aberdeen Proving Ground, Edgewood Area, MD
- b. 22D CM BN (TE) Pine Bluff Arsenal, AR
- c. 110th CM BN (TE) Fort Lewis, Washington

One permanent site for the Nuclear Disablement team is: 20th SUPCOM (CBRNE) Aberdeen Proving Ground, MD

2. Remote Sites. The majority of 20th SUPCOM (CBRNE) operations involving radioactive sources are conducted at remote sites throughout the United States and overseas in support of Department of Defense, Homeland Security and Combatant Commanders. Transportation, storage and use of radioactive commodities at remote sites will be in accordance with Army, Department of Transportation (DOT), local SOP, and Nuclear Regulatory Commission guidelines.

3. Storage. During long term storage at permanent sites Cf-252 sources are stored in a 55 gallon storage drum or 5 gallon DOT approved shipping and storage container filled with lead shot and polyethylene as shielding for Gamma and Neutrons. The Cf-252 sources are shipped in a DOT approved shipping and storage container. Radioactive materials are stored in marked secured cabinets in the approved radioactive storage room or locker. Radioactive check sources will be stored in a marked secured storage cabinet, locker or container. All radioactive material is secured when not in use and all keys are maintained in a central key box.

4. RADIATION AREA - PINS operations are normally performed in remote field environments on active installations, Formerly Used Defense Sites or OCONUS in support of Combatant Commanders and during emergency responses to recovered munitions or containers. Figure 2 depicts a typical field emplacement of a PINS system. Figure 3, depicts the radiation area established to protect personnel. Because there is some danger of radiation exposure from the Cf-252 source the first task is to set up an "Exclusion Zone" surrounding the point where the source will be used. No one will be allowed inside this zone while the source is out of its DOT approved shipping container, except for brief periods to reposition the source or other equipment. As a general rule allow a minimum of 5 meters (15 feet) between the location of the source and the location of all other activity, including monitoring of the electronics. **The radiation exclusion zone will be guarded by site personnel to prevent unauthorized access, and will not exceed 2mr/hr.** If possible, use existing structures such as walls or

(10) Ensure personnel dosimeters (when necessary) are issued, stored, maintained, and used properly. Review personnel dosimetry records at least once per calendar quarter.

(11) Ensure all radiation detection equipment is calibrated and maintained properly.

(12) Ensure the safe and proper storage, transportation, packaging and disposal (as applicable) of radioactive sources IAW applicable regulations.

(13) Maintain a copy of the CBRNE NRC license.

(14) Request authorization from the CBRNE RSO to procure additional sources or increase authorized activity amounts.

d. Alternate RSO (ARSO). The ARSO will:

(1) Perform the RSO duties in his absence. All references to RSO in this document also apply to the ARSO during the period in which the ARSO is performing RSO duties.

(2) Provide assistance to the RSO as required.

(3) Report to the RSO accidents and incidents involving radioactive sources while under his supervision.

6. Operation.

a. Equipment containing radioactive sources will be operated in accordance with the manufacturer's operator's manual to achieve the lowest possible radiation exposures for personnel while operating the equipment. Appendix B details the ALARA Program.

b. Sources and equipment containing sources will be secured from unauthorized use, tampering or removal from the area when not used.

7. Posting and Survey Requirements for Radioactive Source Use, Storage, and Maintenance Locations.

a. Use Locations. Use locations include any CBRNE area of operations. Before moving the radioactive source to another use location, a meter check of the source holder will be made to ensure the source is still present in the source holder so the source is not accidentally lost.

b. Storage Locations. All sources will be stored IAW CBRNE NRC license and listed on the inventory. **Whenever a source is moved from a storage location to a use location the local RSO will record the movement activity in a logbook which**

will include source serial number, date shipped, date received and notify the CBRNE RSO of all movement activity.

(1) Posting. The following forms will be posted in each storage location:

(a) Annotated "Radioactive Material" sign on the storage container.

(b) NRC form 3, 5-2005, NOTICE TO EMPLOYEES, Standards for Protection Against Radiation (Part 20); Notices and Instructions to Workers; Inspections (Part 19); Employee Protection.

(2) Surveys. Storage locations will be surveyed as follows:

(a) During the physical inventory, the storage location and sources will be visually inspected for security and general physical condition. Information will be recorded on the general survey form, Attachment 2.

(b) Leak tests. Leak tests will be completed IAW NRC License No.

(1) Sealed sources need not be leak tested if they contain not more than 3.7 MBq (100,000 nanoCi) of beta and/or gamma emitting material or not more than 0.370 MBq (10,000 nanoCi) of an alpha emitting material. In addition, they need not be leak tested if they are not designed to emit alpha particles, are in storage and are not being used.

(2) Sources requiring leak tests will be "leak tested" using removable contamination survey techniques by the RSO or by other qualified persons authorized by the RSO. The laboratory analyzing the leak test samples must be capable of detecting 185 Bq (0.005 microCi) of radioactive material on the test sample.

(a) However, when sources are removed from storage for use or transferred to another person, and have not been leak tested within the required leak test interval, they shall be tested before use or transfer.

(b) No sealed source or detector cell shall be stored for more than 10 years without being tested for leakage and/or contamination.

(c) A survey of each area in which radioactive sources are stored or used will be performed initially, immediately after new sources are added to room, or after sources are moved to a new storage room.

(1) The survey will consist of instrument monitoring using survey instrumentation capable of detecting the types of radioactive material being used and stored and also area wipe tests for removable contamination when applicable.

TABLE I. Annual Dose Limits.

Person/body part	Adults	Minors
1. Total effective dose equivalent (TEDE)	5 rem	0.5 rem
Whole body		
2. Head (brain, optic chiasm, bone marrow)	50 rem	0.5 rem
3. Neck (thyroid)	15 rem	same as above
4. Rest of body (whole body surface, skin)	50 rem	3 rem
5. Feet (soles, palms, and associated skin)	50 rem	5 rem
6. Breasts (women)	0.5 rem not to exceed 0.05 rem/month	0.03 rem
7. Member of public	0.1 rem	30 mrem

TABLE II. Investigational Levels.
(per calendar quarter)

	Level 1 (IL-1)	Level 2 (IL-2)
1. The sum of the dose equivalent and the committed dose equivalent to any individual organ or tissue, other than the lens of the eye.	1.25 rem	2.50 rem
2. Dose equivalent to the lens of the eye.	375 mrem	750 mrem
3. Dose equivalent to the skin on any part of the body.	1.25 rem	2.50 rem
4. Dose equivalent to the TEDE.	50 mrem	125 mrem
5. Minors.	50 mrem	125 mrem

b. The RSO will review records of personnel monitoring not less than once in any calendar quarter as required in AR 11-9. The following actions will be taken:

(1) Personnel dose less than IL-1. Except when deemed appropriate by the RSO, no further action will be taken in those cases where an operator's dose is less than the applicable table values.

(2) Personnel dose equal to or greater than IL-1 but less than IL-2. The RSO will review the dose of each operator whose quarterly dose equals or exceeds IL-1 and will

Item 11
Waste Management

1. All radioactive waste generated by the CBRNE Command will be properly disposed of IAW Army, local, state and federal environmental laws and regulations. Wastes will be properly documented through the APG automated Hazardous Waste Tracking System with proper turn-in documentation and must be reviewed by the Activity Environmental Coordinator (AEC).

2. Radioactive waste will be generated and stored at permanent facilities. Generation and disposal of waste at remote sites is not anticipated. Radioactive wastes will be managed and inspected by the same laboratory management responsible for daily operations.

3. **Idaho National Engineering Laboratories have conducted extensive studies on the probability of source activation from Cf-252, and although possible, any activation would be orders of magnitude below levels of concern.**