



DEPARTMENT OF THE ARMY
UNITED STATES ARMY TANK - AUTOMOTIVE AND ARMAMENTS COMMAND
ARMAMENT AND CHEMICAL ACQUISITION AND LOGISTICS ACTIVITY
ROCK ISLAND, ILLINOIS 61299-7630

10 CFR 30.50

PLY TO
ENTION OF

10 9 MAY 1997

Lic

12-00722-06

03013027

Safety Office, Armament and Chemical
Acquisition and Logistics Activity

Mr. James Cameron
U.S. Nuclear Regulatory Commission
Region III
801 Warrenville Road
Lisle, Illinois 60532-4351

Dear Mr. Cameron:

Enclosed with this memorandum are 30 day follow-on reports concerning the Aberdeen Proving Grounds, MD incident reported to the Operations Center on 15 April 1997.

A synopsis of the incident follows:

On April 14, 1997 Aberdeen Proving Grounds, MD (APG) reported an incident involving breakage of an M187 Mount Telescope in a classroom. An instructor at APG attempted to remove the tritium sources from an M-187 prior to use in the classroom. After removing the M-187 cover, the instructor tried to cut away the potting material holding one of the sources in place. While doing so, the source ruptured and tritium gas escaped. The instructor stopped work, bagged the item and reported the breakage to the RPO.

The room was isolated (greater than 24 hours) until surveys could be performed and a decon completed, as necessary. Surveys of the area revealed that the floor, door knob to the room and other areas in the room had been contaminated. A bioassay was ordered for the instructor and results indicated a tritium uptake. USACHPPM's evaluation indicated an uptake of .5 microcuries/liter. The calculated exposure from this uptake was 4.8 mrem.

Attached are two reports. The first report is from Gutierrez Palmenberg, Inc., who acted as the Acala representative in the investigation of this incident. The second report is from the APG radiation protection officer (RPO). These two reports lay out the actions taken and actions to be taken to preclude reoccurrence.

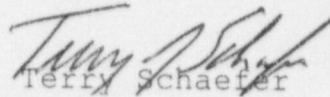
9706260143 970519
PDR ADOCK 03013027
C PDR



1E-72

The point of contact for this action is Mr. Timothy J. Mohs,
AMSTA-AC-SF, (309) 782-6228.

Sincerely,

A handwritten signature in cursive script, appearing to read "Terry Schaefer".

Terry Schaefer
Major, OD
Chief, Safety Office

Gutierrez - Palmenberg, Inc.

333 North Rancho Drive, Suite 580
Las Vegas, Nevada 89106

May 7, 1994

Mr. Tim Mohs, Health Physicist
Director, ACALA
Dept of the Army
Attn: AMSTA-AC-SS
Rock Island, IL 61299-7630

Subject: Radiological Accident/Incident Investigation - ACALA Report #97-23

The enclosed letter and report are provided as a response to your request for an investigation into the Tritium Accident Event that occurred at Aberdeen Proving Grounds (APG) on 14 April 1997. The onsite investigation was conducted from 21 April through 24 April '97, and the long term actions and effects of this incident are on-going at this time.

With regard to regulatory impact of this incident, the Army Ordnance Center and School (AOCS, a tenant at APG) personnel were in violation of NRC Radioactive Materials License 12-00722-06. This license is administered for the Army by the Armament & Chemical Acquisition & Logistics Activity (ACALA) and contains, in part, provisions with regard to Tritium.

AOCS was in specific violation of License Conditions (LC):

11.A., which states in part, "...*Ampoules containing hydrogen-3 shall not be opened or removed from fire control devices except...only at the Letterkenny Army Depot, Anniston Army Depot, Rock Island Arsenal, Albany Georgia Marine Corps Logistics Base and Barstow, California Marine Corps Logistic Base.*", and

13., which states, "*Sealed sources containing licensed material shall not be opened.*".

In addition to the AOCS violations, there was an APG violation with regard to the requirement for a physical inventory every twelve (12) months, in accordance with AR 710-2, AR 740-26, and 12-00722-06, Rev 9 & 30. During the investigation, the discovery of a small cache of removed radioactive devices, of which the APG personnel had no knowledge indicates that such an inventory could not have been conducted.

As an agent for the licensee, TACOM-ACALA, APG was in violation of 10 CFR 30.41, in that they received and shipped radioactive material, without having a copy of NRC License 12-00722-06 for the radioactive tritium commodities that were being handled.

Both tenant (AOCS) and landlord (APG) were in general violation of several sections of the License implementing document, AR 385-11. These sections include, but are not limited to; 1-18 (d), 1-20 (a), (b), (c), (d), (f), (g), & (h), 1-24, 1-26, 1-28, 1-29, and others.

The accident that occurred in Room 203 of Building 3144 was reportable to the NRC within twenty-four (24) hours, in accordance with 10 CFR 30.50 (b). The regulation requires that an incident must meet all four (4) of its' stated event criteria. An incident must be:

- An unplanned contamination event, that
 - restricts access for greater than 24 hours by imposing additional controls or prohibiting entry, and;
 - involves a quantity of material greater than five (5) times the lowest ALI in appendix B for the material of interest, and;
 - has access restricted for a reason other than allowing decay of isotopes with a half-life of less than 24 hours.

This incident was unplanned, the area was restricted for greater than 72 hours, the potential activity released was greater than 800 millicuries (mCi) with the lowest ALI=80 mCi ($80 \text{ mCi} * 5 = 400 \text{ mCi}$ for the comparison value), and the half-life of tritium is greater than 24 hours ($T_{1/2} = 12.3 \text{ years}$).

In accordance with the information provided, I have completed an accident/incident evaluation of the Personnel and Area Contamination Accident at APG. A synopsis of the event, contributing history, investigation details (including any attachments or drawings for clarity), problem solving, and conclusions are included in the attached report.

Thank you for the opportunity to assist you in this incident investigation. I look forward to working with you in this or other similar capacities in the future. Please feel free to call me at 702-647-5699 if you have any questions, comments, or concerns.

Sincerely,



Dixie Wells, RRPT
GPI-RSO

cc: Maj Terry Schaefer, ACALA Safety
Thomas O'Dou, GPI-CHP
Walter Cunningham, GPI-VP
Kelly Crooks, IOC Contracting
Ralph Cardenuto, APG-PRPO
Ed Bennett, AOCS/SEO-RPO

Radiological Accident/Incident Report 97-23

Initial Problem

On April 14, 1997 at 1000, Sgt [REDACTED] was removing the radioactive components from an XM187 Telescope subassembly when the last of the four (4) components being removed - cracked. The broken component contained 0.81 Ci of Tritium (^3H). The Sgt was working alone in a closed classroom and was the only person exposed to the radioactive material. He received an uptake (internal contamination); also, his work station, the adjacent area, and some other isolated 'spots' were contaminated.

Initial Actions

The Sgt reacted in an appropriate manner to the broken radioactive component by immediately double-bagging it in plastic, placing the wrapped component in a box, closing and marking the box as "Broken Tritium Device". He notified his coworkers, Sgts Cox, Johnston, Rivera, and Fowler while proceeding to wash his face and hands (exposed skin areas) with soap and water. The affected classroom was secured and posted, and the FC-RPO was notified.

Followup Actions

The FC-RPO, Bernard Miller, made his required notifications - to his immediate supervisors, and the Aberdeen Proving Grounds (APG)-PRPO, Raphael Corpuz. Mr. Corpuz responded to the call and came to Building 3144 within the hour. He conducted a survey of the area, prepared the 'wipes' for submittal to US Army Center for Health Promotion and Preventive Medicine (CHPPM) for analysis, and arranged for [REDACTED] to report to the clinic for a tritium bioassay (approximately four (4) hours after the incident), as required.

Results

Initial survey of Room 203 documented contamination levels up to 2700 DPM on the floor in the area that Sgt Gombos was working and levels approximately 10% less in adjacent floor area, on the doorknob, and on the floor near the door. Room 203 was deconned and surveyed several times over a 3-day period. The levels following the decontamination efforts were generally <20 DPM and the room was released for use.

14 April bioassay results on [REDACTED] were $2.01 \pm 0.02 \mu\text{Ci/L}$, 16 April results were $1.52 \pm 0.02 \mu\text{Ci/L}$. Utilizing an ICRP-2 calculation $[(51.1)(q)(f_2)(\sigma)/(m)(\lambda^e) = \text{total dose}]$ and the initial bioassay result, the Sgt's total dose for this event was approximately 5 mRem. The second count indicated that the tritium was being eliminated from his body in a normal manner.

INVESTIGATION DETAILS

History

The US Army Ordnance Center and School (AOCS) is a Training and Doctrine Command (TRADOC) tenant on the Army Materiel Command (AMC) facility - Aberdeen Proving Grounds. It is one of 50+ tenants at APG. AOCS instructs its' personnel in the 'hands on' aspect of maintenance on all components that it teaches. Each of several schools teaches a different part of any component, such as; engine maintenance and repair, fire control maintenance and repair, electrical maintenance and repair, etc. As a rule, the instructors have many years experience in maintenance and repair prior to becoming instructors.

The majority of the instruction in Building 3144 is in the area of fire control devices. Many of the Army's fire control devices have a radioactive component which is generally in place for night vision functions. One of the primary radioactive components used for this purpose is Tritium (^3H). Its form is generally as a gas, which makes it very dispersable in air if its' containment is broken.

Sgt [REDACTED] is a fire control instructor for AOCS at APG. His area of instruction is normally that of fire control devices that contain radioactive tritium. However, his area of instruction is not with regard to any of the night vision capabilities. The instruction in night vision capabilities is taught at a different Army facility, therefore the fact that the devices contain radioactive materials has become an unnecessary hazard for these instructors and their students.

In recent years, in an effort to provide a better and safer learning and teaching atmosphere for their students, the radioactive materials were removed from the fire control devices prior to using them in a teaching situation. Initially, the devices had been sent to a contractor operated maintenance and repair shop (within the APG confines) where the radioactive materials were removed. The transmittal and tracking document used was a DA Form 2407, Maintenance Request (Attachment 1).

Within the last year, one of the instructors became concerned with the QA being exercised in the contractor shop. Several telescopic sights sent for radioactive material removal had been returned from that shop with cracked and smudged lenses rendering them unusable for training. In one particular incident, several telescopic devices (w/tritium removed) valued at ~\$7000.00/ea were discarded as trash. To prevent a recurrence of this type of situation, the instructor checked one of the Tech Manuals (TM), found the section that showed how to remove the radioactive materials. The TM gave no indication that disallowed this removal. The instructor determined that this was a simple maintenance function and began removing them locally (within the school).

The removed radioactive materials were wrapped in a protective manner and stored in a locked tool box until the instructor had accumulated too many for the tool box. They were then moved to a locked area in the basement of Building 3144 for storage pending proper disposal,

which had become a problem. Within storage area, they were posted as 'Tritium Devices' and were inventoried.

Incident Details

The removal of tritium from the fire control devices for the purpose of protecting the students was in practice before [REDACTED] arrived at APG (~10 months ago). The removal was performed in accordance with instructions in Army Tech Manuals and/or Bulletins, which was the same technique [REDACTED] used.

On the morning of Monday, April 14, 1997, [REDACTED] was preparing an XM187 fire control device for use in one of his training sessions. He was working in Room 203 of Building 3144. Since he was removing the tritium, he had closed the door to the classroom (Dwg 1), placed the device on a work table near the windows, and was alone. He had four (4) radioactive components to remove from within the body of the device. He had completed removal of the two (2) rectangular level vials in the 'elevation' sight (Dwg 2) and one (1) of the 2 half-moon shaped components from the 'correction' sight. He was attempting to remove the second of these two by manipulation of the inside screw slot, when his hand slipped, and impacted the component, thus cracking it and releasing the tritium.

[REDACTED] went immediately to the garbage can in the classroom,

- removed the plastic garbage bags,
- wrapped the M187 in plastic,
- placed it in a cardboard box,
- placed the box inside more plastic bags,
- and the sealed the outside package.

He walked across to the door, opened it, walked across the hall and notified SSG Cox that he had broken a tritium component. Within the next ten (10) minutes, he notified SSG Johnston, SFC Fowler, SFC Rivera, and went to the 'mens room' to wash his face, hands, and arms.

[REDACTED] left Room 203 secured (the door was closed) when he departed to make notifications and clean up (decontaminate bare skin surfaces). SFC Rivera called the (TRADOC) FC- RPO, Bernard Miller, who reported the incident to his supervision and the APG-RPO office. Upon the arrival of the PRPO Corpuz, Room 203 was surveyed for contamination, access restricted, and area posted. Arrangements were made for [REDACTED] to report to the medical facility for a tritium bioassay.

Initial survey results indicated that the room was contaminated in several areas, primarily on the work table, floor, partial pathway, and sites touched by [REDACTED] such as tools, doorknob, etc.(Initial Survey-Attachment 2). A series of decontamination efforts were initiated in Room 203 beginning on 15 April. The room was released for occupancy on 18 April '97 (Release Survey-Attachment 3).

██████████ initial bioassay result indicated his measured level of uptake was $2.01 \pm 0.02 \mu\text{Ci/L}$, which calculated to 5 mRem as an assigned dose. His second bioassay result indicated that his body (and nature) were eliminating the tritium at a normal rate. At the time of this investigation, he was scheduled for periodic repeat bioassay testing until all measurable tritium was gone.

The licensee, ACALA was notified on 16 April 1997, by the FC-RPO, Bernard Miller. He provided Betty Peterson with the information that was available at that time. Ms. Peterson notified the NRC Region III HQ within two (2) hours that a 'Reportable' incident had occurred at APG.

Problem Solving

This incident and its' ramifications were discussed with the tenant RPO staff and the fire control instructors, as it progressed. All personnel were made aware that their actions regarding the removal of the radioactive components was in violation of the Army's NRC license for the possession and control of tritium containing devices.

All personnel involved in this investigation have ceased this type of activity and are now aware that they are not allowed to remove radioactive materials of any kind from the fire control devices.

Actions had been recommended in the past to have the fire control components delivered with the radioactive materials removed, see letter dated 28 June 1994 (Attachment 4). Followup action on this issue seems to be clouded by the fact that AOCS is a TRADOC tenant on an AMC facility, which limits the amount of 'problem to problem solver' communication required.

Note: This investigator contacted personnel via telecon, at depot-level with an inquiry into the manner in which AOCS could receive devices without radioactive materials. It appears that the difficulty factor may be minimal, just the MACOM to MACOM logistics need to be facilitated.

An additional complication occurred when ██████████ expressed concerns regarding the fact that he was told that his initial bioassay results were 'hot'. He had asked for an explanation of the terminology and had not received an acceptable answer, from either the Medical personnel or the PRPO personnel. He indicated that his wife had become concerned about his 'uptake', what it all meant to his health, and could she or his children be harmed by what had happened.

This investigator contacted personnel at CHPPM and arrangements were made to allow perusal

of the Sgt's bioassay results. Those results were verified by the use of similar calculations and defined for [REDACTED] what his dose from the uptake was. On the following day, this investigator spent as much time as required with the Sgt and explained the inaccuracy of using inappropriate terminology, demonstrating the dose calculations and verification, explaining how tritium acts and reacts in the body, and the fact that his family need not be concerned and why. When complete, he was asked if he felt comfortable enough with the details to explain to his wife or would he like the investigator to meet with both of them and help with the followup explanation. He indicated that he was comfortable with and understood the details with which he had been provided and felt confident conveying the information to his family. He was left with the understanding that he need only place a phone call if he needed any further help.

The FC-RPO and the tenant staff have made several concerted efforts to get the help required to properly dispose of the stored tritium components. They have contacted a variety of personnel within the RPO Staff and the facility logistics division, but remain without real guidance.

During the course of the investigation, contact with the logistics personnel was needed for response regarding the method of supply for controlled materials, accountability concerns, etc. Within those conversations, the Director of the Division ensured that the tenant staff was placed in direct contact with the logistics personnel required to facilitate proper shipping of the radioactive materials to an appropriate receiving agency or facility.

Conclusions

- 1) The instructors were not aware that they were in violation of any regulation(s) in removing the tritium components. They believed that their actions were in the best interest of their students. They had Technical Manual guidance for the removal of the tritium, which they followed 'to the letter'.
- 2) The instructors had never seen documents nor received any instruction on either NRC License 12-00722-06 or implementing procedure, AR 385-11.
- 3) This investigator verified, in conversation with depot-level maintenance, that the removal technique being employed was the same as that used at depot.
- 4) Although the tenant RPO staff was new, having been in the position only three (3) weeks, they handled the incident in an admirable manner.
- 5) The APG-RPO personnel indicated that they may suffer from an overburden condition since there are many tenants at APG. In addition, they indicated that they could not keep up with all the tenants actions. This is a serious problem since they are ultimately responsible for all tenants activities - with regard to the Radiation Protection aspect(s).

Recommendations

All parties need to facilitate the proper training and qualifications of tenant RPO Staff personnel, so that they may assume a more responsible and productive role in their activities. This would alleviate some of the burden on the APG Staff.

The need for removal of radioactive materials from the training devices has been exacerbated by this incident. This type of activity must be done at a license approved facility with proper controls; such as, hoods, ventilation, and tritium monitors. This serves to minimize the possibility of any activity release. Should an accident occur, this would ensure that contamination is contained, controlled, and monitored personnel are protected. A more directed effort toward resolution and proper removal of the radioactive materials must be implemented.

Followup on the progress being made towards getting the stored radioactive materials shipped to an appropriate facility or being transferred to the APG-RPO personnel for disposal through the IOC. (See discussion, this report - Page 5, last item.)

In pursuing the trail of the incident, Mr. James Loar's maintenance shop was, not only a major 'find', but apparently a complete surprise to everyone. Mr. Loar's shop was ~20'x40'x15' and completely full of work benches, tool boxes, bookcases, desks, etc. A more significant discovery in his shop was a small box with tritium level vials including several broken tritium components. PRPO Corpuz was notified and responded to the investigator's call for help in surveying Mr. Loar's shop. Ultimately, no significant contamination was discovered in the shop, but the fact that some elevated levels were detected indicates that there may have been a problem in the past. Mr. Loar had a significant file of 2407's that should be investigated.

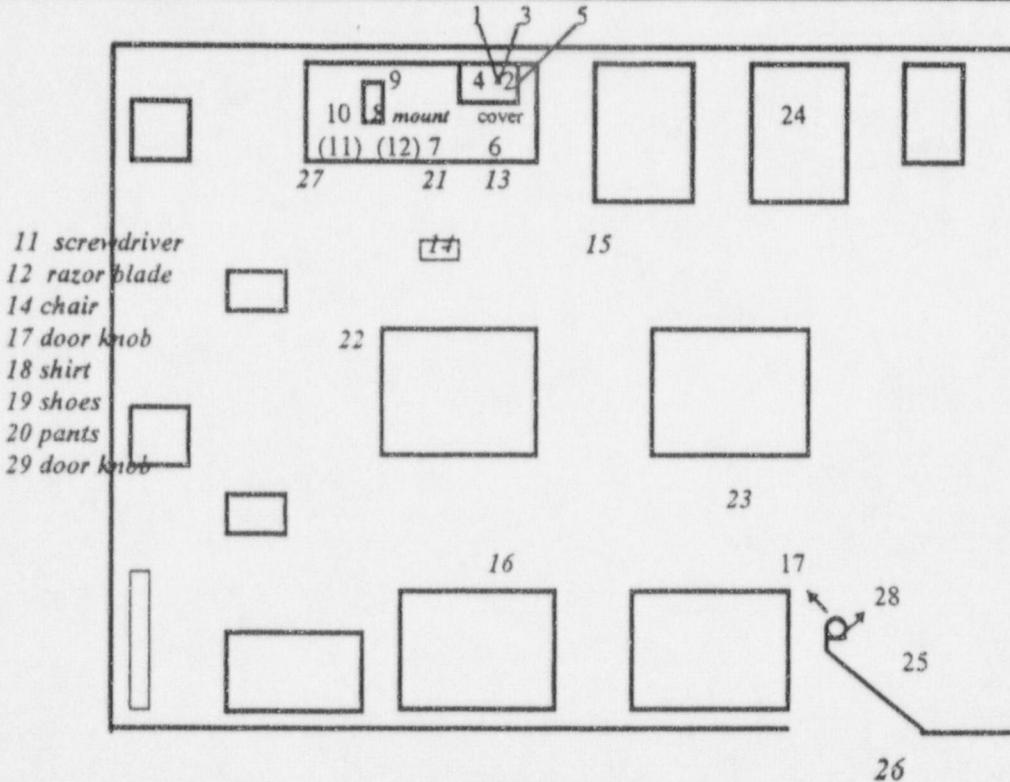
There is a significant possibility that tritium contamination may exist in previously unsurveyed areas, since the APG Radiation Protection Office was unaware that;

- an 'external' maintenance shop that removed tritium existed, or
- that the instructors were removing tritium components in building 3144,

The greatest priority needs to be placed on the followup of this potential problem.

RADIATION AREA SURVEY

BUILDING NO.3144 rm 203 BKEND : ____mR/Hr DATE: 04/14/97
INSTRUMENT: [] LUDLUM [] EBERLINE: OTHER ____
MODEL: NON-USED SERIAL NO. surveyor: CORDUZ
calibration due date:

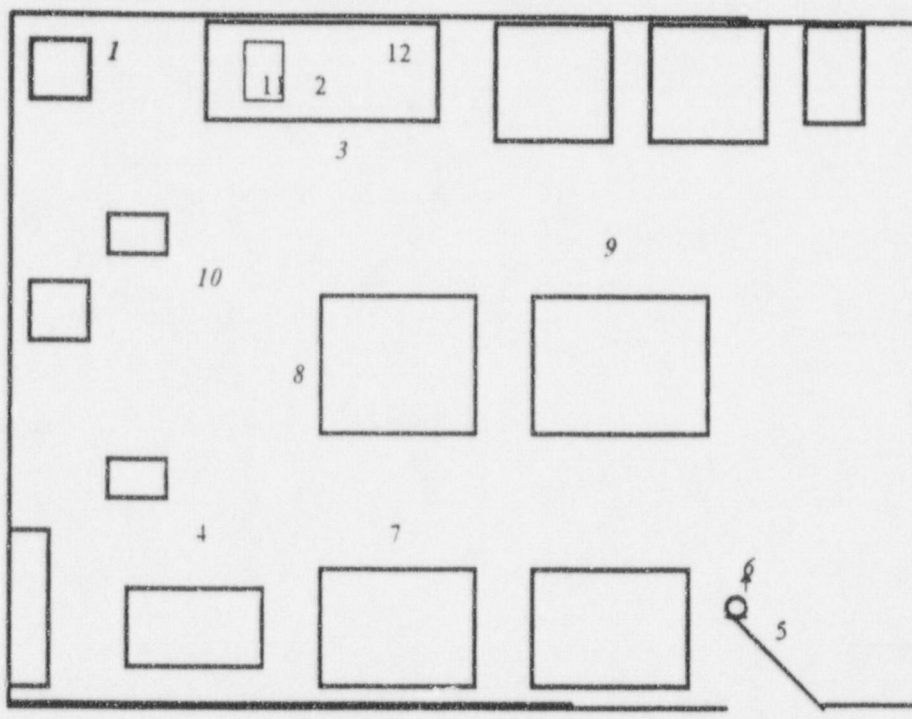


CHDDM SMEAR ANALYSIS DATED

NUMBER:	Disintegration / Minute 3H	Disintegration / Minute 3H	NUMBER:
1	23+7	72+9	15
2	28+7	62+9	16
3	54+8	530+20	17
4	14+6	90+9	18
5	25+7	1+7	19
6	18+7	28+8	20
7	180+10	2700+40	21
8	110+10	66+9	22
9	97+10	12+8	23
10	71+9	9+8	24
11	59+9	10+7	25
12	200+10	2+7	26
13	1600+30	260+10	27
14	41+8	270+10	28
REMARKS: Initial Survey			

RADIATION AREA SURVEY

BUILDING NO.3144 rm 203 BKEND : _____mR/Hr DATE: 04/17/97
INSTRUMENT: [] LUDLUM [] EBERLINE: OTHER _____
MODEL: NON-USED SERIAL NO. _____ surveyor: CORPUZ
calibration due date: non used



CHDDM SMEAR ANALYSIS DATED _____

NUMBER: Disintegration / Minute 3H

1	6+7
2	10+7
3	7+7
4	10+7
5	7+7
6	4+7
7	4+7
8	6+7
9	4+7
10	3+6
11	5+7
12	1+7

REMARKS:

*Closest to Survey & release of line
 not used Sgt. C. C. & Mr. H. H. H.*

U: 1 Sep 94

28 JUN 1994

AMSMC-ASW

MEMORANDUM FOR Commander, Training and Doctrine Command, ATTN: ATTN:ZA,
Fort Monroe, VA 22651-5000

SUBJECT: Restricting the Use of Radioactive Systems During Training

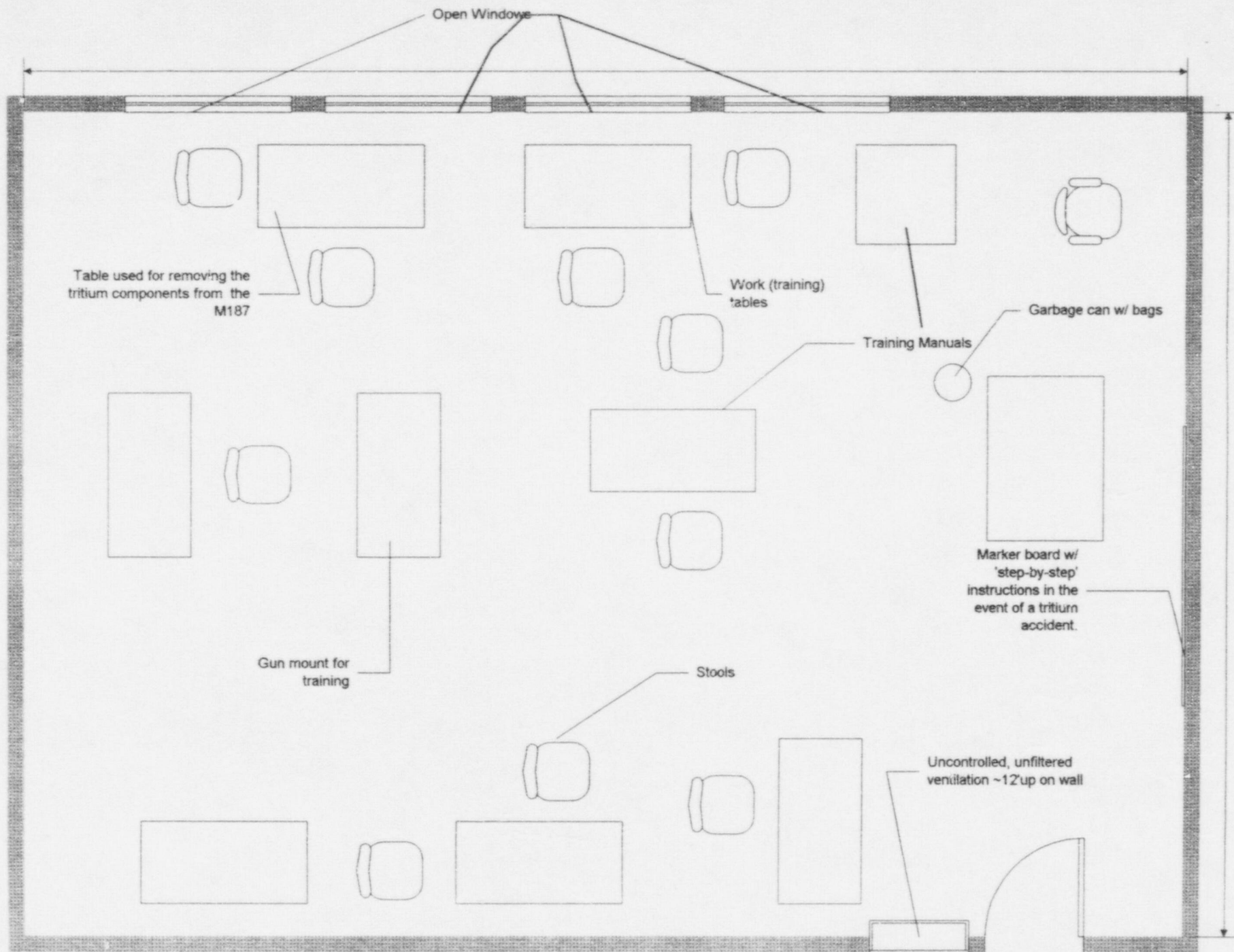
1. Numerous Nuclear Regulatory Commission (NRC) licensed items that are used in training pose potential radiation and environmental hazards. These hazards are created when the items are either broken or improperly disposed of when they are no longer functional.
2. To eliminate, or at least minimize, these impacts on our environment, we are proposing that NRC licensed commodities be restricted, whenever possible, to combat use only. Since this may result in training with different equipment than the "go to war" equipment, we need your help in conducting a study to determine what impact, if any, this procedure will have on training.
3. Enclosed is an Armament and Chemical Acquisition and Logistics Activity (ACALA) list of NRC items that we request you review and provide recommendations for possible substitution or elimination during your training exercises. Each item that we can remove from your training reduces the risk to our soldiers and the environment.
4. If your recommendations and our review indicate that you cannot conduct your training without the item, we may be able to redesign the item to function satisfactorily without or with a reduced source during training.
5. Request your response be provided by 1 September 1994.
6. The POC is Mr. Ronald Spencer, AMSMC-ASW-T, (effective 1 October 1994, AMSTA-AC-WST), DSH 793-6495.

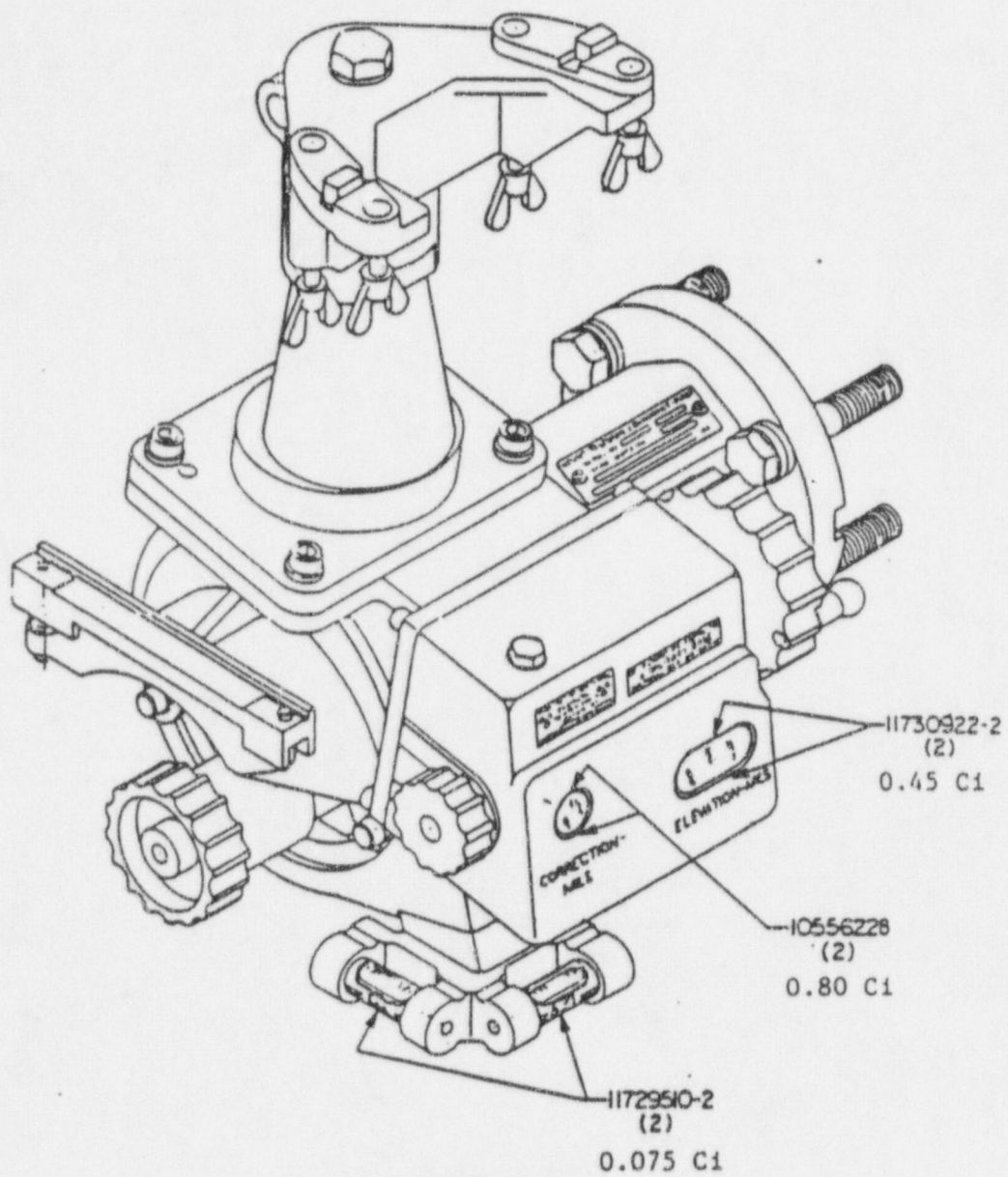
SIGNED

Encl

RONALD E. GENCE
Chief, Weapons Intensive
Management Division

CFI
Cdr, AMCCOH, ATTN: AMSMC-MA; AMSMC-MM; BMCAR-ES(R); AMSMC-EY, Rock Island, IL
61299-6000





XM187
MOUNT, TELESCOPE, AND QUADRANT PN-12599166
 Total Activity 2.65 C1

ATSL-DET-SEO

14 May 1997

MEMORANDUM FOR Director, Armament and Chemical Acquisition and Logistics (ACALA) Activity, ATTN: AMSTA-AC-SF (Mr. Tim Mohs), Rock Island, IL 61299-7630

SUBJECT: Radiological Incident Report

1. On 14 April, 1997 an incident involving breakage of an M187, Mount Telescope in a classroom occurred and reported to ACALA.

a. Description of licensed material involved, kind, quantity, chemical and physical form:

- (1) Tritium
- (2) .81 curies
- (3) Gas

b. Description of the circumstances under which the loss occurred:

A tritium source from an M-187 was being removed prior to use in the classroom. After removing the M-187 cover, the instructor tried to cut away the potting material holding one of the sources in place. While doing so, the source ruptured and tritium gas escaped.

c. Description of disposition, or probable disposition of the licensed material involved:

When the incident occurred the instructor stopped work, bagged the item and reported the breakage to the RPO. The room was isolated (24 hours) until surveys could be performed and a decon completed. The bagged breakage was turned in through S-4 for disposal as contaminated waste.

d. Exposures of individuals to radiation, circumstances under which the exposures occurred, and the possible total effective dose equivalent to persons in unrestricted areas:

A bioassay was ordered for the instructor exposed when he broke a tritium module while removing it from a training device. [REDACTED]'s initial bioassay results showed detectable tritium resulting in a dose of 4.8 mili rem. The first bioassay dated 17 Apr 97 showed 2.01 micro curies per liter and the second bioassay dated 21 Apr 97 showed 1.52 micro curies per liter. This drop indicates that [REDACTED] is

dropping tritium from his system as expected. The dose received by [REDACTED] is well below the 100 mil rem per yr. limit w/no expected health effects from his exposure (encl. 1). Follow up bioassay's will be performed to confirm continued elimination of tritium detection in [REDACTED]. Additionally, in accordance with regulation a permanent record of this bioassay will be filed with the individuals medical record and with the:

Chief, U.S. Army Ionizing Radiation Dosimetry Center,
U.S. Army Test Measurement and Diagnostic Equipment
Activity, ATTN: AMSMI-TMDE-SR-DD/Bldg 5417,
Redstone Arsenal, AL 35898-5400

No dose equivalent to persons in unrestricted areas.

e. Actions taken to recover the material:

The instructor stopped work, bagged the item and reported the breakage to the RPO. The breakage was contained in an isolated area. All fragments were recovered and bagged. The room was isolated (24 hours) until surveys could be analyzed and a decon completed, as necessary. Surveys of the area revealed that the floor, door knob to the room and other areas in the room had been contaminated (enc. 2).

f. Procedures or measures that have been or will be adopted to ensure against the reoccurrence of the event. Please identify any common threads if a similar occurrence has occurred at that location previously.

E-mail was staffed throughout the command stating that tritium would no longer be removed at the U.S. Army Ordnance Center and School. We have no common threads of similar occurrences as this was the first known incident reported at this or any other location at our site.

2. Our POC for this action at the Ordnance Center and School is ARPO Mr. Edward Bennett DSN: 298-3654/3418 or Comm. 410 278-3654/3418.

Frank E. Majewski

Mr. Frank E. Majewski
Safety and Environmental Office Manager



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
6158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

24 APR 1997

MCHB-DC-OMH (40-14c)

MEMORANDUM FOR Chief, U.S. Army Ionizing Radiation Dosimetry
Center, U.S. Army Test Measurement and
Diagnostic Equipment Activity, ATTN:
AMSMI-TMDE-SR-DD/Bldg 5417, Redstone Arsenal,
AL 35898-5400

SUBJECT: High Priority Interpretation of Tritium Bioassay
Results

1. See enclosure 1 for a list of references.
2. As requested, the bioassay results provided to us have been used to estimate radionuclide uptake and dose for the individual involved in the tritium incident 14 April 1997 at Aberdeen Proving Ground (USAIRDC Account Code: OK).
3. The estimated dose was calculated using the RBD computer package and is listed below.

NAME

SSN

DOSE in mrem

4.8

A committed dose report (enclosure 2) for the individual is provided IAW AR 40-14. For bioassay results above the detection limit, estimated doses were verified using hand calculations.

Readiness thru Health

(Enc 1) 143

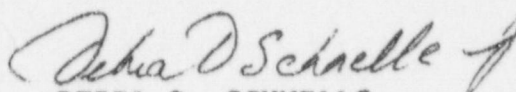
MCHB-DC-OMH (40-14c)

SUBJECT: High Priority Interpretation of Tritium Bioassay Results

4. The point of contact is Mr. Sam Dunston, DSN 584-3548.

FOR THE COMMANDER:

2 Encls
as



DEBRA D. SCHNELLE
MAJ, MS
Program Manager

CF:

CDR, ACALA, ATTN: AMSTA-AC-SF

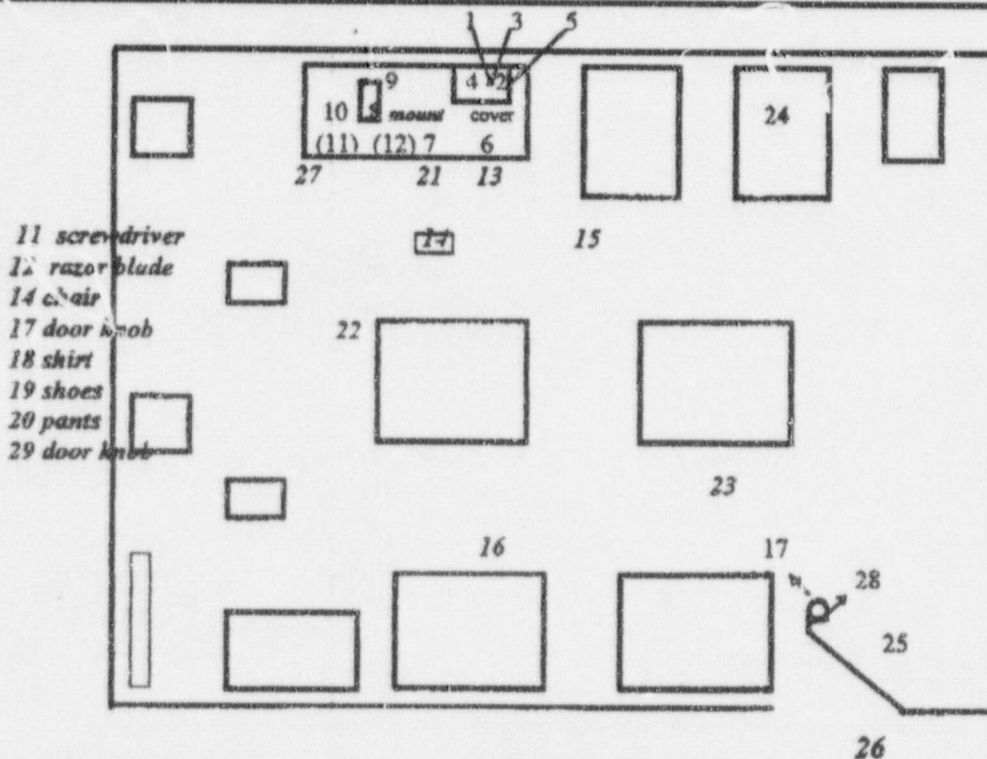
OIC, Kirk U.S. Army Health Clinic, ATTN: Occupational Health Clinic

REFERENCES

1. Radiological Bioassay and Dosimetry (RBD) Software Package, Version 4.1, 1 August 1992.
2. AR 40-14, Occupational Ionizing Radiation Dosimetry, 30 June 1995.
3. DA Pam 40-18, Personnel Dosimetry Guidance and Dos/s Recording Procedures for Personnel Occupationally Exposed to Ionizing Radiation, 30 June 1995.
4. ICRP Publication No. 54, "Individual Monitoring for Intakes of Radionuclides by Workers: Design and Interpretations," 1988.
5. Memorandum, U.S. Army Center for Health Promotion and Preventive Medicine, MCHB-DC-LRC, 17 April 1997, subject: Bioassay Results.
6. Memorandum, U.S. Army Center for Health Promotion and Preventive Medicine, MCHB-DC-LRC, 21 April 1997, subject: Bioassay Results.

RADIATION AREA SURVEY

BUILDING NO. 3144 RM 203 BKEND: _____ mR/hr DATE: 04/14/97
INSTRUMENT: [] LUDLUM [] EBERLINE: OTHER _____
MODEL: NON-USED SERIAL NO. _____ surveyor: CORDUZ
calibration due date: _____



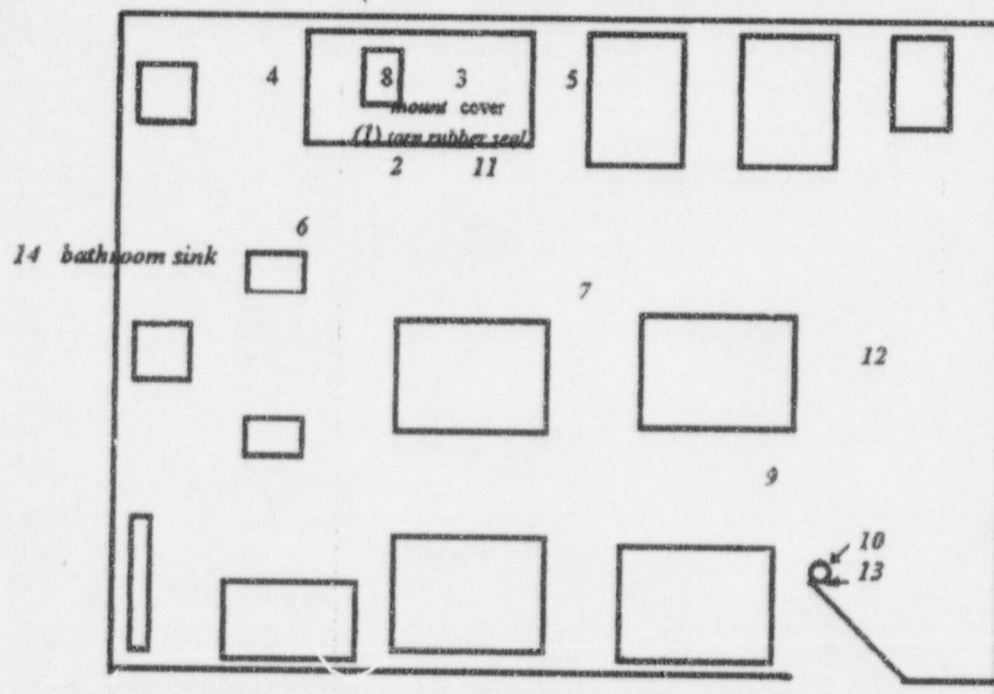
CHPDM SMEAR ANALYSIS DATED

NUMBER:	Disinfection / Minute 30	Disinfection / Minute 30	NUMBER:
1	29+7	72+9	15
2	28+7	62+9	16
3	54+8	530+20	17
4	14+6	90+9	18
5	25+7	1+7	19
6	18+7	28+8	20
7	180+10	2700+40	21
8	110+10	66+9	22
9	97+10	12+8	23
10	71+9	9+8	24
11	59+9	10+7	25
12	200+10	2+7	26
13	1600+30	260+10	27
14	41+8	270+10	28
REMARKS:	Initial Survey		

(Enc 12) 154

RADIATION AREA SURVEY

BUILDING NO. 3144 rtm 203 BKEND: _____ mR/Hr DATE: 04/15/97
 INSTRUMENT: [] LUDLUM, [] EBERLINE: OTHER _____
 MODEL: NON-USED SERIAL NO. _____ surveyor: CORPUZ
 calibration due date: non used

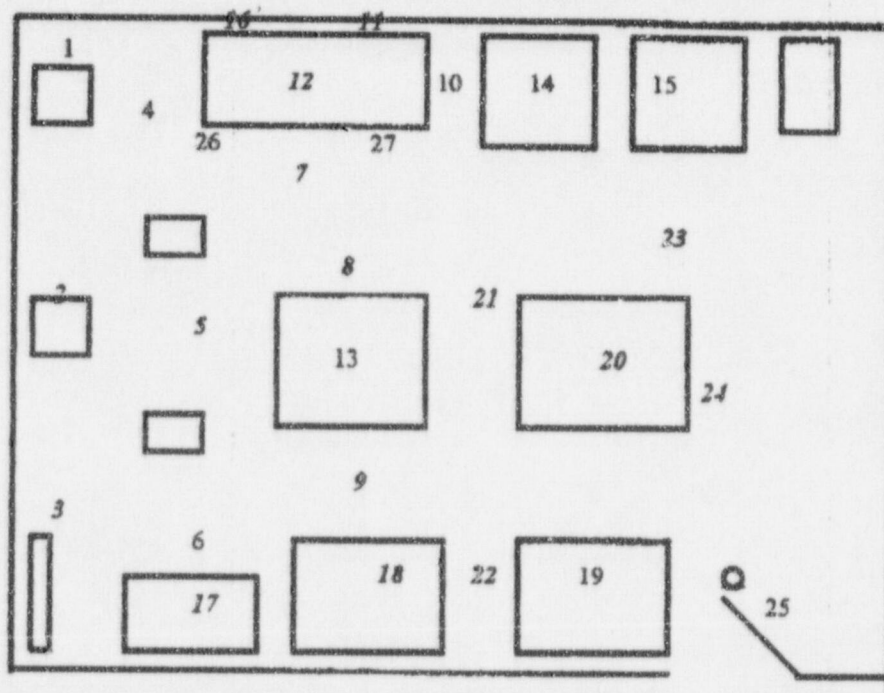


CHDDM SMEAR ANALYSIS DATED

NUMBER:	Disintegration: per Minute	NUMBER:	Disintegration per Minute
1	56±9	8	43±8
2	44±8	9	140±10
3	43±8	10	56±9
4	31±7	11	36±8
5	37±8	12	53±8
6	47±8	13	45±8
7	36±8	14	1±6
REMARKS: Follow up analysis			

RADIATION AREA SURVEY

BUILDING NO. 3144 **rm** 203 **BGND** : _____ **mr/hr** **DATE:** 04/16/97
INSTRUMENT: [] LUDLUM [] EBERLINE: **OTHER** _____
MODEL: NON-USED **SERIAL NO.** _____ **surveyor:** CORPUZ
calibration due date: non used

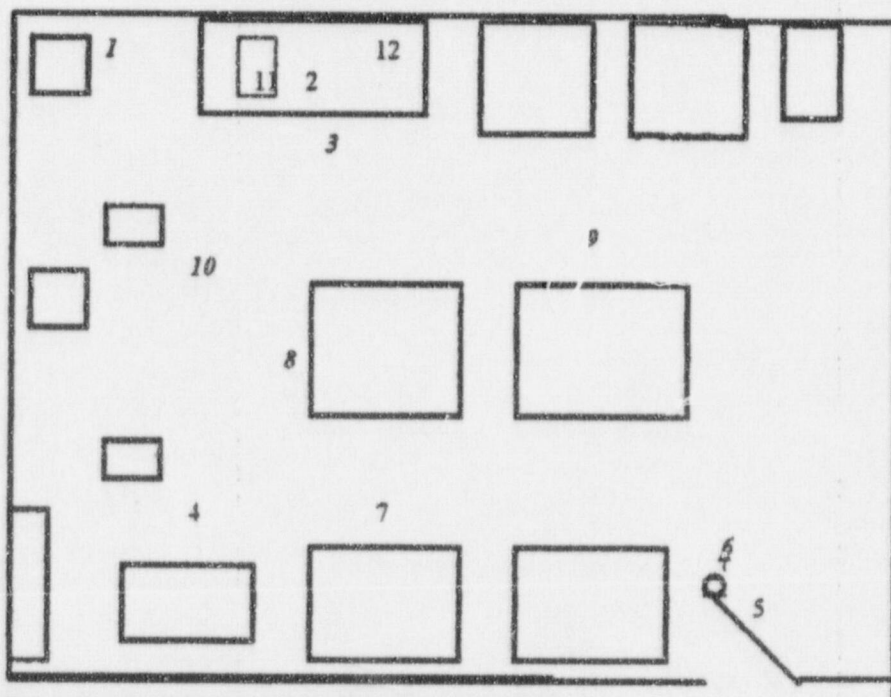


CHDDM SMEAR ANALYSIS DATED

NUMBER:	Disintegration / Minute 30"	Disintegration / Minute 30"	NUMBER
1	58+8	60+9	15
2	95+10	49+8	16
3	50+8	53+9	17
4	57+8	60+9	18
5	53+8	43+8	19
6	85+9	52+8	20
7	34+8	63+8	21
8	53+8	110+10	22
9	45+8	83+9	23
10	69+9	75+9	24
11	36+8	69+9	25
12	190+10	48+8	26
13	48+8	56+9	27
14	40+8		
REMARKS: Follow up survey			

RADIATION AREA SURVEY

BUILDING NO. 3144 rtm 203 BKEND : mR/hr DATE: 04/17/97
 INSTRUMENT: [] LUDLUM [] EBERLINE: OTHER
 MODEL: NON-USED SERIAL NO. surveyor: CORDUZ
 calibration due date: non used



CHLDM SMEAR ANALYSIS DATED

NUMBER: Disintegration / Minute 3H

1	6+7
2	10+7
3	7+7
4	10+7
5	7+7
6	4+7
7	4+7
8	6+7
9	4+7
10	3+6
11	5+7
12	1+7

REMARKS:

Closure of Survey & Release of Room
 Notified Sgt. Rivera & Mr. Majewski.

(Encl 2) 494