AMSEL-SF-RER (385-11h) 5 October 1995

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Control Committee Meeting held on 27 September 1995

1. In accordance with (IAW) AR 385-11, the fourth quarterly meeting of the Fort Monmouth Radiation Control Committee (FMRCC) convened at 1000 hours on 27 September 1995, in Building 2539.

2. Attendance.

a. Members Present:

Mr. Steven A. Horne, AMSEL-SF/CG Representative
Mr. Joseph M. Santarsiero, AMSEL-SF-RER/Chairman
Mr. Craig Goldberg, AMSEL-SF-RER/Recorder
Mr. Ira Kaplowitz, AMSEL-RD-NV-SE-RD
Dr. Robert Lux, AMSRL-EP-E
Mr. Michael Walterschied, AMSRL-OP-RF
Mr. Louis E. Branovich, AMSRL-PS-CA
SPC Michael Cuddyer, MCXS-PVM (Alternate)
Mr. James Shirghio, SELFM-PW-EV

b. Excused Absences:

Dr. Stanley Kronenberg, AMSEL-RD-NV-SE-RD
SGT Otha Johnson, MCXS-PVM
Ms. Joyce Caffyn, SELFM-SO

3. Old Business.

a. Review of FMRCC Meeting Minutes. The minutes of the 14 June 1995 FMRCC meeting, dated 29 June 1995, were reviewed and approved unanimously as written.

ACTION: None.

AMSEL-SF-RE (15-1a) 3 October 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 26 September 2002

1. In accordance with Army Regulation (AR) 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the fourth FY02 quarterly meeting of the Fort Monmouth Radiation Safety Committee (FMRSC) convened at 1005 on 26 September, at the CECOM Directorate for Safety (DS), Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, AMSEL-SF-RE/Chairman
Mrs. Alice Kearney, AMSEL-SF-RE/Recorder
1LT Aaron Miaullis, MCXS-PVM (Primary)
Mr. Ira Kaplowitz, AMSEL-RD-IW-EC (Primary)
Mr. Ted Do, AMSEL-RD-IW-EC (Alternate)
Mr. Fred Mangino, SELFM-SO (Acting Alternate)
Ms. Wanda Green, SELFM-PW-EV (Primary)
Mr. Charles Goebel, Chenega Technology Services Corporation (CTSC) (Primary)
Mr. Greg Kucharewski, CTSC (Alternate)

b. Excused Absence:

Mr. Stephen LaPoint, AMSEL-SF/Commanding General's Representative
Mr. Ted Paquet, SELFM-SO (Primary)
Mr. Dinkerrai Desai, SELFM-PW-EV (Alternate)
SPC Castillo, MCXS-PVM (Alternate)

3. Old Business.

a. Review/approval of the 27 June 2002 FMRSC minutes. The minutes of the 27 June 2002 FMRSC meeting, dated 9 July 2002, were reviewed and approved unanimously as written.

ACTION: None.

b. Fort Monmouth 2002 Annual Emergency Response Drill. The After Action Report for the 2002 drill, conducted after normal duty hours on 18 June 2002, was provided to the FMRSC members.

ACTION: None.

c. Possible Impact of the Fort Monmouth Realignment. The Chairman briefly addressed the upcoming realignment and indicated that DS will be providing the U.S. Army Garrison Plans, Training and Mobilization personnel a summary of radiological support currently provided to the Garrison. The potential impact of the realignment on this Committee, if any, is not known at this time.

ACTION: AMSEL-SF will keep the FMRSC apprised of the impact relating to the Fort Monmouth Radiation Safety Program.

d. Tritium Exit Signs on Fort Monmouth. The FMRSC Chairman requested the DPW representative provide an update on the status of an inventory of tritium exit signs on Fort Monmouth. This was requested previously, at the urge of AMC, in order to prevent tritium signs from being destroyed or disposed of improperly.

ACTION: DPW will determine the status of the inventory of tritium exit signs on Fort Monmouth and report back to the Committee.

e. Outdoor Freespace Radiation Tests at Fort Monmouth. As discussed previously, a policy is currently in use to require prior approval of the Commander, U.S. Army Garrison, for outdoor, freespace radiation of radiofrequency and other non-ionizing radiation producing devices anywhere at Fort Monmouth. However, there is no written policy to disseminate to local activities to raise their awareness of this requirement. The Garrison representative responsible for developing the policy indicated that the requirement has been discussed at resident staff meetings, and will be incorporated into a larger regulation being developed to address numerous activities that require prior approval.

ACTION: SELFM-SO will report on the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002. There was a false reading of 000.039 on the neutron badge of one of the NBC personnel in Bldg 2540A (the badge was not worn during the

quarter). The U.S. AIRDB has assigned an administrative dose for this person.

ACTION: None.

4. New Business. Radiation Protection Program:
a. Automated Dosimetry Reports, 7 April to 6 July 2002.

(1) **CECOM.**

(a)	Collective exposure	0.213 REM
(b)	Average rem/quarter.....	0.018 REM
(c)	Highest exposure.....	0.078 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(3) **EOD.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC). No results received as of this date.**

ACTION: PAHC to submit Dosimetry Reports to DS.

b. Health Physics Surveys. All required health physics surveys are completed through the month of September 2002 with no unusual findings.

ACTION: None.

c. Nuclear Regulatory Commission (NRC) License Actions. NRC License Number 29-01022-14 (CECOM Worldwide): We performed Independent Government Testing of the Lensatic Compass, NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 02-08-01, and 02-09-02. The following tests were performed as stipulated in MIL-PRF-

10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2) and Luminosity (paragraph 4.4.1.9.4.1 - photometric). Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

d. Department of the Army Radiation Authorization (ARA) Actions:

(1) ARA A29-10-01 (CECOM Research and Development): ARA 29-10-01, undated (Expiration Date: 30 June 2005), was issued for research and development at the Charles Wood Area of Fort Monmouth. ARA 29-10-01 updates previous submissions by reflecting current policy and requirements. The only significant changes from previous submissions are the changes in Radiation Safety Officer (RSO), Alternate RSOs, the addition of a 60 nanocurie Radium-226 EPA standard previously not included in the ARA, and deletion of the two each Americium-241 alpha references sources, New England Nuclear Nuclear Corporation Model NES-302S, 50 nanocuries each.

(2) ARA A29-0122 (CECOM Museum): ARA 29-0122, undated (Expiration Date: 30 June 2005), was issued for the use and storage of communications-electronics end article applications and components as museum artifacts at the CECOM Museum. The artifacts contain Radium-226 incorporated as radioluminous paint on meter movements, toggle switches and circuit breakers, and electron tubes incorporating various radioactive materials.

e. Radiological Work Permit (RWP). Fort Monmouth RWP #200 issued to PM, NBC Defense Systems was renewed on 1 August 2002. The RWP allows for the safe use of the Californium-252 (Cf-252) neutron source. The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in the field of neutron physics.

ACTION: None.

f. NonIonizing Radiation Actions.

(1) Several Space and Terrestrial Communications Directorate (S&TCD) equipment/systems were evaluated for Radiofrequency (RF) safety. They were intended for freespace radiation on Post. Coordination was also performed with the Garrison Chief of Staff for co-authorization for the tests/ demonstrations. Equipment/systems evaluated included the MOSAIC Advanced Technology Bed Demo involving 4 different RF emitters, MILSTAR On-the-Move, VIGILENT SHEPHERD, EHF SATCOM-ON-THE-MOVE and the Juice 02 exercise, which was a joint Software Engineering Center (SEC)/S&TCD program. Pre-test/exercise calculations were performed followed by real-time radiation safety measurements for most all to insure adequacy of personnel safety. Recommendations were provided regarding safe personnel-to-antenna separation distances, etc.

(2) The CECOM Microwave Safety Officer has been attending monthly Garrison Operations Support Meetings, where various CECOM organizations discuss their upcoming needs for freespace radiating of non-ionizing radiation producing equipments/systems on Fort Monmouth. POC for the meetings is Mr. John Stonska, x29416.

(3) A follow-up site assistance visit was conducted for SEC.

(4) A Site Assistance Visit was conducted for operations at Bldg. 2718 (numerous occupants) regarding their non-ionizing radiation safety program.

(5) A follow-up site assistance visit was conducted for the Military Affiliate Radio System building. The CECOM MSO will be providing a complete reference binder for their use.

(6) Several random outdoor installation drive-through's were conducted to look for non-registered RF emitters. None were found during this quarter.

(7) RF radiation safety support was provided to U.S. Army Reservists supporting Golden Kastle 02.

(8) RF radiation safety support was provided to PM WIN-T for a system planned for RF freespace testing on the Garrison (LHGXA antenna installed on the TROJAN SPIRIT II)

g. Aerial Detector Testing. Mr. Ira Kaplowitz, FMRSC member for AMSEL-RD-IW-EC, provided a brief demonstration of the unmanned aerial radiation detection system, which was tested at Naval Air Engineering Center, Lakehurst, in June 2002. The presentation was interesting and well received.

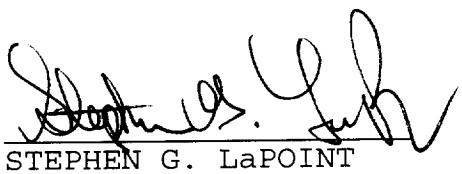
h. Transportation Parcel Inspection System. CTSC representatives requested AMSEL-SF-RE review literature regarding a Transportation Parcel Inspection System for any radiation safety concerns. This portable system, used for screening incoming packages, is being considering for purchase.

ACTION: CTSC shall provide AMSEL-SF-RE with information about the system in question. AMSEL-SF-RE will review the literature and provide recommendations as necessary.

5. The FMRSC meeting was adjourned at 1130 hours.

Prepared by: 
ALICE M. KEARNEY
Recorder, FMRSC

Reviewed by: 
CRAIG S. GOLDBERG
FMRSC Chairman/Fort Monmouth
Radiation Safety Officer

Approved by: 
STEPHEN G. LaPOINT
Commanding General's
Representative

AMSEL-SF-RE (15-1a)
SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 26 September 2002

DISTRIBUTION:
AMSEL-CS (COL Bridges)
SELFM-CO (LTC Reyes)
AMSEL-SF (LaPoint/Goldberg/Kearney)
AMSEL-SF-RE (Bianchi/Proctor/Perrella/Cummings/Ziola)
MCXS-PVM (1LT Miallus/SPC Castillo)
AMSEL-RD-IW-EB (Kaplowitz/Do) (Email)
SELFM-PW-EV (Green/Desai) (Email)
SELFM-SO (Paquet/Paustian) (Email)
Charles Goebel, CTSC, QC & Safety Mgr, Bldg 286, RM 017 (Email)
Greg Kucharewski, CTSC, Admin. Svcs. Supervisor, Bldg 886 (Email)

TRACKING LIST FOR FMRSC ACTIONS
(2 October 2002)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS
AMSEL-SF	DS will work with Plans, Training and Mobilization personnel to determine the impact of the realignment on DS support of the FM Radiation Safety Program.	27 Jun 02	**OPEN.**
SELFM-SO	SELFM-SO will report on the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.	27 Jun 02	**OPEN.**
AMSEL-SF-RE	Dosimetry Custodian will ensure incorrect exposure reading is corrected by AIRDB.	27 Jun 02	**CLOSED. AIRDB has assigned Admin Dose.**
AMSEL-SF-RE	RE will provide After Action Report of Jun 02 Emergency Drill to FMRSC members.	27 Jun 02	**CLOSED.**
SELFM-PW	DPW will determine the status of the inventory of tritium exit signs on Fort Monmouth.	27 Jun 02	**OPEN.**
MCXS-PVM	PVM will provide Automated Dosimetry Reports for 7 April to 6 July 2002 to AMSEL-SF.	26 Sep 02	**OPEN.**
CTSC	CTSC will provide information for review to AMSEL-SF-RE regarding a Transportation Parcel Inspection System.	26 Sep 02	**OPEN.**
AMSEL-SF-RE	AMSEL-SF-RE will evaluate the information for the above system and provide recommendations.	26 Sep 02	**OPEN.**

FORT MONMOUTH RAD[illegible] CONTROL COMMITTEE
CECOM DIRECTORATE [illegible] 2539
26 Se[illegible]

1. Old Business:

a. Review/approve the 27 [illegible] es.

b. Fort Monmouth 2002 Annual Emergency Response Drill.

c. Possible Impact of the Fort Monmouth Realignment.

d. Tritium Exit Signs on Fort Monmouth

e. Outdoor Freespace Radiation Tests at Fort Monmouth.

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002.

2. New Business:

a. Automated Dosimetry Reports, 7 April to 6 July 2002.

b. Health Physics Surveys.

c. Nuclear Regulatory Commission (NRC) License Actions.

d. Department of the Army Radiation Authorization (ARA) Actions.

e. Radioactive Work Permits (RWP).

f. Nonionizing Radiation Actions.

g. Lakehurst Aerial Detector Testing.

AMSEL-SF (15-1a) 26 September 2002

Fort Monmouth Radiation Safety Committee (FMRSC) Sign-in Sheet

1. The following personnel attended the **26 September 2002** FMRSC meeting as MEMBERS/ALTERNATES:

NAME	ORGANIZATION	SIGNATURE
Mr. Stephen LaPoint	AMSEL-SF (Commanding General's Representative)	Excused Absence
Mr. Craig Goldberg	AMSEL-SF-RE/Acting Chairman/ Fort Monmouth Radiation Safety Officer	
Ms. Alice Kearney	AMSEL-SF-RE/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-IW-EC	
Mr. Ted Do	AMSEL-RD-IW-EC (Alt)	
1LT Aaron Miaullis	MCXS-PVM	
SPC John Castillo	MCXS-PVM	excused (Alt.)
Ms. Wanda Green	SELFM-PW-EV (Primary)	
Mr. Dinkerrai Desai	SELFM-PW-EV (Alternate)	Excused Absence
For Mr. Ted Paquet	SELFM-SO (Primary)	Fred Manning
Ms. Gail Paustian	SELFM-SO (Alt)	Excused Absence
Mr. Charles Goebel	Chenega Technology Services Corporation (CTSC) (Primary)	
Mr. Greg Kucharewski	CTSC (Alternate)	

2. The following personnel attended the 4th QTR FY02 FMRSC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE

3. Additional Remarks:

AMSEL-SF-RE (11-9e) 25 June 2002

MEMORANDUM FOR RECORD

SUBJECT: 2002 Fort Monmouth (FM) Annual Installation Radiation Drill, After Action Report

1. Scenario: The 2002 FM annual drill simulated a worker becoming unconscious due to a fall while operating the J.L. Shepherd Model 81-22 Multisource Gamma Calibrator (MSGC) located in building 2540.

2. Conditions of the Drill:

a. The drill occurred after normal duty hours on 18 June 2002.

b. Firefighters had previous knowledge that building 2540 contained radioactive material as a result of previous training; previous emergency drills; and notification that an after hours use of the MSGC was planned for 18 June 2002, 1730 to 2230 hours.

3. Objectives:

a. To determine if firefighters properly use RADIAC instrumentation in emergency operations.

b. To determine if emergency response personnel should secure the accident scene/area.

c. To determine if firefighters can extricate a victim from a field of radiation in a timely manner.

d. To determine if firefighters turn off or secure the source of radiation.

e. To determine if firefighters communicate with their command post during the drill.

4. Participants:

a. CECOM Directorate for Safety (DS) Personnel:

Hugo Bianchi

b. Provost Marshall Office:

Patrolman Thomas Carlin

c. FM Fire and Emergency Services Division:

Deputy Chief Steve Roszkowski
Captain Thomas Caruso
Firefighter Scott Gould
Firefighter Eugene Stabulis
Firefighter Craig Flannigan
Firefighter Elizabeth Sweeney
Firefighter William Chyzik
Firefighter Edward Miller
Firefighter Cynthia Yost
Firefighter Jason Brown

d. PM NBC Defense Systems Personnel:

Fred Gentner

5. Drill Events:

a. The drill was initiated at 1809 hours by placing a call to "911." The caller stated that as he was leaving building 2539 for home, he noticed a car in the parking lot and went to building 2540 to investigate. He reported that he found an unconscious worker in building 2540 and that the radiation light above the person was "on." The dispatcher took the information and asked for the name of the caller.

b. Patrolman Carlin arrived on the scene first at 1812 hours, conferred with the caller and then secured the roadways leading to the area. Fort Monmouth firefighters from the Charles Wood Area station responded to the call by parking approximately 150 feet from the compound fence-line, in an upwind direction at 1818 hours.

c. Upon arriving at the scene, one firefighter immediately secured the RADIAC meter to record the background reading of the arrival area, i.e., the command post. When the reading was deemed "acceptable," (i.e., the firefighter verified that the background for the area was 0.016 mR/hr.) three firefighters began their approach to building 2540.

d. The three firefighters arrived at the small gate to the compound of building 2540 at 1824 hours, a reading of 0.022 mR/hr was reported to the command post. Then the three firefighters conducted a survey around the periphery of building 2540, the highest reading reported to the command post was 0.029 mR/hr.

e. RADIAC meter readings were taken at the doorway to building 2540 at 1828 hours, the reading was radioed to the command post as 0.021 mR/hr. One firefighter stayed at the entrance while the other two entered the building using their "blue access key."

f. As the firefighters traveled down the dimly lit hallway, they radioed readings back to the command post; the highest reading was 0.026 mR/hr. They continued surveying until they came upon the unconscious victim laying at the doorway to the exposure room. They found the unconscious victim at 1830 hours. After it was determined by the firefighter that the readings were safe (i.e., the measured highest reading of 0.062 mR/hr at the victim was well below the turnaround number of 25K mR/hr), the firefighters extricated the victim from the doorway to the exposure room at 1831 hours.

g. The source of radiation was shut down at 1833 hours.

h. At 1834 hours a search of the exposure room was made and no other victims were found.

i. The drill concluded at 1835 hours.

6. Critique of the Drill:

a. At the termination of the drill, all personnel involved participated in an informal critique of the events.

b. The outcome of the critique was as follows:

(1) Response time to the scene by firefighters and communications used at the accident scene was good.

(2) Although firefighters were confident with the level of training that they have received, and were aware of the "turnaround number" of 25K mR/hr, the "turnaround number" was not set to alarm on their RADIAC meter. The "turnaround number" is the reading that would require a firefighter to cease response and return to the command post and await further instruction from the command post and/or health physicists.

(3) The firefighters had some difficulty shutting the source down due to the fact that the emergency off button was not marked.

(4) Usage of the RADIAC meter, extricating the victim, and the survey of the periphery of the building went well.

7. Recommendations:

a. CECOM DS will ensure that the emergency off button on the control panel for the MSGC is clearly marked.

b. CECOM DS will provide informal training to firefighters on RADIAC usage (i.e., changing the alarm setting). In addition, informal periodic training will be provided to ensure that all firefighters remain proficient in RADIAC usage.

8. The recommendation in paragraph 7a has been implemented. The recommendation in paragraph 7b will be implemented during the first quarter of FY03.

9. Our POC is Hugo Bianchi, AMSEL-SF-RE, DSN 987-3112, ext. 6444 or COMM (732) 427-3112, ext. 6444, Facsimile DSN 992-6403 or COMM (732) 542-7161 or E-Mail: hugo.bianchi@mail1.monmouth.army.mil.

10. CECOM Bottom Line: THE WARFIGHTER.

Prepared by: Hugo Bianchi
HUGO BIANCHI
Health Physicist, Radiological Engineering Division

Approved by: C. Goldberg
CRAIG GOLDBERG
Chief, Radiological Engineering Division

CF: Chief, Fort Monmouth Department of Fire & Emergency Services

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
PM NBC Defense Systems Attn: AMSSB-PM-RNN-U Building 2540 Charles Wood Area, Fort Monmouth	Dr. George Brucker	
	3. PERMIT NUMBER 200	4. EXPIRATION DATE 1 August 2004

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Californium-252	CfPd Alloy/Solid	53.5 micrograms – Cf-252 3.35 mCi (n)

8. CONDITIONS:

a. The source listed in Item 5 is used for research and development of RADIAC meters.

b. The authorized place of use is in the exposure room, Building 2540, Charles Wood Area, Fort Monmouth.

c. The source will be utilized under the supervision of the individual listed in Item 2. Additional users shall be approved by the Fort Monmouth Radiation Safety Officer (RSO). The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation/use of the source listed in Item 5.

APPROVED:

DATE: 1 August 2002

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

RADIOLOGICAL PERMIT APPLICATION

Check One

Date 1 Aug 2002

___ Initial Permit Application
/ Application for Amendment to Permit No. _____
V Application for Renewal of Permit No. 200

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: ~~F2WD (AMSEL-RD-IW-CB)~~ PM, NBC Defense Systems

3. Radiation Area Supervisor: Name DR. GEORGE J. BRUCKER

4. Radioactive Material:

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Cf (252)	Cf Pd alloy	Solid Capsule 3.35mCi (n) (53.5 micrograms - Cf-252)

5. Other Sources of Ionizing Radiation Producing Devices:

N/A

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Dr. George J Brucker
Mr. Edward Bechtel
Mr. Fred Reutner
Mr. Mike Basso

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**

2540A, ROOM 007 (EXPOSURE ROOM)

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**

Attached SOP

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)** Source is contained in a 55 gal steel drum filled with WEP Shielding. The source is located in a cavity in a WEP plug. The drum is located in Room 007 which is used for high energy exposure experiments.

10. **Signature of Director of Responsible Individual:**

Name: EDWARD GROEBER **Signature**

CECOM Directorate for Safety USE ONLY:

Instrumentation: B/γ Survey meter & neutron survey meter provided by CECOM DS.

Dosimetry: B/γ/n dosimetry provided by CECOM DS

Reviewed by: Hugo Bianchi **Date:** 1 Aug 2002

Approved by: C J Goldby **Date:** 8/1/02

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 200	EXPIRATION DATE: 1 August 2004

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter (to include neutron dosimetry) and use calibrated RADIAC meters (gamma and neutron) to measure ambient radiation levels when using the source listed in Item 5.

e. No unauthorized personnel are allowed in the same room when the Cf-252 source is in use.

f. The Cf-252 source may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

g. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6441 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in Item 5, to include procuring additional sources.

h. The Cf-252 source shall be surveyed on a monthly basis by the CECOM Directorate for Safety.

i. The Cf-252 source shall be leak tested on a quarterly basis by the CECOM Directorate for Safety.

j. The Cf-252 source is to be used IAW SOP 10-21, approved 1 August 2002, as provided with the Radiological Permit Renewal Application, dated 1 August 2002.

k. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 1 August 2002, signed by Edward Groeber, Director, PM NBC Defense Systems.

Radiological Permit Application Supplement

Name: Brucker (Last) George (First) J. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth, N.J.	50 yrs.	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
all	3,500 Ci Co(60)	9401 EVANS	7 yrs.	research
X-Ray	300 KV	9401 EVANS	7 yrs.	research
neutron generator	2.8 mev (10^{10} n/s)	9401 EVANS	3 yrs.	research

Radiological Permit Application Supplement

Name: Bechtel (Last) Edward (First) W. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Ft. Monmouth NJ	5 yrs	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
All Isotopes	3500 Ci Co(60)	Vault 9401 Evans	5 yrs	Research
X-Ray Iso Volt 320	300 KV	9401 Evans	5 yrs	Research
Neutron Generator	2.5 MeV 10^{10} n/s D-D	9401 Evans	1 wk	Research

Radiological Permit Application Supplement

Name: GENTNER (Last) FRED (First) I. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Mammouth, N.J.	5 yrs.	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
all	3500 Ci Co(60)	9401 EVANS	5 yrs	research
X-ray	300 KV	9401 EVANS	5 yrs	research
neutron Generator	2.8 MEV (10^{10} n/s)	9401 EVANS	1 yr.	research

Radiological Permit Application Supplement

Name: Basso Michael J
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth	40 Years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	5000 Curies	Evans	20 yrs.	Research + Development
Cs-137	120 Curies	Evans	20 yrs.	"
X-ray	300 Kev	Evans	20 yrs	"
gamma Neutron	1 MeV Accelerator	Evans	20 yrs	"

SOP Number 10-21

STANDARD OPERATING PROCEDURE FOR THE USE OF THE CALIFORNIUM-252 NEUTRON SOURCE

1. PURPOSE: This document provides procedures for the use of the 53.5 micrograms of Californium 252 (Cf-252) neutron source, Fort Monmouth ID Cf-01.

2. APPLICABILITY: This SOP applies to all authorized users listed on the radiation permit application.

3. DISCUSSION: The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in neutron physics and dosimetry.

4. PROCEDURES:

a. *Pre-Operation:*

(1) Notify the radiation area supervisor concerning intended use of the Cf-252 source.

(2) Report to the radiation area supervisor for a safety briefing. Topics normally covered in the briefing will include:

(a) The proper use of the Cf-252 source,
(b) Safety procedures,
(c) RADIAC usage,
(d) Radiation survey techniques,
(e) Dosimetry usage,
(f) And exposure duration for intended use.

(3) Users shall wear a whole body TLD badge when using the Cf-252 source. See the radiation area supervisor for dosimetry assignment.

(4) Ensure you use 'ACTIVE' calibrated RADIAC survey meters (i.e, gamma and neutron survey meters) when using the Cf-252 source, perform all pre-operational checks prior to use.

b. *Operation:*

(1) Take out the shielding (WEP) plug by pulling it up by its handle and place it aside. The Cf-252 source is in a metal capsule lying horizontally in a styrofoam cradle at the bottom of the cavity.

(2) Place the item to be exposed on a suitable platform at the desired distance above the source. DO NOT MOVE THE SOURCE.

(3) Avoid line of sight exposure to any part of the body. Use tongs, forceps or a similar instrument to position the item to be exposed. The source is facing up, away from personnel and the entrance to the room.

(4) Conduct your exposure. Throughout the exposure, ensure radiation levels are safe by taking readings at various restricted and unrestricted areas. Report erroneous or abnormally high readings to the radiation area supervisor immediately.

c. *Post-operation:*

(1) After the exposure has been concluded, ensure the Cf-252 source is restored in its shielded storage configuration.

(2) Return the dosimetry and the RADIAC survey meters to their appropriate storage locations.

5. EMERGENCY ROCEDURES:

a. When using the Cf-252 source, monitor areas outside of the exposure room or any other authorized area (i.e., unrestricted areas) and report dose rate levels greater than twice background to the Radiation Area Supervisor.

b. EMERGENCY PHONE NUMBERS:

Radiation Area Supervisor - X75443
Fire Department - 911
Police - 911
Ambulance - 911
Directorate for Safety - X73112

Prepared by: George J Brucker Date: 1 Aug. 2002

GEORGE BRUCKER, Ph.D.
Research Physical Scientist
Radiation Area Supervisor

Reviewed by: Hugo Bianchi Date: 1 August 02

Hugo Bianchi
Health Physicist
Radiological Engineering Division

Approved by: C. Goldberg Date: 8/1/02

CRAIG GOLDBERG
Chief, Radiological
Engineering Division

email reg to Lt Mialius AK

FORT MONMOUTH RADIATION SAFETY COMMITTEE (RSC)
WORKING AGENDA
CECOM DIRECTORATE OF SAFETY RISK MANAGEMENT, BUILDING 2539
26 September 2002

RSC convened at 1005 hours.

1. Old Business:

a. Review/approve the 27 June 2002 RSC minutes. The minutes from the last meeting were distributed, dated 9 July 2002. **If there are no comments/problems regarding those minutes, move for approval of minutes as written.**

b. Fort Monmouth 2002 Annual Emergency Response Drill. **Copies of the drill are provided today.**

c. Possible Impact of the Fort Monmouth Realignment. **Wing it!** DS is providing summary of our FM support to Garrison Many aspects re: ionizing & nonionizing. ACTION: We'll report back to RSC & establish list of our support in order to provide services.

d. Tritium Exit Signs on Fort Monmouth. DS requested DPW to identify all tritium exit signs prior to new construction and/or demolition. As of this date DPW has not provided any ~~additional~~ information. Since there was no representation by DPW at the last meeting, the Committee approved a motion to request DPW to provide an immediate update on the status of all tritium exit signs on Fort Monmouth, as well as annual inventories of the signs. **DPW was to determine the status of tritium exit signs with regard to new construction and/or demolition on Fort Monmouth and provide that information to DS as soon as possible. Nothing has been received from DPW as of today.** no DPW

Wkly 745 - Lane Hall Resident Mgr DPTM [illegible] Mobilize)

e. Outdoor Freespace Radiation Tests at Fort Monmouth. A policy is currently in use to require prior approval of the Commander, U.S. Army Garrison, for outdoor, freespace radiation of radiofrequency, and other non-ionizing radiation producing devices anywhere at Fort Monmouth. Part of this request/approval process will include the coordination and/or the approval of the CECOM Microwave Safety Officer, Directorate for Safety. **There was no written policy as of the previous meeting (27 Jun). The action was assigned to the Fort Monmouth Garrison Safety Office to determine and report the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.**

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002. There was a false reading of 000.039 on the neutron badge of one of the NBC personnel in Bldg 2540A (the badge was not worn during the quarter). **The U.S. AIRDB has assigned an administrative dose for this person.**

ACTION: None.

2. New Business. Radiation Protection Program:

a. Automated Dosimetry Reports, 7 April to 6 July 2002.

(1) **CECOM.**

(a)	Collective exposure	0.213 REM
(b)	Average rem/quarter.....	0.018 REM
(c)	Highest exposure.....	0.078 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(3) **EOD.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC). No results received as of this date.**

ACTION: PAHC to submit Dosimetry Reports to DS.

b. Health Physics Surveys. The results for the Sep 02 are not available yet; if there are any unusual findings, they will be reported at the December 2002 meeting.

c. Nuclear Regulatory Commission (NRC) License Actions.

NRC License Number 29-01022-14 (CECOM Worldwide): We performed Independent Government Testing of the Lensatic Compass, NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 02-08-01, and 02-09-02. The following tests were performed as stipulated in MIL-PRF-10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2) and Luminosity (paragraph 4.4.1.9.4.1 - photometric).

Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

d. Department of the Army Radiation Authorization (ARA) Actions:

(1) ARA A29-10-01 (CECOM Research and Development): ARA 29-10-01 undated (Expiration Date: 30 June 2005) (complete revision) issued for research and development at the Charles Wood Area of Fort Monmouth. ARA 29-10-01 updates previous submissions by reflecting current policy and requirements. The only significant changes from previous submissions are the changes in Radiation Safety Officer (RSO), Alternate RSOs, the addition of a 60 nanocurie Radium-226 EPA standard previously not included in the ARA, and deletion of the two each Americium-241 alpha references sources, New England Nuclear Nuclear Corporation Model NES-302S, 50 nanocuries each.

(2) ARA A29-0122 (CECOM Museum): ARA 29-0122 undated (Expiration Date: 30 June 2005) (complete revision) issued for the use and storage of communications-electronics end article applications and components as museum artifacts at the CECOM Museum. The artifacts contain Radiium-226 incorporated as radioluminous paint on meter movements, toggle switches and circuit breakers, and electron tubes incorporating various radioactive materials. Ra^{226} commodities

ACTION: None

e. Radiological Work Permit (RWP). Fort Monmouth RWP #200, issued to PM, NBC Defense Systems was renewed on 1 August 2002. The RWP allows for the safe use of the Californium-252 (Cf-252) neutron source. The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in the field of neutron physics.

ACTION: Approve RWP.

f. NonIonizing Radiation Actions. (Ken's input:)

(1) Several S&TCD systems/equipments were evaluated for RF safety. They were intended for freespace radiation on Post. Coordination was also performed with the Garrison Chief of Staff for co-authorization for the tests/demonstrations. Equipment/systems evaluated included the MOSAIC Advanced Technology Bed Demo involving 4 different RF emitters, MILSTAR On-the-Move, VIGILANT SHEPHERD, EHF SATCOM-ON-THE-MOVE and the

Juice 02 exercise, which was a joint SEC/S&TCD program. Pre-test/exercise calculations were performed followed by real-time

radiation safety measurements for most all to insure adequacy of personnel safety. Recommendations were provided regarding safe personnel-to-antenna separation distances, etc.

(2) The CECOM MSO has been attending monthly Garrison Operations Support Meetings, where various CECOM organizations discuss their upcoming needs for freespace radiating on the Garrison of non-ionizing radiation producing equipments/systems. POC for the meetings is Mr. John Stonska, x29416.

(3) A follow-on Site Assistance Visit was conducted for Software Engineering Center (SEC).

(4) A Site Assistance Visit was conducted for operations at Bldg. 2718 (DRE, PEO EIS and PM DWTS) regarding their non-ionizing radiation safety program.

(5) A follow-on Site Assistance Visit was conducted for the Military Affiliate Radio System (MARS) building. The CECOM MSO will be providing a complete reference binder for their use.

(6) Several random outdoor installation drive-through's were conducted to look for non-registered RF emitters. None were found during this quarter.

(7) RF radiation safety support was provided to U.S. Army Reservists supporting Golden Kastle 02.

(8) RF radiation safety support was provided to PM WIN-T for a system planned for RF freespace testing on the Garrison (LHGXA antenna installed on the TROJAN SPIRIT II)

✓g. Lakehurst Aerial Detector Testing. Ira Kaplowitz will provide a brief overview of the testing which took place in June. to take radiation readings / location

Any new business?

RSC adjourned at 1130 **hours.**

next 12 Dec

New: TVS - DCI is requesting to purchase cargo detection for vehicles rad + exp 450kV unit

b. Development of Radiological Work Permit by Dr. Kronenberg for the Neutron Source.

(1) There is currently an outstanding action for Dr. Kronenberg to provide a completed Radiological Work Permit (RWP) to the CECOM Safety Office at least 90 days prior to delivery of the Cf-252 neutron source he wishes to acquire. Due to his absence at the meeting, a status report could not be obtained.

(2) A discussion was had between Dr. Kronenberg and Mr. Goldberg on 28 September 1995 regarding this issue. Dr. Kronenberg indicated that the acquisition of the neutron source was suspended indefinitely due to monetary constraints.

ACTION: AMSEL-RD-NV-SE-RD will alert the FMRCC when the procurement of the neutron source moves forward, and will submit a Radiological Work Permit to the CECOM Safety Office for its use.

c. Termination Physicals for ARL Personnel Removed from the Dosimetry Program. As of the previous meeting, there were four people that were removed from the dosimetry program who had not yet received termination physicals. They are: Karen Blisnuk, Raymond Filler, Sally Laffey, and Robert Murray.

ACTION: AMSRL-OP-RF will ensure that the termination physicals are completed for the above personnel. If assistance is required, please contact the CECOM Safety Office.

d. Storage of Dosimetry Badges. As requested at the previous meeting, each member has reminded all of their personnel that wear dosimetry badges to store them with the control badge in the locations (i.e. control boxes) approved by the RPO when they are not being used.

ACTION: None.

4. New Business.

a. Radiological Work Permit for Gas Chromatograph used by Serv-Air.

(1) Radiological Work Permit No. 129 was submitted from the Serv-Air Environmental Laboratory (Building 173) for a Gas Chromatograph (GC) with an Electron Capture Detector which contains 15 mCi of Ni-63. The Ni-63 is fully shielded within the detector housing and dosimetry will not be required. An SOP, dated 11 July 1995, has been developed for its use.

(2) The RWP submittal has been reviewed and approved by the CECOM Safety Office provided that:

- the CECOM Safety Office performs a survey of the GC prior to operation by the user. (This survey has already been completed).

- after the initial set-up, the radioactive source is not removed or reconfigured without informing and receiving permission of the Radiation Protection Officer (RPO).

- the source is leak tested every six months and results are documented and maintained for five years. (The CECOM Safety Office will support Serv-Air on this issue).

- no unauthorized personnel are allowed in the room when the GC is in operation.

- it is used in accordance with the SOP mentioned above.

(3) RWP No. 129 was approved unanimously by the FMRCC.

(4) Several members of the FMRCC expressed the opinion that the Serv-Air Environmental Laboratory will be acquiring additional equipment that utilizes radioactive material. It was recommended that a memorandum be sent to Mr. Jim Ott, The Director of Public Works at Fort Monmouth, to remind him that certain requirements must be met prior to the acquisition of any equipment that utilizes radioactive material.

ACTION: AMSEL-SF-RER will send a memorandum to Mr. Jim Ott reminding him to advise our office prior to obtaining additional radioactive material/ionizing radiation producing equipment.

b. Unannounced Nuclear Regulatory Commission Inspection.

(1) During the 9-10 August 1995 timeframe, the CECOM Safety Office received an unannounced inspection by a representative of the U.S. Nuclear Regulatory Commission (NRC). The inspection was to ensure that the radiation safety program that we have established in support of CECOM managed radioactive materials and items was in accordance with the conditions and requirements of the NRC issued licenses. Although many aspects of our programs were evaluated, the inspection focused primarily upon our inventory and accountability control, requests for requisitions, our calibrator leak test program, and our own audits of user/storage site locations.

(2) After our two-day evaluation, the NRC inspector also visited Letterkenny Army Depot (LEAD) to briefly inspect the radiation safety program we have established at LEAD in support of our NRC licenses. The results of the evaluation identified no areas of noncompliance and the NRC inspector described our program as being "definitely well above average", "extremely proactive", and "a model program that's working."

ACTION: NONE.

c. Organo-Metallic Chemical Vapor Deposition (OMCVD) System Being Used at ARL.

(1) Mr. Walterschied informed the FMRCC that one of ARL's Diamond Deposition Reactors has been converted to an OMCVD system. The system produces up to 1500 Watts of microwave energy which is delivered to a grounded metal reactor through a grounded metal waveguide.

(2) Some measurements of the microwave levels existing around the chamber have been made by the Army Research Laboratories. With the cabinet doors ajar (which is sometimes necessary during normal operation), levels on the order of 1 mW/cm^2 were detected. With the doors closed, no discernible levels of microwave radiation were found.

(3) Although this is well below the Permissible Exposure Limit (PEL) delineated in DODI 6055.11, dated 21 February 1995, Mr. Walterschied requested that the CECOM Safety Office perform an independent survey of the equipment to validate the above readings.

ACTION: AMSEL-SF-RER will coordinate with AMSRL-OP-RF for an agreeable time to conduct a survey of the OMCVD system.

d. Dosimetry for DENTAC Units. SPC Cuddyer voiced a concern regarding the removal of dosimetry badges for dental units assigned to Fort Hamilton, NY. The responsibility for ensuring that these dental units comply with all Federal and Army regulations rests with the Preventive Medicine Office at Fort Monmouth.

ACTION: AMSEL-SF-RER will provide the appropriate references regarding the requirement for dosimetry for dental units, and MCXS-PVM will ensure that proper action is taken.

5. Radiation Protection Program.

a. Personnel Dosimetry Program. Neither CECOM nor Patterson Army Health Clinic have received the dosimetry results from the wearing period of 2 April 1995 through 1 July 1995. The results will be reported at the next quarterly meeting. The delay was due to the relocation of the U.S. Army Ionizing Radiation Dosimetry Center from Lexington Bluegrass Army Depot to Redstone Arsenal.

b. Health Physics Surveys. All required health physics surveys have been performed IAW regulatory requirements through the month of September 1995. The surveys were without significant findings.

6. Nonionizing Radiation.

a. Inspection of Laser Safety Program by USACHPPM.

(1) An inspection of the CECOM and Fort Monmouth laser safety program was conducted by Mr. Terry Lyon of the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) on 18-19 July 1995. The purpose of the survey was to ensure that the installation is in full compliance with all pertinent regulations.

(2) During the survey, site visits were made to labs/shops maintained by the Army Research Laboratory, the Night Vision and Electronic Sensors Directorate, the Space and Terrestrial Communications Directorate, the Command and Control Systems Integration Directorate, and Serv-Air, Inc.

(3) Although no formal report has been received, comments were provided to Mr. Craig Goldberg during the visit and preliminary recommendations were conveyed during a formal outbriefing given to the Deputy Chief of the CECOM Safety Office.

(4) In summary, although our program is in compliance with applicable regulations, some recommendations were made which, in the opinion of Mr. Lyon, would further ensure safety to personnel. Appropriate corrective actions are bring coordinated with USACHPPM.

ACTION: AMSEL-SF-RER will convey necessary corrective actions to each affected directorate when an appropriate course of action is agreed upon.

b. Discussion of Termination Physicals for Laser Workers.

(1) One issue that was discussed during the above survey was the importance of insuring that termination medical examinations are performed on personnel who leave Government employ or no longer work with lasers.

(2) Since no system is currently in place to ensure that these exams are performed, the CECOM Safety Office recommended a memorandum be drafted to Dr. Istafanous requesting that an Optional Form 23 be placed in the medical folder of each individual who is identified as a laser worker to signify the need for a termination exam upon his/her leaving Government employ. This action was endorsed by the FMRCC.

ACTION: AMSEL-SF-RER will send a memo to the Occupational Health Physician requesting the above action be taken.

7. The FMRCC meeting was adjourned at 1030 hours, and the Chairman recommended the next meeting be scheduled for the first or second week of December.

Prepared by: _____
CRAIG GOLDBERG
Recorder, FMRCC

Reviewed by: _____
for JOSEPH M. SANTARSIERO
Chairman, FMRCC/RPO

Approved by: _____ 5Oct95
STEVEN A. HORNE
Commanding General's
Representative

AMSEL-SF-RER
SUBJECT: Minutes of the Fort Monmouth Radiation Control Committee Meeting held on 27 September 1995

DISTRIBUTION:
AMSEL-CG
AMSEL-SF (Horne/Santarsiero/Goldberg)
AMSEL-RD-NV-SE-RD (Kaplowitz)
AMSEL-RD-NV-SE-RD (Evans, 9401) (Kronenberg)
AMSRL-EP-E (Lux/Pfeffer)
AMSRL-OP-RF (Walterschied)
AMSRL-PS-CA (Branovich)
MCXS-PVM (SGT Johnson/SPC Cuddyer)
SELFM-PW-EV (Shirghio/Green)
SELFM-SO (Caffyn)

TRACKING LIST FOR FMRCC ACTIONS
(27 September 1995)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS
AMSEL-SF-RER	Notify FMRCC as to approval/ disapproval of amendment to license 29-01022-07 for removal of light from earthen mound.	12/07/94	Awaiting response from NRC
AMSEL-SF-RER	Send a memo to DPW (Ott) reminding them that procedures must be in place before procuring radioactive material/equipment.	9/27/95	Open
AMSEL-SF-RER	Coordinate with AMSRL-OP-RF to conduct a microwave survey of the OMCVD system.	9/27/95	Open
AMSEL-SF-RER	Provide reference to MCXS-PVM regarding dosimetry at dental units.	9/27/95	Open
AMSEL-SF-RER	Convey necessary corrective actions from Laser Survey by USACHPPM.	9/27/95	Open
AMSEL-SF-RER	Send memo to Dr. Istafanous regarding termination exams for laser workers.	9/27/95	Open
AMSRL-OP-RF	Ensure that 4 personnel within ARL receive termination physicals (Blisnuk, Filler, Laffey, and Murray).	6/14/95	Open
AMSEL-RD-NV-SE-RD	Provide AMSEL-SF-RER with information about the Californium source to be procured.	12/07/94	Open

FORT MONMOUTH RADIATION CONTROL COMMITTEE
4th QUARTER AGENDA
CECOM SAFETY OFFICE, BUILDING 2539
27 September 1995

1. Old Business:

   a. Review/approve the 14 June 1995 FMRCC minutes.

   b. Development of RWP by Dr. Kronenberg for the Neutron Source.

   c. Termination Physicals for ARL Personnel Removed from the Dosimetry Program.

   d. Storage of Dosimetry Badges.

2. New Business:

   a. Radiological Work Permit for Gas Chromatograph used by Serv-Air.

3. Radiation Protection Program:

   a. Personnel Dosimetry Report.

      (1) CECOM.

      (2) PACH.

   b. Health Physics Surveys.

4. Non-ionizing Radiation:

   a. Inspection of Laser Safety Program by USACHPPM.

   b. Discussion of Termination Examinations for Laser Workers.

AMSEL-SF (385-11h) 27 September 1995

Fort Monmouth Radiation Control Committee (FMRCC) Sign-in Sheet

1. The following personnel attended the 4th Quarter FMRCC meeting as MEMBER/ALTERNATE:

NAME	ORGANIZATION	SIGNATURE
Mr. Steven A. Horne	AMSEL-SF	
Mr. Joseph Santarsiero	AMSEL-SF-RER/Chairman	
Mr. Craig Goldberg	AMSEL-SF-RER/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-NV-SE-RD	
Dr. Stanley Kronenberg	AMSEL-RD-NV-SE-RD	
Dr. Robert Lux	AMSRL-EP-E	
Dr. Robert Pfeffer	AMSRL-EP-E (Alt)	
Mr. Louis E. Branovich	AMSRL-PS-CA	
Mr. Michael Walterschied	AMSRL-OP-RF	
SGT Otha Johnson	MCXS-PVM	
SPC Michael Cuddyer	MCXS-PVM (Alt)	
Mr. James Shirghio	SELFM-PW-EV	
Ms. Wanda Green	SELFM-PW-EV (Alt)	
Ms. Joyce Caffyn	SELFM-SO	

2. The following personnel attended the 4th Quarter FMRCC as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE

3. Additional Remarks:

S: 20 September 1995

AMSEL-SF-RER 15 August 1995

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Fort Monmouth Radiation Control Committee (FMRCC) Meeting, 27 September 1995

1. The next meeting of the FMRCC will be held on **Wednesday, 27 September 1995, at 1000 hours**, in the CECOM Safety Office Conference Room located at Building 2539.

2. Request that you complete any actions that were assigned to you in the minutes of the previous meeting held 14 June 1995. Those minutes have been forwarded previously to your office for review. **Actions are currently assigned to the following offices: AMSEL-SF-RER, AMSEL-RD-NV-SE-RD, and AMSRL-OP-RF.**

3. Respond to our POC no later than **20 September 1995** as to your availability regarding the subject meeting. Also, if you have an item for discussion, please provide the information at that time.

4. Our POC is Mr. Craig Goldberg, AMSEL-SF-RER, X73112 ext. 6405, Fax X26403, or E-mail (goldberc@doim6.monmouth.army.mil).

5. CECOM Bottom Line: THE SOLDIER.

William H. Hulse Jr

for STEVEN A. HORNE
Commanding General's
Representative

DISTRIBUTION:
AMSEL-SF (Horne/Santarsiero/Goldberg)
AMSEL-RD-NV-SE-RD (Kaplowitz)
AMSEL-RD-NV-SE-RD (Evans, 9401) (Kronenberg)
SELFM-PW-EV (Shirghio/Green)
SELFM-SO (Caffyn)
AMSRL-EP-E (Lux/Pfeffer)
AMSRL-OP-RF (Walterschied)
AMSRL-PS-CA (Branovich)
MCXS-PVM (SGT Johnson/SPC Cuddyer)

Office Record Copy

AMSEL-SF (385-11h) 15 January 1998

Fort Monmouth Radiation Control Committee (FMRCC) Sign-in Sheet

1. The following personnel attended the **15 January 1998** FMRCC meeting as MEMBER/ALTERNATE:

NAME	ORGANIZATION	SIGNATURE
Mr. ~~Richard Lovell~~ J. SANTARSIERO	AMSEL-SF-RE/~~Actg~~ Chairman	
Mr. S. HORNE	" " " /CG Rep	
Ms. Alice Frampton	AMSEL-SF-RE/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-NV-SE-RD	
Dr. Stanley Kronenberg	AMSEL-RD-NV-SE-RD	
2LT Colleen Meyer	MCXS-PVM	
SPC Rainer June	MCXS-PVM (Alt)	
Mr. Ralph DeMartino	SELFM-PW-EV	
Ms. Wanda Green	SELFM-PW-EV (Alt)	
Ms. Joyce Caffyn	SELFM-SO excused absence	
Mr. Ted Paquet	SELFM-SO (Alt) excused absence	

2. The following personnel attended the 1st Qtr FY98 FMRCC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE
Steven A Horne	AMSEL-SF	

3. Additional Remarks:

FORT MONMOUTH RADIATION CONTROL COMMITTEE
AGENDA
CECOM DIRECTORATE OF SAFETY RISK MANAGEMENT, BUILDING 2539
15 January 1998

1. Old Business:

a. Review/approve the 11 September 1997 FMRCC minutes.

b. Request for Assistance in Procuring Cesium 137 (^{137}Cs) Source.

c. Dosimetry Regarding ARL.

d. Status of Building 2540, CECOM Directorate of Safety Risk Management Calibration Laboratory.

e. Termination of Radiological Work Permit #119.

f. PAHC Request for Assistance with Disposal of Radioactive Equipment.

2. New Business:

Radiation Protection Program:

a. Personnel Dosimetry Report for Period 6 Jul to 4 Oct 97.

(1) CECOM

(2) EOD

(3) PAHC

b. Health Physics Surveys.

c. RF, Laser, and High Intensity Optical Source Site Surveys.

d. RF, Laser, and High Intensity Optical Source Site Personnel Training.

e. Request for Approval of New Radiation Work Permit for Amersham Wide Area Reference Alpha Source, containing 1.68 uCi Pu-238.

AMSEL-SF-RE (385-11a) 17 October 1997

MEMORANDUM FOR United States Army Medical Department Activity, Building 1075, ATTN: Property Book Officer (SSG Hensley), Fort Monmouth, NJ 07703

SUBJECT: Survey of X-Ray Machines at Building 1075

1. Reference FONECON between Judy Crystal, United States Army Medical Department Activity (USAMEDDAC), Patterson Army Health Clinic (PAHC), and Hugo Bianchi, our directorate, 8 October 1997, SAB.

2. As discussed during referenced FONECON, we performed an evaluation of excess x-ray machines at PAHC, building 1075, on 9 October 1997.

3. The items listed in this paragraph have been disassembled, stored on wooden pallets and are ready for turn-in as excess equipment. In their present condition, these items are neither capable of producing x-rays nor do they contain radioactive material.

a. Portable Dental x-ray machine, Phillips, MF6, BAR CODE: 7668, Serial Number (SN): 9025276.

b. Dental x-ray machine, G.E., BAR CODES: A0660 and B9563, SN: 301311DNZ.

c. Control Panel, BAR CODE: G2422.

4. During the evaluation, it was learned that the RADIAC meters listed below were also on-hand waiting for turn-in as excess equipment. The CECOM representative took possession of the radioactive test samples associated with items 4a and 4b below. The licensed radioactive material will be stored as excess radioactive material in our storage facility. In addition, the radioactive storage labels affixed to the storage cases for these items were defaced.

a. AN/PDR-27P, BAR CODE: C3036, SN: A1335 with radioactive test sample (MX-7338), SN: K7981.

b. AN/PDR-27R, SN: A585, with 2 radioactive test samples (MX-7338), SNs: K376 and K14080.

c. Eberline Model PRM-6, SN: 500, with no associated radioactive test sample.

d. Technical Associates Model PUG 1AB, SN: 2971, with no associated radioactive test sample.

e. Technical Associates Model CP44, SN: 0646, with no associated radioactive test sample.

f. Eberline Model 520, SN: 640, with no associated radioactive test sample.

g. Victoreen Model 498, no SN available, with no associated radioactive test sample.

h. Ludlum Model 3 with 44-9 detector, SN: 14251, with no associated radioactive test sample.

5. We certify that the items listed in paragraphs 3 and 4 contain no radioactive materials and/or are not capable of producing radiation.

6. Our POC is Mr. Hugo Bianchi, Voice on DSN 987-3112 ext. 6444 or (732) 427-3112 ext. 6444; Facsimile on (732) 542-7161; or E-mail address at: bianchi@doim6.monmouth.army.mil.

7. CECOM Bottom Line: THE SOLDIER.

Joseph M. Santarsiero

JOSEPH M. SANTARSIERO
Acting Director, Safety
Risk Management

CF: Fort Monmouth Ionizing Radiation Control Committee, ATTN: AMSEL-SF-RE (A. Frampton), Fort Monmouth, NJ 07703-5024

RADIOACTIVE MATERIAL MOVEMENT FORM

CHECK ONE: ____ SHIPMENT X RECEIPT

MOVEMENT NUMBER: 97-039

From: Patterson Health Clinic
B. 1075, P.B. Officer
Ft. Monmouth, NJ

To: CECOM OSRM
B. 2539

COMMODITY DESCRIPTION

Number of Containers	QTY	NSN	Nomenclature	Isotope	Activity	Total Activity
1	3	6665-00-832-6159	MX-7338	Kr 85	5 mCi	15 mCi

MODE OF SHIPMENT

- ____ Air
- ____ Truck
- ____ Rail
- ____ Water
- ____ Parcel Post
- ✓ Other (POV)

PHYSICAL CHARACTERISTICS

- ____ Special Form
- ✓ Normal Form

- ____ Solid
- ____ Liquid
- ✓ Gas

RADIATION SURVEY RESULTS

Instrument Used: AN/PDR-77
Calibration Due: 18APR98 SN: 1128A
Transport Index: N/A
Surface: 0.25 mrad/hr ____ µGy/hr
One Meter: N/A mrad/hr ____ µGy/hr
Background: 0.02 mrad/hr ____ µGy/hr

WIPE TEST RESULTS N/A

Wipe Taken by: ____ Date: ____

Sample Counted by: ____ Date: ____

Removable: ____ dpm/100 cm²

LLD: ____ µCi ____ Bq

BASIC DESCRIPTION (See Below)

____ Radioactive Material, Excepted Package - Instruments & Articles, 7, UN 2910

____ Radioactive Material, Excepted Package - Limited Quantity of Material, 7, UN2910

____ Radioactive Material, Excepted Package - Articles Manufactured from Natural or Depleted Uranium or Thorium, 7, UN 2910

____ Radioactive Material, Special Form, n.o.s., 7, UN 2974

____ Radioactive Material, Low Specific Activity LSA, n.o.s., 7, UN 2912

____ Radioactive Material, Fissile, n.o.s., 7, UN 2918

____ Radioactive Material, Excepted Package - Empty Packaging, 7, UN 2910

Labeling
- ____ White I
- ____ Yellow II
- ____ Yellow III
- X Exempt

Marking
- ____ Radioactive
- ____ Radioactive LSA
- ____ Waste Class A, B, C
- ____ Other (____)
- X Exempt

Shipping Papers
- ____ Included & Complete
- X Exempt

24 HOUR EMERGENCY RESPONSE PHONE NUMBER ( )

COMMENTS: Items SN: K7981, K376 and K14080 p/u for Health Clinic PBO while perf. inventory of excess X-RAY machines

Printed Name of RPO or Designee:	Signature:	Date:
Hugo Bianchi	Hugo Bianchi	90ct97

6/96

S: 15 January 1998

AMSEL-SF-RE (385-11b) 16 December 1997

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Laser Radiation and High Intensity Optical Source(HIOS)/ Radiofrequency Safety Training

1. Reference:

a. CECOM-R 385-10, Lasers and Laser Support Equipment, 12 December 1988.

b. CECOM-R 385-17, Radiofrequency and Microwave Producing Equipment, 7 December 1988.

2. A required safety briefing for all soldiers and government employees who work with potentially hazardous RF/Microwave radiation or laser sources is scheduled for the following dates:

DATE	TOPIC	TIME	LOCATION
27 Jan 98	RF LASER	0845-0945 1015-1115	Myer Ctr Mini-Auditorium (1B204)
18 Feb 98	RF LASER	0845-0945 1015-1115	Myer Ctr Mini-Auditorium (1B204)
05 Mar 98	RF LASER	0845-0945 1015-1115	Myer Ctr Mini-Auditorium (1B204)

3. This training will deal with the hazards of laser/RF equipment and the requirements of the Fort Monmouth Nonionizing Radiation Protection Program.

4. Examples of personnel who are required to attend this training include:

a. Those who are currently enrolled in the laser/HIOS medical surveillance program; those who use laser devices; those who repair these systems; and those who conduct research and development testing of such equipment. The personnel at enclosure 1 are known to perform such work.

b. Those who are current users of RF/Microwave sources; those who repair RF/Microwave systems; and those who conduct

research and development testing of such equipment. The personnel at enclosure 2 are known to perform such work.

c. If corrections are needed (i.e., personnel are no longer at that directorate/division/branch, or new personnel are performing this type of work), notify the POC's for this Directorate identified in paragraph 7.

5. Supervisors should ensure that all applicable personnel attend this training. Provide a listing of the personnel from your organization, with the date which they plan to attend, to this Directorate no later than 15 January 1998. This list can be faxed to X26403, Attention: Mr. Karl Hezel, or sent via post mail.

6. Personnel that have had similar training during the past year may waive this requirement provided they forward a copy of the course listing and proof of attendance to this Directorate for our records.

7. Our Poc's are Mr. Karl Hezel and Mr. Craig Goldberg, AMSEL-SF-RE, X29723 or MILNET: amsel-sf@cecom3.monmouth.army.mil.

8. CECOM Bottom Line: THE SOLDIER.

Encls

JOSEPH M. SANTARSIERO
Acting Director, Safety
Risk Management

CF:
AMSEL-RD-C2-CS
AMSEL-RD-C2-ES-AB
AMSEL-IW-EF
AMSEL-IW-TI
AMSEL-RD-NV-S/CCD-GEC
AMSEL-RD-NV-S/CCD-SIL
AMSEL-RD-NV-ST-CST
AMSEL-RD-ST-HS
AMSEL-RD-ST-SE-TF
AMSEL-RD-ST-SY
AMSEL-RD-ST-TE
AMSEL-RD-ST-WL
AMSEL-SE-WS-AI-CM

MEMORANDUM FOR SEE DISTRIBUTION
SUBJECT: Laser Radiation and High Intensity Optical Source(HIOS)/ Radiofrequency Safety Training

MCXS-PT
MCXS-PVM
MCXS-R
MCXS-RR-LOG
SELFM-PTM
TVS (SAFETY- Charlie Global)

TRAINED	LNAME	FNAME	CATEGORY	OFCSYM	PHONE	JOB
12/03/96	DeVlbiss	Wayne	LW	AMSEL-RD-NV-S/CCD-GEC	X43794	Electronics Engineer
12/03/96	Oshel	Harry	LW	AMSEL-RD-NV-S/CCD-SIL	X44015	Electronics Technician
12/03/96	Chan	Allan	LW	AMSEL-RD-NV-ST-CST	X42676	Electronics Engineer
	Cook	R	CONTRACTOR	AMSEL-RD-NV-ST-CST		Engineer
	Faughnan	James	LW	AMSEL-RD-NV-ST-CST	X25414	Junior Engineer
12/03/96	Hardy	Joan	IW	AMSEL-RD-NV-ST-CST		
	Keane	C	LW	AMSEL-RD-NV-ST-CST		Engineer
	Kennedy	P	CONTRACTOR	AMSEL-RD-NV-ST-CST		Engineer
	Lee	Edward	LW	AMSEL-RD-NV-ST-CST	X43120	Electronics Engineer
	Nowakowski	J	CONTRACTOR	AMSEL-RD-NV-ST-CST		Engineer
	Pollack	D	CONTRACTOR	AMSEL-RD-NV-ST-CST		Engineer
12/03/96	Seward	James	IW	AMSEL-RD-NV-ST-CST		
	Winter	John	LW	AMSEL-RD-NV-ST-CST	X42296	Electronics Engineer
12/05/96	Coryell	Louis	IW	AMSEL-RD-ST-SY	X73640	EE
12/05/96	Wright	James	IW	AMSEL-RD-ST-SY	X72819	EE
	Lee	Francis	LW	AMSEL-RD-ST-SY-TE	X20022	Electronics Engineer
12/05/96	Meshal	Azza	LW	AMSEL-RD-ST-SY-TE	X74034	Electronics Engineer
12/03/96	Vallestero	Neil	LW	AMSEL-RD-ST-WL	X72804	Electronics Engineer
	McMURRAY	J	CONTRACTOR	AMSEL-SE-WS-AI-CM		

ENCL 1

TRAINED	LNAME	FNAME	OFCSYM	PHONE	TYPEWORK
	Ahrens	Steven	AMSEL-RD-C2-CS	X43894	
	Andujar	Joe	AMSEL-RD-C2-CS	X20095	
12/05/96	Brumes	John	AMSEL-RD-C2-CS	X73622	
	Goldin	Marv	AMSEL-RD-C2-CS	X44896	
12/03/96	Goleski	Gary	AMSEL-RD-C2-CS		
	McClintock	Dan	AMSEL-RD-C2-CS	X42598	
	Oleinik	Leonid	AMSEL-RD-C2-CS	X44219	
	Paijean	Dan	AMSEL-RD-C2-CS	X42976	
	Pastrana	Juan	AMSEL-RD-C2-CS	X20098	
	Soos	John	AMSEL-RD-C2-CS	X43723	
	Weinfeldt	John	AMSEL-RD-C2-CS	X42849	
	Blondina	John	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Borsellino	John	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Budinich	Marco	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Canterman	Charles	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Cathcart	Kevin	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Marks	William	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	McPartland	Michael	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Moss	Edward	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Reinhart	Karl	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Rembach	Kevin	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Savino	Anthony	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Shimak	Joseph	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Stowe	Willis	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Sullivan	Michael	AMSEL-RD-C2-ES-AB	DSN 624-2130	
	Gibson	Tom	AMSEL-RD-IW-EF	x75535	
	Lasewicz	John	AMSEL-RD-IW-EF	X75316	
01/08/97	Nalbandian	Vahakn	AMSEL-RD-IW-EF	X45328	
01/08/97	Robbiani	Ray	AMSEL-RD-IW-EF		
01/08/97	Rogers	Frank	AMSEL-RD-IW-EF		
	Smith	Larry	AMSEL-RD-IW-EF	X75248	
	Tallman, J	Robert	AMSEL-RD-IW-EF	X45532	
01/08/97	Borowick	John	AMSEL-RD-IW-TI		
01/08/97	Bui	Ken	AMSEL-RD-IW-TI		
	Cadotte	Roland	AMSEL-RD-IW-TI		
	Caprario	Mike	AMSEL-RD-IW-TI		
01/08/97	Chaung	Richard	AMSEL-RD-IW-TI		
12/05/96	Ciccorella	Frank	AMSEL-RD-IW-TI	X75742	
	Fredericks	Gerard	AMSEL-RD-IW-TI	X45595	
	Kosiski	John	AMSEL-RD-IW-TI		
	Marutlli	Don	AMSEL-RD-IW-TI		
	McCormick	Gordon	AMSEL-RD-IW-TI	X45240	
01/08/97	Nietzold	Brian	AMSEL-RD-IW-TI		
	Potenziani	Ernie	AMSEL-RD-IW-TI		
	Scott	Lawrence	AMSEL-RD-IW-TI	X45958	
	Shaba	Shapur	AMSEL-RD-IW-TI		
	Stanko	George	AMSEL-RD-IW-TI		
	Wilbur	Bill	AMSEL-RD-IW-TI		
01/08/97	Yang	Qiuting	AMSEL-RD-IW-TI		
	Aletta	Joseph	AMSEL-RD-NV-S/CCD	X42348	
	Bartling	Dorothy	AMSEL-RD-NV-S/CCD	X42705	
	Brown	Clinton	AMSEL-RD-NV-S/CCD	X43222	
	Carbonairo	Buddy	AMSEL-RD-NV-S/CCD		

ENCL 2

TRAINED	LNAME	FNAME	OFCSYM	PHONE	TYPEWORK
	Comer	Steve	AMSEL-RD-NV-S/CCD	X26565	
	DeCosimo	Lawrence	AMSEL-RD-NV-S/CCD	X44261	
	Emigh	Craig	AMSEL-RD-NV-S/CCD	X42705	
	Faughnan	James	AMSEL-RD-NV-S/CCD	542-5414	Contractor
12/03/96	Hardy	Joan	AMSEL-RD-NV-S/CCD	X43627	
	Irwin	Raymond	AMSEL-RD-NV-S/CCD	X44589	
	Kaunzinger	Peter	AMSEL-RD-NV-S/CCD	X26564	
	Kimble	Bill	AMSEL-RD-NV-S/CCD	X42715	
	Lisuzzo	Tony	AMSEL-RD-NV-S/CCD	X43107	
12/03/96	Moubarak	Mehdi	AMSEL-RD-NV-S/CCD		
12/03/96	Nowicki	Richard	AMSEL-RD-NV-S/CCD	X43536	
	O'Connell	Joseph	AMSEL-RD-NV-S/CCD	X44870	
12/03/96	O'Neill	Owen	AMSEL-RD-NV-S/CCD		
	Oshel	Harry	AMSEL-RD-NV-S/CCD	X44015	
12/06/96	Parent	Kesny	AMSEL-RD-NV-S/CCD	X42715	
12/03/96	Reilly	John	AMSEL-RD-NV-S/CCD	X42917	
	Rodriguez	Quirmo	AMSEL-RD-NV-S/CCD	X43796	
	Tully	Robert	AMSEL-RD-NV-S/CCD	X42311	
	Weber	Mark	AMSEL-RD-NV-S/CCD	X42715	
	Williams	Bruce	AMSEL-RD-NV-S/CCD	X40435	Contractor
	Zanzalari	Robert	AMSEL-RD-NV-S/CCD	X44676	
	Gillette	Almon	AMSEL-RD-ST-HS	X44442	
12/12/96	Glass	Jackie	AMSEL-RD-ST-HS	X20769	Contractor
	Hegarty	Ken	AMSEL-RD-ST-HS		Contractor
	Moore	Archie	AMSEL-RD-ST-HS	X42952	Contractor
	Romano	Sal	AMSEL-RD-ST-HS	X44676	
	Acevedo	Nadja	AMSEL-RD-ST-SE-TF	X29906 X5717	
	Blum	Ken	AMSEL-RD-ST-SE-TF	X29210 X5618	
	Bukarica	Michael	AMSEL-RD-ST-SE-TF	X29210 x5612	
12/03/96	Cacciapall	Mark	AMSEL-RD-ST-SE-TF	X29906 X5723	
	Cartagena	SFC Dwayn	AMSEL-RD-ST-SE-TF	X29210 X5606	
	Dunnegan	SFC Rick	AMSEL-RD-ST-SE-TF	X29210 X5604	
	Eickmeyer	Otto	AMSEL-RD-ST-SE-TF	X29210 X5603	
	Emert	SFC Chris	AMSEL-RD-ST-SE-TF		
	Farnelli	Martin	AMSEL-RD-ST-SE-TF	X29906 x5726	
	Fath	Marcus	AMSEL-RD-ST-SE-TF	X29210 x5631	Contractor
	Hallock	SSG	AMSEL-RD-ST-SE-TF	X23480,20905	
	Jakubowski	Steve	AMSEL-RD-ST-SE-TF	X29210 X5619	
	Kroll	Mike	AMSEL-RD-ST-SE-TF	X29210 X5610	
	Langan	Russ	AMSEL-RD-ST-SE-TF	X29782 X5226	
	Lee	Francis	AMSEL-RD-ST-SE-TF	X29022	
	Mac Carty	Lynn	AMSEL-RD-ST-SE-TF	X29210 X5605	
	Matia-Garc	SGT Henry	AMSEL-RD-ST-SE-TF		
	McKenzie	SGT John	AMSEL-RD-ST-SE-TF	X29906 X5721	
	McKenzie	John	AMSEL-RD-ST-SE-TF	X29906 x5721	
	Miller	David	AMSEL-RD-ST-SE-TF	X29906 x5725	Contractor
	Peterson	Ken	AMSEL-RD-ST-SE-TF	X29210 X5611	
12/06/96	Pham	Phat	AMSEL-RD-ST-SE-TF	X29906 X5720	
12/06/96	Pinney	Warren	AMSEL-RD-ST-SE-TF	X29906 X5719	
	Pratt	Roy	AMSEL-RD-ST-SE-TF	X29210 x5625	Contractor
	Presho	Bill	AMSEL-RD-ST-SE-TF	X29210 X5622	
	Pully	Page	AMSEL-RD-ST-SE-TF	X29210 X5620	
	Scisco	David	AMSEL-RD-ST-SE-TF	X29906 x5724	Contractor

ENCL 2
2/1

TRAINED	LNAME	FNAME	OFCSYM	PHONE	TYPEWORK
	Sorrels	Paul	AMSEL-RD-ST-SE-TF	X29210 x5627	Contractor
12/03/96	Varnamkhas	Siamak	AMSEL-RD-ST-SE-TF	X29906 X5722	
	Chu	Bob	AMSEL-RD-ST-SY	X74683	
12/05/96	Coryell	Louis	AMSEL-RD-ST-SY	X73640	
	Dillie	Ledru	AMSEL-RD-ST-SY	X72573	
	Dubiel	Alan	AMSEL-RD-ST-SY	X72928	
	Fong	Stanley	AMSEL-RD-ST-SY	X74845	
	Ha	Kevin	AMSEL-RD-ST-SY	X73056	
	Hegarty	Bonnie	AMSEL-RD-ST-SY	X73974	
	Hersh	Charles	AMSEL-RD-ST-SY	X73021	
	Jeski	John	AMSEL-RD-ST-SY	X20444	
	Leisher	Timothy	AMSEL-RD-ST-SY	X73200	
	Loso	Francis	AMSEL-RD-ST-SY	X44025	
	Lucas	Stephen	AMSEL-RD-ST-SY	X72625	
12/06/96	Meshal	Azza	AMSEL-RD-ST-SY	X74034	
	Michael	Gerald	AMSEL-RD-ST-SY	X72737	
	Moyse	James	AMSEL-RD-ST-SY	X72722	
	Ortiz	Martin	AMSEL-RD-ST-SY	X72710	
	Staba	Jay	AMSEL-RD-ST-SY		
12/06/96	Vallestero	Neil	AMSEL-RD-ST-SY	X22804	
	Wien	Richard	AMSEL-RD-ST-SY	X73311	
12/06/96	Wright	James	AMSEL-RD-ST-SY	X72819	
	Yee	Albert	AMSEL-RD-ST-SY	X42846	
	Bodnar	Andrew	AMSEL-RD-ST-TE		Contractor
	Rodriquez	Lou	AMSEL-RD-ST-TE		Contractor
	Ulrich	Robert	AMSEL-RD-ST-TE		Contractor
	Carton	Denise	AMSEL-RD-ST-WL	X42890	
	Chiu	Herman	AMSEL-RD-ST-WL	X20447	
	Eng	Ray	AMSEL-RD-ST-WL	X44198	
	Gerner	Adam	AMSEL-RD-ST-WL	X20465	
	Guertin	Wilbur	AMSEL-RD-ST-WL	X20464	
	Guthrie	Bill	AMSEL-RD-ST-WL	X20620	
	Ku	D.	AMSEL-RD-ST-WL	X20443	
	Lee	Joseph	AMSEL-RD-ST-WL	X20448	
	Loffer	Ken	AMSEL-RD-ST-WL	X20454	
12/05/96	Lorenzo	Gregory	AMSEL-RD-ST-WL	X20452	
	Lu	Ted	AMSEL-RD-ST-WL	X20467	
	Mak	Bing	AMSEL-RD-ST-WL	X20371	
	Orr	Michael	AMSEL-RD-ST-WL	X20450	
	Ruppe	Russell	AMSEL-RD-ST-WL	X20446	
	Schneider	John	AMSEL-RD-ST-WL	X20459	
	Soicher	Haim	AMSEL-RD-ST-WL	X20470	
	Thomas	Ed	AMSEL-RD-ST-WL	X20465	
	Ver Hoven	Robert	AMSEL-RD-ST-WL	X20457	
	Yee	Edward	AMSEL-RD-ST-WL	X20450	
	Bohn	Frank	AMSEL-RD-ST-WL-AA	X72470	
	Cofield	David	AMSEL-RD-ST-WL-AA	X74220	
12/05/96	Gamble	John	AMSEL-RD-ST-WL-AA	X72500	
	Shar	Mal	AMSEL-RD-ST-WL-AA	X42317	
	Walylko	Joe	AMSEL-RD-ST-WL-AA	X73147	
	Levy	Yoram	AMSEL-RD-ST-WL-X	X74664	
	Abdulahad	Saul	AMSEL-SE-WS-AI-CM	X23981	
	Angel	Alejandro	AMSEL-SE-WS-AI-CM	X25199	

Encl 2
3/4

TRAINED	LNAME	FNAME	OFCSYM	PHONE	TYPEWORK
	Bogner	Andy	AMSEL-SE-WS-AI-CM	X20769	
	Boldridge	Jeff	AMSEL-SE-WS-AI-CM	X28224	
	Deikun	James	AMSEL-SE-WS-AI-CM	X23981	
	Glass	Jackie	AMSEL-SE-WS-AI-CM	X20764	
	Hatt	Ted	AMSEL-SE-WS-AI-CM	X20769	Contractor
	Klayton	Rod	AMSEL-SE-WS-AI-CM	X28224	
	Loi	Khanh	AMSEL-SE-WS-AI-CM	X28093	
	McMurray	Jim	AMSEL-SE-WS-AI-CM	X23981	
	Pambuana	Cyril	AMSEL-SE-WS-AI-CM	X25896	Contractor
	Purewal	Harinder	AMSEL-SE-WS-AI-CM	X23093	
	Rudinski	Rob	AMSEL-SE-WS-AI-CM	X25896	Contractor
	Thompson	Dave	AMSEL-SE-WS-AI-CM	X22237	Contractor
	Truong	Hoan	AMSEL-SE-WS-AI-CM	X23093	Contractor
	Zbozny	William	AMSEL-SE-WS-AI-CM	X28224	
CEU	Lutz	Ralph	MCXS-PT		
CEU	Walker	John	MCXS-PT		
CEU	Parekh	Varsha	MCXS-R	X20903/2560	
	Barron	SPC Richa	MCXS-RR-LOG	X21578	
	Eisenhower	George	MCXS-RR-LOG	X21578	
	Miranda	SGT Alan	MCXS-RR-LOG	X21578	
	Prichett	SPC Edwar	MCXS-RR-LOG	X21578	
	Tarnosky	W01 Chery	MCXS-RR-LOG	X21578	
12/06/96	Berryhill	Brian	SELFM-HC-54	X27055	
12/06/96	Brown	Steve	SELFM-HC-54	X27055	
12/06/96	Cirillo	John	SELFM-HC-54	X27055	
12/06/96	Cole		SELFM-HC-54	X27055	
12/06/96	Cole	Dwayne	SELFM-HC-54	X27055	
12/06/96	Covello	Rocko	SELFM-HC-54	X27055	
12/06/96	Donovan	Jim	SELFM-HC-54	X27055	
12/06/96	Downer	William	SELFM-HC-54	X27055	
12/06/96	Flowers	Carl	SELFM-HC-54	X27055	
12/06/96	Hanson	Brian	SELFM-HC-54	X27055	
12/06/96	Helman	Derrick	SELFM-HC-54	X27055	
12/06/96	Idler	John	SELFM-HC-54	X27055	
12/06/96	Johnson	Everret	SELFM-HC-54	X27055	
12/06/96	Roberts	Mike	SELFM-HC-54	X27055	
12/06/96	Shelley	Steve	SELFM-HC-54	X27055	
12/06/96	Singleton	Travis	SELFM-HC-54	X27055	
12/06/96	Wood	Scott	SELFM-HC-54	X27055	
	Bisset	R.	SELFM-PTM		
	Reason	Michael	SELFM-PTM	X24839	
12/06/96	Goebel	Charles	TVS	X24777	
	Rozek	Roman	TVS	X23370	
	Thompson	Francis	TVS	X23370	
12/06/96	Van Doorn	Penny	TVS	X23834	
12/06/96	Welmaker	Beths	TVS	X23834	
12/06/96	Wright	Dan	TVS	X24354	
	Wroblewski	Frank	TVS	X23370	

ENCL 2

U.S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH

RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices designated in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
NBC Defense Systems, Night Vision Electronic Sensor Directorate, Attn: AMSEL-RD-NV-SE-RD, Building 9401, Evans Area	Dr. Stanley Kronenberg	
	3. PERMIT NUMBER 139	4. EXPIRATION DATE 13 January 00

5. MATERIAL/DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Amersham Wide Area Reference Source Model: PP.100	Pu-238 incorporated into aluminum foil	Total - 1.68303 uCi SN: ES927 - 16.43 nCi SN: ES928 - 188.6 nCi SN: ES929 - 1.478 uCi

8. CONDITIONS:

a. The Wide Area Reference Source (WAAS) is used to calibrate various alpha RADIAC instruments.

b. Authorized place of use is Building 9401, Evans Area and Building 2540, Charles Wood Area.

c. Source will be utilized under the supervision of the Fort Monmouth Radiation Protection Officer and IAW CECOM SOP # 20-06, approved 12 January 1998, as provided with Initial Radiological Permit Application for the Wide Area Reference Source, dated 6 January 1998.

d. The WAAS may not be removed, reconfigured or modified in any manner.

e. Notify the CECOM DSRM, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6441 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the sources listed in Item 5, to include procuring additional sources.

APPROVED: Joseph M. Santarsiero

JOSEPH M. SANTARSIERO
Chief, Radiological Engineering
Division/Fort Monmouth
Radiation Protection Officer

DATE: 13 January 98

U.S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH

RADIOLOGICAL PERMIT

SUPPLMENTARY SHEET

PERMIT NUMBER 139	**4. EXPIRATION DATE** 13 January 00

CONDITIONS

f. The Plutonium-238 sources in the WAAS shall be leak tested at an interval not to exceed 3 months.

g. Unless specifically provided otherwise, the source listed in Item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 6 January 1998, signed by Edward Groeber, Director, NBC Defense Systems

RADIOLOGICAL PERMIT APPLICATION

Check One

Date 6 Jan 98

X Initial Permit Application (assign # 139)

___ Application for Amendment to Permit No. ____

___ Applications for Renewal of Permit No. ____

1. To: CECOM DSRM
AMSEL-SF-RE
FT MON, NJ 07703

2. Organization Applying for Permit: NBC Defense Sys. NVESD, Attn: AMSEL-RD-NV-SE-RO

3. Radiation Area Supervisor: Name Dr. Stanley Kronenberg

4. Radioactive Material: Pu-238

Element & Mass Number	Chemical Form	Physical Form, Activity (mCi)
Pu-238	foil	Solid;
		SN: ES927 - 16.43 nCi
		SN: ES928 - 188.6 nCi
		SN: ES929 - 1.4784 Ci
		total 1.68303 4Ci

5. Other Sources of Ionizing Radiation Producing Devices:

N/A

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person named below.

Dr. Stanley Krorenberg
George Brucker
Ed Groeber
Burt Cummings
Al Perrella
Walt Swaylik
Hugo Bianchi

7. Locations where source(s) of ionizing radiation will be used (Bldg, rm): Bldg 9401, calibration room; Bldg 2540, room 108.

8. Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.
Attached SOP

9. Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)
CECOM DSRM lab facility, disposable surgical gloves.

10. Signature of Director of Responsible Individual:

Name E. GROSBOR Signature

CECOM DSRM USE ONLY:

Instrumentation: Provided by CECOM DSRM, alpha, beta & gamma RADIAC as requested by individual in block 3.

Dosimetry: provided by CECOM DSRM for use in Calibration facilities in Bldgs 9401 and 2540, although no dosimetry is required when utilizing the Amersham WARS only!

Reviewed by: Hugo Bianchi Date: 12 Jan 98

Approved by: Joseph M. Santarsiero Date: 1/14/98

Radiological Permit Application Supplement

Name: Cummings (Last) Burt (First) C (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
Various Nuclear Power Stations	1985 - 1992	(YES) NO	(YES) NO
Ft. Monmouth	1992 to Present	(YES) NO	YES NO N/A

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, Beta, Gamma and Neutron Sources	Calibration Standards	N/A	Daily	Calibration

Radiological Permit Application Supplement

Name: Perrella (Last) Albert (First) R. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
FORT MONMOUTH, NJ	1993 TO Present	(YES) NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, Beta, GAMMA, and NEUTRON SOURCES	Calibration Standards	N/A	Daily	Calibration

Radiological Permit Application Supplement

Name: SWAYLIK, WALTER —
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
FT. MONMOUTH	8 YRS	(YES) NO	YES (NO)
		YES NO	YES NO

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
COLBOLT 60	3500 CURIES	EVANS AREA	4 YRS	DEVELOPMENT TESTING
VDM-2 CS 137	120 CURIES	EVANS AREA	4 YRS	DEVELOPMENT TESTING
AMERICIUM 241	MICROCURIES	EVANS AREA	6 YRS	DEVELOPMENT TESTING

Radiological Permit Application Supplement

Name: STANLEY KRONENBERG Ph.D. Research Physical Scientist
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
UNIVERSITY OF VIENNA, AUSTRIA	5 Years	YES NO	(YES) NO
FT. MONMOUTH N.J.	41 Years	(YES) NO	YES NO

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
ATOMIC NUMBERS (THROUGH 98	KCi, Sealed & unsealed	FT. MONMOUTH NEVADA TEST SITE	41 Years	SCIENTIFIC RESEARCH
NUCLEAR WEAPONS	K TONS - M TONS	NEVADA TEST SITE PACIFIC TEST SITE	10 Years	WEAPONS TESTS, WEAPONS EFFECTS RESEARCH
NEUTRON GENERATOR KAMAN	10^{12} n/s	FT. MONMOUTH	20 YEARS	SCIENTIFIC RESEARCH
BURST REACTORS	LOS ALAMOS, ABERDEEN 10^{17} FISSIONS/BURST	LOS ALAMOS ABERDEEN	20 YEARS	SCIENTIFIC RESEARCH

Radiological Permit Application Supplement

Name: BRUCKER (Last) GEORGE (First) JOSEPH (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
FORT MONMOUTH	12 YR	(YES) NO	(YES) NO
RCA/GE	30 YR	(YES) NO	YES (NO)

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cobalt-60	3500 curies	EVANS LAB FORT MONMOUTH	30 YR	RESEARCH DEVICE TESTING
cobalt-60 GAMMACELL-220	12,000 curies	RCA/GE	10 YR	RESEARCH DEVICE TESTING
UDM2A Cs-137	120 curies	EVANS	6 YR	Research Device testing
Radon, Sr-90, Cs-137 Tritium, Cobalt	microcuries	RCA/GE	30 YR	Research Device Testing [illegible]
americium, Plutonium Sr-90, Cs, Cm Co,	microcuries	EVANS	10 YR	Research & Device Testing, Cal
LINACS	Kilovolts to megavolts	NRL LAB BOEING LAB CRANE	20 YR	Research & Device Testing
		HANSCOM AIR FORCE LAB, [illegible]		
Flash-X ray Generator	Kilovolts to megavolts	Harry Diamond Physics International [illegible]	15 YR	Research & device testing
		Sandia BOEING TRW, [illegible]		
Pulse Reactors +	Neutron fluences 10^{12} to 10^{14} n/cm²	Aberdeen	10 YR	Research & device testing
Triga Reactor	Neutron fluence 10^{12} to 10^{14} n/cm²	Maryland University	1 YR	Research & device testing
Tandem Van de Graaff	Kilovolts to hundreds of Kilovolts	Brookhaven	5 YR	Heavy ion upset Testing of [illegible]

Radiological Permit Application Supplement

Name: GROEBER, EDWARD OTTO
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
AFWL KIRTLAND AFB, NM	4 Years	(YES) NO	(YES) NO
USACECOM FT. MON, NJ.	18 YEARS	(YES) NO	(YES) NO

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co^{60}	100 K Curies	KAFB, NM	3 Years	Research
Cs^{137}	UDM - 1A	KAFB, NM	4 Years	Research/ Testing
Co^{60}	Vault	Ft. Mon, NJ	18 Years	Testing
Cs^{137}	UDM - 1A	Ft. Mon, NJ	18 Years	Testing

Radiological Permit Application Supplement

Name: Bianchi (Last) Hugo (First) (NMI) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job (Circle)	Formal Course (Circle)
HSC, FSH	12 weeks 1987	YES NO	(YES) NO
Applied H.P., ORAU Tennessee	5 weeks 1992	YES NO	(YES) NO

2. Experience:

Isotope or other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cs-137	60 Ci	CECOM, Ft Monm	3 yrs.	calibration
Isovolt 320	X-Ray	B. 9401, Ft Mon	3 yrs.	calibration
Various isotopes (Atomic # 1-83)	1 μCi ~ 7 Ci	CECOM, Ft Mon	10 yrs.	cal, R+D, storage leak test, transp.

SOP NUMBER 20-06

STANDARD OPERATING PROCEDURE FOR USE OF THE AMERSHAM MODEL PPR.100 WIDE AREA ALPHA SOURCE (WAAS) SET

1. **PURPOSE:** To provide safety procedures when utilizing the WAAS Set.

2. **APPLICABILITY:** This procedure applies to authorized users of the Directorate of Safety Risk Management calibration facility.

3. **DISCUSSION:** The WAAS is used to calibrate RADIAC's capable of detecting alpha radiation. The Set consists of three Pu-238 sources ranging from 16 nanocuries to 1.4 microcuries and a detector positioning assembly. Typical emission rates range from 4,000 to 455,500 cpm.

4. **PROCEDURES:**

a. Obtain the key, located in room 103, to unlock the radioactive materials storage locker.

b. An appropriate survey meter is required for use of the WAAS. Perform the following pre-operational checks prior to use:

(1) Valid calibration label.
(2) Calibrated "ACTIVE".
(3) Battery check.
(4) Source check with a radioactive source.

c. Don a pair of disposable surgical gloves before handling the WAAS Set.

d. Ensure that the source to be used possesses a valid calibration label.

e. Perform the RADIAC calibration IAW established procedures.

f. Survey the surgical gloves and work area with an ACTIVE survey meter. If the reading is less than twice the background reading discard the gloves in regular waste. If the reading is greater than twice the background reading discard the gloves as radioactive waste.

g. Secure the WAAS Set in the radioactive materials storage locker and return the key.

Prepared by: Burt Cummings Date: 12 JAN 98
BURT CUMMINGS
Instrument Specialist

Approved By: Joseph M. Santarsiero Date: 12 Jan 98
JOSEPH M. SANTARSIERO
Chief, Radiological
Engineering Division

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-334-S DATE: January 19, 1993

SOURCE TYPE: Wide Area Reference Source

MODEL: PP.100

DISTRIBUTOR:

Amersham Corporation
2636 South Clearbrook Drive
Arlington Heights, IL 60005-4692

MANUFACTURER:

Amersham Buchler GmbH & Co KG
Gieselweg 1
D-3300 Braunschweig
Germany

ISOTOPE:

Plutonium - 238

MAXIMUM ACTIVITY:

22 µCi, 814 kBq

LEAK TEST FREQUENCY: 3 months

PRINCIPAL USE: (T) Other

CUSTOM SOURCE: - YES x NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Wide Area Reference Source

DESCRIPTION:

The model PP.100 sources contain Pu-238 which has been incorporated into an anodized layer of a nominal thickness 0.3 mm of aluminum foil.

Before the Pu-238 is incorporated into the foil, the foil's surface is given a special electrochemical treatment which produces micropores with diameters less than 1 um and depths in the range of 4 to 10 um. Pu-238 is then incorporated into these pores in an insoluble chemical form and the pores are chemically sealed using a proprietary process. The resultant active layer is very thin, and chemically and mechanically resistant. The thickness of the active layer is 5um. The active foil is then mounted on a robust aluminum holder to provide mechanical strength. The nominal activities of the PP.100 sources range from 18 nCi to 18 μCi.

LABELING:

PP.100 sources distributed after January 19, 1993 are engraved with the following information:

- Trefoil
- Radioactive
- Pu-238
- Serial Number
- Amersham-Buchler
- Assay Date
- Total Activity

PP.100 sources distributed prior to January 19, 1993 are engraved with the following information.

- Trefoil
- Radioactive
- Pu-238
- Serial Number
- Amersham-Buchler

DIAGRAMS:

See Attachments 1 and 2.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Wide Area Reference Source

CONDITIONS OF NORMAL USE:

PP.100 sources are designed for the calibration of alpha radiation measurement equipment. Such measurements would normally take place in a laboratory or other clean environment operating under normal temperature and pressure.

PROTOTYPE TESTING:

Prototype sources have been tested in accordance with the procedures of American National Standards Institute (ANSI) N542-1977. Based on the results of these tests, the ANSI classification is C34515.

EXTERNAL RADIATION LEVELS:

The following external radiation levels were measured for a 16.6 µCi source using R.S. Landauer Gardray film badges:

	24 Hours	96 Hours
Surface	M	20 mR Shallow; 10 mR Deep
1.5 cm	M	M

For the purposes of this source sheet, the "Shallow" dose equivalent is the dose equivalent from all radiations at approximately 0.007 cm depth in soft tissue. The "Deep" dose is the dose equivalent from all radiations at a depth of 1 cm in soft tissue. The "M" indicates a less than]0 mR reading which is the minimum detectable.

QUALITY ASSURANCE AND CONTROL:

All radioactive and non-radioactive raw materials are checked for conformance to written specifications relating to purity and other material characteristics. The radionuclidic purity for the Pu-238 is >99.9 % (Pu-239: 0.03%, Pu-242: 0.05%).

Finished sources are calibrated for total activity using a large area methane flow counter. The activity was calculated from the alpha-ray emission rate. An absorption of alpha-particles of 5.5% and an alpha-particle backscattering of 0.5% were taken into account. Wipe tests are performed on all accessible surfaces to ensure removable contamination is less than 0.005 µCi.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Wide Area Reference Source

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

1. The sealed sources shall be distributed only to specific Licensees of the Nuclear Regulatory Commission (NRC) or Agreement States.

2. At the time of distribution, a Safe Handling Data Sheet and a Measurement and Leak Test Certificate will accompany the source.

3. Cleaning agents that are strongly acidic or basic should be avoided as they could compromise the integrity of the source. Normal detergents will not compromise the source.

4. Handling, Use, Storage, Transfer, and Disposal: Shall be determined by the licensing authority.

5. This registration sheet and the information contained with the references shall not be changed without the written consent of the Illinois Department of Nuclear Safety.

6. The sources shall be leak tested at three (3) month intervals using techniques capable of detecting 0.005 microcurie of removable contamination.

7. The recommended working life for this source is 15 years.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data submitted by Amersham Corporation for source design Model PP.100, we conclude that the source design should maintain its integrity for normal conditions of use and accidental conditions which might occur.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-334-S DATE: January 19, 1993

SOURCE TYPE: Wide Area Reference Source

REFERENCES:

The following documents for the Amersham Corporation Model PP.100 are hereby incorporated by reference and are made a part of this registry document:

1. Amersham Corporation application dated February 21, 1991.
2. Amersham Corporation letter, with attachments, dated July 30, 1992.
3. Amersham Corporation letter dated November 9, 1992.
4. Amersham Corporation Quality Assurance Manual For Safety Related Products Supplied to the Nuclear Industry, effective date October 26, 1992.

ISSUING AGENCY: Illinois Department of Nuclear Safety

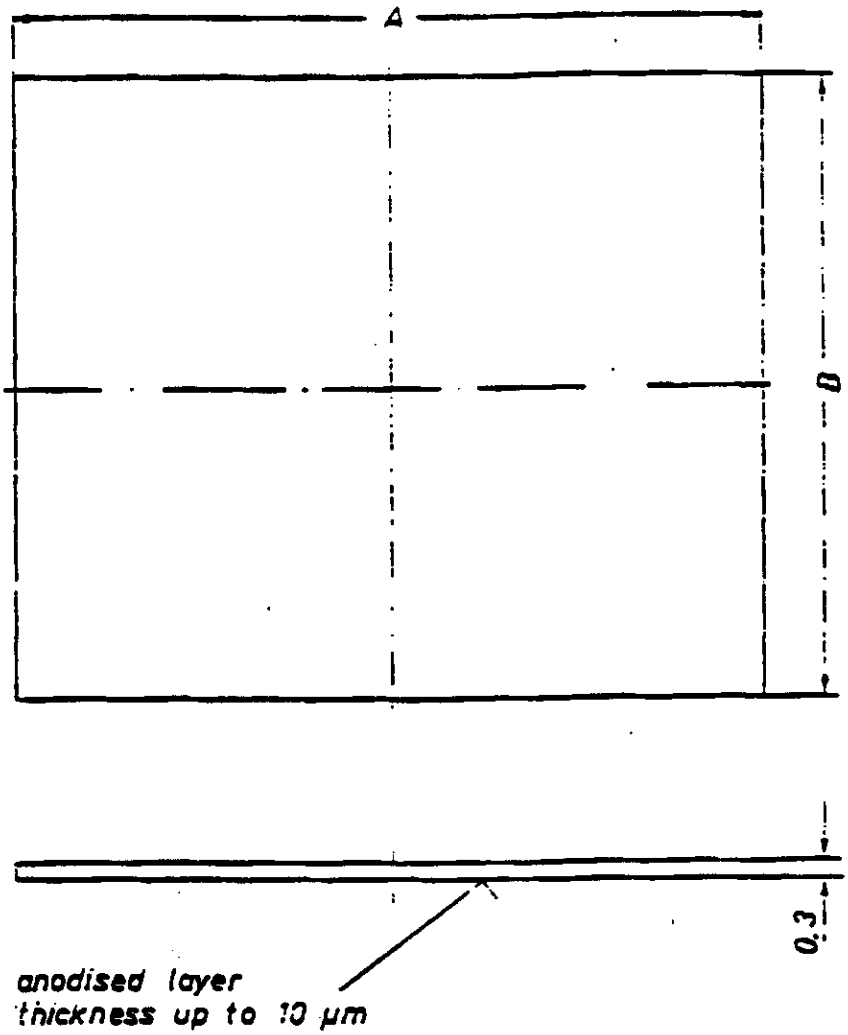
DATE: 1-21-93 REVIEWED BY: Mary E. Burkhart

DATE: 1/21/93 CONCURRENCE: Dwight C. Klinger

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-334-S DATE: January 19, 1993 ATTACHMENT 1

SOURCE TYPE: Wide Area Reference Source



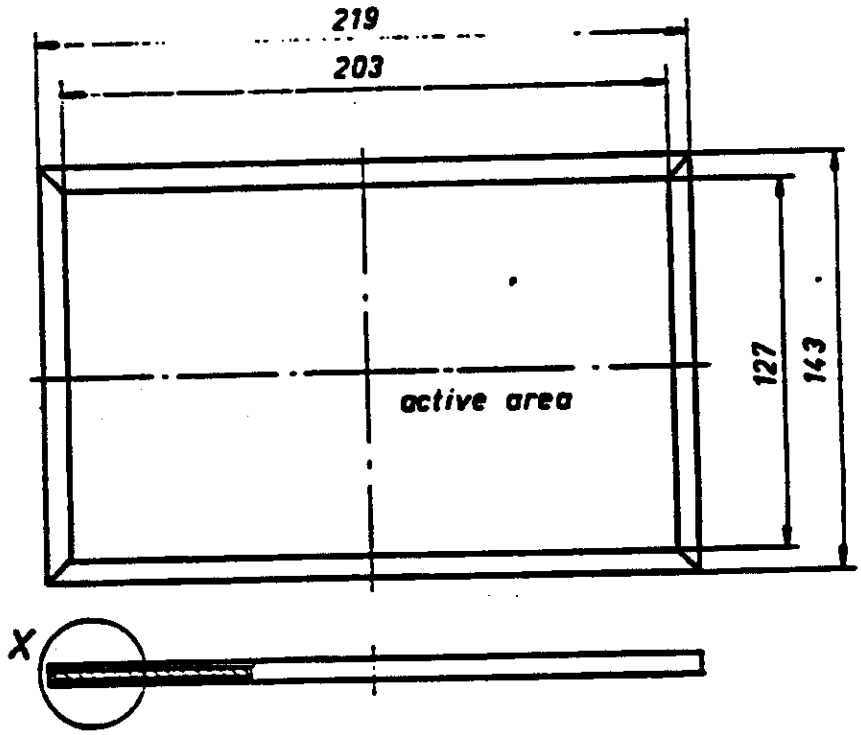
A = 10 - 380 mm
B = 10 - 260 mm

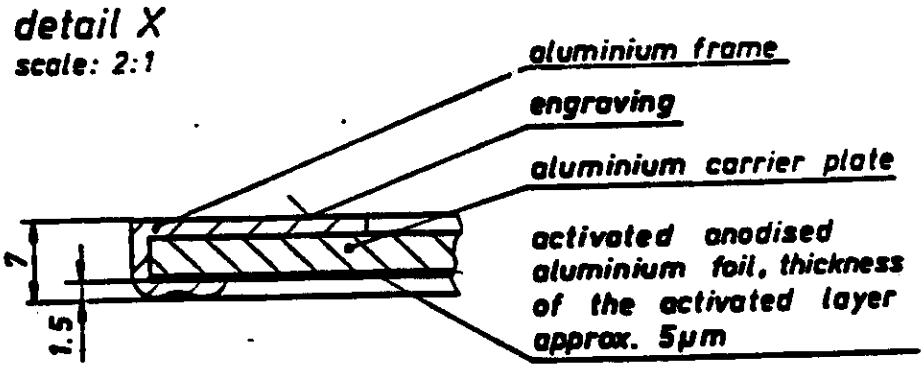
Nuclides:
C-14, Cl-36, Co-60, Sr-90, Tc-99, Cs-137, Pm-147, Tl-204, Po-210, Pu-238, Am-241, Natural Uranium

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO: IL-136-S-334-S DATE: January 19, 1993 ATTACHMENT 2

SOURCE TYPE: Wide Area Reference Source





All dimensions in mm except where otherwise noted.

Author: Barry Silber at SAFE1
Date: 1/13/98 9:16 AM
Priority: Normal
TO: alice frampton
CC: Richard Lovell
Subject: 2000 curie co-60 update

ALICE:

AS OF YESTERDAY, I SPOKE WITH THE NRC (ERIC REBER) ON THE STATUS OF OUR LICENSE AMENDMENT FOR USE OF THE 2000 CURIE COBALT 60 CALIBRATOR. HE GAVE THE APPLICATION A REAL CURSORY REVIEW. HE INDICATED THAT WE WOULD HAVE TO ADDRESS ISSUES CONTAINED IN THE NUREG FOR 10 CFR PART 36, INCLUDING PROVIDING AN EVALUATION TO ASSURE THAT AN INDIVIDUAL OF THE GENERAL PUBLIC WILL NOT RECEIVE 100 MREM IN A YEAR (TAKING INTO CONSIDERATION OCCUPANCY FACTORS).

I ALSO SPOKE WITH ED GROEBER YESTERDAY TO DETERMINE THE STATUS OF DELIVERY OF THE CALIBRATOR FROM J.L. SHEPHERD. HE INDICATED WE ARE LOOKING MONTHS DOWN THE ROAD BEFORE WE WILL RECEIVE THE CALIBRATOR.

THIS WILL GIVE US SUFFICIENT TIME TO ADDRESS NRC QUESTIONS AFTER WE RECEIVE THE LETTER FROM THEM AND A COPY OF THE NUREG WHICH WE HAVE TO FOLLOW.

BARRY

AMSEL-SF-RE (385-11h) 3 April 2000

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Control Committee Meeting, 23 March 2000

1. In accordance with Army Regulation 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the second FY00 quarterly meeting of the Fort Monmouth Radiation Control Committee (FMRCC) convened at 1005 on 23 March 2000, at the CECOM Directorate for Safety, Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, AMSEL-SF-RE/Chairman/Acting CG's Rep
Mr. Richard Lovell, AMSEL-SF-RE/Co-Chairman
Dr. Stanley Kronenberg, AMSEL-RD-IW-E
Mr. Ira Kaplowitz, AMSEL-RD-IW-EB (Alternate)
Ms. Alice Kearney, AMSEL-SF-RE/Recorder
Mr. Ted Paquet, SELFM-SO
Mr. Ralph DeMartino, SELFM-PW-EV
1LT Horner, MCXS-PVM (Primary)

b. Excused Absence:

Mr. Stephen G. LaPoint, AMSEL-SF-RE/Commanding General's Representative

3. Old Business.

a. Review of FMRCC Meeting Minutes. The minutes of the 16 December 1999 FMRCC meeting were reviewed and approved unanimously as written.

ACTION: None.

b. Annual Fort Monmouth Ionizing Radiation Worker Training. All CECOM radiation workers and 754th EOD personnel have received annual radiation safety training as of 29 December 1999.

ACTION: None

c. Tritium exit signs. **AMSEL-SF-RE received a message from DA regarding the accountability and ultimate disposal of tritium exit signs. AMSEL-SF-RE contacted the Directorate for Public Works (DPW) to obtain the location of tritium exit signs on Fort Monmouth. DPW indicated they were not able to provide that information. AMSEL-SF-RE will prepare a memorandum to all Fort Monmouth building custodians, with pertinent information, to determine the locations of all the tritium signs. DPW (SELFM-PW-EV) FMRCC Representative, Mr. DeMartino, requested collaboration on input for a DPW Standing Operating Procedure (SOP) regarding building demolition and tritium exit signs and smoke alarms.**

ACTION: AMSEL-SF-RE will prepare a memorandum to all Fort Monmouth building custodians regarding tritium exit sign locations, and will collaborate with DPW on the SOP.

ACTION: SELFM-PW-EV will prepare a SOP regarding tritium exit signs IAW Fort Monmouth building demolition.

4. New Business.

a. Personnel Dosimetry Report for 3 October 1999 to 1 January 2000.

(1) CECOM.

(a) Collective exposure ..... 0.0 rem.

(b) Average rem/quarter..... 0.0 rem.

(c) Highest exposure..... 0.0 rem.

(2) EOD.

(a) Collective exposure ..... 0.0 rem.

(b) Average rem/quarter..... 0.0 rem.

(c) Highest exposure..... 0.0 rem.

(3) PAHC.

(a) Collective exposure ..... 0.0 rem.

(b) Average rem/quarter..... 0.0 rem.

(c) Highest exposure..... 0.0 rem.

b. New FMRCC Membership. Mr. Stephen LaPoint, Director, Directorate for Safety, is appointed as the Commanding General's Representative. As of 27 March 2000, Mr. Richard Lovell is appointed as Chairman, and Mr. Craig Goldberg as Co-Chairman.

ACTION: AMSEL-SF-RE will revise FMRCC appointment memorandum, obtain approval/signature of U.S. Army Garrison Administrative Officer, and distribute to FMRCC members.

c. Health Physics Surveys. All required health physics surveys are completed through the month of February 2000, with no unusual findings.

ACTION: None.

d. Nuclear Regulatory Commission (NRC) License Actions:

(1) **NRC License Numbers 29-01022-06** (Fort Monmouth Broadscope) **and 29-01022-14** (CECOM Worldwide): Amendments 49 and 18, respectively, were received from the NRC, dated 14 December 1999, releasing Camp Evans property identified as Zones 3 and 4 (copy enclosed). The NRC's full and unrestricted release includes all buildings and structures, land area and sewer system located inside the areas identified as zones 3 and 4. Excluded in the full release are two small areas, one which is being used temporarily to store low-level radioactive waste pending disposal, and the second two acre parcel identified as Zone 4A. PLEXUS contractor for the U.S. Army Corp of Engineers is removing 8,600 linear feet of sewer line located at Camp Evans due to excessive concentrations of mercury vapor throughout the Camp Evans sewer system. Based on Camp Evans' history for use of radioactive materials and the physical condition of the sewer lines, PLEXUS contract personnel requested to perform radiation surveys of the sewer line to ensure OSHA personnel exposures limits are not exceeded. Any radiation survey readings greater

than twice background (~ 30 microR per hour) will require soil sampling and analysis by PLEXUS and the notification of the Directorate for Safety, Radiological Engineering Division. 500 linear feet of sewer line has been removed so far with the highest radiation reading equaling 14 microR per hour. STATUS: As of 20 March 2000, 2000 linear feet of sewer line has been removed, with no indication of any radioactive contamination.

ACTION: AMSEL-SF-RE will continue to keep FMRCC apprised of NRC actions.

(2) **NRC License Number 29-01022-14:**

(a) Amendment requested for authorization of the Lightweight Laser Designator Rangefinder (Litton Laser Systems Division) containing 8 microcuries of Americium-241 as special form sealed sources (AEA Technology). NRC returned the Amendment request due to proprietary information provided by Litton. AMSEL-SF-RE is pursuing resolution of the issue.

ACTION: AMSEL-SF-RE will keep FMRCC apprised of status.

(b) Received corrected copy of Amendment 18 authorizing the possession of depleted uranium shielding in the FEMA Model CDV-794 Calibration System.

ACTION: None.

e. Radioactive Work Permit (RWPs). Four RWP's have been approved by the FMRCC.

(1) RWP #180A - to TECOM/Vinell Services for the use of SCANMAX Model 20 CC Desk Top Cabinet Security X-ray Screening System, to be used in Building 2700 (Myer Center) Mail Center, Room 1B401A.

(2) RWP #180B - to TECOM/Vinell Services for the use of SCANMAX Model 20 CC Desk Top Cabinet Security X-ray Screening System, to be used in Building 761 Mail Center, Main Post.

(3) RWP #180C - to TECOM/Vinell Services for the use of SCANMAX Model 20 CC Desk Top Cabinet Security X-ray Screening System, to be used in Building 976-A, Records Holding Area.

(4) RWP# 190 - to PM NBC Defense Systems (Dr. Stanley Kronenberg), for use of Radium-Beryllium (Ra-Be) source in various experiments and R&D Projects in Building 2540A.

f. Radiation Training/Dosimetry Issuance for TECOM/Vinell Services (TVS) X-ray Operators. Due to the newly acquired X-ray machines for use by TVS, initial radiation safety training and issuance of dosimetry for personnel identified as operators of the X-ray equipment is scheduled for 5 April 2000. Workers have been informed they are not to operate any X-ray equipment prior to receiving training and dosimeter.

ACTION: AMSEL-SF-RE (Dosimeter Custodian) will provide radiation training and issue dosimeter to all TVs X-ray operators. Supervisors and TVS Industrial Hygienists have also been invited to attend the training.

g. Dr. Kronenberg informed the FMRCC that RWPs will need to be issued for the Neutron Generator, the 320 kV ISOVOLT X-ray Machine, and the J.L. Shepherd Quad Source, Model 81, once these systems are taken out of storage and set up in Building 2540A.

ACTION: AMSEL-SF-RE will issue RWPs for the systems indicated.

5. The FMRCC meeting was adjourned at 1035.

6. CECOM Bottom Line: THE SOLDIER.

Prepared by: Alice M. Kearney
ALICE M. KEARNEY
Recorder, FMRCC

Reviewed by: Richard J. Lovell
RICHARD J. LOVELL
FMRCC Chairman

AMSEL-SF-RE
SUBJECT: Minutes of the Fort Monmouth Radiation Control Committee Meeting, 23 March 2000

Approved by: 

STEPHEN G. LA POINT
Commanding General's
Representative

DISTRIBUTION:
AMSEL-SF (LaPoint/Lovell/Goldberg/Kearney) (hard copy)
AMSEL-RD-IW-E (Kronenberg) (hard copy)
AMSEL-RD-IW-EB (Kaplowitz) (hard copy)
MCXS-PVM (1LT Horner/(hard copy)
SELFM-PW-EV (DeMartino/Green) (E-mail)
SELFM-SO (Paquet/Paustian) (E-mail)

TRACKING LIST FOR FMRCC ACTIONS

(27 March 2000)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS
AMSEL-SF-RE	AMSEL-SF-RE will revise the FMRCC Membership memorandum, obtain approval/signature from U.S Army Garrison Administrative Officer, and distribute to FMRCC members.	23 Mar 00	**Revised as of 27 Mar 00.**
AMSEL-SF-RE	AMSEL-SF-RE will prepare a memorandum to all Fort Monmouth building custodians regarding tritium exit sign locations, and will collaborate with DPW on a SOP regarding tritium exit signs/smoke detectors and building demolition on Fort Monmouth.	23 Mar 00	**OPEN**
SELFM-PW-EV	SELFM-PW-EV will prepare a SOP regarding tritium exit signs IAW building demolition.	23 Mar 00	**OPEN**
AMSEL-SF-RE	**AMSEL-SF will provide radiation training and issue dosimetry to all TVS X-ray operators (scheduled for 5 April 2000).**	23 Mar 00	**OPEN**
AMSEL-SF-RE	AMSEL-SF-RE will ensure all FM installation RF workers receive the required refresher training IAW CECOM-R 385-17.	30 Sep 99	**ONGOING**
AMSEL-RD-IW-EC	Dr. Kronenberg will submit RWP application for Ra-Be source use in Building 2540.	16 Dec 99	**CLOSED-RWP signed/approved 20 March 2000.**
AMSEL-SF-RE	AMSEL-SF-RE will apprise RCC of Evans release status pending soil sampling for mercury.	16 Dec 99	**ONGOING. As of 20 Mar 00, 2K linear feet removed-no rad contamination.**
AMSEL-SF-RE	AMSEL-SF-RE will ensure RWPs are issued for the Neutron Generator, the 320 kV ISOVOLT X-ray Machine, and the J.L. Shepherd Quad Source, Model 81, in Building 2540A.	23 Mar 00	**OPEN**

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
TECOM/Vinnell Services P.O. Box 60, Bldg. 286 (Russell Hall) Fort Monmouth, NJ 07703	Gregory Kucharewski	
	3. PERMIT NUMBER 180A	4. EXPIRATION DATE 20 March 2002

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Desk Top Cabinet Security X-Ray Screening System Fitted with Colour Camera Model: SCANMAX 20 CC Manufactured by: SCANNA MSC Inc. Sarasota, FL SN: SR3151 BC: 2678M	N/A	N/A

8. CONDITIONS:

a. The SCANMAX 20 CC listed in item 5 is used to x-ray letters/packages mailed to Fort Monmouth.

b. Authorized place of use is Building 2700 Myer Mail Center, Room 1B401A.

c. The SCANMAX 20 CC x-ray machine will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual, Issue 1, as provided with the Radiological Permit Application for the SCANMAX 20 CC, dated 15 February 2000.

APPROVED:

DATE: 20 March 2000

JOSEPH M. SANTARSIERO
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 180A	EXPIRATION DATE: 20 March 2002

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter when operating the SCANMAX 20 CC x-ray machine.

e. The SCANMAX 20 CC may not be removed, reconfigured or modified in any manner.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in item 5, to include procuring additional devices.

g. The SCANMAX 20 CC shall be surveyed annually for leakage.

h. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 15 February 2000, signed by Gregory Kucharewski, TECOM/Vinnell Services.

RADIOLOGICAL PERMIT APPLICATION

Check One

Date 15 February 2000

X Initial Permit Application (#180A)

___ Application for Amendment to Permit No. _____

___ Application for Renewal of Permit No. _____

1. To: CECOM Dir. for Safety
AMSEL-SF-RE
Ft. Monmouth, NJ 07703

2. Organization Applying for Permit:
TECOM/ Vinnell Services
PO Box 60, Bldg. 286 (Russell Hall)
Fort Monmouth, NJ 07703

3. Radiation Area Supervisor: Name Gregory Kucharewski

4. Radioactive Material: N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)

5. Other Sources of Ionizing Radiation Producing Devices:

SCANNMAX 20 CC > 65 KVP 7MA SN: SR3151

GEN. TLO424/3 TUBE Y475 BC: 2678M

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

ANTHONY SAJDAK, DCI

DORIS CAMACHO, TVS

JAMES FINALDI, TVS

Ellen Edwards

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**

Bldg. 2700 Myer Mail Center, Rm. 1B 401A

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**

See Attached Manual

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)**

Self Contained Interlock

10. **Signature of Director of Responsible Individual:**

Name: Gregory Kuchanowska **Signature** Grzegorz Kuchanowski

CECOM DFS USE ONLY:

Instrumentation: Not required.

Dosimetry: Provided by CECOM DS (whole body badge.)

Reviewed by: Hugo Bianchi **Date:** 9 March 2000

Approved by: Joseph M. Santarsiero **Date:** 10 Mar 00

Radiological Permit Application Supplement

Name: Sajdak (Last) Anthony (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LtD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Camacho (Last) Doris (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Finaldi (Last) James (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Edwards (Last) Ellen (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna L+D.

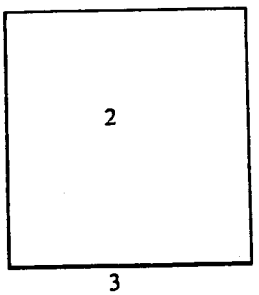
Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976		YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

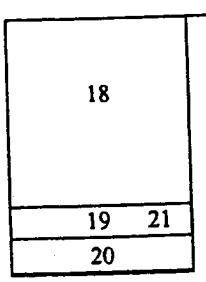
Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

SCANNA SCANMAX 20 CC ; S/N 3151 ; Myer Ctr

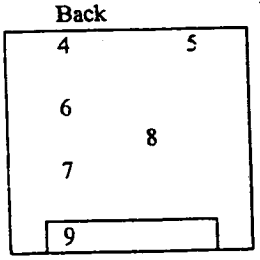
Instrument: Eberline RO2 Ion Chamber Serial #: 3511 Cal Due Date: 23 May 00
Probe: _____ Serial #: _____ Pre-Op checks performed: (Sat) Unsat
Postings:
Caution Radioactive Material Sign: _____
SOP/Radiation Permit: _____ NRC Form 3: _____ No Smoking, Etc. Sign: _____
Section 206: _____ Notice To Workers: _____ Dosimetry Requirements: _____



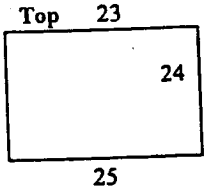
Area No	Left Side Panel Name	Readings
1	Front Panel Vertical Seam	0 *
2	Left Side Panel	0 *
3	Bottom Edge	0 *
	Highest Reading	0



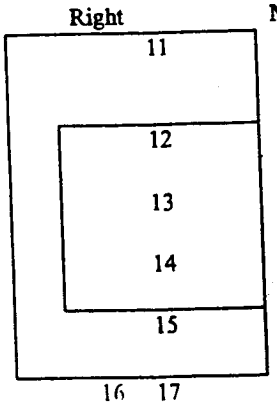
Area No	Front Panel Name	Readings
18	Front Panel	0 *
19	Viewing Boot	NA
20	Control Panel	0 *
21	Bottom Viewer Panel	* 0
22	Bottom Edge	0 *
	Highest Reading	0



Area No	Back Panel Name	Reading
4	Left Vertical Seam	0 *
5	Right Vertical Seam	0 *
6	Top Door Hinge	0 *
7	Bottom Door Hinge	0 *
8	Back Panel	0 *
9	Electrical Plug	0 *
10	Bottom Plug	0 *
	Highest Reading	0



Area No	Lid Name	Reading
23	Back Lid Seam	0 *
24	Right Lid Seam	0.3 *
25	Front Lid Seam	0 *
26	Left Lid Seam	* 0
	Highest. Reading	0.3



Area No	Right Side Panel Name	Reading
11	Top Right Side Panel	0 *
12	Top Door Seam	0 *
13	Door	0 *
14	Bottom Door Seam	0 *
15	Bottom Right Side Panel	* 0
16	Front Panel Vertical Seam	* 0
17	Bottom Edge	0 *
	Highest Reading	0

LEGEND: * Contact Reading

Background: 0 mR/hr

NOTE: All readings are in mR/hr at waist level unless otherwise indicated.

Performed By: Barry Silber Date: 16 Mar 00

OPERATING AND MAINTENANCE MANUAL
ISSUE 1

SCANMAX 20 CC

DESK TOP CABINET
SECURITY X-RAY SCREENING SYSTEM
FITTED WITH COLOUR CAMERA
(110V)

SCANNA MSC Inc.
3340 Espanola Drive
Sarasota
FL 34239 USA

Telephone
Nat: 941 925 9730
Int.: 00 1 941 925 9730

Facsimile
Nat: 941 925 1548
Int.: 00 1 941 925 1548

Date	Amendment No	Page No	Details

IMPORTANT NOTICE

This machine meets all of the safety standards specified in the United States Federal Standard 21, Section 1020.40. On average, leakage of radiation does not exceed 0.1mR per hour at any point 2 inches (5 cm) from any surface. This is five times safer than the permissible leakage of radiation of 0.5 mR per hour specified in the Federal Standard. When operated in accordance with the instructions contained in this manual, this machine is completely safe for operating personnel or other persons who may be within the vicinity.

However it is imperative that operating personnel be instructed in the operation of this equipment as well as radiation safety procedures and that sign's be posted stating -
" Caution - Operation by Authorised Personnel Only".

Further, as a precautionary measure we strongly recommend that operating personnel wearX-Ray monitoring Film Badges.

In the unlikely event of a malfunction causing excessive leakage of radiation, the machine should be turned off immediately and the incoming power line disconnected. The machine should not be re-energised until the malfunction has been corrected by afactory authorised technician and the machine surveyed for radiation leakage.

NOTE
California State Law requires that all radiation producing devices located within the State must be registered by the user within 30 days after accepting delivery from the seller of the equipment. Failure to do this will place you in violation and you could be subject to penalties.

Contact the State of California Department of Health Services.Radiological Health Branch, PO Box 1525, Sacramento, California 95805. Telephone (916) 445-6256

WARNING NOTICE

Safety precautions for use and operation of x-ray producing equipment

X-RAY PRODUCING EQUIPMENT CAN BE DANGEROUS TO BOTH THE OPERATOR AND PERSONS WITHIN THE IMMEDIATE VICINITY UNLESS SAFETY PRECAUTIONS ARE STRICTLY OBSERVED.

Exposure to excessive quantities of X- Radiation may be dangerous to health. Therefore users should avoid exposing any parts of their person, not only to the direct beam, but also to secondary or scattered radiation which occurs when an x-ray beam strikes or has passed through any material.

The X-Ray producing equipment is installed in a cabinet providing adequate radiation shielding, the user should be aware that the useful beam can constitute a distinct hazard if not employed in strict accordance with instructions contemplated to provide maximum safety for the operator.

Also, the electrical circuits, although enclosed for the protection of the operators, must be considered as a potential hazard calling for strict observance of safety practices pertaining to operation and maintenance. Proper electrical grounding must always be used.

Before using the equipment all persons designated or authorised to operate the equipment, or supervise its operation, should have a full understanding of its nature and become familiar with established safe exposure factors by a careful study of the National Bureau of Standards Handbook " X-Ray Protection" HB93, pertaining to X-Ray protection.

OPERATION MANUAL FOR THE SCANMAX 20C

CONTENTS

INTRODUCTION

The SCANMAX 20 (Fig One) is a fluoroscopic X-ray cabinet specifically designed for the detection of explosive devices, hate mail and other contraband material concealed in incoming mail and packages. Items are placed in the inspection chamber and simply by pressing a push button switch a high resolution image is displayed on the video monitor. Image reversal, high penetration and 2 different color palettes are available. These and the zoom facility will expedite the recognition of the items in the package.

It is ideally suited for use in government and commercial mailrooms, embassies, prisons and courtrooms. It can also be used in reception areas for the inspection of briefcases and hand-delivered items not passing through the central mailroom.

The SCANMAX 20 is completely self contained and can be put into operation immediately and can examine the contents of a parcel 40 x 40 cm (16" x 16"). A parcel, briefcase or a batch of envelopes/small packets can be examined in less than 10 seconds.

The SCANMAX is designed to ensure operator protection against radiation hazards through the use of lead shielding. An interlock system on the door prevents the generation of X-rays when the inspection chamber door is opened, ensuring maximum protection to personnel. Even so, always be aware that radiation (X-rays) can constitute a distinct hazard if not employed in strict accordance with the instructions provided in this manual.

Before operating the SCANMAX 20 all personnel designated to operate the unit, or supervise its operation, must have a full understanding of the contents of this manual.

UNPACKING / INSTALLATION INSTRUCTIONS

The installation of the SCANMAX 20 is relatively simple and requires no special tools. It is shipped as a whole in a sturdy ply wood container mounted on a wooden pallet. The shipping crate is designed to withstand normal handling during overseas shipments.

Despite these safeguards, damage may occur in transit. Therefore, immediately inspect the exterior of the container for evidence of damage. In the event damage has occurred, immediately notify the carrier at your location.

UNPACKING THE SCANMAX 20

To remove the SCANMAX from the shipping crate, perform the following:

1. Undo the binding and open the box with the help of a large screwdriver.
2. Using extreme care, remove the pallet and lift the equipment into place. For this use a lifting trolley or fork-lift truck. Care must be taken to avoid scratching the unit.
3. Inspect the SCANMAX cabinet for evidence of any physical damage.

WARNING: **Physical damage to the SCANMAX cabinet may result in excessive radiation emission levels. Any damage observed should be thoroughly investigated, prior to operating the unit.**

WARNING: **To ensure operator safety, radiation emission levels must be checked before putting the SCANMAX into operation.**

PRE INSTALLATION CHECKS

Prior to first time operation, it is essential for the safety of the operator and for the long life of the equipment that the following instructions are strictly observed.

Ensure that the system voltage is the same as the mains supply voltage available. If in doubt regarding the mains voltage at hand, perform a measurement. Units will be set at 110V unless otherwise instructed and should therefore only be operated from a 110V mains supply. Connecting to a different mains voltage will result in improper operation or even destruction of the unit.

Ensure that a good mains earth is provided. To minimise shock hazard the SCANMAX must be connected to an electrical ground or earth. The unit is equipped with athree conductor AC mains lead. The corresponding socket at the installation must be fitted with a reliable protective earth contact.

SCANNA or the supplier cannot be held responsible for incorrect connection.
Do not operate the equipment in the presence of flammable gases or fumes.
protective devices (fuses etc.).

INSTALLATION GUIDE

1. Take unit out of box (following the instructions in the previous section) and place on a strong table/base capable of supporting up to 200 kgs. Take extreme care when lifting as the unit is very heavy (157 kgs/372 lbs). Use a lifting trolley or fork lift truck. Ensure that there is unrestricted access to the inspection chamber door on the right of the unit. Ensure that the door is fully closed.

2. Connect monitor to unit by means of the 'D' connector and power cables supplied

3. Connect the trackball and place on a suitable surface. (Can be hand held during operation)

4. Plug unit into the mains supply after checking voltage of machine matches local voltage

5. Ensure that the door is fully closed and insert the key into the key switch on the front control panel and turn it clockwise to switch on the unit. The green **SYSTEM READY** light should illuminate to indicate the interlocks have been operated and that the equipment is ready for use.

6 Perform interlock check by doing the following:
Activate the red **X-RAY ON** button on the front control panel. Observe that all X-ray lights illuminate and that they remain illuminated. Slowly open the loading door and verify that the **X-RAY ON** and warning indicators switch off ***as soon as the door is opened.***

7. Check image quality by placing a sample package into the centre of the inspection cabinet.

8. Using the Trackball check that the left hand switch rotates through the zoom function and that the right hand switch rotates through the six image formats.

IMPORTANT

Upon installation and after any relocation a critical examination report should be carried by qualified staff with the appropriate radiation survey equipment.

If all controls function properly and the radiation tests show the equipment to be safe then the SCANMAX is ready for operation

WARNING

THIS EQUIPMENT PRODUCES IONISING RADIATION WHEN ENERGISED AND SHOULD BE OPERATED ONLY BY TRAINED PERSONNEL

IMPORTANT:
INSTALLATION ADVICE WHEN USING A SUPPORT TROLLEY

TO FIT THE TOP UNIT TO THE BASE THE FOLLOWING PROCEDURE MUST BE USED

1. Ensure that the feet have been removed from the base of the Scanmax before attemptingto place the unit on its trolley.

2. The unit ***MUST*** be placed on its base, with the front of the unit to the open side of the trolley

3. Assemble the unit at, or close to, the intended site of operation as the Scanmax 20 is topheavy when on its base. Care must be taken whilst moving the unit on its base.

IMPORTANT SAFETY PRECAUTIONS

The SCANMAX 20 utilises an X-ray generator which is lead shielded against radiation emissions. The generation of X-rays stops automatically as soon as the door is opened, accidentally or otherwise. This high level of safety conforms to the strictest protective measures against radiation.

The SCANMAX 20 is inspected prior to shipment to ensure that radiation emission levels are well within the legal requirements.

Modification No modification of the SCANMAX, particularly the radiation chamber, should be attempted without written consent from the manufacturer.

Support If the SCANMAX is moved after initial operation, extreme care should be taken to ensure proper handling. Use mechanical aids such as forklifts or lifting jacks. **Do not place the unit on an inadequate support or try to lift it unaided.** If the unit is dropped, do not attempt to resume operation before consulting a qualified service technician. The user must be aware that excessive radiation leakage could develop due to mishandling.

Relocation A radiation leakage survey, conducted by highly qualified personnel, must be conducted after any relocation of this equipment or after any modification to the equipment. This procedure will prevent radiation health hazards to operating personnel.

Grounding To avoid electrical shock, ensure that the grounding is not defeated.

Wiring it is obvious that any abnormal use or modification of the internal wiring is highly discouraged. We cannot be responsible for any damage or injury caused by such action

Health & Safety UK radiation control regulations require the registration of radiation Sources with the local Health and Safety Executive. Registration should be made within 30 days of purchase. Contact your local HSE for further information.

SAFETY INSTRUCTIONS

WARNING: Radiation hazard can result if this unit is operated improperly.

Below is a list of common ways in which this might occur. This is not an exhaustive list andfinal responsibility for safe operation is assumed by the user.

1. Never operate with the safety interlocks defeated. Never attempt to make the unit function with the door opened. Make sure the plunger interlock on the door does not become broken or damaged.

2. Never operate with any of the enclosure panels removed or damaged.

3. Never operate a unit which has become physically damaged unless it is successfully re-tested for radiation integrity by qualified staff.

4. Never compromise cabinet integrity by drilling holes or attaching fasteners.

5. If when viewing the equipment the lead glass appears to be damaged, switch off the unit and report as faulty. Do not use the system until it has been checked by a competent engineer and a successful radiation check carried out.

6. In the event of any concern regarding the safe operation of theSCANMAX contact your supplier or your local Radiological Protection Adviser immediately.

WARNING: SCANMAX is an electrical device and is subject to shock hazard.

Good operating procedure should be practised to avoid electrical hazards.Final responsibility for safe operation is assumed by the user.

1. A grounded or earthed supply must be used, preferably with ground fault interruption.

2. SCANMAX is designed for indoor use. Do not operate outside where moisture or rain can create a shock hazard. Do not operate in excessively wet environments.

WARNING: If you are involved in servicing this unit, be aware that lethal voltages can be present in the controller and at the tube head even when the key is switched off.

1. Physically disconnect line power or take appropriate precautions before making adjustments. Also note that power resistors inside the power supply can burn the skin if touched after prolonged use.

2. If a problem is detected, discontinue use and call your service representative.

INTRODUCTION TO X-RAYS

Radiation and the inherent dangers of radiation have in recent years received much publicity however since 1972 the use of x-ray systems has become commonplace throughout the world particularly at Airports. Indeed in these troubled times the public and staff demand the level of security provided by these x-ray screening systems.

The use of x-rays is no more dangerous than a piece of industrial machinery with moving parts, if you put your hand in moving machinery, such as a guillotine, you may be seriously injured, fortunately this type of accident is rare, if common sense and safety procedures are implemented.

The same is true with an x-ray unit. Not interfering with guarding or access panels,*NEVER* defeating interlocks and regularly servicing the equipment will provide a high degree of safety.

Contrary to Radioactive Sources the x-rays or Ionising Radiation used in the Scanmax 20 and other systems supplied by Scanna are non residual. That is the x-rays are produced electrically and as soon as the power is removed from the x-ray generator there are no x-rays in the system.

The following safety measures and devices are included in the equipment supplied by Scanna MSC.

Low x-ray dose.
X-ray beam limiting.
Interlock system.
X-ray On indicators.
Lead Shielding

In the United Kingdom the requirement is a leakage rate as low as is practicable but in no case to exceed 1 micro Sievert per hour. It is the stated intention ofScanna to provide equipment designed so that irradiation leakage is zero. The Regulations and the Code of Practice has introduced conditions whereby doses of radiation can and are maintained considerably below the threshold where the radiation has an detrimental effect. Indeed it is accepted that by far the largest contribution to population dose is from our natural background, e.g. radiation from space (300 symbol 109 \f "Symbol" \s 11μ Sv), Gamma radiation from earth (350 symbol 109 \f "Symbol" \s 11μSv), internal radiation from natural radioneuclides in the body.(380 symbol 109 \f "Symbol" \s 11μSv) and inhaled gases and nuclear fallout (970 symbol 109 \f "Symbol" \s 11μSv). The current safety limit for annual exposure is 5000 symbol 109 \f "Symbol" \s 11μ Sv

Sieverts	rem			
0.1	10	1 dental x-ray exposure	5 rem	0.05 Sv
0.01	1	Natural radiation.	200 m rem per year	2,000 symbol 109 \f "Symbol" \s 10μSv
0.001	0.1	1 Transatlantic Flight	2.5 m rem	25 symbol 109 \f "Symbol" \s 10μ Sv
0.000,1	0.01			

0.000,01 0.000,001 0.000,000,1 0.000,000,01	0.001 0.000,1 0.000,01 0.000,001	Leakage from Scanmax 20	0.000,002 rem	0.2 symbol 109 \f "Symbol" \s 10μ Sv max.

It can be seen from the above figures that spending every hour of your working life within 1 inch of the equipment with the x-rays switched on would still not so much as double your annual dose of radiation accrued simply from being alive.

OPERATING INSTRUCTIONS

1. Switch on mains isolating switch on the rear panel. Note that the front panel 'POWER ON " indicator on the front control panel illuminates.

2. Insert the key into the key switch and turn a quarter turn to the right ensure that the TV monitor is turned on.

3. Place objects to be inspected inside the chamber and close the door firmly (take care not to slam the door). This enables the radiation safety interlocks and the SYSTEM READY light will illuminate.

4. Depress the ''X-RAY ON'' switch and release. The ''X-RAY ON'' indicators will illuminate for 5 seconds.

5. After 5 seconds an X-ray image of the item will become visible on the monitor screen, adjust the Brightness and Contrast controls on the monitor to obtain the optimum image on the screen.

6. Security Screening can be accomplished quickly and can normally be completed within 5-10 seconds. This is usually sufficient to determine whether a package is harmless or contains a suspect article however the image is displayed for as long as required

7. Closer examination can be made by use of the trackball. When the ball is moved a square is illuminated on the screen, move the square centrally over the area for closer examination and press the left hand key and the image will be enlarged by a factor of 2 (Zoom x 2) If a further close look is required press the left hand key again for x4 or x8 and then press again for Normal image.
The image will revert to Normal image when a new image is obtained by pressing the X-ray On switch.

8. The right hand key of the trackball will give the following image displays:

   1 Normal display
   2 Brightened "high penetration" grey
   3 "inverse" (negative) grey level image
   4 Greem/Orange/Grey "Organisc" mode
   Dense objects show as green, less dense objects (plastics and narcotics may show as orange) Other regions show as grey scale
   5 Red/Grey "Bomb" mode. Very dense objects show as red other regions as grey scale
   6 Red/Green/Yellow. A "vivid" bright colour display to emphasise colour capability.

Access is gained to each enhancement by repeatedly pressing the right hand trackball key until the image required is displayed, repeated pressing will return to the Normal image.
When a new image is obtained the last enhancement used will be the display mode used for the new image.

9. Normal letters, express mail etc., can be inspected in batches of 25 or more at a time. This will expedite the screening process. It also reduces the use of the system. Larger packages or briefcases should be inspected individually. (See next section for more details).

10. The **SCANMAX 20** should be turned off when not in use and the key removed from the equipment. The key should be kept by a designated key-holder/supervisor

11. Operator maintenance involves only the cleanliness of the unit both inside the inspection chamber and the outside of the unit and regular safety checks to include mains lead etc.

Hints:

- Tilt or change the orientation of an object to obtain a clearer profile.
- If photographing, use shutter setting 30 or 60 to allow for the camera to synchronise to the monitor (Lines will appear across the film if it not synchronised) to ensure good depth of field, black and white film will tend to give higher apparent contrast.
- If used for law enforcement or security, obtain appropriate training from a qualified personnel.

X-RAY SCREENING PROCEDURES

1. Envelopes may be processed in batches, or evenly spread out within the inspection chamber.

2. Larger packages or briefcases should be placed towards the centre of the unit and processed flat and one at a time.

3. Any item screened which shows the presence of anything unusual (i.e., wires, electrical switches, batteries etc), or which contains high density (black) materials which cannot be penetrated should be treated with extreme caution.

4. If the item appears suspicious, security staff should be alerted and the appropriate security procedures implemented.

SCANNA strongly recommend that users of X-ray inspection equipment implement proper security procedures for dealing with suspect packages.

We also recommend that operators have appropriate training in the recognition of suspect packages and X-ray image identification. Contact SCANNA or your local Police/Law Enforcement Agency for advice on suitable courses.

Be sure to display contacts and appropriate emergency telephone numbers adjacent to the unit.

MAINTENANCE

The **SCANMAX 20** contains no user serviceable parts other than lamps and fuses. For reasons of safety maintenance of the unit should be undertaken by a trained engineer at least once a year during which the security, integrity and levels of all components should be checked. A radiation leakage check should be carried out using a calibrated radiation level monitor. Please contact your service representative or **SCANNA MSC Inc.** for most maintenance needs. A few common procedures are described below and all should be referred to your service representative.

Refer any further problems to **SCANNA MSC Inc.** Procedures listed in this section include:

Line grounding and regulation
Fuse replacement
X-ray source replacement
Door Adjustment
Camera adjustment and cleaning
Testing for radiation leakage

SCANNA MSC Inc does not assume any liability for damages resulting from system modifications performed by the customer.

Line Grounding and Regulation

Regulation
When the unit is energised, the line voltage should drop no more than 5% at the wall outlet. Any further drop indicates that your AC power source needs to be upgraded.

Grounding
A three pin plug should be used with a suitable earth or frame ground. If this ground is not at actual earth potential a shock hazard can exist. For this reason it should be checked and if possible, outlets with ground fault interruption should be used.

Warning
Always disconnect the power cable when working on the tube head or controller. Line voltage can be present at the controller when the key switch is not activated.

Fuse Replacement

Below the mains input socket for the power cord at the rear of the unit is a fuse holder. It is covered by a rectangular piece of black plastic which is part of the holder. Pull outward on this holder until the fuse is exposed. Replace with a 15 amp, 230V, 2 AG style Slow Blow fuse. An extra location is provided where a spare fuse can be kept if needed. If the fuse blows repeatedly, call your service representative.

X-ray Generator and Controller Replacement – Trained Service Personnel Only

In the event of failure quote the Serial number of both the unit and the faulty x-ray generator must be given to SCANNA to ensure that the correct replacement will be supplied.

If a Controller replacement is required the Serial number of both the unit and the x-ray generator must be given to SCANNA to ensure that the correct replacement will be supplied.

This allows the Primary voltage , tube current and the filament resistance to be selected in the software, and it insures that factory pre-sets have been observed. Contact SCANNA if alternate arrangements need to be made. To replace the x-ray generator and controls follow the procedure below. Read safety precautions listed elsewhere in this manual before proceeding.

S1. Warning: disconnect the power. Remove the cover at the top of the unit.
Disengage the wiring connections carefully from the x-ray source.

S2. Loosen the x-ray generator by unfastening the four screws holding it in place.

S3. Disconnect the in-line plug / socket to the x-ray source. (Early models may requirethe connections unsoldering, ensure that a note is made of the connections.

S4. Remove the x-ray generator from the case.
Caution :The x-ray generator is heavy two persons are required for this task.

S5. Pack the x-ray generator in a shock resistant shipping carton so that the ceramic and glass parts of the system do not become damaged. Note, any compression or shock to the outside of the tube head container is transferred directly to the glass envelope of the X-ray tube!

To install a new x-ray generator, repeat the process but in reverse.

S1. Install the new x-ray generator and bolt down.

S2. Reattach the connections to the x-ray generator.

S3. Refit the top panel ensuring the earth lead is re-connected

Controller Removal

S1. Ensure that the unit is disconnected from the mains supply.

S2. Remove the rear connection panel (Eight screws).
NOTE: The Controller is isolated via a panel interlock switch by this action.

S3. Note the position of the connections and disconnect.

S4. Remove the Controller by removing the four mounting nuts taking care not to misplace the nuts or the insulators.

Fit the new Controller in reverse order

S1. Fit the PCB.

S2. Refit the connectors to the PCB.

S3. Refit the rear connection panel and test the unit. Check the panel interlock for correct operation

Door Adjustment: This must be carried out by service representative

To re-seat the door in case of mechanical trauma or accidental loosening of screws, use the following procedure:

S1. Loosen screws on right side of door and back out the set screws until flush with the hinge.

S2. Lift the door and secure the screws. This should eliminate radiation leakage at the door.Be sure that the plunger interlock on the door is not damaged.

S3. Re-tighten screws to fix position. Tighten set screws to ensure that setting does not change. Set screws can also be used to provide a very slight adjustment from left to right if needed.

S4. Test for radiation leakage and correct as needed. You must reject the unit at this point if levels of 1symbol 109 \f "Symbol" \s 11µSv/hr are exceeded.

Final re-seating of the door should be performed in conjunction with radiation testing to ensure that proper fit has been achieved. Door fit was correct upon shipping of the unit from the factory if proper installation instructions have been followed.

The attached Maintenance Report Sheet should be completed by the engineer carrying out the maintenance.

Camera Adjustment and Cleaning

Disconnect the unit from the mains supply.

If carrying out adjustments in the bottom of the unit to the camera and its lens whilst the unit is energised be sure to keep all parts of the body and metallic tools clear of the Isolating transformer and any wiring.

The camera is accessed by removing the front control box.

Three screws on the base of the control box are removed and the box carefully lifted taking care not to put tension on the connections to the control panel.

The camera may be pointing upwards and therefore the lens may after a period of time become dusty. It is recommended that any loose dust on the lens should be initially orally blown off and thenclean the lens using a proprietary lens or spectacle cleaning cloth ensuring that the lens is not scratched.

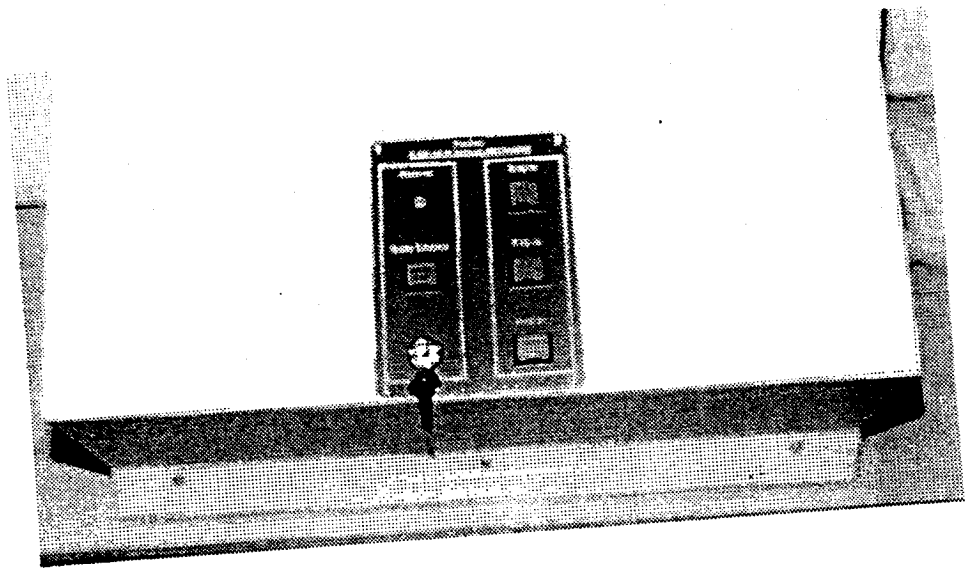
The lens is normally kept with the aperturewide open (f1.6). If the unit is to be checked with the side panel off close the lens until the image on the screen is suitable*(Remember to return to f1.6 before replacing the side panel*) The camera / lens can be focused on its own image reflected from the lead glass in the base of the inspection chamber.

Re-fit the access panel after adjustments ensuring that the earth straps are re-fitted to the panel.

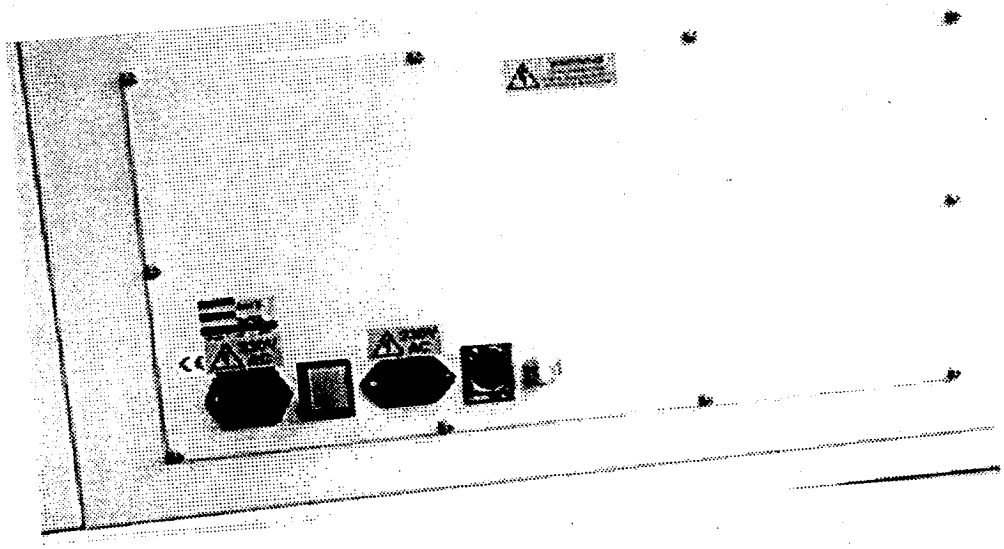
Testing for Radiation Leakage

To complete an accurate radiation leakage test, follow the detailed instructions on the enclosed radiation leakage form.

WARNING:
This can only be accepted when performed by a qualified technician using an approved radiation meter.

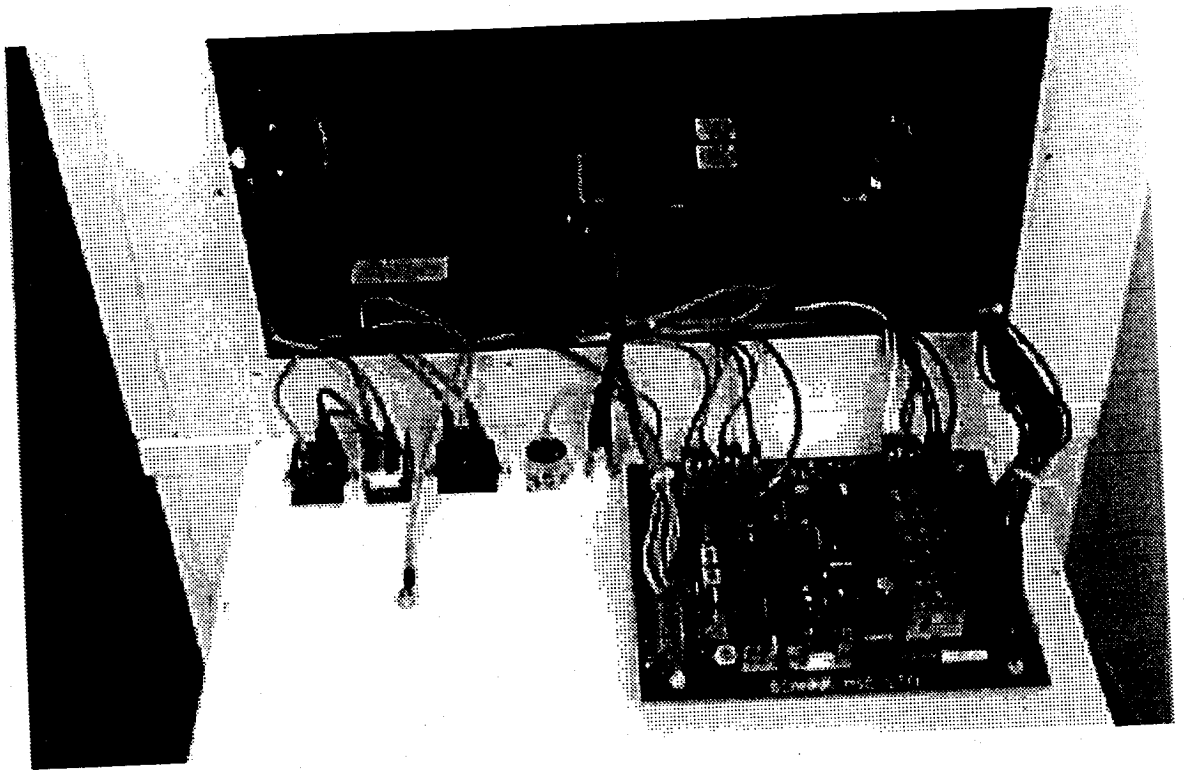


View of front panel

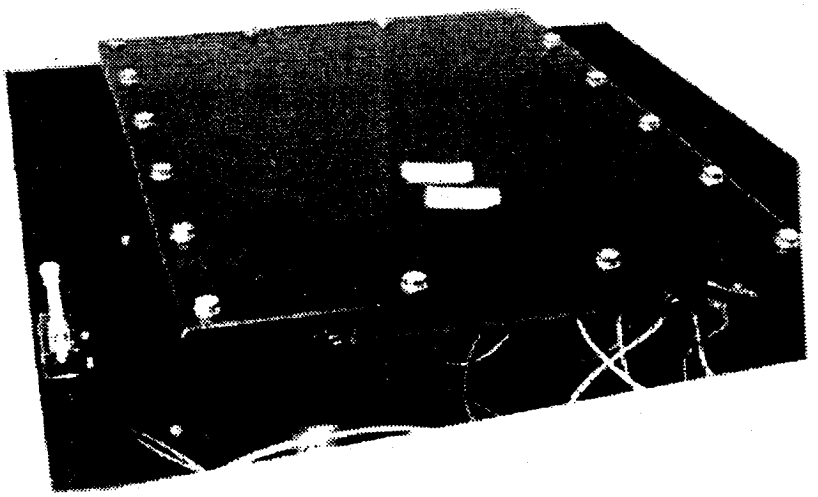


View of rear panel

From Left	1	Mains input (with fuse under)
	2	Mains isolating switch
	3	Mains for Monitor (if applicable)
	4	Remote "X-ray On"
	5	Video Out



View of controller with rear panel open



View of generator showing top panel interlock

MAINTENANCE REPORT SHEET

Customer	Site

The Ionising Radiation Regulations (1985) and the Approved Code of Practice, regulate the use of the equipment's listed. this report and attached Radiation Test Certificate comply with the requirements of the regulations.

Equipment	Serial No.

Item	Check	Result	Comment
1	Check Indicators		
2	Check switch operation		
3	Check door operation and interlock		
4	Clean equipment internally		
5	Check X-ray generator		
6	Check tube current		
7	Check all connectors		
8	Check timer operation		
9	Check all panels are secure		
10	Check monitor controls		
11	Check camera operation		
12	Carry out radiation check		
13	Clean equipment externally		
14			

Comments

Engineer

Date

Customer

Date

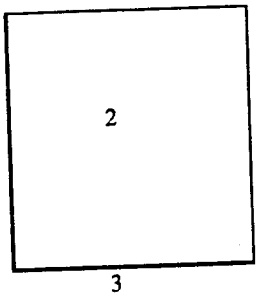
SCANNA MSC LIMITED
CRITICAL EXAMINATION REPORT

Customer: Unit Serial No.:

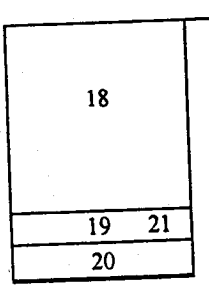
Order No.: X-ray Source Serial No.:

Date:

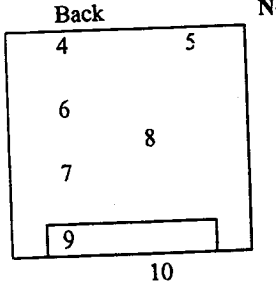
1. Radiation emission levels are not to exceed 1μSv/hr. at any inspection point.



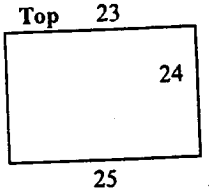
Area No	Left Side Panel Name	Readings
1	Front Panel Vertical Seam	
2	Left Side Panel	
3	Bottom Edge	
	Highest Reading	



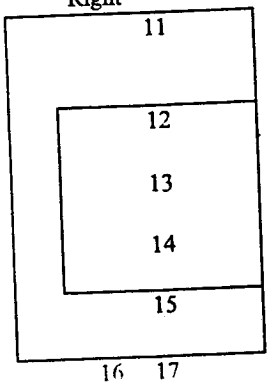
Area No	Front Panel Name	Readings
18	Front Panel	
19	Viewing Boot	
20	Control Panel	
21	Bottom Viewer Panel	
22	Bottom Edge	
	Highest Reading	



Area No	Back Panel Name	Reading
4	Left Vertical Seam	
5	Right Vertical Seam	
6	Top Door Hinge	
7	Bottom Door Hinge	
8	Back Panel	
9	Electrical Plug	
10	Bottom Plug	
	Highest Reading	



Area No	Lid Name	Reading
23	Back Lid Seam	
24	Right Lid Seam	
25	Front Lid Seam	
26	Left Lid Seam	
	Highest. Reading	



Area No	Right Side Panel Name	Reading
11	Top Right Side Panel	
12	Top Door Seam	
13	Door	
14	Bottom Door Seam	
15	Bottom Right Side Panel	
16	Front Panel Vertical Seam	
17	Bottom Edge	
	Highest Reading	

Radiation Monitor Used:_____

Serial Number_____

All readings are shown in symbol 109 \f "Symbol" \s 9μ Sv/hr

Inspected By:.....

SPECIFICATIONS

Physical Specifications-	Height:	107 cm (42.5 inches)
	Width:	55.8 cm (22 inches)
	Depth:	52 cm (20.4 inches)
	Weight:	160 kg (352 lb)
Inspection Chamber size	Height:	48 cm (20 inches)
	Width:	49 cm (19 inches)
	Depth:	45 cm (17 inches)
Door Opening	Height:	41 cm (16 inches)
	Width:	44 cm (17 inches)
Image Area	Depth:	41 cm (16 inches)
	Width:	48 cm (20 inches)
Shipping Dimensions	130 x 80 x 70 cm. (51 x 31 x 27 inches) Weight: 169 kgs (372 lbs)	
Power Requirements	110 VAC +/- 10% 60 HZ Single Phase	
X=Ray Source	Focal Spot	1.5 mm
	Anode Angle	35 degrees
	Anode Type	Stationary
	Kvp	65 KV (85KV max)
	Tube Current	7 mA (20mA max)
	Cooling method	Oil cooled
Resolution	36 AWG	
Radiation Safety	Complies with all current radiation regulations.	
Climatic Conditions	0-40° C. Maximum humidity: 95% non condensing.	
Control specifications	Front Panel:	Key switch, Exposure Switch (X-ray On) Power On Light, X-ray On light System Ready
	Power Electronics:	Auto line voltage compensation. Inverse suppression network. ma Stabiliser, Interlock input, foot switch input. 110 v AC Line in. X-ray generator / Control panel connectors.
Duty Cycle	100%	

Camera Specifications

Pick-up device	1/2" Interline-Transfer CCD.
No. of Elements	795 (h) x 595 (v) 473025
Sensing Area	4.9 mm x 3.7 mm
Scanning System	CCIR & SVGA
Sync. System	Internal.
Resolution	752 X 582
Lens Mount	C Mount.
Minimum illumination	0.02 Lux, F1.4 Output Voltage will work to 0.011x
Cpu BOARD	2MB DRAM 512KB Flash 30-150 MIPS.
Video Output	Monochrome CCIR Colour SVGA
Ambient Temperature	-20symbol 176 \f "Symbol" \s 11.5°C ~ +55symbol 176 \f "Symbol" \s 11.5° C less than 95% (non condensing)
Power Requirements	12 VDC
Power Consumption	1.8 W.
Weight	250 gm (1.46 lbs).
Dimensions	120 x 50 x 35 mm

CCD CAMERA

The VC21 camera has been specifically modified for use with the Scanmax 20 camera system and care must be taken when handling the camera and the lens mountings to ensure that connection of the multi way connector is not damaged or broken.

PRECAUTIONS

- Do not aim the camera towards the sun or extremely bright object.
- Do not touch the CCD imager which is very sensitive and not user serviceable.
- Do not attempt to disassemble the camera unnecessarily. There are no user serviceable components inside.

FEATURES

High sensitivity in a low light level down to 0.02 lux for excellent picture quality.

Picture burn in does not occur

Excellent immunity to vibration and shock.

The camera interface uses solid state components and requires no periodical maintenance work or replacement of components during normal use.

ADJUSTMENTS

The only adjustment available is the lens aperture and focus.
A live image display mode is provided to allow for easy installation of the camera. In this mode the camera operates as a standard camera, displaying a live image on the monitor. This mode is used for setting the camera into its correct position and setting the focus. Live display can be activated by switching the set-up line and will stay in that mode until the x-rays are energised when the camera automatically reverts to normal operation.

WARRANTY

NOTICE: **THIS SHIPMENT LEFT OUR FACTORY IN PERFECT CONDITION.**

If merchandise is delivered in damaged condition, *do not reject shipment.* Purchaser must have the driver note the damage (or the fact that possible damage exists and inspection will follow, or any shortage or overage) and sign all copies of the freight bill duly noted as damaged. Purchaser must examine for concealed damage as soon as possible. Notice of freight claim must be given to carrier within 5 days of delivery. Damaged merchandise and packaging must be retained until inspected by carrier. ***Seller shall not be responsible for any losses sustained due to Purchaser's failure to comply with this freight claim procedure. Seller's invoice must be paid in full, when due, irrespective of pending freight claim.***

REPAIRS:

A one year warranty is provided on the labour performed and any new parts installed by service technician at SCANNA's premises. This warranty is limited to labour performed and parts installed in the repair of a specifically identified problem and does not cover otherproblems which might develop within the same X-ray unit at another time.

Transportation to the factory or service centre is to be prepaid and is the responsibility of the purchaser. Shipment must not be made without first gaining authorisation from SCANNA or its agent.

IMPORTANT NOTICE:

Damage occurring due to operation or installation of this machine in a manner other thanthat detailed in this manual, will void the warranty.

Any type of damage to the fluoroscopic screen will not be covered.

Damage resulting from exceeding the duty cycle will not be covered.

Damage resulting from improper adjustment of the head or controller by an unqualified technician (as approved by SCANNA) will not be covered.

CRIME PREVENTION ADVICE

Bombs in the Post...

Be Alert

Look for the unusual:-

Shape	**Wrapping**	**Writing**
Size	**Grease Marks**	**Spelling**
Thickness	**Postmark**	**Unsolicited mail**
Scaling	**Signs of wire or batteries**	**Wrong name, title or address**

If you are suspicious:-

DON'T

1. **Don't try to open it.**
2. **Don't press squeeze or prod it.**
3. **Don't put it in sand or water.**
4. **Don't put it in a container.**
5. **Don't let anyone else do one of these.**

DO

1. **Keep calm**
2. **Look for sender's name on the back**
3. **Check with the sender**
4. **Check with the addressee.**

Still think you have got one?

Leave it where found
Evacuate the room
Lock the door and keep the key
Send for the security officer and

INVOKE YOUR EMERGENCY PROCEDURES OR TELEPHONE THE POLICE

PAGE 30 BLANK

TROUBLE SHOOTING

1 Insert key and turn on power.	Is Power light lit	No	Check that the mains lead is connected. Check that the mains socket is active. Check mains input fuse If fuse blows again check with door open fuse blows again check with door closed Check bulb	At the wall socket and then to the rear connection p If not contact electrician If faulty, replace, If faulty, replace, If faulty, replace, Change controller and x-ray generator If faulty, replace
2 System Ready	Is System Ready light	No	Check door is fully closed Check Rear panel interlock Check top panel interlock Check LED	))))) Ensure interlocks are made
2 Press X-ray On switch No Picture	Is X-ray On light lit	No	Is System Ready lamp lit Check door is fully closed. Check LED Check mains input fuse	))) Ensure interlock is made. If faulty, replace. If faulty, replace.
2 Cont.	Is X-ray On light lit	Yes	Is the TV Monitor Switched on Are the TV Monitor mains and video cables connected or damaged. Is the Monitor working Is the camera working.	Switch on If faulty replace If faulty, replace If faulty, replace

3 **Dim Picture**			Is there a large object in the viewing chamber Is fluorescent screen damaged Is the TV Camera lens dirty	Remove and check with an empty chamber Replace fluorescent screen Clean lens
			Seek qualified help to check Controller and Source	Check with your local distributor

SCANNA

CRITICAL EXAMINATION REPORT

Customer:	
Customer Order No.	Location:
Equipment Type: 20cc11	Serial No: 3152
Options:	

We confirm that the equipment detailed above has been installed and that all necessary checks have been carried out correctly, and that, as of the certificate date, the x-ray system described below, conforms to the current Radiation Safety Regulations of the United Kingdom as detailed in the:-

"Approved Code of Practice"
"The Protection of Persons against Ionising Radiation arising from any work activity"
"The Ionising Radiation Regulations 1985"

In that the dose rate measured on the surface of the equipment was less than 1μSv/hr and that all indicator lights and operational switches operated correctly.

The Radiation leakage was checked using a Mini-monitor Type G, Serial Number..049302

Certificate Date: 1st December 1999

Inspection Engineer: S.J MAZZOTTA.

Signature: S.J Mazzotta

SCANNA MSC LTD, 104 New Bond Street, London W1Y 9LG.
Tel: 0207 355 3555 Fax: 0207 355 3556 Email: info@scanna-msc.com Web: www.scanna-msc.com

CRITICAL EXAMINATION REPORT

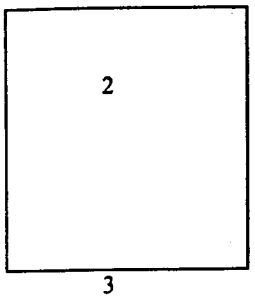
Customer: Equipment Type 20CC11

Order No.: Model Serial No.: 3152

Date: 1ST December 1999

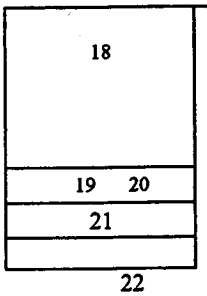
1. Scan all seams and mark with an ''X'' any areas than the specified limit
2. Radiation levels are not to exceed 1μSv/hr. at any inspection point.
3. Write the readings in the columns

Area Left Side Panel



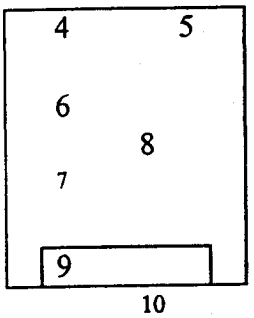
No	Name	
1	Front Panel Vertical Seam	<0.1
2	Left Side Panel	<0.1
3	Bottom Edge	<0.1
	Highest Reading	<0.1

Area Front Panel



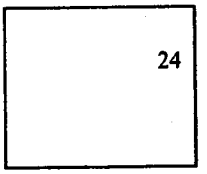
No	Name	
18	Front Panel	<0.1
19	Viewing Boot	NA
20	Control Panel	<0.1
21	Bottom Viewer Panel	<0.1
22	Bottom Edge	<0.1
	Highest Reading	<0.1

Area Back Panel



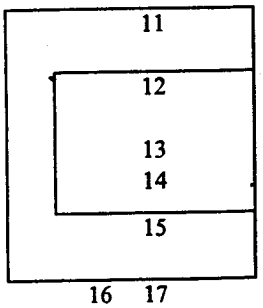
No	Name	
4	Left Vertical Seam	<0.1
5	Right Vertical Seam	<0.1
6	Top Door Hinge	<0.1
7	Bottom Door Hinge	<0.1
8	Back Panel	<0.1
9	Electrical Plug	<0.1
10	Bottom Plug	<0.1
	Highest Reading	<0.1

Area Lid



No	Name	
23	Back Lid Seam	<0.1
24	Right Lid Seam	<0.1
25	Front Lid Seam	<0.1
26	Left Lid Seam	<0.1
	Highest. Reading	<0.1

Area Right Side Panel



No	Name	
11	Top Right Side Panel	<0.1
12	Top Door Seam	<0.1
13	Door	<0.1
14	Bottom Door Seam	<0.1
15	Bottom Right Side Panel	<0.1
16	Front Panel Vertical Seam	<0.1
17	Bottom Edge	<0.1
	Highest Reading	<0.1

Readings carried out using Radiation Monitor Type:

Mini-monitor 900G Serial Number 049302

All reading shown are in μSv/hr

As part of this examination the warning indicators and safety interlocks have been checked and found to be functioning satisfactorily.

Approved By: S.J. [signature]

SCANMAX 20
QUALITY CERTIFICATE

SCANMAX ☒ 20	Camera	Serial Number	3152
X-ray Generator	TL 0424/3	X-Ray Tube	Y475
Voltage	110 Vac	Frequency	60 Hz
Controller Serial No.		Software Issue	XRAY 5

Mechanical Check	
Unit wiring layout checked and termination correctly fitted	YES
X-ray source secured correctly	YES
Transformers secured correctly	YES
Mirror secured correctly	YES
Door fitted correctly	YES
Generator check for oil leaks	YES
All screws fitted correctly with flat & spring washers	YES

Checked By S.J.M.

Operational check	
Control operational	YES
Lights operational	YES
Push buttons operational	YES
Image centred in viewing area	YES
Zoom and colour functions operational	YES
Door Interlocks functioning correctly	YES
Top Panel Interlock functioning correctly	YES
Rear Panel Interlock functioning correctly	YES
Camera functioning correctly	YES
Monitor functioning correctly	YES

Checked By S.J.M.

SCANMAX 20
QUALITY CERTIFICATE

Final Check

All panels fitted correctly	YES
Paint finish appearance and texture	OK
All screws correct and secure	YES
Radiation check (Examination report attached)	YES

Checked By SSR

Label Check

Identification and serial number plate	Rear Panel	YES
Voltage (Mains Input)	Above mains input	YES
Voltage (Monitor output)	Above mains output to monitor	YES
Warning	Top of rear connection panel Rear of top panel	YES
Radiation Trefoil	Above door opening	YES
Scanmax IS 20	Top left of front panel	YES
X-ray ON lens above door		YES
System Ready in green lens on front panel		YES

Checked By SSR

SCANMAX 20
QUALITY CERTIFICATE

Packing Check	
Manual	YES
Radiation Certificate	YES
Final Inspection Certificate	No
Mains Cable	YES
Keys (Two)	YES
Monitor	YES
Mouse	YES
Video Cable	NA.

Inspected By SS Date 1st December 1999

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
TECOM/Vinnell Services P.O. Box 60, Bldg. 286 (Russell Hall) Fort Monmouth, NJ 07703	Gregory Kucharewski	
	3. PERMIT NUMBER 180B	4. EXPIRATION DATE 20 March 2002

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Desk Top Cabinet Security X-Ray Screening System Fitted with Colour Camera Model: SCANMAX 20 CC Manufactured by: SCANNA MSC Inc. Sarasota, FL SN: SR3153 BC: 2677M	N/A	N/A

8. CONDITIONS:

a. The SCANMAX 20 CC listed in item 5 is used to x-ray letters/packages mailed to Fort Monmouth.

b. Authorized place of use is Building 761Mail Center, Main Post.

c. The SCANMAX 20 CC x-ray machine will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual, Issue 1, as provided with the Radiological Permit Application for the SCANMAX 20 CC, dated 15 February 2000.

APPROVED:

DATE: 20 March 2000

JOSEPH M. SANTARSIERO
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 180B	EXPIRATION DATE: 20 March 2002

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter when operating the SCANMAX 20 CC x-ray machine.

e. The SCANMAX 20 CC may not be removed, reconfigured or modified in any manner.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in item 5, to include procuring additional devices.

g. The SCANMAX 20 CC shall be surveyed annually for leakage.

h. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 15 February 2000, signed by Gregory Kucharewski, TECOM/Vinnell Services.

RADIOLOGICAL PERMIT APPLICATION

Check One

Date 15 February 2000

X Initial Permit Application (#180B)

___ Application for Amendment to Permit No. _____

___ Application for Renewal of Permit No. _____

1. To: CECOM Dir. for Safety
AMSEL-SF-RE
Ft. Monmouth, NJ 07703

2. Organization Applying for Permit:
TECOM/ Vinnell Services
PO Box 60, Bldg. 286 (Russell Hall)
Fort Monmouth, NJ 07703

3. Radiation Area Supervisor: Name Gregory Kucharewski

4. Radioactive Material: N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)

5. Other Sources of Ionizing Radiation Producing Devices:

SCANNMAX 20 CC > 65 KVP 7MA SN: SR3153

GEN. TLO424/3 TUBE Y475 BC: 2677M

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

GREGORY KUCHAREWSKI, TVS

SUZANNE COURTNEY, TVS

JASON DENNICK, TVS

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**

Bldg. 761 Mail Center, Main Post

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**

See Attached Manual

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)**

Self Contained Interlock

10. **Signature of Director of Responsible Individual:**

Name: Gregory Kucharewski **Signature** Gregory Kucharewski

CECOM DFS USE ONLY:

Instrumentation: Not required.

Dosimetry: Provided by CECOM DS (whole body badge)

Reviewed by: Hugo Bianchi **Date:** 9 March 2000

Approved by: Joseph M. Fortunato **Date:** 10 Mar 00

Radiological Permit Application Supplement

Name: Kucharewski (Last) Gregory (First) Walter (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna L+D.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A.		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Courtney (Last) Suzanne (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Dennick (Last) Jason (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna L+B.

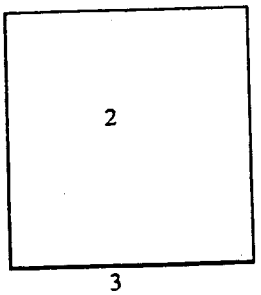
Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

SCANNA SCANMAX 20 CC S/N 3153; Bldg 761

Instrument: Eberline RO2 Ion Chamber Serial #: 3511 Cal Due Date: 23 May 00
Probe: _____ Serial #: _____ Pre-Op checks performed: (Sat) Unsat
Postings:
Caution Radioactive Material Sign: _____
SOP/Radiation Permit: _____ NRC Form 3: _____ No Smoking, Etc. Sign: _____
Section 206: _____ Notice To Workers: _____ Dosimetry Requirements: _____



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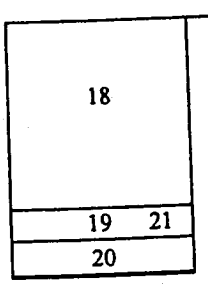
3	Bottom Edge	0.3 *
	Highest Reading	0.3



Area No	Front Panel Name	Readings
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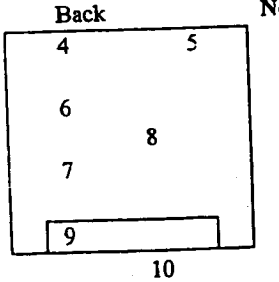
19	Viewing Boot	NA
20	Control Panel	0 *
21	Bottom Viewer Panel	0 *
22	Bottom Edge	0 *
	Highest Reading	0



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5	Right Vertical Seam	0 *
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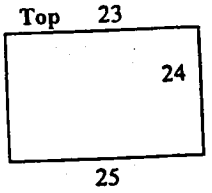
7	Bottom Door Hinge	0 *
8	Back Panel	0 *
9	Electrical Plug	0 *
10	Bottom Plug	0 *
	Highest Reading	0



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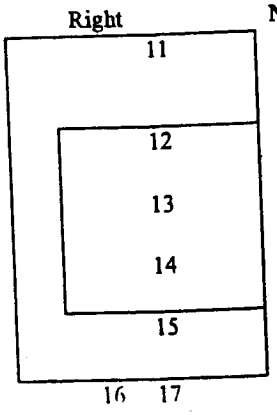
26	Left Lid Seam	0 *
	Highest. Reading	0



Area No	Right Side Panel Name	Reading
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12	Top Door Seam	0 *
13	Door	0 *
14	Bottom Door Seam	0 *
15	Bottom Right Side Panel	0 *
16	Front Panel Vertical Seam	0 *
17	Bottom Edge	0 *
	Highest Reading	0

Background: 0 mR/hr

LEGEND: * Contact Reading

NOTE: All readings are in mR/hr at waist level unless otherwise indicated.

Performed By: Barry Sellers Date: 16 Mar 00

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
TECOM/Vinnell Services P.O. Box 60, Bldg. 286 (Russell Hall) Fort Monmouth, NJ 07703	Gregory Kucharewski	
	3. PERMIT NUMBER	4. EXPIRATION DATE
	180C	20 March 2002

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Desk Top Cabinet Security X-Ray Screening System Fitted with Colour Camera Model: SCANMAX 20 CC Manufactured by: SCANNA MSC Inc. Sarasota, FL SN: SR3152 BC: 2679M	N/A	N/A

8. CONDITIONS:

a. The SCANMAX 20 CC listed in item 5 is used to x-ray letters/packages mailed to Fort Monmouth.

b. Authorized place of use is Building 976-A, Records Holding Area.

c. The SCANMAX 20 CC x-ray machine will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual, Issue 1, as provided with the Radiological Permit Application for the SCANMAX 20 CC, dated 15 February 2000.

APPROVED:

DATE: 20 March 2000

J. M. Santarsiero

JOSEPH M. SANTARSIERO
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 180C	EXPIRATION DATE: 20 March 2002

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter when operating the SCANMAX 20 CC x-ray machine.

e. The SCANMAX 20 CC may not be removed, reconfigured or modified in any manner.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in item 5, to include procuring additional devices.

g. The SCANMAX 20 CC shall be surveyed annually for leakage.

h. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 15 February 2000, signed by Gregory Kucharewski, TECOM/Vinnell Services.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 15 February 2000

X **Initial Permit Application** (#180C)

___ **Application for Amendment to Permit No.** _____

___ **Application for Renewal of Permit No.** _____

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: TECOM/ Vinnell Services PO Box 60, Bldg. 286 (Russell Hall) Fort Monmouth, NJ 07703

3. **Radiation Area Supervisor:** **Name** Gregory Kucharewski

4. **Radioactive Material:** N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)

5. **Other Sources of Ionizing Radiation Producing Devices:**

SCANNMAX 20 CC > 65 KVP 7MA SN: SR3152

GEN. TLO424/3 TUBE Y475 BC: 2679M

6. **Authorized Users:**
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

WILLIAM SIMONE, TVS

ROSALEY DINGLE, TVS

REBECCA BURGESS, TVS

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**

Bldg. 976-A, Records Holding Area

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**

See Attached Manual

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)**

Self Contained Interlock

10. **Signature of Director of Responsible Individual:**

Name: Gregory Kucharewski **Signature** Gregory Kucharewski

CECOM DFS USE ONLY:

Instrumentation: Not required.

Dosimetry: Provided by CECOM DS (whole body badge.)

Reviewed by: Hugo Bianchi **Date:** 9 March 2000

Approved by: Joseph M. Santarsiero **Date:** 10 Mar 00

Radiological Permit Application Supplement

Name: Simone (Last) William (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna L+D.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Dingle (Last) Rosaley (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna L+D

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Burgess (Last) Rebecca (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna Ltd.

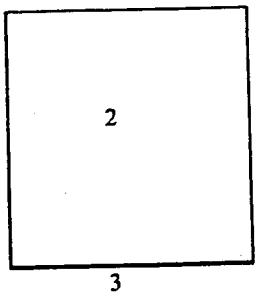
Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

SCANNA SCANMAX 20 CC S/N 3152; Bldg 976

Instrument: Eberline RO2 Ion Chamber Serial #: 3511 Cal Due Date: 23 May 00
Probe: _____ Serial #: _____ Pre-Op checks performed: (Sat) Unsat
Postings:
Caution Radioactive Material Sign: _____
SOP/Radiation Permit: _____ NRC Form 3: _____ No Smoking, Etc. Sign: _____
Section 206: _____ Notice To Workers: _____ Dosimetry Requirements: _____



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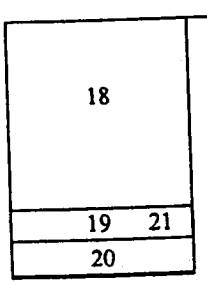
	Highest Reading	0



Area No	Front Panel Name	Readings
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19	Viewing Boot	NA
20	Control Panel	0 *
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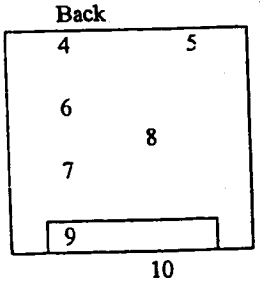

Area No	Back Panel Name	Reading
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7	Bottom Door Hinge	0 *
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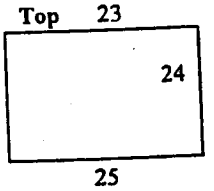
10	Bottom Plug	0 *
	Highest Reading	0



Area No	Lid Name	Reading
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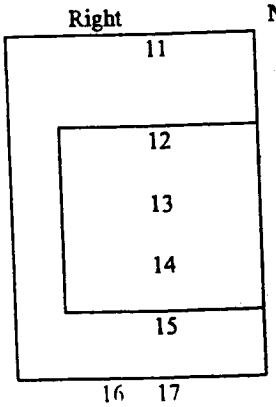
24	Right Lid Seam	0 *
25	Front Lid Seam	0 *
26	Left Lid Seam	* 0
	Highest. Reading	0



Area No	Right Side Panel Name	Reading
11	Top Right Side Panel	* 0
12	Top Door Seam	0 *
13	Door	0 *
14	Bottom Door Seam	0 *
15	Bottom Right Side Panel	* 0
16	Front Panel Vertical Seam	* 0
17	Bottom Edge	0 *
	Highest Reading	0

Background: 0 mR/hr

LEGEND: * Contact Reading

NOTE: All readings are in mR/hr at waist level unless otherwise indicated.

Performed By: Barry Sollie Date: 16 MAR 00

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
PM NBC Defense Systems Attn: AMSSB-PM-RNN-U Charles Wood Area, Fort Monmouth	Dr. Stanley Kronenberg	
	3. PERMIT NUMBER 190	4. EXPIRATION DATE 20 March 2002

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Radium- Beryllium (Ra-Be)	Radium Chloride with Beryllium Powder	Total Activity – 19.6 mCi

8. CONDITIONS:

a. The Ra-Be source listed in item 5 is used as a source of neutrons in various experiments and R&D projects.

b. Authorized place of use is Building 2540, Charles Wood Area and upon completion of the construction of Building 2540A.

c. The Ra-Be source will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW SOP 10-20, approved 10 March 2000, as provided with the Radiological Permit Application for the Ra-Be source, dated 1 February 2000.

APPROVED:

DATE: 20 March 2000

J. M. Santarsiero

JOSEPH M. SANTARSIERO
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 190	EXPIRATION DATE: 20 March 2002

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter and use a calibrated RADIAC meter to measure ambient radiation levels when using the Ra-Be source.

e. The Ra-Be source may not be removed, reconfigured or modified in any manner.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the source listed in item 5, to include procuring additional sources.

g. The Ra-Be source shall be leak tested at an interval not to exceed 3 months.

h. Unless specifically provided otherwise, the sources listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 1 February 2000, signed by Edward Groeber, Director, PM NBC Defense Systems.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 1 Feb 2000

✓ **Initial Permit Application** (#190)

___ **Application for Amendment to Permit No.** _____

___ **Application for Renewal of Permit No.** _____

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: PM NBC Defense Systems Attn: AMSSB-PM-RNN-U Charles Wood Area, Ft. Monmouth, NJ

3. Radiation Area Supervisor: Name Dr. Stanley Kronenberg

4. Radioactive Material: Radium Beryllium

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Ra-226	Radium Chloride w/Beryllium powder	Solid, 19.6 mCi

5. Other Sources of Ionizing Radiation Producing Devices:

N/A

6. Authorized Users:

Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Dr. Stanley Kronenberg

George Brucker

RADIOLOGICAL PERMIT APPLICATION

7. Location where source(s) of ionizing radiation will be used (Bldg, rm) : Bldg 2540, rm. 109; Exposure room in Bldg. 2540A (room # to be determined).

8. Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.

See attached SOP

9. Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)

When in use, the Ra-Be source will be stored in its lead container configuration and never removed.

10. Signature of Director of Responsible Individual:

Name: EDWARD GROEBL **Signature**

CECOM DFS USE ONLY:

Instrumentation: Provided by CECOM DS to include maintenance and calibration.

Dosimetry: Provided by CECOM DS, authorized users in paragraph 6 are already on the dosimetry program for gamma & neutron exposure.

Reviewed by: Hugo Bianchi **Date:** 9 March 2000

Approved by: Joseph M. Fontanese **Date:** 10 Mar 00

Radiological Permit Application Supplement

Name: KRONENBERG (Last) STANLEY (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
UNIVERSITY OF VIENNA AUSTRIA	5 Years	YES NO	(YES) NO
FT. MONMOUTH NJ	46 Years	(YES) NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
All ATOMIC NUMBERS Through 98	KCi SEALED & UNSEALED	FT. MONMOUTH NEVADA TESTSITE	46 Years	SCIENTIFIC RESEARCH
NUCLEAR WEAPONS	KTONS - MTONS	NUCLEAR TEST SITES	10 Years	WEAPON EFFECTS RESEARCH
NEUTRON GENERATOR	10^{12} n s^{-1}	FT. MONMOUTH	25 Years	SCIENTIFIC RESEARCH
BURST REACTORS	10^{17} FISSIONS / BURST	LOS ALAMOS ABERDEEN	25 YEARS	SCIENTIFIC RESEARCH

Radiological Permit Application Supplement

Name: BRUCKER (Last) GEORGE (First) JOSEPH (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FORT MONMOUTH	12 YR	(YES) NO	YES NO
RCA/GE	30 YR	YES (NO)	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cobalt-60	3500 curies	EVANS LAB FORT MONMOUTH	30 YR	Research Device Testing
Cobalt-60 Gamma Cell	12000 curies	RCA/GE	10 YR	Research Device Testing
UDM IA Cs-137	120 curies	EVANS	6 YR	Research Device Testing
Radon, Sr-90, Cs-137 Tritium Cobalt-60	microcuries	RCA/GE	30 YR	Research Device Testing
Americium, Plutonium Strontium, Cs, Co	microcuries	EVANS	10 yr	Research Device Testing
LINAC	Relocated to maryland	NRL LAB BOEING CRANE	20 YR	Research Device Testing
		Hanscom [redacted]	15 YR	Research Device Testing
Pulse Reactors	Neutron fluences 10^{11} to 10^{14} n/cm^2	Maryland University Aberdeen	1 yr	Research Device Testing
Triga Reactor	10^{10} to 10^{12} n/cm^2	Maryland University	1 yr	Research Device Testing
Flash x-ray	Relocated to maryland	Boeing Hanscom Sandia	15 yr	Research Device Testing
Tandem Van De Graaff	Relocated to Maryland of Relocated	Brookhaven	5 yr	Research Device Testing

SOP Number 10-20

STANDARD OPERATING PROCEDURE FOR THE USE OF THE RADIUM-BERYLLIUM NEUTRON SOURCE

1. **PURPOSE:** This document provides procedures for the use of the 19.6 millicurie (mCi) Radium-Beryllium (Ra-Be) neutron source, Fort Monmouth ID# R-01.

2. **APPLICABILITY:** This SOP applies to all authorized users listed on the radiation permit application.

3. **DISCUSSION:** The Ra-Be source is used to conduct testing during the research and development of neutron dosimetric devices.

4. **PROCEDURES:**

a. Ensure you wear a whole body TLD badge when using the Ra-Be source. See the Radiation Area Supervisor for dosimetry.

b. Ensure you use a calibrated RADIAC survey meter when using the Ra-Be source, perform all pre-operational tests and log all source check tests on the RESPONSE TEST LOG, see enclosure.

c. Report to the Radiation Area Supervisor for a briefing. Topics normally covered in the briefing will be: proper use of the source, safety procedures, and exposure times for intended use.

d. Set up your experiment (i.e., dosimeters) to be tested at the desired distances. The source will be configured to be facing away from personnel and the entrance to the room.

e. Conduct your experiment, throughout the experiment, ensure radiation levels are safe by taking readings at various restricted and unrestricted area. Report erroneous or abnormally high readings to the Radiation Area Supervisor immediately.

f. After the experiment has been concluded, ensure the Ra-Be source is put back in its shielded storage configuration.

g. Return the dosimetry and the RADIAC survey meter to their appropriate storage locations.

5. EMERGENCY ROCEDURES:

a. When using the Ra-Be source, monitor areas outside of the exposure room or any other authorized area (i.e., unrestricted areas) and report dose rate levels greater than twice background to the Radiation Area Supervisor.

b. EMERGENCY PHONE NUMBERS:

Radiation Area Supervisor - X75443
Fire Department - 911
Police - 911
Ambulance - 911
Directorate for Safety - X73112

Prepared by: _____ Date: 1 Feb. 2000
STANLEY KRONENBERG, Ph.D.
Research Physical Scientist
Radiation Area Supervisor

Reviewed by: _____ Date: 1 Feb 2000
Hugo Bianchi
Health Physicist
Radiological Engineering Division

Approved by: _____ Date: 10 MAR 2000
CRAIG GOLDBERG
Chief, Radiological
Engineering Division

RESPONSE TEST LOG

Instrument: **AN/PDR-77**

Serial Number: ______________

Check Source SN: ___________

Isotope: **Thorium-232**

RESPONSE TEST LOG				
DATE	PROBE *Check appropriate box or boxes*		RESPONSE SAT/UNSAT	INITIALS
	ALPHA	BETA		

ENCL

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
PM NBC Defense Systems Attn: AMSSB-PM-RNN-U Charles Wood Area, Fort Monmouth	Dr. Stanley Kronenberg	
	3. PERMIT NUMBER 139	4. EXPIRATION DATE 23 December 2001

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Amersham Wide Area Reference Source Model: PP.100 (1 – 3) Model: PPRB6879 (4 – 9)	Pu-238 incorporated into aluminum foil	Total Activity – 5.23 μCi 1. SN: ES927 - 14.4 nCi 2. SN: ES928 - 162 nCi 3. SN: ES929 - 1.35 μCi 4. SN: GE715 - 22 nCi 5. SN: GE716 - 217 nCi 6. SN: GE717 - 1.56 μCi 7. SN: GE718 - 23.2 nCi 8. SN: GE719 - 215 nCi 9. SN: GE720 - 1.66 μCi

8. CONDITIONS:

a. The Wide Area Reference Source (WAAS) listed in item 5 is used to calibrate various alpha RADIAC instruments.

b. Authorized place of use is Building 2540, Charles Wood Area and upon completion of the construction of Building 2540A.

c. Sources will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW SOP 20-06, approved 18 November 1999, as provided with the Radiological Permit Application renewal for the WAAS, dated 7 September 1999.

APPROVED:

DATE: 23 December 1999

for Richard J. Lovell ARSO

JOSEPH M. SANTARSIERO
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 139	EXPIRATION DATE: 23 December 2001

CONDITIONS:

d. The WAAS may not be removed, reconfigured or modified in any manner.

e. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6427, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the sources listed in item 5, to include procuring additional sources.

f. The Plutonium-238 sources in the WAAS shall be leak tested at an interval not to exceed 3 months.

g. Unless specifically provided otherwise, the sources listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 7 September 1999, signed by Edward Groeber, Director, PM NBC Defense Systems.

AMSEL-SF (385-11h) 23 March 2000

Fort Monmouth Radiation Control Committee (FMRCC) Sign-in Sheet

1. The following personnel attended the **23 March 2000** FMRCC meeting as MEMBER/ALTERNATE:

NAME	ORGANIZATION	SIGNATURE
Mr. Stephen LaPoint	AMSEL-SF-RE/CG's Representative	
Mr. Craig Goldberg	AMSEL-SF-RE/Chairman	
Mr. Richard Lovell	AMSEL-SF-RE/Co-Chairman	
Ms. Alice Kearney	AMSEL-SF-RE/Recorder	
Dr. Stanley Kronenberg	AMSEL-RD-IW-EC	not signed - present
Mr. Ira Kaplowitz	AMSEL-RD-IW-EC	
1LT Bryan Horner	MCXS-PVM	not signed - present
Mr. Ralph DeMartino	SELFM-PW-EV	
Ms. Wanda Green	SELFM-PW-EV (Alt)	
Mr. Ted Paquet	SELFM-SO	
Ms. Gail Paustian	SELFM-SO (Alt)	

2. The following personnel attended the 2nd Qtr FY00 FMRCC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE

3. Additional Remarks:

FORT MONMOUTH RADIATION CONTROL COMMITTEE
CECOM DIRECTORATE OF SAFETY RISK MANAGEMENT, BUILDING 2539
23 March 2000

1. Old Business:

a. Review/approve the 16 December 1999 FMRCC minutes.

b. Annual Fort Monmouth Ionizing Radiation Worker Training.

c. Tritium exit signs.

2. New Business. Radiation Protection Program:

a. Personnel Dosimetry Report for 3 Oct 1999 to 1 Jan 2000.

(1) CECOM.

(2) EOD.

(3) PAHC. No reports received as of this date.

b. New FMRCC Membership.

c. Health Physics Surveys.

d. Nuclear Regulatory Commision License Actions.

e. Radioactive Work Permits.

f. Radiation Training/Dosimetry Issuance for TECOM/Vinell X-Ray Operators.

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

December 14, 1999

Docket Nos. 030-05248
030-29741
Control Nos. 127060
127061

License Nos. 29-01022-06
29-01022-14

Joseph M. Santarsiero
Acting Director, Safety Risk Management
Department of the Army
U.S. Army Communications Electronics Command
AMSEL-SF-RER
Ft. Monmouth, NJ 07703-5024

Dear Mr. Santarsiero:

This refers to your license amendment request. Enclosed with this letter is the amended license. The facilities at Zones 3 & 4 may be released for unrestricted use except for the waste storage area described in your letters dated September 1 & 10, 1999.

Please review the enclosed document carefully and be sure that you understand and fully implement all the conditions incorporated into the amended license. If there are any errors or questions, please notify the U.S. Nuclear Regulatory Commission, Region I Office, Licensing Assistance Team, (610) 337-5093 or 5239, so that we can provide appropriate corrections and answers.

Thank you for your cooperation.

Sincerely,

Steve W. Shaffer
Health Physicist
Decommissioning and Laboratory Branch
Division of Nuclear Materials Safety

Enclosure:
Amendment No. 49
Amendment No. 18
cc:
Joseph M. Santarsiero, Radiation Safety Officer
State of New Jersey

AMSEL-SF-RE (15-1a) 3 October 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 26 September 2002

1. In accordance with Army Regulation (AR) 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the fourth FY02 quarterly meeting of the Fort Monmouth Radiation Safety Committee (FMRSC) convened at 1005 on 26 September, at the CECOM Directorate for Safety (DS), Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, AMSEL-SF-RE/Chairman
Mrs. Alice Kearney, AMSEL-SF-RE/Recorder
1LT Aaron Miaullis, MCXS-PVM (Primary)
Mr. Ira Kaplowitz, AMSEL-RD-IW-EC (Primary)
Mr. Ted Do, AMSEL-RD-IW-EC (Alternate)
Mr. Fred Mangino, SELFM-SO (Acting Alternate)
Ms. Wanda Green, SELFM-PW-EV (Primary)
Mr. Charles Goebel, Chenega Technology Services Corporation (CTSC) (Primary)
Mr. Greg Kucharewski, CTSC (Alternate)

b. Excused Absence:

Mr. Stephen LaPoint, AMSEL-SF/Commanding General's Representative
Mr. Ted Paquet, SELFM-SO (Primary)
Mr. Dinkerrai Desai, SELFM-PW-EV (Alternate)
SPC Castillo, MCXS-PVM (Alternate)

3. Old Business.

a. Review/approval of the 27 June 2002 FMRSC minutes. The minutes of the 27 June 2002 FMRSC meeting, dated 9 July 2002, were reviewed and approved unanimously as written.

ACTION: None.

b. Fort Monmouth 2002 Annual Emergency Response Drill. The After Action Report for the 2002 drill, conducted after normal duty hours on 18 June 2002, was provided to the FMRSC members.

ACTION: None.

c. Possible Impact of the Fort Monmouth Realignment. The Chairman briefly addressed the upcoming realignment and indicated that DS will be providing the U.S. Army Garrison Plans, Training and Mobilization personnel a summary of radiological support currently provided to the Garrison. The potential impact of the realignment on this Committee, if any, is not known at this time.

ACTION: AMSEL-SF will keep the FMRSC apprised of the impact relating to the Fort Monmouth Radiation Safety Program.

d. Tritium Exit Signs on Fort Monmouth. The FMRSC Chairman requested the DPW representative provide an update on the status of an inventory of tritium exit signs on Fort Monmouth. This was requested previously, at the urge of AMC, in order to prevent tritium signs from being destroyed or disposed of improperly.

ACTION: DPW will determine the status of the inventory of tritium exit signs on Fort Monmouth and report back to the Committee.

e. Outdoor Freespace Radiation Tests at Fort Monmouth. As discussed previously, a policy is currently in use to require prior approval of the Commander, U.S. Army Garrison, for outdoor, freespace radiation of radiofrequency and other non-ionizing radiation producing devices anywhere at Fort Monmouth. However, there is no written policy to disseminate to local activities to raise their awareness of this requirement. The Garrison representative responsible for developing the policy indicated that the requirement has been discussed at resident staff meetings, and will be incorporated into a larger regulation being developed to address numerous activities that require prior approval.

ACTION: SELFM-SO will report on the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002. There was a false reading of 000.039 on the neutron badge of one of the NBC personnel in Bldg 2540A (the badge was not worn during the

quarter). The U.S. AIRDB has assigned an administrative dose for this person.

ACTION: None.

4. New Business. Radiation Protection Program:
a. Automated Dosimetry Reports, 7 April to 6 July 2002.

(1) **CECOM.**

(a)	Collective exposure	0.213 REM
(b)	Average rem/quarter.....	0.018 REM
(c)	Highest exposure.....	0.078 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(3) **EOD.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC). No results received as of this date.**

ACTION: PAHC to submit Dosimetry Reports to DS.

b. Health Physics Surveys. All required health physics surveys are completed through the month of September 2002 with no unusual findings.

ACTION: None.

c. Nuclear Regulatory Commission (NRC) License Actions. NRC License Number 29-01022-14 (CECOM Worldwide): We performed Independent Government Testing of the Lensatic Compass, NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 02-08-01, and 02-09-02. The following tests were performed as stipulated in MIL-PRF-

10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2) and Luminosity (paragraph 4.4.1.9.4.1 - photometric). Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

d. Department of the Army Radiation Authorization (ARA) Actions:

(1) ARA A29-10-01 (CECOM Research and Development): ARA 29-10-01, undated (Expiration Date: 30 June 2005), was issued for research and development at the Charles Wood Area of Fort Monmouth. ARA 29-10-01 updates previous submissions by reflecting current policy and requirements. The only significant changes from previous submissions are the changes in Radiation Safety Officer (RSO), Alternate RSOs, the addition of a 60 nanocurie Radium-226 EPA standard previously not included in the ARA, and deletion of the two each Americium-241 alpha references sources, New England Nuclear Nuclear Corporation Model NES-302S, 50 nanocuries each.

(2) ARA A29-0122 (CECOM Museum): ARA 29-0122, undated (Expiration Date: 30 June 2005), was issued for the use and storage of communications-electronics end article applications and components as museum artifacts at the CECOM Museum. The artifacts contain Radium-226 incorporated as radioluminous paint on meter movements, toggle switches and circuit breakers, and electron tubes incorporating various radioactive materials.

e. Radiological Work Permit (RWP). Fort Monmouth RWP #200 issued to PM, NBC Defense Systems was renewed on 1 August 2002. The RWP allows for the safe use of the Californium-252 (Cf-252) neutron source. The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in the field of neutron physics.

ACTION: None.

f. NonIonizing Radiation Actions.

(1) Several Space and Terrestrial Communications Directorate (S&TCD) equipment/systems were evaluated for Radiofrequency (RF) safety. They were intended for freespace radiation on Post. Coordination was also performed with the Garrison Chief of Staff for co-authorization for the tests/ demonstrations. Equipment/systems evaluated included the MOSAIC Advanced Technology Bed Demo involving 4 different RF emitters, MILSTAR On-the-Move, VIGILENT SHEPHERD, EHF SATCOM-ON-THE-MOVE and the Juice 02 exercise, which was a joint Software Engineering Center (SEC)/S&TCD program. Pre-test/exercise calculations were performed followed by real-time radiation safety measurements for most all to insure adequacy of personnel safety. Recommendations were provided regarding safe personnel-to-antenna separation distances, etc.

(2) The CECOM Microwave Safety Officer has been attending monthly Garrison Operations Support Meetings, where various CECOM organizations discuss their upcoming needs for freespace radiating of non-ionizing radiation producing equipments/systems on Fort Monmouth. POC for the meetings is Mr. John Stonska, x29416.

(3) A follow-up site assistance visit was conducted for SEC.

(4) A Site Assistance Visit was conducted for operations at Bldg. 2718 (numerous occupants) regarding their non-ionizing radiation safety program.

(5) A follow-up site assistance visit was conducted for the Military Affiliate Radio System building. The CECOM MSO will be providing a complete reference binder for their use.

(6) Several random outdoor installation drive-through's were conducted to look for non-registered RF emitters. None were found during this quarter.

(7) RF radiation safety support was provided to U.S. Army Reservists supporting Golden Kastle 02.

(8) RF radiation safety support was provided to PM WIN-T for a system planned for RF freespace testing on the Garrison (LHGXA antenna installed on the TROJAN SPIRIT II)

g. Aerial Detector Testing. Mr. Ira Kaplowitz, FMRSC member for AMSEL-RD-IW-EC, provided a brief demonstration of the unmanned aerial radiation detection system, which was tested at Naval Air Engineering Center, Lakehurst, in June 2002. The presentation was interesting and well received.

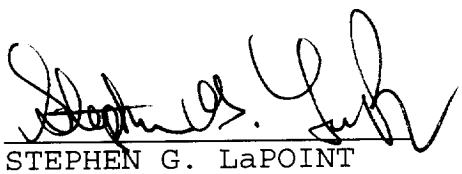
h. Transportation Parcel Inspection System. CTSC representatives requested AMSEL-SF-RE review literature regarding a Transportation Parcel Inspection System for any radiation safety concerns. This portable system, used for screening incoming packages, is being considering for purchase.

ACTION: CTSC shall provide AMSEL-SF-RE with information about the system in question. AMSEL-SF-RE will review the literature and provide recommendations as necessary.

5. The FMRSC meeting was adjourned at 1130 hours.

Prepared by: 
ALICE M. KEARNEY
Recorder, FMRSC

Reviewed by: 
CRAIG S. GOLDBERG
FMRSC Chairman/Fort Monmouth
Radiation Safety Officer

Approved by: 
STEPHEN G. LaPOINT
Commanding General's
Representative

AMSEL-SF-RE (15-1a)
SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 26 September 2002

DISTRIBUTION:
AMSEL-CS (COL Bridges)
SELFM-CO (LTC Reyes)
AMSEL-SF (LaPoint/Goldberg/Kearney)
AMSEL-SF-RE (Bianchi/Proctor/Perrella/Cummings/Ziola)
MCXS-PVM (1LT Miallus/SPC Castillo)
AMSEL-RD-IW-EB (Kaplowitz/Do) (Email)
SELFM-PW-EV (Green/Desai) (Email)
SELFM-SO (Paquet/Paustian) (Email)
Charles Goebel, CTSC, QC & Safety Mgr, Bldg 286, RM 017 (Email)
Greg Kucharewski, CTSC, Admin. Svcs. Supervisor, Bldg 886 (Email)

TRACKING LIST FOR FMRSC ACTIONS
(2 October 2002)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS
AMSEL-SF	DS will work with Plans, Training and Mobilization personnel to determine the impact of the realignment on DS support of the FM Radiation Safety Program.	27 Jun 02	**OPEN.**
SELFM-SO	SELFM-SO will report on the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.	27 Jun 02	**OPEN.**
AMSEL-SF-RE	Dosimetry Custodian will ensure incorrect exposure reading is corrected by AIRDB.	27 Jun 02	**CLOSED. AIRDB has assigned Admin Dose.**
AMSEL-SF-RE	RE will provide After Action Report of Jun 02 Emergency Drill to FMRSC members.	27 Jun 02	**CLOSED.**
SELFM-PW	DPW will determine the status of the inventory of tritium exit signs on Fort Monmouth.	27 Jun 02	**OPEN.**
MCXS-PVM	PVM will provide Automated Dosimetry Reports for 7 April to 6 July 2002 to AMSEL-SF.	26 Sep 02	**OPEN.**
CTSC	CTSC will provide information for review to AMSEL-SF-RE regarding a Transportation Parcel Inspection System.	26 Sep 02	**OPEN.**
AMSEL-SF-RE	AMSEL-SF-RE will evaluate the information for the above system and provide recommendations.	26 Sep 02	**OPEN.**

FORT MONMOUTH RAD[illegible] CONTROL COMMITTEE
CECOM DIRECTORATE [illegible] 2539
26 Se[illegible]

1. Old Business:

a. Review/approve the 27 [illegible] es.

b. Fort Monmouth 2002 Annual Emergency Response Drill.

c. Possible Impact of the Fort Monmouth Realignment.

d. Tritium Exit Signs on Fort Monmouth

e. Outdoor Freespace Radiation Tests at Fort Monmouth.

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002.

2. New Business:

a. Automated Dosimetry Reports, 7 April to 6 July 2002.

b. Health Physics Surveys.

c. Nuclear Regulatory Commission (NRC) License Actions.

d. Department of the Army Radiation Authorization (ARA) Actions.

e. Radioactive Work Permits (RWP).

f. Nonionizing Radiation Actions.

g. Lakehurst Aerial Detector Testing.

AMSEL-SF (15-1a) 26 September 2002

Fort Monmouth Radiation Safety Committee (FMRSC) Sign-in Sheet

1. The following personnel attended the **26 September 2002** FMRSC meeting as MEMBERS/ALTERNATES:

NAME	ORGANIZATION	SIGNATURE
Mr. Stephen LaPoint	AMSEL-SF (Commanding General's Representative)	Excused Absence
Mr. Craig Goldberg	AMSEL-SF-RE/Acting Chairman/ Fort Monmouth Radiation Safety Officer	
Ms. Alice Kearney	AMSEL-SF-RE/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-IW-EC	
Mr. Ted Do	AMSEL-RD-IW-EC (Alt)	
1LT Aaron Miaullis	MCXS-PVM	
SPC John Castillo	MCXS-PVM	excused (Alt.)
Ms. Wanda Green	SELFM-PW-EV (Primary)	
Mr. Dinkerrai Desai	SELFM-PW-EV (Alternate)	Excused Absence
For Mr. Ted Paquet	SELFM-SO (Primary)	Fred Manning
Ms. Gail Paustian	SELFM-SO (Alt)	Excused Absence
Mr. Charles Goebel	Chenega Technology Services Corporation (CTSC) (Primary)	
Mr. Greg Kucharewski	CTSC (Alternate)	

2. The following personnel attended the 4th QTR FY02 FMRSC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE

3. Additional Remarks:

AMSEL-SF-RE (11-9e) 25 June 2002

MEMORANDUM FOR RECORD

SUBJECT: 2002 Fort Monmouth (FM) Annual Installation Radiation Drill, After Action Report

1. Scenario: The 2002 FM annual drill simulated a worker becoming unconscious due to a fall while operating the J.L. Shepherd Model 81-22 Multisource Gamma Calibrator (MSGC) located in building 2540.

2. Conditions of the Drill:

a. The drill occurred after normal duty hours on 18 June 2002.

b. Firefighters had previous knowledge that building 2540 contained radioactive material as a result of previous training; previous emergency drills; and notification that an after hours use of the MSGC was planned for 18 June 2002, 1730 to 2230 hours.

3. Objectives:

a. To determine if firefighters properly use RADIAC instrumentation in emergency operations.

b. To determine if emergency response personnel should secure the accident scene/area.

c. To determine if firefighters can extricate a victim from a field of radiation in a timely manner.

d. To determine if firefighters turn off or secure the source of radiation.

e. To determine if firefighters communicate with their command post during the drill.

4. Participants:

a. CECOM Directorate for Safety (DS) Personnel:

Hugo Bianchi

b. Provost Marshall Office:

Patrolman Thomas Carlin

c. FM Fire and Emergency Services Division:

Deputy Chief Steve Roszkowski
Captain Thomas Caruso
Firefighter Scott Gould
Firefighter Eugene Stabulis
Firefighter Craig Flannigan
Firefighter Elizabeth Sweeney
Firefighter William Chyzik
Firefighter Edward Miller
Firefighter Cynthia Yost
Firefighter Jason Brown

d. PM NBC Defense Systems Personnel:

Fred Gentner

5. Drill Events:

a. The drill was initiated at 1809 hours by placing a call to "911." The caller stated that as he was leaving building 2539 for home, he noticed a car in the parking lot and went to building 2540 to investigate. He reported that he found an unconscious worker in building 2540 and that the radiation light above the person was "on." The dispatcher took the information and asked for the name of the caller.

b. Patrolman Carlin arrived on the scene first at 1812 hours, conferred with the caller and then secured the roadways leading to the area. Fort Monmouth firefighters from the Charles Wood Area station responded to the call by parking approximately 150 feet from the compound fence-line, in an upwind direction at 1818 hours.

c. Upon arriving at the scene, one firefighter immediately secured the RADIAC meter to record the background reading of the arrival area, i.e., the command post. When the reading was deemed "acceptable," (i.e., the firefighter verified that the background for the area was 0.016 mR/hr.) three firefighters began their approach to building 2540.

d. The three firefighters arrived at the small gate to the compound of building 2540 at 1824 hours, a reading of 0.022 mR/hr was reported to the command post. Then the three firefighters conducted a survey around the periphery of building 2540, the highest reading reported to the command post was 0.029 mR/hr.

e. RADIAC meter readings were taken at the doorway to building 2540 at 1828 hours, the reading was radioed to the command post as 0.021 mR/hr. One firefighter stayed at the entrance while the other two entered the building using their "blue access key."

f. As the firefighters traveled down the dimly lit hallway, they radioed readings back to the command post; the highest reading was 0.026 mR/hr. They continued surveying until they came upon the unconscious victim laying at the doorway to the exposure room. They found the unconscious victim at 1830 hours. After it was determined by the firefighter that the readings were safe (i.e., the measured highest reading of 0.062 mR/hr at the victim was well below the turnaround number of 25K mR/hr), the firefighters extricated the victim from the doorway to the exposure room at 1831 hours.

g. The source of radiation was shut down at 1833 hours.

h. At 1834 hours a search of the exposure room was made and no other victims were found.

i. The drill concluded at 1835 hours.

6. Critique of the Drill:

a. At the termination of the drill, all personnel involved participated in an informal critique of the events.

b. The outcome of the critique was as follows:

(1) Response time to the scene by firefighters and communications used at the accident scene was good.

(2) Although firefighters were confident with the level of training that they have received, and were aware of the "turnaround number" of 25K mR/hr, the "turnaround number" was not set to alarm on their RADIAC meter. The "turnaround number" is the reading that would require a firefighter to cease response and return to the command post and await further instruction from the command post and/or health physicists.

(3) The firefighters had some difficulty shutting the source down due to the fact that the emergency off button was not marked.

(4) Usage of the RADIAC meter, extricating the victim, and the survey of the periphery of the building went well.

7. Recommendations:

a. CECOM DS will ensure that the emergency off button on the control panel for the MSGC is clearly marked.

b. CECOM DS will provide informal training to firefighters on RADIAC usage (i.e., changing the alarm setting). In addition, informal periodic training will be provided to ensure that all firefighters remain proficient in RADIAC usage.

8. The recommendation in paragraph 7a has been implemented. The recommendation in paragraph 7b will be implemented during the first quarter of FY03.

9. Our POC is Hugo Bianchi, AMSEL-SF-RE, DSN 987-3112, ext. 6444 or COMM (732) 427-3112, ext. 6444, Facsimile DSN 992-6403 or COMM (732) 542-7161 or E-Mail: hugo.bianchi@mail1.monmouth.army.mil.

10. CECOM Bottom Line: THE WARFIGHTER.

Prepared by: Hugo Bianchi
HUGO BIANCHI
Health Physicist, Radiological Engineering Division

Approved by: C. Goldberg
CRAIG GOLDBERG
Chief, Radiological Engineering Division

CF: Chief, Fort Monmouth Department of Fire & Emergency Services

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
PM NBC Defense Systems Attn: AMSSB-PM-RNN-U Building 2540 Charles Wood Area, Fort Monmouth	Dr. George Brucker	
	3. PERMIT NUMBER 200	4. EXPIRATION DATE 1 August 2004

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Californium-252	CfPd Alloy/Solid	53.5 micrograms – Cf-252 3.35 mCi (n)

8. CONDITIONS:

a. The source listed in Item 5 is used for research and development of RADIAC meters.

b. The authorized place of use is in the exposure room, Building 2540, Charles Wood Area, Fort Monmouth.

c. The source will be utilized under the supervision of the individual listed in Item 2. Additional users shall be approved by the Fort Monmouth Radiation Safety Officer (RSO). The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation/use of the source listed in Item 5.

APPROVED:

DATE: 1 August 2002

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

RADIOLOGICAL PERMIT APPLICATION

Check One

Date 1 Aug 2002

___ Initial Permit Application
/ Application for Amendment to Permit No. _____
V Application for Renewal of Permit No. 200

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: ~~F2WD (AMSEL-RD-IW-CB)~~ PM, NBC Defense Systems

3. Radiation Area Supervisor: Name DR. GEORGE J. BRUCKER

4. Radioactive Material:

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Cf (252)	Cf Pd alloy	Solid Capsule 3.35mCi (n) (53.5 micrograms - Cf-252)

5. Other Sources of Ionizing Radiation Producing Devices:

N/A

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Dr. George J Brucker
Mr. Edward Bechtel
Mr. Fred Reutner
Mr. Mike Basso

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**

2540A, ROOM 007 (EXPOSURE ROOM)

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**

Attached SOP

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)** Source is contained in a 55 gal steel drum filled with WEP Shielding. The source is located in a cavity in a WEP plug. The drum is located in Room 007 which is used for high energy exposure experiments.

10. **Signature of Director of Responsible Individual:**

Name: EDWARD GROEBER **Signature**

CECOM Directorate for Safety USE ONLY:

Instrumentation: B/γ Survey meter & neutron survey meter provided by CECOM DS.

Dosimetry: B/γ/n dosimetry provided by CECOM DS

Reviewed by: Hugo Bianchi **Date:** 1 Aug 2002

Approved by: C J Goldby **Date:** 8/1/02

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 200	EXPIRATION DATE: 1 August 2004

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter (to include neutron dosimetry) and use calibrated RADIAC meters (gamma and neutron) to measure ambient radiation levels when using the source listed in Item 5.

e. No unauthorized personnel are allowed in the same room when the Cf-252 source is in use.

f. The Cf-252 source may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

g. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6441 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in Item 5, to include procuring additional sources.

h. The Cf-252 source shall be surveyed on a monthly basis by the CECOM Directorate for Safety.

i. The Cf-252 source shall be leak tested on a quarterly basis by the CECOM Directorate for Safety.

j. The Cf-252 source is to be used IAW SOP 10-21, approved 1 August 2002, as provided with the Radiological Permit Renewal Application, dated 1 August 2002.

k. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 1 August 2002, signed by Edward Groeber, Director, PM NBC Defense Systems.

Radiological Permit Application Supplement

Name: Brucker (Last) George (First) J. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth, N.J.	50 yrs.	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
all	3,500 Ci Co(60)	9401 EVANS	7 yrs.	research
X-Ray	300 KV	9401 EVANS	7 yrs.	research
neutron generator	2.8 mev (10^{10} n/s)	9401 EVANS	3 yrs.	research

Radiological Permit Application Supplement

Name: Bechtel (Last) Edward (First) W. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Ft. Monmouth NJ	5 yrs	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
All Isotopes	3500 Ci Co(60)	Vault 9401 Evans	5 yrs	Research
X-Ray Iso Volt 320	300 KV	9401 Evans	5 yrs	Research
Neutron Generator	2.5 MeV 10^{10} n/s D-D	9401 Evans	1 wk	Research

Radiological Permit Application Supplement

Name: GENTNER (Last) FRED (First) I. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Mammouth, N.J.	5 yrs.	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
all	3500 Ci Co(60)	9401 EVANS	5 yrs	research
X-ray	300 KV	9401 EVANS	5 yrs	research
neutron Generator	2.8 MEV (10^{10} n/s)	9401 EVANS	1 yr.	research

Radiological Permit Application Supplement

Name: Basso Michael J
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth	40 Years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	5000 Curies	Evans	20 yrs.	Research + Development
Cs-137	120 Curies	Evans	20 yrs.	"
X-ray	300 Kev	Evans	20 yrs	"
gamma Neutron	1 MeV Accelerator	Evans	20 yrs	"

SOP Number 10-21

STANDARD OPERATING PROCEDURE FOR THE USE OF THE CALIFORNIUM-252 NEUTRON SOURCE

1. PURPOSE: This document provides procedures for the use of the 53.5 micrograms of Californium 252 (Cf-252) neutron source, Fort Monmouth ID Cf-01.

2. APPLICABILITY: This SOP applies to all authorized users listed on the radiation permit application.

3. DISCUSSION: The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in neutron physics and dosimetry.

4. PROCEDURES:

a. *Pre-Operation:*

(1) Notify the radiation area supervisor concerning intended use of the Cf-252 source.

(2) Report to the radiation area supervisor for a safety briefing. Topics normally covered in the briefing will include:

(a) The proper use of the Cf-252 source,
(b) Safety procedures,
(c) RADIAC usage,
(d) Radiation survey techniques,
(e) Dosimetry usage,
(f) And exposure duration for intended use.

(3) Users shall wear a whole body TLD badge when using the Cf-252 source. See the radiation area supervisor for dosimetry assignment.

(4) Ensure you use 'ACTIVE' calibrated RADIAC survey meters (i.e, gamma and neutron survey meters) when using the Cf-252 source, perform all pre-operational checks prior to use.

b. *Operation:*

(1) Take out the shielding (WEP) plug by pulling it up by its handle and place it aside. The Cf-252 source is in a metal capsule lying horizontally in a styrofoam cradle at the bottom of the cavity.

(2) Place the item to be exposed on a suitable platform at the desired distance above the source. DO NOT MOVE THE SOURCE.

(3) Avoid line of sight exposure to any part of the body. Use tongs, forceps or a similar instrument to position the item to be exposed. The source is facing up, away from personnel and the entrance to the room.

(4) Conduct your exposure. Throughout the exposure, ensure radiation levels are safe by taking readings at various restricted and unrestricted areas. Report erroneous or abnormally high readings to the radiation area supervisor immediately.

c. *Post-operation:*

(1) After the exposure has been concluded, ensure the Cf-252 source is restored in its shielded storage configuration.

(2) Return the dosimetry and the RADIAC survey meters to their appropriate storage locations.

5. EMERGENCY ROCEDURES:

a. When using the Cf-252 source, monitor areas outside of the exposure room or any other authorized area (i.e., unrestricted areas) and report dose rate levels greater than twice background to the Radiation Area Supervisor.

b. EMERGENCY PHONE NUMBERS:

Radiation Area Supervisor - X75443
Fire Department - 911
Police - 911
Ambulance - 911
Directorate for Safety - X73112

Prepared by: George J Brucker Date: 1 Aug. 2002

GEORGE BRUCKER, Ph.D.
Research Physical Scientist
Radiation Area Supervisor

Reviewed by: Hugo Bianchi Date: 1 August 02

Hugo Bianchi
Health Physicist
Radiological Engineering Division

Approved by: C. Goldberg Date: 8/1/02

CRAIG GOLDBERG
Chief, Radiological
Engineering Division

email reg to Lt Mialius AK

FORT MONMOUTH RADIATION SAFETY COMMITTEE (RSC)
WORKING AGENDA
CECOM DIRECTORATE OF SAFETY RISK MANAGEMENT, BUILDING 2539
26 September 2002

RSC convened at 1005 hours.

1. Old Business:

a. Review/approve the 27 June 2002 RSC minutes. The minutes from the last meeting were distributed, dated 9 July 2002. **If there are no comments/problems regarding those minutes, move for approval of minutes as written.**

b. Fort Monmouth 2002 Annual Emergency Response Drill. **Copies of the drill are provided today.**

c. Possible Impact of the Fort Monmouth Realignment. **Wing it!** DS is providing summary of our FM support to Garrison. Many aspects re: ionizing + nonionizing. ACTION: We'll report back to RSC + develop list of our support in order to provide services.

d. Tritium Exit Signs on Fort Monmouth. DS requested DPW to identify all tritium exit signs prior to new construction and/or demolition. As of this date DPW has not provided any ~~additional~~ information. Since there was no representation by DPW at the last meeting, the Committee approved a motion to request DPW to provide an immediate update on the status of all tritium exit signs on Fort Monmouth, as well as annual inventories of the signs. **DPW was to determine the status of tritium exit signs with regard to new construction and/or demolition on Fort Monmouth and provide that information to DS as soon as possible. Nothing has been received from DPW as of today.** no DPW

Wkly 745 - Lane Hall Resident Mgr DPTM [illegible]

e. Outdoor Freespace Radiation Tests at Fort Monmouth. A policy is currently in use to require prior approval of the Commander, U.S. Army Garrison, for outdoor, freespace radiation of radiofrequency, and other non-ionizing radiation producing devices anywhere at Fort Monmouth. Part of this request/approval process will include the coordination and/or the approval of the CECOM Microwave Safety Officer, Directorate for Safety. **There was no written policy as of the previous meeting (27 Jun). The action was assigned to the Fort Monmouth Garrison Safety Office to determine and report the status of the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.**

f. False Reading of One Thermoluminescent Dosimeter (TLD) for Wearing Period of 6 January to 6 April 2002. There was a false reading of 000.039 on the neutron badge of one of the NBC personnel in Bldg 2540A (the badge was not worn during the quarter). **The U.S. AIRDB has assigned an administrative dose for this person.**

ACTION: None.

2. New Business. Radiation Protection Program:

a. Automated Dosimetry Reports, 7 April to 6 July 2002.

(1) **CECOM.**

(a)	Collective exposure	0.213 REM
(b)	Average rem/quarter.....	0.018 REM
(c)	Highest exposure.....	0.078 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(3) **EOD.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC). No results received as of this date.**

ACTION: PAHC to submit Dosimetry Reports to DS.

b. Health Physics Surveys. The results for the Sep 02 are not available yet; if there are any unusual findings, they will be reported at the December 2002 meeting.

c. Nuclear Regulatory Commission (NRC) License Actions.

NRC License Number 29-01022-14 (CECOM Worldwide): We performed Independent Government Testing of the Lensatic Compass, NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 02-08-01, and 02-09-02. The following tests were performed as stipulated in MIL-PRF-10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2) and Luminosity (paragraph 4.4.1.9.4.1 - photometric).

Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

d. Department of the Army Radiation Authorization (ARA) Actions:

(1) ARA A29-10-01 (CECOM Research and Development): ARA 29-10-01 undated (Expiration Date: 30 June 2005) (complete revision) issued for research and development at the Charles Wood Area of Fort Monmouth. ARA 29-10-01 updates previous submissions by reflecting current policy and requirements. The only significant changes from previous submissions are the changes in Radiation Safety Officer (RSO), Alternate RSOs, the addition of a 60 nanocurie Radium-226 EPA standard previously not included in the ARA, and deletion of the two each Americium-241 alpha references sources, New England Nuclear Nuclear Corporation Model NES-302S, 50 nanocuries each.

(2) ARA A29-0122 (CECOM Museum): ARA 29-0122 undated (Expiration Date: 30 June 2005) (complete revision) issued for the use and storage of communications-electronics end article applications and components as museum artifacts at the CECOM Museum. The artifacts contain Radiium-226 incorporated as radioluminous paint on meter movements, toggle switches and circuit breakers, and electron tubes incorporating various radioactive materials. Ra^{226} commodities

ACTION: None

e. Radiological Work Permit (RWP). Fort Monmouth RWP #200, issued to PM, NBC Defense Systems was renewed on 1 August 2002. The RWP allows for the safe use of the Californium-252 (Cf-252) neutron source. The Cf-252 source is used to conduct testing during the research and development of neutron dosimetric devices and in other basic research in the field of neutron physics.

ACTION: Approve RWP.

f. NonIonizing Radiation Actions. (Ken's input:)

(1) Several S&TCD systems/equipments were evaluated for RF safety. They were intended for freespace radiation on Post. Coordination was also performed with the Garrison Chief of Staff for co-authorization for the tests/demonstrations. Equipment/systems evaluated included the MOSAIC Advanced Technology Bed Demo involving 4 different RF emitters, MILSTAR On-the-Move, VIGILANT SHEPHERD, EHF SATCOM-ON-THE-MOVE and the

Juice 02 exercise, which was a joint SEC/S&TCD program. Pre-test/exercise calculations were performed followed by real-time

radiation safety measurements for most all to insure adequacy of personnel safety. Recommendations were provided regarding safe personnel-to-antenna separation distances, etc.

(2) The CECOM MSO has been attending monthly Garrison Operations Support Meetings, where various CECOM organizations discuss their upcoming needs for freespace radiating on the Garrison of non-ionizing radiation producing equipments/systems. POC for the meetings is Mr. John Stonska, x29416.

(3) A follow-on Site Assistance Visit was conducted for Software Engineering Center (SEC).

(4) A Site Assistance Visit was conducted for operations at Bldg. 2718 (DRE, PEO EIS and PM DWTS) regarding their non-ionizing radiation safety program.

(5) A follow-on Site Assistance Visit was conducted for the Military Affiliate Radio System (MARS) building. The CECOM MSO will be providing a complete reference binder for their use.

(6) Several random outdoor installation drive-through's were conducted to look for non-registered RF emitters. None were found during this quarter.

(7) RF radiation safety support was provided to U.S. Army Reservists supporting Golden Kastle 02.

(8) RF radiation safety support was provided to PM WIN-T for a system planned for RF freespace testing on the Garrison (LHGXA antenna installed on the TROJAN SPIRIT II)

✓g. Lakehurst Aerial Detector Testing. Ira Kaplowitz will provide a brief overview of the testing which took place in June. to take radiation readings / location

Any new business?

RSC adjourned at 1130 **hours.**

next 12 Dec

New: TVS - DCI is requesting to purchase cargo detection for vehicles rad + exp 450kV unit

AMSEL-SF-RE 30 September 2003

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 11 September 2003

1. In accordance with Army Regulation (AR) 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the fourth FY03 quarterly meeting of the Fort Monmouth Radiation Safety Committee (FMRSC) convened at 1010 hours on 11 September 2003, at the CECOM Directorate for Safety (DS), Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, AMSEL-SF-RE/Chairman
Mrs. Alice Kearney, AMSEL-SF-RE/Recorder
CPT Aaron Miallus, MCXS-PVM (Primary)
Mr. Ira Kaplowitz, AMSEL-RD-IW-EC (Primary)
Mr. Ted Do, AMSEL-RD-IW-EC (Alternate)
Ms. Wanda Green, SELFM-PW-EV (Primary)
Mr. Greg Kucharewski, Chenega Technology Services Corporation (CTSC) (Alternate)

b. Absent:

Mr. Ted Paquet, SELFM-SO (Primary)

3. Old Business.

a. Review/approval of the 19 June 2003 FMRSC minutes. The minutes of the 19 June 2003 FMRSC meeting, dated 30 June 2003, were reviewed and approved unanimously as written.

ACTION: None.

b. Tritium Exit Signs on Fort Monmouth. At the June 2003 meeting the DPW RSC member, Ms. Wanda Green, stated that the Fort Monmouth Fire Inspector would be conducting a post-wide inventory of all tritium exit signs. We provided DPW and the Fire Inspector with information on identifying tritium exit signs. The Fire Inspector has indicated that he will accomplish this during his fire safety drills conducted in October. Ms. Green was assigned the task of ensuring that the appropriate guidance regarding tritium exit signs will be included in the construction

and demolition checklists initiated by DPW, prior to the December 2003 RSC meeting.

ACTION: SELFM-PW-EV will ensure that the Fire Inspector has provided the inventory of tritium exit signs on Fort Monmouth upon completion (o/a 31 Oct 03).

ACTION: SELFM-PW-EV will ensure that the appropriate guidance regarding tritium exit signs will be included in the construction and demolition checklists initiated by DPW, prior to the December 2003 RSC meeting.

c. Written Policy for Outdoor Freespace Radiation Tests at Fort Monmouth. Mr. Fred Mangino, Lead, OSHA Management Office/Acting RSC Representative, stated at the June 2003 meeting he would develop a written policy outlining the requirements to notify DPTMS and DS, prior to any operations involving outdoor freespace radiation of RF and any other NIR producing devices on Fort Monmouth. SELFM-SO has submitted a draft policy statement to the Directorate for Safety for review and comment. There was no representation at this meeting by the OSHA Management Office so the issue was not discussed.

ACTION: AMSEL-SF-RE will provide comments on the draft policy statement to SELFM-SO for their consideration by 31 October 2003.

d. Nonionizing Radiation Actions.

(1) PM Defense Communications and Army Transmission Systems (DCATS) contacted the Fort Monmouth Microwave Safety Officer (MSO) to evaluate a construction project in a fenced-in area just outside of Building 2718, involving a 4.9-meter, dual-band (C & Ku), one-of-a-kind, dish-shaped antenna. The system has since been experiencing technical difficulties so it is not yet ready for the MSO to perform his validating RF safety measurements. A drive-by on 10 September showed that there are at least 5-satellite communications systems in various stages of readiness. STATUS: As of 24 September 2003, the MSO has not been able to obtain an update on the state of readiness to perform the routine RF Safety measurements on the dual-band system with the 4.9-meter dish-shaped antenna located in the fenced-in area adjacent to Building 2718.

ACTION: AMSEL-SF-RE, upon notification by DCATS that the system is operable, will perform the on-site validation RF safety measurements and report the results to FMRSC.

(2) The Director, DS, has reviewed the final draft of CECOM-R 385-XX, provided comments on same, and has returned the draft to the MSO for review, incorporation and finalization. Upon completion, the draft will be circulated within the Fort Monmouth community, to include the RSC, for comment and concurrence.

ACTION: AMSEL-SF-RE will review the comments regarding the new regulation and make appropriate changes. The final draft will be provided prior to the next RSC meeting for review and comment.

(3) The Information Intelligence Warfare Directorate (I2WD) submitted a revised and updated Standing Operating Procedure (SOP) for Electronic Combat Division Survivability Integration Lab for review by the CECOM Alternate Laser Safety Officer (LSO).

ACTION: AMSEL-SF-RE will review the SOP and comment to I2WD by 31 October 2003.

(4) Space and Terrestrial Communications Directorate (S&TCD) is constructing two new satellite communications systems in a newly fenced-in area adjacent to Building 199. The "Teleport Test Bed Compound" contains a new Electronics Shelter, formally known as Building 198, and two large parabolic dish-shaped antennas, measuring 8.1 and 9.0 meters, respectively. Upon completion of construction, S&TCD will notify the MSO so that radiation safety measurements can be taken. STATUS: System is not expected to be used to transmit until sometime in October. We are waiting for notification from a representative of S&TCD to inform us when the MSO can take the required radiation safety measurements. Signs are still missing on each of the two dish-shaped antennas.

ACTION: AMSEL-SF-RE will perform the on-site validation RF safety measurements, upon notification by S&TCD that construction is completed, and provide the results to the FMRSC.

4. New Business. Radiation Protection Program:

a. Automated Dosimetry Reports, 6 April to 5 July 2003.

(1) **CECOM.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(3) **EOD.**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC).**

No results received as of this date.

ACTION: PAHC will provide a copy of the results to the Fort Monmouth Dosimetry Custodian.

b. Health Physics Surveys. Required health physics surveys were completed for the months of July and August, with no unusual findings. The surveys for September 2003 will be conducted prior to 30 September. Any unusual findings will be reported at the next RSC meeting.

ACTION: None.

c. Nuclear Regulatory Commission (NRC) License Actions.

(1) NRC License Number 29-01022-06 (CECOM Fort Monmouth): Amendment request for change in Chairmanship of the

CECOM Fort Monmouth Radiation Safety Committee (RSC) from Mr. Joseph M. Santarsiero to Mr. Craig S. Goldberg. Amendment Number 57, dated 29 July 2003, was issued by the NRC. The current license condition authorizing the RSC to designate users of licensed material does not list the name of the Chairman of the RSC so that amendment of the license will no longer be required when the Chairman changes.

(2) NRC License Number 29-01022-14 (CECOM World-wide): An Amendment request has been submitted for the renewal of NRC License Number 29-01022-14 for the world-wide fielding of various radioactive materials used in CECOM End Article Applications/ Commodities.

(3) NRC License Number 29-01022-14 (CECOM World-wide): We performed Independent Government Testing of the Lensatic Compass (seven lots), NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 03-06-11 (Double Lot(Ten each)), 03-06-12, 03-07-01, 03-07-02, 03-07-13, 03-08-03 (Double Lot(Ten each)), and 03-09-14 (Double Lot (Ten each)). The following tests were performed as stipulated in MIL-PRF-10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2), Luminosity (paragraph 4.4.1.9.4.1 - photometric) and Water Leakage (paragraph 4.4.2.1). Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

(4) NRC License Number 29-01022-14 (CECOM World-wide): Amendment request for the world-wide fielding of the Cobalt-60 version of the Mobile Vehicle and Cargo Inspection System (VACIS) containing one curie of Cobalt-60. Amendment Number 26, dated 20 August 2003, was issued by the NRC.

(5) NRC License Number 29-01022-14 (CECOM World-wide): We were recently notified of a serious concern regarding potential noncompliance to our NRC license, which authorizes the possession and use of the Cesium-137 version of the Mobile Vehicle and Cargo Inspection System (VACIS), and now, of the

Cobalt-60 version of the Mobile VACIS. Two each, Cobalt-60 versions of the Mobile VACIS, were improperly transferred by Science Applications International Corporation (SAIC), the manufacturer of the Mobile VACIS, to OCONUS Army elements. This transfer was accomplished at the behest of an Army representative, contrary to regulatory requirements.

Army elements are authorized to possess the Mobile VACIS under our NRC license, provided that these Army elements make application to us for, and are issued, a Department of the Army Radiation Authorization (ARA) to possess the Mobile VACIS. This is the required procedure that is acceptable to the NRC to assure compliance to NRC regulatory requirements. This was not done in this instance.

As a result of this occurrence, we officially informed the Mobile VACIS Program Manager, Physical Security Equipment, as well as their contractor, Computer Science Corporation, of our concerns and expectations regarding ensuring that Mobile VACIS customers make timely application for an ARA so that we can issue an ARA before the planned delivery of the Mobile VACIS to the customer.

As an additional control measure, we have now instituted a requirement that SAIC contact us prior to any shipment of the Mobile VACIS in order to verify that the recipient is authorized to receive it.

ACTION: None.

d. Radiation Work Permit (RWP). CTSC applied for a new RWP for two SCANMAX 20 CC x-ray machines, S/Ns SR3151 and SR3153. Two x-ray machines will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual to x-ray letters/packages mailed to Fort Monmouth. The two SCANMAX 20 CC X-Ray machines were moved from Building 116 to Building 451 (Central Mail Processing Facility) on 27 August 2003, and initial surveys were completed by DS Radiological Engineering Laboratory (REL) personnel. The X-Ray machines shall be surveyed annually for leakage. Authorized users shall wear a whole body dosimeter, provided by the DS, when operating the SCANMAX 20 CC x-ray machine. The application for the RWP, dated 5 September 2003,

signed by Gregory Kucharewski, CTSC, was assigned RWP #180F and will expire on 5 September 2005.

ACTION: The RWP was approved by the Committee.

e. The Fort Monmouth (FM) Radiological Emergency Drill. The annual exercise was conducted after normal duty hours on 30 June 2003. The emergency scenario was initiated when a worker called "911" due to a perceived malfunction while operating the multi-gamma radiation source at a research facility on FM (Building 2540, DS REL). Numerous aspects of emergency response to a radiological incident were evaluated. Participants included the FM Department of Fire and Emergency Services and the DS. The exercise was productive and raised the level of awareness and proficiency for emergency personnel responding to a radiological accident on our installation.

ACTION: AMSEL-SF-RE will continue to train emergency personnel as required.

f. Request for Disposal of Low Level Radioactive Materials. DS submitted a request to U.S. Army Joint Munitions Command, Rock Island, IL, for disposal of EXIT signs containing tritium and smoke detectors containing Americium-241, stored at Building 2540.

ACTION: AMSEL-SF-RE will update the FMRSC at the next meeting regarding the disposal status.

g. Changes in RSC Policies. At the request of the Commanding General's Representative to the RSC, the following changes will be instituted as of this meeting.

(1) When an action is identified for a FMRSC member, a mutually agreed-upon suspense date/timeline will be assigned. Status information will be provided by the member at each RSC meeting. Once the suspense date is passed, the action will be listed as "overdue".

(2) Regarding members' attendance, absences will only be noted if there is no representation from a member's organization, in lieu of specifying attendance of each member of the organization.

h. Radiation Protection and Medical Physics Survey-Radiation Protection Program and Mammographic, Patterson Army Health Clinic (PAHC). CPT Miallus informed the Committee that PAHC was surveyed by North Atlantic Regional Medical Command on 8-11 September 2003 to evaluate the Radiation Protection Program and Mammographic. He will report the results at the next RSC meeting.

ACTION: PAHC will provide a copy of the results of the 2003 evaluation at the next RSC meeting.

5. The FMRSC meeting was adjourned at 1105 hours.

Prepared by:
ALICE M. KEARNEY
Recorder, FMRSC

Reviewed by:
CRAIG S. GOLDBERG
FMRSC Chairman/Fort Monmouth
Radiation Safety Officer

Approved by:
STEPHEN G. LaPOINT
Commanding General's
Representative

DISTRIBUTION:
AMSEL-CS (COL Bridges)
SELFM-CO (LTC Reyes)
AMSEL-SF (LaPoint/Goldberg/Kearney)
AMSEL-SF-RE (Bianchi/Proctor/Perrella/Cummings/Ziola)
MCXS-PVM (CPT Miallus/SPC Castillo)
AMSEL-RD-IW-EB (Kaplowitz/Do) (Email)
SELFM-PW-EV (Green/Desai) (Email)
SELFM-SO (Paquet/Paustian) (Email)
Charles Goebel, CTSC, QC & Safety Mgr, Bldg 286, Room 017 (Email)
Greg Kucharewski, CTSC, Admin. Svcs. Supervisor, Bldg 886 (Email)

TRACKING LIST FOR FMRSC ACTIONS
(30 September 2003)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
AMSEL-SF	AMSEL-SF will inform the FMRSC when information is received regarding the impact of the IMA realignment on the Fort Monmouth Radiation Safety Program.	27 Jun 02	**OPEN**	**N/A**
AMSEL-SF-RE	AMSEL-SF-RE will provide comments to SELFM-SO regarding the written policy for Outdoor Freespace Radiation Tests at Fort Monmouth.	19 Jun 03	**OPEN**	**31 Oct 03**
AMSEL-SF-RE	Upon notification by DCATS that the system is operable, the CECOM MSO will perform the on-site validation RF safety measurements, and report the results to FMRSC.	19 Jun 03	**OPEN**	**Upon notif. by DCATS an appropriate suspense date will be identified.**
AMSEL-SF-RE	Upon notification by S&TCD that construction is completed, the CECOM MSO will perform the on-site validation RF safety measurements, and report the results to the FMRSC.	19 Jun 03	**OPEN**	**Upon notif. by S&TCD an appropriate suspense date will be identified.**
AMSEL-SF-RE	CECOM Alternate LSO will review I2WD SOP re: Laser operations.	19 Jun 03	**OPEN**	**31 Oct 03**
AMSEL-SF-RE	CECOM MSO will provide final draft of new regulation for Lasers, RF, and Microwave Radiation Producing Equipment to FMRSC for review.	11 Sep 03	**OPEN**	**Next RSC Meeting, o/a 18 Dec 03.**

TRACKING LIST FOR FMRSC ACTIONS
(30 September 2003)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
AMSEL-SF-RE	DS will provide status on disposal of radioactive waste at REL.	11 Sep 03	**OPEN**	**Next RSC Meeting, o/a 18 Dec 03.**
MCXS-PVM	PAHC will provide a copy of the NARMC evaluation results at the next RSC meeting.	11 Sep 03	**OPEN**	**Next RSC Meeting, o/a 18 Dec 03.**
MCXS-PVM	PAHC will provide dosimetry results for 6 Apr-5 Jul 03.	11 Sep 03	**OPEN**	**Next RSC Meeting, o/a 18 Dec 03.**
SELFM-PW	DPW will ensure that checklists for construction and demolition of buildings at Fort Monmouth include appropriate guidance with regard to tritium exit signs.	11 Sep 03	**OPEN**	**Next RSC Meeting, o/a 18 Dec 03.**
SELFM-PW	DPW will ensure the inventory of tritium exit signs on Fort Monmouth is provided by the FM Fire Inspector.	11 Sep 03	**OPEN**	**31 Oct 03**

DEPARTMENT OF THE ARMY
HEADQUARTERS US ARMY COMMUNICATIONS-ELECTRONICS COMMAND
AND FORT MONMOUTH
FORT MONMOUTH, NEW JERSEY 07703-5301

REPLY TO
ATTENTION OF

AMSEL-SF-RE

31 December 2003

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 18 December 2003

1. In accordance with Army Regulation (AR) 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the first FY04 quarterly meeting of the Fort Monmouth Radiation Safety Committee (FMRSC) convened at 1020 hours on 18 December 2003, at the CECOM Directorate for Safety (DS), Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, CECOM DS Radiological Engineering Division (AMSEL-SF-RE)/Chairman
Mrs. Alice Kearney, AMSEL-SF-RE/Recorder
Mr. Ira Kaplowitz, Research Development and Engineering Center, Intelligence Information Warfare Directorate (AMSEL-RD-IW-EC) (Primary)
Ms. Wanda Green, U.S. Army Garrison Fort Monmouth (USAG-FM), Directorate of Public Works Environmental Office (SELFM-PW-EV) (Primary)
Mr. Ted Paquet, USAG-FM Directorate for Public Safety, OSHA Management Office (SELFM-SO) (Primary)
Mr. Charles Goebel, Chenega Technology Services Corporation (CTSC)
Mr. Greg Kucharewski, CTSC (Alternate)

b. Absent:

U.S. Army Medical Command-Preventive Medicine (MCXS-PVM), Patterson Army Health Clinic (PAHC)

3. Old Business.

a. Review/approval of the 11 September 2003 FMRSC minutes. The minutes of the 11 September 2003 FMRSC meeting, dated 30 September 2003, were reviewed and approved unanimously as written.

ACTION: None.

b. Tritium Exit Signs on Fort Monmouth. The SELFM-PW-EV member, Ms. Green, has revised the demolition checklists initiated by DPW to include appropriate guidance regarding tritium exit signs. This will preclude the need for a post-wide inventory of tritium exit signs and will be a more proactive way to ensure that they are not disposed of improperly. Although smoke detectors containing Americium-241 are routinely turned in to AMSEL-SF-RE for controlled disposal, the Committee recommended that the checklist also be annotated with information regarding smoke detectors.

ACTION: SELFM-PW-EV will ensure that the appropriate guidance regarding smoke alarms will be included in the construction and demolition checklists initiated by DPW, prior to the March 2004 RSC meeting.

c. Written Policy for Outdoor Freespace Radiation Tests at Fort Monmouth. SELFM-SO developed a written policy outlining the requirements to notify the Directorate of Plans, Training and Mobilization and DS prior to any operations involving outdoor freespace radiation of RF and any other NIR producing devices on Fort Monmouth. The Fort Monmouth Microwave Safety Officer (MSO) reviewed the draft policy and provided comments to SELFM-SO on 5 Dec 03. SELFM-SO has provided copies of the draft to FMRSC for review and comments.

ACTION: FMRSC members will review the policy and provide comments to the Committee Recorder NLT 31 January 2004. No response by that date will be considered concurrence with the policy.

d. Nonionizing Radiation Actions.

(1) PM Defense Communications and Army Transmission Systems (DCATS) contacted the Fort Monmouth Microwave Safety Officer (MSO) to evaluate a construction project in a fenced-in area just outside of Building 2718, involving a 4.9-meter, dual-band (C & Ku), one-of-a-kind, dish-shaped antenna. The system has since been experiencing technical difficulties so it is not yet ready for the MSO to perform his validating RF safety measurements. As of this date, the MSO has not been contacted to perform the routine RF Safety measurements. Measurements will

be performed if and when the system is found to be functionally operational. A motion was approved by the FMRSC to close out this action until the MSO is contacted by PM DCATS.

ACTION: None.

(2) CECOM Regulation (CECOM-R) 385-XX. The regulation was reviewed by the Director, DS, and comments were incorporated by the MSO. FMRSC members were provided a copy of the draft for review and were requested to provide comments by 20 February 2004.

ACTION: All FMRSC members will review CECOM-R 385-XX and provide comments to Committee Recorder NLT 20 February 2004. No response by that date will be considered concurrence with the regulation.

(3) The Information Intelligence Warfare Directorate (I2WD) submitted a revised and updated Standing Operating Procedure (SOP) for Electronic Combat Division Survivability Integration Lab for review by the CECOM Alternate Laser Safety Officer (ALSO). The ALSO has authorized I2WD to operate under their most recent SOP.

ACTION: None.

(4) Space and Terrestrial Communications Directorate (S&TCD) is constructing two new satellite communications systems in a fenced-in area adjacent to Building 199. The "Teleport Test Bed Compound" contains an electronic shelter and two large parabolic dish-shaped antennae. Upon completion of construction, S&TCD will notify the MSO, at which time radiation safety measurements will be taken. No transmissions are permitted until that time. A motion was approved by the FMRSC to close out this action until the MSO is contacted by S&TCD.

ACTION: None.

e. Disposal of Low Level Radioactive Materials. DS shipped five 55-gallon drums and one 30-gallon drum consisting of 6 EXIT signs containing tritium, and 700 smoke detectors containing Americium-241, which had been stored at Building 2540, to Wright Patterson Air Force Base (AFB) for disposal/recycling. The items

have been delivered to Wright Patterson AFB but we have not yet received a shipping manifest.

ACTION: AMSEL-SF-RE will ensure a shipping manifest is provided.

f. Radiation Protection and Medical Physics Survey-Radiation Protection Program and Mammographic, PAHC. PAHC was surveyed by North Atlantic Regional Medical Command on 8-11 September 2003 to evaluate the Radiation Protection Program and Mammographic. There was no representation of PAHC at the meeting, therefore no discussion was conducted regarding the survey. The PAHC RSC member provided a copy of the results on 22 December 2003.

ACTION: PAHC RSC member will discuss the results of the 2003 evaluation at the next RSC meeting.

4. New Business. Radiation Protection Program:

a. Automated Dosimetry Reports, 6 July to 4 Oct 2003.

(1) **CECOM.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(2) ***RADCON Team.**

(a)	Collective exposure	0.049 REM
(b)	Average rem/quarter.....	0.008 REM
(c)	Highest exposure.....	0.049 REM

(3) **CTSC.**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **754th Explosives Ordnance Detachment (EOD).**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(5) **Patterson Army Health Clinic (PAHC).**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

***The record of occupational exposure to radiation is incorrect for Mr. Craig Goldberg, as he did not wear dosimetry issued by CECOM during this period while participating in a RADCON Exercise. The FMRSC Recorder/FM Dosimetry Custodian submitted a request to U.S. Army Ionizing Radiation Dosimetry Center (AIRDC), Redstone Arsenal, AL, on 24 December 2003 to assign an administrative dose to Mr. Goldberg for that period.**

ACTION: None.

b. Health Physics Surveys. The required health physics surveys for September 2003 were conducted, with no unusual findings (they had not been completed as of the 11 September 2003 meeting). Additionally, the surveys have been completed through the month of December 2003 with no unusual findings.

ACTION: None.

c. Nuclear Regulatory Commission (NRC) License Actions.

(1) NRC License Number 29-01022-06 (CECOM Fort Monmouth): Amendment request to delete the possession and use of the J.L Shepherd and Associates Model 89-260 Calibrator.

(2) NRC License Number 29-01022-14 (CECOM worldwide): Amendment request for the renewal and complete revision of NRC License Number 29-01022-14 for the world-wide fielding of various radioactive materials used in CECOM End Article Applications/ commodities. As discussed, Amendment #27, dated 11 December 2003, was received on 17 December 2003.

(3) NRC License Number 29-01022-14 (CECOM worldwide): Army Radiation Authorization Numbers A13-0146-NECD, A29-0147-DIX and A30-0148-WSMR were issued to the Newport Chemical Depot, Indiana, Fort Dix, NJ, and White Sands Missile Range, NM, respectively, for the possession and use of the Cobalt-60 version of the Science Applications International Corporation Mobile

Vehicle and Cargo Inspection System authorized for use under NRC License Number 29-01022-14.

(4) NRC License Number 29-01022-14 (CECOM Worldwide): We performed Independent Government Testing of the Lensatic Compass (eight lots), NSN 6605-01-196-6971, under Contract Number DAABO7-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 03-09-15, 03-10-04(Double Lot(Ten each)), 03-10-16, 03-10-17, 03-11-05 (Double Lot(Ten each)), 03-11-18, 03-12-06, and 03-12-01. The following tests were performed as stipulated in MIL-PRF-10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case, on the above completely assembled units: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2), Luminosity (paragraph 4.4.1.9.4.1 - photometric) and Water Leakage (paragraph 4.4.2.1). Results of the Contamination, Diffusion and Luminosity tests for all of the above Lot Numbers are acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

ACTION: None.

d. Radiation Work Permits (RWP). The following RWPs were issued:

(1) RWP #240 was issued to the Fort Monmouth Fire Department & Emergency Services on 5 December 2003. RWP #240 is valid for a period of two years and authorizes the use of an APD-2000. The APD 2000 Monitor is a portable, hand-held monitor & detector and is designed for emergency first response to hazardous chemical spills & terrorist attacks. The APD-2000 contains 10 millicuries of Ni-63.

(2) RWP #87-02 was issued to JPM NBC CA for the use of the Seifert 320D ISOVOLT X-Ray machine. The X-Ray machine is used for research and development of RADIAC meters at building 2540. The RWP was approved on 18 December 2003 and is valid for a period of two years.

(3) RWP #220 was issued to JPM NBC CA for the use of a 50 millicurie Cs-137 source used for research and development of RADIAC meters. This source is used on Fort Monmouth and other

locations. The RWP was approved on 7 November 2003 and is valid for a period of two years.

ACTION: None.

e. NRC License Inspection. On 29-30 October 2003, the CECOM Directorate for Safety received an unannounced inspection of our NRC License Numbers 29-01022-06 and 29-01022-14 by an NRC Region I representative. The inspection was performed to ensure that the radiation safety programs we manage in support of CECOM managed radioactive commodities, at the world-wide level, and for the CECOM/Fort Monmouth community, are in accordance with the conditions and requirements of the NRC issued licenses. The inspection focused on an evaluation of license operations and NRC specific license requirements, which revealed no issues or findings. The program evaluation included: Radiation Safety Committee meeting and minutes, radiation source inventory and accountability control, source leak test and radiation detection instrument calibration and repair programs, personnel radiation exposure histories, radiation work permits, personnel training programs, and our own audits of user/storage site locations. The results of the evaluation identified no areas of noncompliance as stated in their formal NRC inspection report provided at the outbrief.

ACTION: None.

f. 2003 Annual Radiation Safety Training. The majority of Fort Monmouth radiation workers have received annual radiation safety training. The Dosimetry Custodian will ensure the training for remaining personnel is conducted as soon as possible.

STATUS: AMSEL-SF-RE will ensure all personnel receive 2003 make-up radiation safety training as soon as they are available.

g. Replacement of Alternate RSC Member for AMSEL-RD-IW-EC. Mr. Ted Do will no longer be serving as the Alternate RSC member for AMSEL-RD-IW-EC. He has been replaced by Mr. Walter Swaylik. An appointment memorandum has been approved/signed by the FM Garrison Administrative Officer. A new FMRSC membership appointment memorandum has been prepared for approval of the FM Garrison Administrative Office.

ACTION: AMSEL-SF-RE will obtain approval/signature of the revised FMRSC membership by the FM Administrative Officer.

h. Health Physics Surveys at PAHC. Health physics surveys were conducted of the following diagnostic equipment at PAHC, with no unusual findings:

(1) GE General Purpose and Fluoro X-Ray Machine.

(2) Gendex Othoralix Panoramic X-Ray Machine.

(3) Philips Intra-Oral X-Ray Machine.

(4) Picker General Purpose X-Ray Machine.

ACTION: None.

i. New American Science & Engineering (AS&E) X-Ray Machine at CTSC. CTSC has received a new Cabinet X-Ray System, AS&E Micro-Dose Model GT-342, which will be utilized at Building 451. CTSC personnel received user training from the manufacturer's representative, and an initial radiation survey was performed upon set-up. The manufacturer does not require dosimetry. The FMRSC recommended the use of personnel dosimetry be reviewed, as there have been no exposures since the initiation of dosimetry in 2000. Area dosimeters are currently used on the existing SCANMAX X-ray machines, and an area dosimeter will be used for the new X-Ray unit as well. The CTSC members indicated they will discuss the option of discontinuing the personnel dosimeters with employees.

ACTION: CTSC RSC members will discuss the option of discontinuing personal dosimetry with employees and report the decision to the Committee at the next RSC meeting.

j. Annual Radioactive Source Notification. IAW AR 11-9, an inventory of radioactive sources on Fort Monmouth was provided to Emergency Responders on 8 December 2003.

ACTION: None.

k. Semiannual Physical Inventory of Radioactive Material. IAW NRC License Numbers 29-01022-06, 29-01022-07 and 29-01022-14,

a semiannual physical inventory of all radioactive sources was conducted on 15 December 2003.

ACTION: None.

5. The FMRSC meeting was adjourned at 1110 hours.

Prepared by:
ALICE M. KEARNEY
Recorder, FMRSC

Reviewed by:
CRAIG S. GOLDBERG
FMRSC Chairman/Fort Monmouth
Radiation Safety Officer

Approved by:
STEPHEN G. LaPOINT
Commanding General's
Representative

DISTRIBUTION:
AMSEL-CS (COL Bridges)
SELFM-CO (LTC Reyes)
AMSEL-SF (LaPoint/Goldberg/Kearney)
AMSEL-SF-RE (Bianchi/Proctor/Perrella/Cummings/Ziola)
MCXS-PVM (CPT Miallus/SGT Castillo)
AMSEL-RD-IW-EB (Kaplowitz/Swaylik) (Email)
SELFM-PW-EV (Green/Desai) (Email)
SELFM-SO (Paquet/Paustian) (Email)
Charles Goebel, CTSC, QC & Safety Mgr, Bldg 286, Room 017 (Email)
Greg Kucharewski, CTSC, Admin. Svcs. Supervisor, Bldg 886 (Email)

TRACKING LIST FOR FMRSC ACTIONS
(as of 30 December 2003)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
SELFM-PW-EV	DPW will ensure that checklists for construction and demolition of buildings at Fort Monmouth include appropriate guidance for disposal of smoke alarms containing Am-241.	18 Dec 03	**OPEN**	**Next RSC Meeting, o/a 20 Mar 04.**
ALL MEMBERS	FMRSC members will review draft policy for Outdoor Freespace Radiation Tests on Fort Monmouth and provide comments to DS.	18 Dec 03	**OPEN**	**31 Jan 04.**
AMSEL-SF-RE	Upon notification by DCATS that the system is operable, the CECOM MSO will perform the on-site validation RF safety measurements, and report the results to FMRSC.	19 Jun 03	**CLOSED**	**N/A**
ALL MEMBERS	FMRSC members will review final draft of new regulation for Lasers, RF, and Microwave Radiation Producing Equipment to FMRSC, and provide comments to DS NLT 20 Feb 04.	18 Dec 03	**OPEN**	**20 Feb 04.**
AMSEL-SF-RE	CECOM Alternate LSO has reviewed I2WD SOP re: Laser operations, and authorized operations under present form.	19 Jun 03	**CLOSED**	**N/A**
AMSEL-SF-RE	Upon notification by S&TCD that construction is completed, the CECOM MSO will perform the on-site validation RF safety measurements, and report the results to the FMRSC.	19 Jun 03	**CLOSED**	**N/A**
AMSEL-SF-RE	DS will ensure shipping manifest for disposal of H3 EXIT signs and Am-241 smoke detectors is received by DS.	18 Dec 03	**OPEN**	**Next RSC Meeting, o/a 20 Mar 04.**

TRACKING LIST FOR FMRSC ACTIONS
(as of 30 December 2003)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
MCXS-PVM	Results of NARMC evaluation provided to RSC Recorder on 22 Dec 03. PAHC RSC member will discuss results at the next RSC meeting.	11 Sep 03	**CLOSED. Provided 22 Dec 03.**	**N/A**
AMSEL-SF-RE	Dosimetry Custodian will complete make-up 2003 Annual Radiation Safety training for all FM personnel.	18 Dec 03	**OPEN**	**9 Jan 2004.**
AMSEL-SF-RE	FMRSC Recorder will prepare an appointment memorandum for Mr. Walter Swaylik for approval/signature of FM Garrison Administrative Officer.	18 Dec 03	**CLOSED. Appt memo signed off 19 Dec 03.**	**N/A**
AMSEL-SF-RE	A new FMRSC membership appointment memorandum has been prepared for approval of the FM Garrison Administrative Officer. Recorder will ensure memo is approved/signed by the Administrative Officer and provided to FMRSC members.	18 Dec 03	**OPEN**	**Prior to next RSC Meeting, o/a 20 Mar 04.**
AMSEL-SF-RE	FMRSC Recorder/FM Dosimetry Custodian will submit a request to U.S. Army Ionizing Radiation Dosimetry Center to assign an admin dose to Mr. Goldberg for 6 Jul-4 Oct 2003.	18 Dec 03	**CLOSED. Request submitted to AIRDC 24 Dec 03.**	**N/A**
CTSC	CTSC RSC members will discuss the option of discontinuing personal dosimetry with CTSC employees and report findings to the Committee at the next RSC meeting.	18 Dec 03	**OPEN**	**Next RSC Meeting, o/a 20 Mar 04.**

AMSEL-SF (15-1a) 18 December 2003

Fort Monmouth Radiation Safety Committee (FMRSC) Sign-in Sheet

1. The following personnel attended the **18 December 2003** FMRSC meeting as MEMBERS/ALTERNATES:

NAME	ORGANIZATION	SIGNATURE
Mr. Stephen LaPoint	AMSEL-SF (Commanding General's Representative)	
Mr. Craig Goldberg	AMSEL-SF-RE/Chairman/ Fort Monmouth Radiation Safety Officer	
Ms. Alice Kearney	AMSEL-SF-RE/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-IW-EC	
CPT Aaron Miaullis	MCXS-PVM	
SGT John Castillo	MCXS-PVM	
Ms. Wanda Green	SELFM-PW-EV (Primary)	
Mr. Dinkerrai Desai	SELFM-PW-EV (Alternate)	
Mr. Ted Paquet	SELFM-SO (Member)	
Mr. Charles Goebel	Chenega Technology Services Corporation (Primary)	
Mr. Greg Kucharewski	Chenega Technology Services Corporation (Alternate)	

2. The following personnel attended the 1st QTR FY04 FMRSC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE

3. Additional Remarks:

FORT MONMOUTH RADIATION SAFETY COMMITTEE
CECOM DIRECTORATE FOR SAFETY, BUILDING 2539
18 December 2003

AGENDA

1. Old Business:

a. Review/approve the 11 September 2003 RSC minutes.

b. Tritium Exit Signs on Fort Monmouth.

c. Policy for Outdoor Freespace Radiation Tests at Fort Monmouth.

d. Nonionizing Radiation Actions.

e. Disposal of Low Level Radioactive Waste, Building 2540.

f. Radiation Protection and Medical Physics Survey-Radiation Protection Program and Mammographic, Patterson Army Health Clinic.

2. New Business:

a. Automated Dosimetry Reports, 6 July to 4 October 2003.

b. Health Physics Surveys.

c. Nuclear Regulatory Commission (NRC) License Actions.

d. Radiation Work Permit.

e. NRC Inspection of CECOM DS.

f. Annual Radiation Safety Training.

g. Replacement of Alternate RSC Member for AMSEL-RD-IW-EC.

h. Health Physics Surveys at PAHC.

i. New X-Ray Equipment at Chenega Technology Services Corporation.

j. Annual Radioactive Source Notification.

k. Semiannual Physical Inventory of Radioactive Material.

FORT MONMOUTH DEMOLITION INSPECTION LOG

INSPECTOR:_____ DATE: _____
BUILDING: _____ TRUSTEE: __ _____ EXT: _____
DATE DEMO SCHEDULED: _ _____

ITEM TO INSPECT	DATE TURN-OFF/REMOVED	DPW REPRESENTATIVE	COMMENTS
REMOVE DEBRIS:			
GARBAGE			
FURNITURE			
HAZ- WASTE			
HAZ- MATERIAL			
NOTIFICATIONS:			
FEDERAL			
STATE			
LOCAL			
ASBESTOS:			
FLOOR TILE			
INSULATION			
SHINGLES			
WALLS			
CEILING			
PLUMBING			
OTHER			
STORAGE TANKS:			
ABOVEGROUND			
UNDERGROUND			
REMOVE			
SALVAGEABLE			
MATERIAL			
LIGHT FIXTURES:			
BULBS			
BALLAST			
TRI. EXIT SIGNS			

ITEM TO INSPECT	DATE TURN-OFF/REMOVED	DPW REPRESENTATIVE	COMMENTS
UTILITIES:			
GAS			
WATER			
ELECTRIC			
SEWER			
PHONE/COMM.			
TRANSFORMER			
(POLE/PAD)			
PCB-CONT.			
PCB			
NON-PCB			
(TURN-IN TO STOCK/DISPOSE)			
DISCONTINUE			
CUSTODIAL			
SERVICES			
NEW JERSEY			
NATURAL GAS			

SELFM-SO 30 December 2003

MEMORANDUM FOR All Commanders, Directors, and Activity Chiefs

SUBJECT: Standard Operating Procedures (SOP) for Outdoor Free Space Radio Frequency and Microwave Radiation Tests and Operations Conducted at Fort Monmouth

1. REFERENCES:

a. AR 11-9, The Army Radiation Safety Program 28 May 1999.

b. CECOM-R 385-17, Radio Frequency and Microwave Producing Equipment, 07 Dec 88.

2. PURPOSE. To provide guidance for activities desiring to operate, test, and/or evaluate radio frequency and microwave producing equipment at Fort Monmouth, including Charles Wood area.

3. APPLICABILITY. These procedures are applicable to any activity that desires to conduct testing of radio frequency and microwave producing equipment at Fort Monmouth.

4. POLICY. To insure radio frequency radiation (RFR) safety for both worker and general population from potential overexposures due to RFR sources used and/or located outdoors & any potential RFR concerns and/or overexposures are prevented by way of engineering design, protective equipment, administrative actions, or a combination thereof. RFR protection is in accordance with Department of Defense Instruction DoDI 6055.11, subject: Protection of DoD Personnel from Exposure to Radio Frequency Radiation and Exempt Lasers and Army Regulations 11-9, The Army Radiation Safety Program and 40-5, Preventive Medicine. This SOP implements DoD Instruction (DoDI) 6055.11, AR 11-9 and AR 40-5, Preventive Medicine.

5. PROCEDURES. All requests to conduct RFR tests and operations will be submitted at least 30 days prior to the test date, to the US Army Garrison Fort Monmouth Directorate for Plans, Training, Mobilization and Security (DPTMS) (SELFM-DPT/S), located in Russel Hall, Building 286, Telephone No. 732-532-2503. DPT/S has primary staff responsibility to coordinate the request and approve as well as site the location and operation of radiation emitting equipment, based on the parameters recommended by the CECOM MSO, DOIM Frequency Manager, Director of Public Safety, and other affected parties as circumstances warrant.

6. EVALUATION PROCESS. After DPTM/S has received a formal, written request to conduct RFR Test and Evaluation, the following will occur:

a. DPTM/S Staff will notify, at a minimum, the following:

(1) CECOM Directorate for Safety, Microwave Safety Officer, Mr. Ken Proctor, (732) 532-0084, ext 6446, who will perform radiation safety analysis, conduct measurements as deemed necessary using the enclosed form (encl. 1) which is to be filled out by the agency, and provide recommendations to the DPTM/S for the requested test/operation.

(2) The OSHA Management Office (OMO) POC, Mr. Fred Mangino, Lead, Safety & Occupational Health Specialist, (732) 532-0083, who will coordinate with CECOM MSO and recommend other agency/organization involvement as necessary.

(3) The Director of Information Management (DOIM), Office of Radio Frequency Management, who will research potential frequency inference with known current and proposed operation systems in the Fort Monmouth area.

(4) Other staff/agencies that may be involved on an as needed basis such as the DPW, DPS, CERDEC Flight Activity Safety, and Staff Judge Advocate, etc.

b. In cases where the necessary safety requirements may not be compatible with the requested test plan objectives, the DPTM/S will attempt to resolve issues and mediate so the test may go forward safely. If this cannot be accomplished, the DPTM/S will prepare a report to accompany their recommendation of disapproval to the Commander, USAG Fort Monmouth.

7. The USAGFM POC for the SOP is Mr. Fred Mangino, Lead OSHA Management Office, 732.532-0083, 732.532.5371 (Voice Mail), or Alfred.Mangino@us.army.mil.

Anthony D. Rayes
LTC, FA
Commanding

DEPARTMENT OF THE ARMY
HEADQUARTERS
U.S. ARMY COMMUNICATIONS-ELECTRONICS COMMAND
FORT MONMOUTH, NEW JERSEY 07703-5000

CECOM REGULATION
No. 385-XX

15 December 2003

Safety

NON-IONIZING RADIATION SAFETY PROGRAM

Issue of changes to this regulation by other U.S. Army Communications-Electronics Command (CECOM) elements is specifically prohibited unless approved by Commander, CECOM, ATTN: AMSEL-SF-RE

*This regulation supercedes CECOM-R 385-10, 12 December 1988 and CECOM-R 385-17, 7 December 1988.

1. Purpose. This regulation establishes policies, defines responsibilities, and prescribes procedures that will ensure personnel safety during the operation and maintenance of non-ionizing radiation (NIR) producing equipment including radiofrequency radiation (RFR) and laser radiation producing equipment.

2. Applicability. This regulation applies to all directorates, offices, centers and activities within the U.S. Army Communications-Electronics Command (CECOM), and resident activities located at CECOM installations that utilize and/or are responsible for logistical support of NIR producing equipment.

3. References. Required and related publications are listed in Appendix A.

4. Explanation of Abbreviations and Terms. *See Appendix B for explanation of special terms and acronyms used in this regulation.*

5. Policy. The policy of CECOM is to identify, attenuate, or control by engineering design, protective equipment, administrative actions, or a combination thereof, hazardous NIR associated with Department of Defense (DoD) and/or commercial electronic equipment and to eliminate any potential hazards to personnel health and safety associated with working with NIR producing equipment. This regulation implements DoD Instruction (DoDI) 6055.11, AR 11-9 and AR 40-5.

6. Responsibilities.

a. *The Commander, CECOM, will -*

(1) Establish a Radiation Safety Committee (RSC) in accordance with AR 11-9 to advise the Commander on matters pertaining to radiation protection for the purpose of ensuring that NIR sources are utilized in a safe manner.

(2) Appoint, in writing, a qualified individual to be the Radiation Safety Officer (RSO) to provide consultation and advice on the degree of hazards associated with radiation sources and the effectiveness of measures used to control the potential hazards associated with such sources. As deemed necessary, additional personnel may be appointed to assist the RSO in managing the Radiation Safety Program. The training and experience of the designated person(s) must be commensurate with the type and level of potential hazards of the radiation sources for which the designated person(s) will be responsible.

(3) Ensure adequate resources (personnel, test/measurement equipment, training, etc.) are available to maintain and demonstrate compliance with applicable radiation safety regulations.

b. *The RSC will -*

(1) Review adopted procedures and applicable regulations pertaining to the use of NIR producing systems.

(2) Review accident/incident reports and violations of regulations for recommendation of required corrective actions.

c. *The Director, Directorate for Safety will -*

(1) Serve as the Commander's representative to the RSC and provide advice to the Commander on matters relating to the safety of NIR producing systems.

(2) Assume overall responsibility for the NIR Safety Program.

(3) As deemed necessary, identify qualified individuals to be the Radiofrequency Radiation Safety Officer (RFSO), Laser Safety Officer (LSO), or collectively, to be the Non-ionizing Radiation Safety Officer (NIRSO) to provide consultation and advice on the degree of hazards associated with NIR and the effectiveness of measures used to control these hazards. *Hereafter, the term NIRSO will collectively refer to the aforementioned individuals (RFSO and LSO).* The training and experience of the designated person must be commensurate with the type and level of potential hazards of the radiation sources for which he/she will be responsible. If a separate RFSO and LSO are appointed, each person will serve as a qualified expert and have the ultimate responsibility for their appointed portion of the combined installation non-ionizing radiation safety program. *(See para. 6d)*

(4) Ensure that the appointed NIRSO personnel are adequately trained and are provided the necessary resources (personnel, test/measurement equipment, supplies, etc.) for the responsibilities of their appointment.

(5) Assure that the NIRSO audit(s) the Fort Monmouth Non-ionizing Radiation Safety Program (NIRSP) annually.

(6) Ensure that transitioned/fielded equipment have received appropriate non-ionizing radiation safety evaluation surveys.

d. *The NIRSO will -*

(1) Establish and maintain an appropriate NIRSP, as well as commensurate written policies and procedures, to assure compliance with applicable Federal, DoD, and Army radiation safety regulations and directives. The policies and procedures will include emergency reaction plans, as necessary, and procedures for investigating and reporting actual or suspected radiation accidents, incidents and overexposures.

(2) Advise the RSO, directors, activity chiefs, and/or the RSC, as appropriate, on matters pertaining to the safe use of NIR producing systems.

(3) Serve as a local NIR safety point of contact for the DoD and the principle point of contact for matters regarding NIR safety for the CECOM.

(4) Maintain an inventory/description of all potentially hazardous NIR producing systems located at/on the Fort Monmouth Installation. The inventory will be based on input from organizations/facilities/centers utilizing such systems.

(5) Maintain documentation listing locations categorized as "Radiofrequency (RF) Controlled" and "RF Uncontrolled" environments as necessary.

(6) Review, approve, and maintain a record of local Standing Operating Procedures (SOPs) for organizations/facilities/centers utilizing NIR producing devices/systems.

(7) Perform initial and periodic site surveys/inspections of potentially hazardous NIR producing systems to ensure compliance with applicable regulations. Conduct surveys on relocated systems as deemed necessary.

(8) Ensure that medical surveillance records are maintained as required by the appropriate installation medical staff (e.g., Chief, Occupational Health Services, Patterson Army Health Clinic (PAHC)).

(9) Review and coordinate investigations pertaining to reported accidents/incidents involving NIR producing systems.

(10) Advise the RSC and the RSO of reported hazards pertaining to NIR producing systems/operations of resident activities.

(11) Provide warning statements and safety precautions upon request to the Security Assistance Management Directorate (SAMD) for NIR producing systems offered for Foreign Military Sale (FMS).

(12) Provide advice, as requested, to other personnel within the Directorate for Safety pertaining to procurement data packages, equipment transitions, Safety Release actions and requests for the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) to conduct NIR safety evaluation surveys of NIR producing systems.

(13) Provide initial and periodic refresher NIR safety briefings to installation NIR equipment users, workers and maintainers. These briefings will include a background on the nature of NIR, the potential and associated hazards, and the means (technical, administrative, etc.) by which personnel can avoid potentially hazardous exposures. Ancillary personnel that are required to be in the area where NIR equipment is being used will also receive this training.

(14) Provide support as required to the Tri-Service Electromagnetic Radiation Panel (TERP) as established by the Deputy Under Secretary of Defense for Environmental Security (DUSD (ES)), as the DoD "Designated Agency Safety and Health Official."

(15) Provide support as required to the DoD Laser System Safety Working Group (LSSWG) as established by the DUSD (ES), as the DoD "Designated Agency Safety and Health Official."

(16) Provide laser exemption approval/recommendations to the Contracting Officer in the CECOM Acquisition Center, as needed, following determination that any given laser/laser system meets the exemption criteria detailed herein.

(17) Ensure the appointment of a Laser Range Safety Officer (LRSO) for each outdoor laser range.

e. *Directors of organizations/facilities developing or procuring NIR producing devices for ultimate materiel release will -*

(1) Ensure that NIR hazard evaluations are conducted for all NIR producing systems prior to testing, utilization and equipment/system fieldings. The preferred source of these evaluations is USACHPPM. *(Per AR 40-5)* An approved CECOM Systems Safety Release will supplement such assurance.

(2) Ensure that written notification is provided to the appropriate manufacturer by the Contracting Officer for each laser product that is being exempted from the provisions of 21 CFR 1040.10 and 1040.11 and from the Reports and Records provisions of 21 CFR Part 1002 (except 1002.00). Laser products eligible for military exemption must be used exclusively by DoD components, be designed for actual combat or combat training operations, or are otherwise classified in the interest of national security. Military-exempt lasers will not include lasers intended primarily for indoor classroom training and demonstration, industrial operations, scientific investigations, or medical applications. It is to be noted that the USACHPPM maintains records for all military-exempt lasers that indicate types of laser products and their respective manufacturers. The appropriate CECOM Acquisition Center official or Contracting Officer will grant exemptions after coordinating with the DS, ATTN: AMSEL-SF.

(3) Ensure that appropriate NIR safety warning statements are included in all technical, operational and maintenance manuals for developed and procured systems.

f. *Directors of organizations/facilities/centers utilizing NIR producing devices will -*

(1) Ensure that this regulation and any approved SOPs are readily available at all permanent-type NIR operation locations and that assigned personnel comply with these publications.

(2) Ensure that a current reproduction of any SOP, approved by the NIRSO, is conspicuously posted in each NIR facility, that the original SOP has an attached page with signatures affixed of personnel required, authorized and trained to work on or near the NIR producing equipment indicating their agreement to adhere to the content and procedures of the SOP. One SOP may cover multiple NIR sources in the same facility.

(3) Request that the NIRSO conduct a NIR survey on any new installation or relocation of a potentially hazardous NIR producing system prior to its operation.

(4) Ensure that applicable personnel are included in a medical and/or ocular surveillance program. *(See para. 15)* A listing of all such personnel will be updated annually or when personnel are added or removed and forwarded to the CECOM NIRSO.

(5) Provide the NIRSO with an inventory of potentially hazardous NIR producing systems. Update this inventory annually or when items are added or removed. For all exempted laser products maintain a permanent record of the status of each, including their ultimate disposition.

(6) Ensure that all personnel who routinely use, work or maintain equipment that emits NIR, or whose work environment contains equipment that emits NIR, receive initial and refresher NIR safety briefings. These briefings will provide a background on the nature of NIR, the hazards associated with NIR sources, and the means by which personnel can avoid potentially hazardous exposures. Initial training shall be received before assignment to such work areas and duties. Refresher NIR training should be given and may be incorporated into other periodic safety training programs.

(7) Report exempted lasers that are no longer required through the NIRSO to the Defense Reutilization and Marketing Service (DRMS) for utilization screening within the DoD. The reporting DoD Component shall maintain accountability during the screening period. Transfer of excess shall be made directly between the gaining and losing organizations. Dispose of exempted lasers in accordance with DoD 4160.21-M-1, Defense Demilitarization Manual. No disposal of potentially usable exempt lasers or exempt laser parts outside of DoD shall be made without the prior approval of the DUSD (ES) or his/her designee, as the DoD "Designated Agency Safety and Health Official." Send requests for such disposition through supply channels to the commanding general of the appropriate material readiness command.

(8) Ensure that all personnel who may be exposed to harmful levels of laser radiation wear appropriate laser eye protection. The optical density (O.D.) and the laser wavelength for which the eyewear offers protection must adequately protect against the hazards present.

g. *Directors of resident organizations/facilities/centers responsible for any operational parameters concerning NIR equipment will-* advise the NIRSO on matters concerning associated hazards (e.g. potential for X-rays, etc.) at resident locations and on

actions taken to alleviate any identified hazard. Accident/incident reports and violations of applicable regulations will be reported through these channels.

h. *All operators/workers/maintainers assigned to NIR producing systems will* comply with this regulation and any approved SOPs.

i. *The Logistics Engineering and Operations Directorate (LEO) will -*

(1) Ensure that all NIR producing systems are coded with a Special Control Item Code (SCIC) of "7," "C," "D," "E," "G," "M," "P," "R," "U," "V," "W," or "X," as appropriate, indicating that the system is "hazardous."

(2) Consult the NIRSO before transitioning NIR producing systems.

(3) Ensure that previous exception data and all safety or hazard analysis reports accompany NIR producing equipment when the equipment is transitioned.

j. *The Security Assistance Management Directorate (SAMD) will-*

(1) Consult the NIRSO whenever a FMS customer requests a NIR producing device to insure that adequate radiation protection information is provided to the customer.

(2) Ensure that appropriate safety precautions are included when these devices are offered for sale.

(3) Advise the FMS customer to contact the appropriate country safety personnel for further guidance on the safe handling and use of the NIR producing device.

k. *The Patterson Army Health Clinic (PAHC), through the local Occupational Health Department, or an appropriate medical support facility servicing the specific location, will -*

(1) Provide medical assistance and advice as established by AR 40-5 and as addressed in appendix C.

(2) Perform medical surveillance examinations. (See para. 15)

7. Procedures.

a. Supervisors will insure that personnel involved with NIR producing equipment will be cognizant of their respective duties and any associated hazards, including NIR safety.

b. Safety matters concerning potentially hazardous NIR producing equipment (e.g. RF/microwave and laser systems) will be coordinated with the NIRSO prior to initial installation or subsequent relocation.

c. Prior to starting any operation involving NIR producing equipment, SOPs will be developed by the host organization and submitted to the NIRSO for signature. The SOPs will address in general terms the operations that will be conducted in a given location (laboratory, facility, etc.) and discuss how the NIR producing equipment will be used to achieve a given purpose. SOPs will detail the applicable safety measures and procedures that personnel (RF, Laser, etc. workers/personnel) are to follow. They must also provide procedural information regarding accidents including whom to contact (including telephone numbers, extensions, etc.), a listing of the organization's certified First-Aid and Cardiopulmonary Resuscitation (CPR) certified/qualified individuals (with telephone numbers) and procedures that are to be followed. RF and Laser workers will sign and date a signature page at the end of the SOP indicating their pledge to work in accordance with the safety procedures specified. Proposed changes to the SOPs will be submitted to the NIRSO for determination of overall impact and approval. The signature page may be amended only with the knowledge of the local organization's government safety representative and the NIRSO. Copies of such updates will be provided to the NIRSO. A copy (or copies, as appropriate) of the original signed and dated SOPs with signatures affixed will be conspicuously posted in the vicinity of the applicable NIR producing systems/operations. The original approved SOP with signature page(s) will be securely stored by the local organization's government safety representative or functional supervisor. If an original SOP is maintained by a local organization's government safety representative, a copy of the signed and dated original SOP will be maintained by the applicable supervisor. This same supervisor will also be responsible for the enforcement of all provisions cited in the SOP. Periodically, the proponent and the NIRSO will review the SOPs to assure they are current. No deviation from the approved SOPs will be permitted without the approval of the local safety POC. The NIRSO shall be consulted prior to any such deviations to the approved SOPs.

d. First-aid personnel will be available with appropriate training and equipment at a level commensurate with the associated NIR hazards (e.g., electrical shock, exposures, burns, etc.). Preferably, local organizational first aid trained individuals will be utilized to insure the most expedient medical attention possible when deemed appropriate. (See Appendix C)

e. All personnel who could be exposed to harmful levels of laser radiation will wear appropriate laser eye protection. The O.D. and wavelength of the eye protection (e.g. glasses, goggles, etc.) are typically printed on the eyewear.

f. Laser systems operated in an "inherently safe mode" with a totally enclosed beam path may be exempted from some requirements. (See paras. 9 and 10) Any exemptions will be obtained, in writing, from the CECOM NIRSO.

g. When a compelling reason makes a deviation from any requirement of this regulation necessary, a management official may request a waiver (temporary authority to deviate for a specified period, not to exceed 60 days) or an exemption (long term authority to deviate). Such a request will be brought to the RSC for concurrence.

h. Personnel who routinely work with or maintain equipment that emits NIR will attend initial and refresher NIR safety briefings.

i. Follow the electrical safety guidance found in TB 385-4, MIL-HDBK-454 (Guideline 1), and UL 1950 where, and as, applicable.

8. General Precautions for All Laser Operations.

a. Do not look into the beam.

b. The beam will never be directed at personnel.

c. Avoid aiming the laser with the naked eye. This prevents looking along the axis of the beam and decreases the hazard from any reflections of the beam.

d. Work with lasers will be done in areas of high general illumination (except for outdoor night operations and any other operation which requires low light level conditions).

e. When required, ensure that appropriate laser eye protection is worn and that it provides proper wavelength and adequate O.D. protection for the laser being used.

f. Suitable precautions will be followed to avoid electrical shock in connection with potentially dangerous circuits (both high and low-voltage). Follow the electrical safety guidance found in TB 385-4, MIL-HDBK-454 (Guideline 1), and UL 1950 where, and as, applicable.

g. Unused secondary laser beams emerging from alternate apertures of the laser will be properly terminated. An unused beam resulting from the use of beam splitters will be terminated.

h. Where possible, lasers should be set up so that the beam path is not at normal eye level (i.e. is below 3-feet or above 7-feet).

i. X-rays may be generated where high voltage (over 15 kV) power supplies and/or components (e.g. tubes) are utilized. Appropriate shielding will be utilized, where necessary, to prevent over exposures to X-ray radiation.

j. **Warning Signs** will be conspicuously displayed at all locations employing Class 3b and Class 4 lasers as defined in American National Standards Institute (ANSI) Z136.1 (American National Standard for Safe Use of Lasers). **Warning labels** will be permanently affixed to all laser systems. Design and use of warning signs and labels will be in accordance with ANSI Z136.1, and/or Title 21, Code of Federal Regulations, Section 1040.10(g) (Labeling requirements), as appropriate.

k. Eliminate all reflective material from the vicinity of the beam path.

l. Areas in which liquid nitrogen or other forms of coolant are used will be adequately ventilated.

m. Personnel will be trained at the operator level to deal with any applicable chemical hazards that may be associated with lasers on hand.

n. Appropriate fire extinguishers will be readily accessible for any laser systems that pose a fire hazard.

9. Specific Precautions for Class 4 Laser Systems.

a. High-energy laser beams capable of producing a fire will be terminated by a suitable backstop consisting of the appropriate thickness of earth, firebrick, or other fire-resistant materials. ***Use of asbestos containing products for this purpose is prohibited.***

b. Interlocks will be designed and incorporated into the laser facility to prevent exposure of personnel entering the laboratory. Door interlocks should be equipped with positive action manual reset devices to preclude accidental restart of lasers when the door is again closed. All interlocks will be periodically inspected for proper operation. An inspection report of such interlocks will be provided to the applicable organizational government safety representative.

c. Many situations exist in the research and development (R&D) environment where uncontrolled interruption of power (e.g., via a door interlock) can cause great damage to the equipment. In these instances, alternative methods may be established provided they consider ingress and egress during emergency conditions. Consideration shall also be given to the guidance provided in ANSI Z136.1 regarding Class 4 Laser Controlled Areas. Any alternative method for meeting these requirements will be approved, in writing, by the NIRSO.

d. Laser electronic-firing systems for pulsed lasers will be designed to avoid an accidental pulsing of a stored charge.

e. Systems with large capacitor banks should utilize an alarm system, to include a sound and/or flashing lights (visible through laser safety eyewear). A countdown procedure should be used once the capacitor banks begin to charge.

f. Large capacitor banks and high voltage power supplies should utilize discharging and/or shorting devices to ensure stored charges are appropriately discharged in a timely manner.

g. Personnel will wear appropriate eye protection for both the laser and any other associated potential hazards.

h. Very high-energy/high-power lasers should be fired by remote control. The use of closed-circuit television (CCTV) monitoring eliminates the requirement for personnel to

be in the same room with the laser. As an alternative, the laser and beam can be enclosed within a light-tight, fire-resistant box.

i. Signs will be affixed at the entrances of all Class 4 laser areas.

j. Follow the electrical safety guidance found in TB 385-4, MIL-HDBK-454 (Guideline 1), and UL 1950 where, and as, applicable.

10. Additional Precautions for R&D Lasers.

a. The operation of R&D laser systems differs from other lasers by the changing performance and attendant hazards that result from the constant reconfiguration of the equipment to fit the required experimental needs. Thus, a system configured in one experiment, as a Class 1 laser may, with minor adjustments, become a Class 4 laser. An increased hazard may also result from an inadvertent reflection or a failed component. For these reasons all experimental R&D laser systems should be treated as having their most hazardous possible classification.

b. The operator of such a R&D laser or laser system must assume the responsibility of being cognizant of the hazards associated with the specific configuration of the laser in use.

c. Specific recommendations are:

(1) Wear appropriate protective eyewear (e.g. goggles, etc.) adequate for all the wavelengths in use.

(2) Keep the number of personnel involved to a minimum.

(3) Try not to work alone (if necessary, arrange for someone to check on you periodically).

(4) Prohibit casual physical access to the area until the operator has "safed" the laser.

11. Additional Precautions for Outdoor Laser Operations.

a. Outdoor laser operations will be conducted only at an approved laser range and in accordance with the requirements of AR 385-63. The LRSO will serve as the approval authority for laser ranges.

b. Only those personnel and objects approved by the LRSO will be permitted between the laser and its target.

c. Only authorized personnel will be permitted to set up, adjust, and operate the laser. Use of the laser will be prohibited for unnecessary or unauthorized purposes or for periods of time beyond that absolutely necessary.

d. The LRSO will give the final and only authority to operate the laser. Personnel downrange, if any, will give the final clearance to fire. The operator will give the range safe signal. While the laser is being installed, calibrated, and adjusted, the operator will ensure that the laser is incapable of accidental firing.

e. Personnel will be excluded from the beam path at all points where the radiant exposure or irradiance, as defined in ANSI Z136.1, exceeds the appropriate laser protection standard. This will be accomplished by the use of physical barriers, administrative controls, and limiting beam traverse.

f. Lasing of non-target, vehicular traffic or aircraft is prohibited.

g. The beam path will be cleared of all flat specular surfaces capable of producing potentially hazardous reflections.

h. Lasing into populated areas is prohibited.

i. Local SOPs will prescribe, at a minimum, the procedures to be followed prior to laser operations, including:

(1) Inspection of the anticipated beam path to ensure that unauthorized personnel and all animals are out of the field of fire.

(2) Inspection of the laser optics to ensure that the laser is sighted on the designated target.

(3) Ensuring that all personnel within the laser hazard area are wearing laser safety eyewear designed for the specific wavelength of the laser and possessing an adequate O.D.

(4) Procedures for placement of temporary or permanent warning signs around the perimeter of the range.

(5) Procedures to ensure that the laser beam will not leave the boundaries of the laser range.

12. Specific Procedures for Free Space Radiation of RFR Sources.

a. Whenever possible, RFR producing sources will be operated into appropriately rated termination ("dummy") loads instead of free space radiating.

b. When the mission requires free space RFR, such radiation shall not be directed toward occupied areas where the resulting exposures (power density levels) may exceed State, Federal or DoD protection standards. Occupied areas include military and civilian buildings (e.g. encampments, schools, housing areas, Government offices, etc.). Where possible, occupied areas will be devoid of such radiation exposures. If unavoidable, such

exposures are to be ***less than*** the applicable DoD radiation safety protection standards. Where feasible, antennas will be mounted either on a roof where exposure to nearby personnel (e.g. in occupied areas, etc.) is not likely. Such locations are to be secured and be inaccessible to unauthorized personnel that may not be aware of the potential for RFR exposure.

c. When the mission DOES REQUIRE free space radiation near occupied areas (as defined above), potentially hazardous radiation from antennas will be kept distant from personnel. Personnel exposure/over exposure will be prevented via exclusion from these areas through the use of mechanical and/or electrical means (e.g. interlocks), antenna radiation sector blanking mechanisms, fences, or other positive means.

d. Interlocks, antenna sector blanking systems, and other beam restriction devices (including those described above) will be inspected periodically and after any initial installation or other activity that involves disassembly or disturbance of these devices. A record of these inspections along with the reasons why the inspections were conducted (failure of safety mechanism, periodic verification of proper operation, etc.) will be kept on file for reference by the using activity and be made available for inspection by the NIRSO. All such entries will indicate the individual making the entry along with his/her telephone number and extension and organizational mailing code/symbol. The local safety representative for the organization will initial along side the entry indicating his/her knowledge of the inspection and results thereto.

e. Only authorized personnel will be permitted to set up, adjust, operate and maintain RFR producing systems. Use of these systems will be prohibited for unnecessary or unauthorized purposes, at higher than required output power levels or for any period of time beyond that absolutely necessary for the mission.

f. Personnel will be excluded from the radiation of the antenna(s) at all locations where the power density level of the radiation exceeds the applicable Permissible Exposure Limit (PEL) of DoDI 6055.11. While in operation, any areas of potentially hazardous radiation levels will be under surveillance to ensure that the area remains clear of personnel.

g. Areas where personnel may be over-exposed will be posted with applicable signs and or labels prepared in accordance with DoDI 6055.11. The signs and/or labels, etc., shall indicate all pertinent details of the RFR hazard (e.g. applicable hazard distances, points of contact, etc.).

h. Where warning lights, bells, buzzers, etc. are employed; signs will be posted to inform personnel that the warning signal, when energized, is an indication that a potential RFR hazard may be present. Where such warning indicators are utilized, periodic inspections will be conducted. A record of these inspections along with the reason why the inspections were conducted (failure of safety mechanism, periodic verification of proper operation, etc.) will be kept on file for reference by the using activity. All such entries will indicate the individual making the entry along with his/her telephone number

and extension as necessary. The local safety representative for the organization will initial along side the entry indicating his/her knowledge of the inspection. Such records will be made available for inspection by the NIRSO.

i. Sources of RFR (e.g. transmitters, etc.) used for training missions will be operated at the minimum practical RF output power level necessary.

j. Waveguides will be inspected periodically for mechanical integrity (e.g. loose waveguide flanges, etc.) and damage. Special attention shall be given to flexible waveguide sections for observable or suspected areas of RFR leakage. A record of these inspections along with the reason why the inspections were conducted will be kept on file for reference by the using activity. All such entries will indicate the individual making the entry along with his/her telephone number and extension as necessary. The local safety representative for the organization will initial along side the entry indicating his/her knowledge of the inspection. A permanent record of these inspections will be kept on file for reference and be available for inspection by the NIRSO.

k. Precautions will be taken to prevent RF shock hazards to personnel. While the RFR producing system is energized and transmitting, ensure that personnel cannot make contact with any metallic conductors of any antenna or transmission line component (e.g. RF connectors/connections, feedlines, electrical contacts, etc.).

l. Ensure that vehicle mounted antennas, particularly whip antennas, will not come into contact with nearby/overhead power lines. When unsure, lower and/or tie the antenna down to the vehicle to prevent such contact while passing beneath or near such conductors.

m. Potentially hazardous exposures to X-Ray radiation (a form of ionizing radiation) may result from being in close proximity to certain high voltage areas of transmitters. Such areas will be labeled accordingly to adequately warn personnel.

13. Specific Procedures for Laboratory/Maintenance Locations.

a. Ensure that all laboratory and maintenance personnel are familiar with, and are specially trained regarding, the potential hazards associated with NIR producing systems (e.g. RFR, laser, and high intensity optical sources).

b. The use of dummy loads (for RFR producing systems), backstops, beam dumps, etc. (for laser radiation producing systems), and/or closed-loop/enclosed configurations are preferred where possible. This is particularly important for indoor NIR operations.

c. Free space radiation for RFR may be permitted ***outside*** the building for testing purposes with coordination with, and approval of, the Fort Monmouth Garrison Operations Coordinator, the Fort Monmouth Frequency Coordinator **and** the NIRSO.

d. ***Indoor*** free space RFR is allowed only with the advance written approval of the NIRSO. Appropriate RF/microwave warning signs and applicable warning indicators will be posted/utilized as necessary to warn personnel of potential RFR hazards.

e. Observe precautions to prevent electrical shocks, RF electrical shocks and X-radiation hazards associated with NIR producing sources.

f. To the extent possible, ensure that during maintenance/service work is not performed on RF producing systems with the applied power on or transmitter energized. When the transmitter and antenna are widely separated, position one person at the transmitter's location to assure that it is not enabled while maintenance personnel are working on or near the antenna. If this second person is not available to stand by the transmitter, disconnect the transmitter from the power source and post a sign at the transmitter to alert personnel that the transmitter and/or antenna is being maintained/serviced and that energizing the transmitter is prohibited. It is preferable in these situations to use lockout/tagout devices.

g. Testing of laser systems will be performed in controlled areas, with barriers and posted signs as appropriate and necessary to warn personnel of potential NIR hazards.

h. Personnel working with laser sources will wear appropriate eye protection as necessary designed for the specific wavelength of the laser and possessing an adequate O.D.

i. Personnel access to NIR testing areas will be controlled.

j. Personnel performing maintenance functions will receive specialized training in NIR safety (e.g. RFR, laser, and high intensity optical sources) and in any other generic safety areas specific to the systems they maintain.

k. Grounding for discharge of live circuit points will be performed prior to maintenance.

14. Specific Precautions in the Event of Suspected Overexposures.

a. Immediately disconnect the applied power from the NIR producing system that caused the potential overexposure.

b. Notify appropriate medical personnel and facilities and arrange for the examination of potentially overexposed personnel.

c. Notify the NIRSO at extension 20084 as soon as possible so that an investigation can commence.

e. Do not alter the configuration or control settings of the NIR producing system involved. Do not remove, cut, destroy or alter any damaged or defective areas that may

have been involved in a potential exposure/overexposure. These items/areas must be inspected by the NIRSO and other appropriate safety personnel before the NIR system will be released for further use by the NIRSO.

15. Medical Surveillance.

a. Ocular Surveillance Program. In accordance with DASG Policy Memorandum, 11 April 1994, Subject: Vision and Ocular Assessments of Personnel in Laser and Radiofrequency Radiation Environments, personnel working with RFR producing equipment are ***not*** required to be included in an Ocular Surveillance Program *except* in the case of current or previously known or suspected overexposures to the eye (in excess of five (5) times the applicable PEL). All personnel working in Class 3b and Class 4 laser environments (both Incidental Laser Workers and Laser Workers) will be included in an Ocular Surveillance Program. The program for these personnel will consist of preplacement ocular examinations and termination ocular examinations.

b. Accident Examinations. Any individual suspected or confirmed to have had an **eye exposure to RFR** levels in excess of five (5) times the applicable PEL will have an eye examination performed within 24-hours of any such suspected or confirmed exposure. In such cases, there will be an emphasis on any previous eye injuries or diseases and use of any medications, especially those with photosensitizing side effects. Any individual suspected or confirmed to have had an **eye exposure to laser radiation** at levels in excess of those found in ***ANSI Z136.1, American National Standard for Safe Use of Lasers,*** will have an ocular examination performed as soon as practical but within 24-hours of the suspected or confirmed exposure.

16. Non-ionizing Radiation Safety Evaluation Surveys.

a. Monitoring of local RF/microwave radiation exposure levels (RF power density/field strengths) may only be conducted by personnel with adequate training and experience as determined by the NIRSO. This monitoring will be restricted to the measurement of ambient RF/microwave radiation levels, possible radiation leaks, and estimation/determination of potential exposures to personnel following an incident or accident.

b. Qualified individuals, with the approval of the USACHPPM, will conduct RF/microwave hazard evaluations that include the direct measurement of RF/microwave radiation power density levels emanating from any source.

Appendix A

PUBLICATIONS

Required Publications

ANSI Z136.1
American National Standard for Safe Use of Lasers

AR 11-9
The Army Radiation Safety Program

AR 385-40
Accident Reporting and Records

DoDI 6055.11
Protection of DoD Personnel from Exposure to Radiofrequency Radiation and Military Exempt Lasers

MIL-HDBK-828
Laser Range Safety

TB 385-4
Safety Requirements for Maintenance of Electrical and Electronic Equipment

TB 43-0133
Hazard Controls for CECOM Radiofrequency and Optical Radiation Producing Equipment

TB MED 523
Control of Hazards to Health from Microwave and Radio Frequency Radiation and Ultrasound

TB MED 524
Control of Hazards to Health from Laser Radiation

Related Publications

AMC-R 385-100
Safety Manual

American National Standards Institute (ANSI) Z535 Series (Accident Prevention Signs):

ANSI Z535 Series of Standards (Accident Prevention Signs):

ANSI Z535.1
Safety Color Code

ANSI Z535.2
Environmental and Facility Safety Signs

ANSI Z535.3
Criteria for Safety Symbols

ANSI Z535.4
Product Safety Signs and Labels

ANSI Z535.5
Accident Prevention Tags (for Temporary Hazards)

AR 40-5
Preventive Medicine

AR 385-63
Policies and Procedures for Firing Ammunition for Training, Target Practice and Combat

DASG Policy Memorandum, Subject: Vision and Ocular Assessments of Personnel in **(11 April 1994)** Laser and Radiofrequency Radiation Environments

DoD 4160.21-M-1
Defense Demilitarization Manual (authorized by DoD Directive 4160.21, December 5, 1980)

DoD 6055.5-M
Occupational Health Surveillance Manual

MIL-HDBK-454
General Guidelines for Electronic Equipment

FM 8-50
Prevention and Medical Management of Laser Injuries

Title 21, Code of Federal Regulations, Part 1002 (except section 20)
Records and Reports

Title 21, Code of Federal Regulations, Part 1030
Performance Standards for Microwave and Radio Frequency Emitting Products

Title 21, Code of Federal Regulations, Part 1040 (Section 10)
Performance Standards for Light-Emitting Products, Laser Products

Title 21, Code of Federal Regulations, Part 1040 (Section 11)
Performance Standards for Light-Emitting Products, Specific Purpose Laser Products

UL 1950
Safety of Information Technology Equipment, Including Electrical Business Equipment

Appendix B

GLOSSARY OF TERMS AND ABBREVIATIONS

Authorized Personnel. Individuals approved as RF and/or laser operators by the person designated in the SOP as having approval authority. In the absence of such approval authority, the NIRSO will authorize such operators.

Classes of Lasers. Classes of lasers are defined in ANSI Z136.1 (cited in Appendix A, this regulation).

Closed Loop Operation. The configuration of a RF/microwave source where the output and termination of the radiation are contained within the source system. In this configuration there is little to no chance of any free space radiation.

Controlled Area. An area where the occupancy and activity of those within are subject to control and supervision for the purpose of protection from NIR hazards.

Dummy Load. A device used to terminate or absorb the RF/microwave energy from the transmitter or RF power amplifier so that the systems antenna cannot radiate it.

Exempted Military Laser Systems. The Food and Drug Administration has granted the Department of Defense (DoD) an exemption from Title 21, Code of Federal Regulations, Parts 1040.10-11 and from the provisions of 21 CFR Part 1002 (except 1002.00) for laser products that are used exclusively by DoD components and those that are designed for actual combat, combat training operations or are classified in the interest of national security. The exemption applies for military laser systems that are:

(1) Unable to meet the Federal Standards and maintain mission effectiveness.
(2) Used exclusively by DoD components.
(3) Designed for Actual combat, combat training, or are classified or otherwise protected for national security purposes.

Free Space Radiation. Electromagnetic radiation that is intentionally or unintentionally radiated from a system.

Hazard Distance. The distance from a RF/microwave source within which the power density level exceeds the PEL.

Hazard Evaluation Survey. In the context of this regulation, an evaluation of the hazards to personnel in the vicinity of non-ionizing radiation sources.

Incidental (Laser) Workers. Employees whose work makes it possible, but unlikely, that they will be exposed to laser energy sufficient to damage their eyes. Examples are operators of fielded Army laser equipment, individuals using lasers on an approved laser range, personnel involved in "force on force" laser training exercises when adequate

protection is provided, and personnel involved on a short-term basis in Research Development and Test Engineering (RDTE) or maintenance of laser equipment.

Laser. A source of intense, coherent, and directional optical radiation. Laser is an acronym for *Light Amplification by Stimulated Emission of Radiation*. A laser usually is composed of an energy source, a resonant cavity, and an active lasing medium.

Laser Exposure (or Protection) Standards. The maximum permissible laser radiation exposure levels below which personnel may be exposed without adverse acute or chronic health effects. These limits are defined in AR 11-9 and ANSI Z136.1.

Laser Range Safety Officer (LRSO). An individual designated to supervise and ensure the safe operation of a laser range. This individual will be technically qualified by virtue of education, training, or experience as determined by the LSO. *Note that the title "Laser Range Safety Officer" is a functional title and does not denote a commissioned status.*

Laser Safety Officer (LSO). An individual, appointed in writing, to provide consultation and advice on the degree of hazard associated with laser radiation and the effective measures to control these hazards. This individual, and any designated alternate, will be technically qualified by virtue of education, training, and/or professional experience. *Note that the title of "Laser Safety Officer" is a functional title and does not denote a commissioned status.*

Laser Workers. Employees who work routinely in laser environments and have a significant risk of accidental overexposure. Examples are personnel regularly involved in maintenance and/or RDTE of laser equipment, or those who work in situations where adequate protective measures cannot be provided.

Military-Exempt Laser. (See "Exempted Military Laser Systems")

Non-ionizing Radiation (NIR). Electromagnetic radiation whose photon energy is less than approximately 12.4 electron-Volts (eV). As such, this form of radiation is not capable of ionizing a water molecule made of atomic oxygen and hydrogen atoms. This type of radiation can cause changes in vibrational and rotational energies of molecules of tissues and is usually dissipated in the form of heat.

Non-ionizing Radiation Safety Officer (NIRSO). An individual, appointed in writing, to provide consultation and advice on the degree of hazard associated with non-ionizing radiation and the effective measures to control these hazards. This individual, and any designated alternate, will be technically qualified by virtue of education, training, and/or professional experience. *Note that the title of "Non-ionizing Radiation Safety Officer" is a functional title and does not denote a commissioned status.*

Optical Density (O.D.). A logarithmic expression for the attenuation provided by an optical attenuating medium, such as an eye protection filter.

Permissible Exposure Limit (PEL). That intensity of RF/microwave radiation above which personnel are subjected to potential hazards. These standards are listed and explained in DoDI 6055.11.

Potentially Hazardous RF/Microwave Source. Any RF/microwave radiation-producing source capable of emitting power density levels in excess of the protection standard (PEL).

Power Density. The average intensity of RF/microwave radiation present at a given point. The average power per unit area, usually expressed as milliwatts-per-square-centimeter (mW/cm^2).

Radiofrequency Radiation Safety Officer (RFSO). An individual, appointed in writing, to provide consultation and advice on the degree of hazard associated with RF/microwave radiation and the effective measures to control these hazards. This individual, and any designated alternate, will be technically qualified by virtue of education, training, and/or professional experience. *Note that the title of "Radiofrequency Radiation Safety Officer" is a functional title and does not denote a commissioned status.*

Radiation Safety Committee (RSC). A committee appointed by the Commander in accordance with AR 40-5 and whose composition and responsibilities are described in AR 40-5 and AR 11-9. Among its other responsibilities, the RSC, via consultation with the NIRSO, advises the Commander on NIR safety hazards and methods to control these hazards.

Radiation Safety Officer (RSO). Appointed by the Commander in writing as the executive agent for the command's radiation safety program. The title is sometimes referred to as radiation protection officer, or health physics officer. *Note that the title of Radiation Safety Officer is a functional title and does not denote a commissioned status.*

RF/Microwave Radiation. Electromagnetic energy in the frequency range of 3 kHz to 300 GHz.

RF/Microwave System. Any device capable of emitting RF/microwave radiation (including radars, communication systems, jammers, microwave ovens, etc.).

RF Workers. Employees who work routinely with and/or around Radiofrequency radiation producing equipment and have a potential risk of accidental exposures.

Specular Reflections. Mirror-like reflections

Appendix C

FIRST AID PROCEDURES
FOR
LASER OPERATIONS

FIRST-AID FOR ELECTRICAL SHOCK VICTIMS.

1. Before touching a victim of electrical shock, the circuit should be de-energized or the victim should be freed from the live conductor by using an appropriate nonconductive object such as a rope, dry wooden stick, or insulated pole. Cardiopulmonary resuscitation (CPR) procedures appropriate to the victim's condition should be started immediately.

2. Once the victim is breathing again, treat for physical shock if symptoms are present.

FIRST-AID FOR SHOCK VICTIMS.

If the patient is pale, cold, sweaty, weak, and has a rapid pulse, treat by:

a. Laying the patient down.

b. Loosening the patient's clothing.

c. Keeping the patient warm.

d. Elevating the patient's legs.

e. Keeping the patient quiet and relaxed.

FIRST-AID FOR LASER OPERATIONS INVOLVING EYE OR SKIN INJURIES.

1. First-Aid for EYE Injury from Laser Energy. First-aid should not be attempted for damage produced by laser exposure to the eye; therefore, prompt reporting to a medical treatment center is imperative. Dial 911. This is critical for known or suspected laser injuries.

2. First-Aid for Eye Injury from Caustic Chemicals. A deluge type eyewash and/or shower will be provided in a readily accessible location. Personnel are to flush the eye(s) for approximately 15 to 20 minutes and then report promptly to a medical treatment facility.

3. First-Aid for Skin Contact with Caustic Chemicals. Immediately flush the skin with large quantities of water. Report to a medical treatment facility for medical care.

4. First-Aid for Airborne Exposure to Asphyxiants and Toxic Gases (cryogenics, carbon monoxide, etc.). Remove the individual from the contaminated environment as quickly

as possible. The rescuers will use a buddy system and be provided with an adequate self-contained breathing apparatus in a contaminated atmosphere. If the person has stopped breathing, begin mouth-to-mouth ventilation. Quickly check to see if the victim's heart is beating; if a pulse is absent, begin CPR procedures as appropriate. Continue CPR measures until relieved by trained medical personnel.

5. First-Aid for Burns. Cover the burned area and keep it clean. Treat for physical shock if necessary.

6. First-Aid for Cryogenic Caused Frostbite. Cover affected area and keep it clean. Prohibit smoking. If the lower extremity is involved, treat as a litter patient with the affected body part either level or slightly elevated. Have the patient transported to a medical facility for emergency transport.

The proponent of this publication is the U.S. Army Communications Command. Users are invited to send comments on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Commander, CECOM, ATTN: AMSEL-SF, Fort Monmouth, NJ 07703-5024.

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Major General, USA
Commanding

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Colonel, GS
Chief of Staff

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Kearney, Alice M CECOM DS

From: Groeber, Edward O RDECOM [edward.groeber@us.army.mil]
Sent: Thursday, December 18, 2003 2:29 PM
To: 'Kearney, Alice M CECOM DS'
Subject: RE: Radiation Safety Committee Alternate Membership

Alice,

How about an appointment email?

I hereby appoint Walter Swaylik as the JPM NBC CA alternate member to the Ft Monmouth RSC.

Ed Groeber
Radiac System Manager
JPM, NBC CA

-----Original Message-----
From: Kearney, Alice M CECOM DS [SMTP:alice.kearney@us.army.mil]
Sent: Thursday, December 18, 2003 8:39 AM
To: 'Groeber, Edward O RDECOM'
Subject: RE: Radiation Safety Committee Alternate Membership

Thanks, Special Ed! Can you do an appointment memo for him?

Merry Christmas!

-----Original Message-----
From: Groeber, Edward O RDECOM [mailto:edward.groeber@us.army.mil]
Sent: Thursday, December 18, 2003 8:13 AM
To: Kearney, Alice M CECOM DS
Cc: 'Kaplowitz, Ira CECOM RDEC I2WD'
Subject: RE: Radiation Safety Committee Alternate Membership

Alice,

Walt Swaylik will be the alternate.

Ed

-----Original Message-----
From: Kaplowitz, Ira CECOM RDEC I2WD [SMTP:Ira.Kaplowitz@mail1.monmouth.army.mil]
Sent: Wednesday, December 17, 2003 4:00 PM

To: Groeber Edward O. (JPM NBC CA) (E-mail)

Cc: Kearney, Alice M CECOM DS

Subject: Radiation Safety Committee Alternate Membership

Ed,

Alice reminded me that a new alternate member of the RSC must be appointed to replace Ted Do. She would like to announce the appointment at tomorrow's RSC meeting.

Ira

AMSEL-RD-IW-EC (15-1a) 19 December 2003

MEMORANDUM FOR AMSEL-SF-RE

SUBJECT: Duty Appointment, Alternate Member, CECOM and Fort Monmouth Radiation Safety Committee (FMRSC)

1. The following individual is appointed as the JPM NBC CA Alternate FMRSC Member:

Mr. Walter Swaylik

2. AUTHORITY: AR 11-9 and CECOM 385-18.

3. EFFECTIVE: This appointment supersedes all previous FMRSC JPM NBC CA Alternate appointments and is effective immediately.

4. PERIOD: Until officially relieved or released from appointment.

5. PURPOSE: To serve as JPM NBC CA Alternate Member of the FMRSC. Member provides pertinent ionizing and nonionizing radiation safety information and technical assistance.

6. CECOM BOTTOM LINE: The Warfighter.

FOR THE COMMANDER:

JOAN C. HUSSEY
Administrative Officer

Patterson Army Health Clinic
General Electric DMR

MEDICAL PHYSICIST MAMMOGRAPHIC EQUIPMENT EVALUATION REPORT

Date of Report: September 11, 2003

Date of Survey: September 11, 2003

Evaluation Performed by:

John C. Ramsey
Medical Physicist
BIO-MED ASSOCIATES, INC.

JCR/tlb
pattersonarmy-gedmr-r2

MAMMOGRAPHIC EQUIPMENT EVALUATION

Patterson Army Health Clinic
1075 Stephenson Street/Radiology Dept.
Ft. Monmouth NJ 07703

Date of Survey: September 11, 2003

ACR Expiration Date: April 27, 2004
FDA Expiration Date: May 27, 2004

Equipment

Location of Unit: MAMMOGRAPHY
X-ray Unit Manufacturer: General Electric — Model: DMR
Processor Manufacturer: Kodak — Model: X-OMAT 480 RA
Screen Manufacturer: Kodak — Type: MR-2
Film Manufacturer: Kodak — Type: MR-2

Mammography Phototimer Technique Chart

SEE PAGE 5

1. MAMMOGRAPHIC UNIT ASSEMBLY EVALUATION

Free-standing dedicated unit is mechanically stable.	PASS
All moving parts move smoothly,without obstructions to motion.	PASS
All locks and detents work properly.	PASS
Image receptor holder assembly is free from vibrations.	PASS
Image receptor slides smoothly into holder assembly.	PASS
Image receptor is held securely by assembly in any orientation.	PASS
Compressed breast thickness scale is accurate to +/- 0.5 cm, reproducible to +/- 2 mm	FAIL
Patient or operator is not exposed to sharp or rough edges, or other hazards	PASS
Operator technique control charts are posted	PASS
Operator protected during exposure by adequate radiation shielding.	PASS
All indicator lights working properly	PASS
Automatic decompression can be overriden to maintain compression (status displayed)	PASS
Manual emergency compression release can be activated in the event of a power failure	PASS

Mammography Phototimer Technique Chart

Breast Thickness (cm)	FATTY BREAST				50% FATTY - 50% DENSE				DENSE BREAST			
	AEC Exposure Mode	Target / Filter	kVp Setting	AOP	AEC Exposure Mode	Target / Filter	kVp Setting	AOP	AEC Exposure Mode	Target / Filter	kVp Setting	AOP
< 3 cm		Mo/Mo	25	CNT		Mo/Mo	25	CNT		Mo/Mo	26	CNT
3 to 5 cm		Mo/Mo	26	CNT		Mo/Mo	25	CNT		Mo/Rh	27	CNT
6 to 7 cm		Mo/Mo	27	CNT		Mo/Rh	27-29	CNT		Rh/Rh	28-29	STD
> 7 cm		Mo/Rh	28-30	CNT		Rh/Rh	31	STD		Rh/Rh	31-34	DOSE

Implant Displacement Views

Photo-time using the above chart

Manual Technique for Implanted Breasts

Breast Thickness (cm)	FATTY BREAST				50% FATTY - 50% DENSE				DENSE BREAST			
	AEC Exposure Mode	Target / Filter	kVp Setting	mAs	AEC Exposure Mode	Target / Filter	kVp Setting	mAs	AEC Exposure Mode	Target / Filter	kVp Setting	mAs
< 3 cm		Rh/Rh	25	100		Rh/Rh	26	100		Rh/Rh	27	120
3 to 8 cm		Rh/Rh	26	120		Rh/Rh	27	120		Rh/Rh	28	140
> 7 cm		Rh/Rh	27	140		Rh/Rh	28	140		Rh/Rh	29	160

Phantom Image:

Cassette #	13
AOP Mode	CNT

Photocell Position
2

Revised 09/11/03

2. COLLIMATION ASSESSMENT

Source to image receptor distance (SID) in mm: 660 mm

Deviation between x-ray field and light field:

Anode Material	Mo	Mo	Rh	Rh
Focal Spot Size	0.3	0.3	0.3	0.3
Collimator : (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Left Edge Deviation	0.5	0	1	0
Right Edge Deviation	3.5	2.5	6	2
Sum of left and right edge deviations	4	2.5	7	2
Sum as % of SID	**0.6%**	**0.4%**	**1.1%**	**0.3%**
Anterior Edge Deviation	4.5	4.5	4.5	2
Chest Edge Deviation	3.5	1.5	9	10.5
Sum of anterior & chest edge deviations	8	6	13.5	12.5
Sum as % of SID	**1.2%**	**0.9%**	**2.0%**	**1.9%**

ACTION LIMIT: ACR/MQSA - If sum of left plus right edge deviation or anterior plus chest edge deviations exceed 2% of SID, seek service adjustment.

Difference between x-ray field and edges of the image receptor:

Collimator: (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Left edge deviation	0.5	2	2	1
% of SID (retain sign)	**0.1%**	**0.3%**	**0.3%**	**0.2%**
Right edge deviation	1	-2	-1.5	-1
% of SID (retain sign)	**0.2%**	**-0.3%**	**-0.2%**	**-0.2%**
Anterior edge deviation	-4	-33	-4	-33
% of SID (retain sign)	**-0.6%**	**-5.0%**	**-0.6%**	**-5.0%**
Chest edge deviation	8.5	8.5	1	1.5
% of SID (retain sign)	**1.3%**	**1.3%**	**0.2%**	**0.2%**

ACTION LIMIT: ACR/MQSA - If x-ray field dimensions differ from the dimensions of the image receptor at any side by more than +/- 2% of SID or if x-ray field falls within image receptor on the chest wall side, seek service adjustment.
ACR - If x-ray field falls within image receptor by more than -4% on the anterior side, seek service adjustment.
MQSA - X-ray field can not extend beyond any of the 4 sides of the image receptor by more than +2% of the SID.

Alignment of chest wall edges of compression paddle and film:

Collimator: (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Difference between paddle edge and film	4	3.5	4	4
Difference as % of SID:	**0.6%**	**0.5%**	**0.6%**	**0.6%**

ACTION LIMIT: ACR/MQSA - If chest wall edge of compression paddle is within the image receptor or projects beyond the chest wall edge of the image receptor by more than 1% of SID, seek service correction.

3. EVALUATION OF SYSTEM RESOLUTION

X-Ray Tube Manufacturer:	General Electric
X-Ray Tube Model Number:	GS412-49, Sn. 1698TX0

Nominal focal spot size, from		0.3	0.3	0.1	0.1
Anode material		Mo	Rh	Mo	Rh
Grid used?		Yes	Yes	Yes	Yes
Paddle used?		Yes	Yes	Yes	Yes
Nominal kVp setting		26	28	27	28
Nominal mA setting					
Density control setting		0	0	0	0
mAs		177	55	141	55
Magnification Factor		1.0	1.0	1.8	1.8
Limiting resolution	bars parallel to A-C axis	**15**	**16**	**18**	**16**
in line-pairs per mm	bars pependicular to A-C axis	**16**	**15**	**12**	**11**

ACTION LIMIT: If the limiting resolution is <13 line-pairs per mm with the bars parallel to the anode-cathode axis or is <11 line-pairs per mm with the bars perpendicular to the anode-cathode axis, then a more detailed investigation of the reason should be made and corrective action should be taken.

4. AUTOMATIC EXPOSURE CONTROL (AEC) SYSTEM PERFORMANCE

AEC Sensor Position: 2 Density Control: 0

Small Cassette ID: 8, 9, 10, 11 Large cassette I.D.: 5

4a. Performance Capability:

Thickness / kVp Tracking: 50% fatty - 50% dense breast							
Imaging mode:	small image receptor with grid						
Focal Spot:	large focal spot						
mA:							
Phantom Thickness	*AEC Mode*	*Anode*	*Filter*	*kVp*	*mAs*	*Density Control Setting*	*Optical Density*
2 cm	CNT	Mo	Mo	25	33	0	1.65
4 cm	CNT	Mo	Mo	25	137	0	1.59
6 cm	CNT	Mo	Rh	27	285	0	1.43
8 cm	STD	Rh	Rh	31	305	0	1.57
Mean Density (2-6 cm)	**Density Range**			**MQSA Allowable Range**			
1.56	**1.43**	**to**	**1.65**	**1.41**	**to**		**1.71**

Unit complies with final regulation 10/28/02 for 2cm - 6cm.

Image Mode Tracking for 4 cm thick phantom						
mA:	100/30					
Anode / Filter:	Mo/Mo					
Image Mode	*AEC Mode*	*Focal Spot*	*kVp*	*mAs*	*Density Control Setting*	*Optical Density*
18 x 24 cm	CNT	0.3	26	137	0	1.59
24 x 30 cm	CNT	0.3	25	134	0	1.65
MAG - no grid	CNT	0.1	27	101	0	1.79

* Mo/Rh

Overall AEC Performance				(10/28/02)		
Mean Density	**Density Range**			**Recommended Range**		
1.61	**1.43**	**to**	**1.79**	**1.46**	**to**	**1.76**

ACTION LIMIT: ACR - The AEC system should be able to maintain constant film optical density to within +/-0.30 of the average over the phantom thicknesses and imaging modes tested.

ACR/MQSA - The AEC system must be capable of maintaining film optical density within +/-0.30 of the mean (+/-0.15 after 10/28/2002) when the thickness of the phantom is varied over 2 - 6 cm and the kVp is varied over the range of those used clinically for those thicknesses. The optical density in the center of the phantom image must not be less than 1.20. If these standards are not met, seek service adjustment.

4.b. Density Control Function:

Imaging mode: Normal
Focal Spot Size: 0.3
mA setting: N/A
kVp setting: 25
Phantom thickness: 4
Cassette ID: 10

Density Selector Setting	Target/Filter	Image #	Recorded mAs	% Step Change	Measured Density	Density Change
-2	Mo/Mo	1	136		1.56	
-1	Mo/Mo	2	147	8.1%	1.64	0.08
0 / Normal	Mo/Mo	3	159	8.2%	1.69	0.05
+ 1	Mo/Mo	4	171	7.5%	1.76	0.07
+ 2	Mo/Mo	5	187	9.4%	1.79	0.03

ACTION LIMIT: (ACR) Each step should result in a 12 to 15% change in mAs, or approximately a 0.15 change in film optical density. If not, seek service.

5. UNIFORMITY OF SCREEN SPEED AND AEC REPRODUCIBILITY

Screen type:	MR-2	Processor:	X-OMAT 480 RA
Film type:	MR-2	kVp setting:	25
Focal spot size:	0.3	Imaging mode:	Normal
		Density setting:	0

Small Cassettes:

Phantom Size	4.0	cm
Film Emulsion Number:	514 033 15	

Large Cassettes:

Phantom Size	4.0	cm
Film Emulsion Number:	515 030 13	

Cassette ID #	Artifacts ?	mAs	Density
Control Cassette:			
8	Yes	137	1.59
[redacted]	Yes	137	1.55
	Yes	137	1.53
Mean of control cassette densities:			1.56
Std Dev control cassette densities:			0.03
Other Cassettes:			
9	Yes	137	1.59
10	Yes	137	1.55
11	Yes	136	1.60
12	Yes	136	1.52
13	Yes	136	1.56
[redacted]			
Mean Density			1.56
Minimum Density			1.52
Maximum Density			1.60
Density Range			0.08

Cassette ID #	Artifacts ?	mAs	Density
Control Cassette:			
7	Yes	134	1.65
[redacted]	Yes	135	1.61
	Yes	134	1.59
Mean of control cassette densities:			1.62
Std Dev control cassette densities:			0.03
Other Cassettes:			
8	Yes	134	1.61
9	Yes	134	1.62
10	Yes	134	1.62
11	Yes	134	1.57
12	Yes	133	1.54
[redacted]			
Mean Density			1.60
Minimum Density			1.54
Maximum Density			1.65
Density Range			0.11

ACTION LIMIT: ACR/MQSA - If standard deviation of control cassette densities is less than 0.05 AND density range exceeds 0.3, then corrective action is needed.

6. ARTIFACT EVALUATION

Type of Attenuator:	Lucite
Thickness of Attenuator:	4.0
kVp Setting:	25, 26
Density Control Setting:	0

Image receptor size	18x24cm	24x30cm	18x24cm MAG
Cassette Number	9, 10	7, 8	9
Anode	Mo	Mo	Mo
Filter	Mo	Rh	Mo
Focal Spot size	0.3	0.3	0.1
Emulsion Orientation	Up	Up	Up
Resultant film O.D.	1.59	1.42	1.79
mAs	114	61	101
Artifacts visible?	Yes	Yes	Yes
Processor ?	Yes	Yes	Yes
Acceptable ?	Yes	Yes	Yes
Describe artifacts:	Roller marks, guide-shoe marks.	Roller marks, guide-shoe marks, mottle.	Roller marks.
Cassette-film-screen ?	Yes	Yes	Yes
Acceptable ?	Yes	Yes	Yes
Describe artifacts:	Dust	Dust.	Dust.
X-Ray Equipment ?	No	No	Yes Collimation.

ACTION LIMIT: ACR/MQSA - If significant artifacts are visible, contact the appropriate person maintaining or servicing the processor or x-ray equipment.

6. ARTIFACT EVALUATION

Type of Attenuator:	Lucite
Thickness of Attenuator:	4
kVp Setting:	25
Density Control Setting:	0

Image receptor size	18x24cm
Cassette Number	8, 12
Anode	Rh
Filter	Rh
Focal Spot size	0.3
Emulsion Orientation	Up
Resultant film O.D.	1.46
mAs	77
Artifacts visible?	Yes
Processor ?	Yes
Acceptable ?	Yes
Describe artifacts:	Roller marks, guide-shoe marks.
Cassette-film-screen ?	Yes
Acceptable ?	Yes
Describe artifacts:	Dust.
X-Ray Equipment ?	No

ACTION LIMIT: ACR/MQSA - If significant artifacts are visible, contact the appropriate person maintaining or servicing the processor or x-ray equipment.

7.a. IMAGE QUALITY EVALUATION

Phantom used:	B 545
AEC Detector Position:	2
Image Receptor and Size:	18 x 24
Cassette No.:	13

	Previous Film	Current Film	Comments
Date	8/8/2002	9/11/2003	
kVp setting	25	25	
Density Control setting	0	0	
Phototimed mAs (or exposure time)	148	147	
mAs change (or exposure time change, -t)		-1.0	
% mAs change (or % t change = -t/t x 100%)		-0.7%	
Background O.D.	1.78	1.56	
Background O.D. Change		-0.22	
O.D. outside disc	1.70	1.49	
O.D. inside disc	1.18	1.04	
O.D. difference (outside O.D. - inside O.D.)	0.52	0.45	
O.D. difference change		-0.07	
Number of fibers seen	4.5	5.0	
Fibers seen after deduction	4.5	4.5	
Fiber Change		0.0	
Number of speck groups seen	3.5	4.0	
Speck groups after deduction	3.5	3.5	
Speck group change		0.0	
Number of masses seen	4.0	4.0	
Masses seen after deduction	4.0	4.0	
Mass change		0.0	

ACTION LIMIT: **ACR/MQSA** - The largest 4 fibers, 3 speck groups, and 3 masses must be visible. Background optical density must be at least 1.20. Corrective action must be taken before any further examinations are performed if the results of this test fail any MQSA regulations.

ACR - The density difference should be at least 0.40 for a 4-mm thick acrylic disk. Background optical density should be at least 1.40 and must be 1.20. If %mAs change exceeds +/-15%, if background density change exceeds +/-0.20, if density difference change exceeds +/-0.05, or if fiber, speck group or mass score decreases by more than 0.5, the source of the change should be identified and corrected.

8. kVp ACCURACY / REPRODUCIBILITY

kVp meter used: see Appendix A Setting: Normal

Nominal kVp setting	25	27	28	32	27
Nominal focal spot size	0.3	0.3	0.3	0.3	0.1
Exposure time	56.7	51.3	50.5	45.2	157.8
mA setting	~88	~98	99.1	~111	~32
mAs setting	5	5	5	5	5
Measured kVp values					
1	25.5	27.1	28.0	31.7	27.0
2	25.5				
3	25.4				
4	25.5				
Mean kVp	25.5	27.1	28.0	31.7	27.0
Standard deviation (SD)	0.05		0.00		
Mean kVp - Nominal kVp	0.5	0.1	0.0	-0.3	0.0
0.05 x Nominal kVp	1.25	1.35	1.4	1.6	1.35
% Error	1.9%	0.4%	0.0%	-0.9%	0.0%
Coefficient of variation	0.002				

ACTION LIMIT: ACR/MQSA - If the mean kVp differs from the nominal kVp by more than +/- 5% of the nominal kVp, or if the kVp coefficient of variation exceeds 0.02, then seek service correction.

9. BEAM QUALITY (HVL) MEASUREMENT

Dosimetry system used: See Appendix A

Nominal kVp Setting		25	27	28
Anode		Mo	Mo	Mo
Filter		Mo	Rh	Mo
mA setting				
Time setting				
mAs setting		16	16	16
Exposure Measurements: (mR)	No aluminum filtration, E_{0a}	184.0	204.0	271.0
	0.2 mm of added aluminum, E_2			
	0.3 mm of added aluminum, E_3	96.9	119.4	150.9
	0.4 mm of added aluminum, E_4	79.9	101.5	126.5
	0.5 mm of added aluminum, E_5			
Repeat E_0 measurement E_{0b}.		183.4	203.8	271.0
Measurment E_{0b} within 2% of E_{0a} ?		Yes	Yes	Yes
Average E_0		183.7	203.9	271.0
Average E_0 / 2		91.9	102.0	135.5
Recorded thickness and exposures that bracket $E_0/2$:	(t_a<t_b) t_a	0.3	0.3	0.3
	t_b	0.4	0.4	0.4
	(E_a>E_b) E_a	96.9	119.4	150.9
	E_b	79.9	101.5	126.5
Calculated HVL:		**0.33**	**0.40**	**0.38**
Minimum allowed HVL		**0.28**	**0.30**	**0.31**
Maximum allowed HVL		**0.37**	**0.46**	**0.40**

$$\text{Calculated HVL} = \frac{t_b \ln\left(\frac{2E_a}{E_0}\right) - t_a \ln\left(\frac{2E_b}{E_0}\right)}{\ln\left(\frac{E_a}{E_b}\right)}$$

ACTION LIMIT: **ACR:** If measured HVL < kVp/100 + 0.03 (in mmAl)

or

If measured HVL > kVp /100 + C (in mmAl),
Where C = 0.12 for Mo/Mo, C = 0.19 for Mo/Rh,
C = 0.22 for Rh/Rh, and C = 0.30 for W/Rh, than seek service correction.

MQSA: HVL > kVp/100 (in mmAl)

10. BREAST ENTRANCE EXPOSURE, AEC REPRODUCIBILITY, AVERAGE GLANDULAR DOSE, AND RADIATION OUTPUT

Dosimetry system used: SEE APPENDIX A

Imaging mode:			SID (cm)	66	cm
Screen type:	MR-2		Source-detector distance (cm):	60.6	cm
Film type:	MR-2		Source-bucky distance (cm):	64.4	cm
Cassette size (cm):	18 x 24	cm	Dosimeter used:	See Appendix A	
Field restriction (cm):	18 x 24	cm			
Phantom and thickness:	B 545, 4.2cm				

Breast Thickness (cm)	4.2 cm	4.2 cm	4.2 cm
Phantom	B 545	B 545	B 545
Nominal kVp setting	25	27	28
Anode material	Mo	Mo	Mo
Filter	Mo	Rh	Mo
AEC Mode	CNT	AEC	AEC
AEC density control setting	2	2	2
Measured HVL (mmAl)	0.33	0.40	0.36

Breast Entrance Exposure and AEC Reproducibility

	R	mAs	R	mAs	R	mAs
Exposure #1	1.247	171.0	0.609	81.0	0.883	88.0
Exposure #2	1.245	170.0	0.609	81.0	0.883	88.0
Exposure #3	1.245	170.0				
Exposure #4	1.239	169.0				
Mean values	1.244	170.0	0.609	81.0	0.883	88.0
Standard deviation (SD)	0.004	0.816	0.000	0.000	0.000	0.000
Coefficients of variation (CV)	0.003	0.005	0.000	0.000	0.000	0.000

Average Glandular Dose:

Inv Square corrected skin exp	1.0	1.0	1.0
Dose Conversion factor (mrad/R)*	166	204	183
Computed Average Glandular Dose (mrad):	207	124	152

* From Tables 1-3

ACTION LIMIT: If coefficient of variation for either R or mAs exceeds 0.05, seek service. If average glandular dose exceeds 300 mrads (3 mGy) for 4.2 cm effective breast thickness, seek service or technique adjustment. Corrective action must be taken before examinations are performed if the test results fail MQSA regulations.

Radiation Output Rate:

3 sec, 4.5 cm	kVp	Anode/ Filter	SID (cm)	Exp (mR)	mA	mAs	Time (sec)	Rate mR/sec	Kerma (mGy/s)
above	28	Mo/Mo	66	3265.1	100	320	3.2	1020	8.91
breast support	28	Mo/Mo	66	2049.7	100	200	2	1025	8.95
	$mR/mAs_1 \langle X_1 \rangle =$		10.203	$mR/mAs_2 \langle X_2 \rangle =$		10.249	$\lvert \langle X1 \rangle - \langle X2 \rangle \rvert =$		0.05

Air Kerma (mGy/sec) = Exp Rate (mR/sec) x 0.00873 mGy/mR

Action Limit: **ACR:** If output rate is less than 800 mR/sec (7.0 mGy air kerma/sec), seek service.
MQSA: If output rate is less than 513 mR/s (4.5 mGy/s), seek service.
After 10/28/2002, this value changes to 800 mR/s (7.0 mGy/s).

APPENDIX A

Instrumentation:

Keithley Model 35050A Dosimeter, Serial No. 45572, calibrated October 09, 2001.

Keithley Model 96035 15cc Chamber, Serial No. 46404, calibrated October 09, 2001.

Calculations:

Absorbed Dose (rads) = Entrance Exposure x f

Where: f is the rads/R conversion factor for the HVL and breast thickness indicated from: American College of Radiology Medical Physicists Manual, 1999, Tables 1 - 3.

DENSITOMETER: X-Rite 331, S/N 018972

Calibration	0.03	0.22	1.47	2.98	3.71
Reading	0.04	0.23	1.5	3.05	3.78
Difference	0.01	0.01	0.03	0.07	0.07

BIO-MED ASSOCIATES, INC.

4 MAIN STREET
FLEMINGTON, NEW JERSEY 08822
908-788-9440 FAX 788-6757

JOHN C. RAMSEY
Medical Physicist

www.biomedphysics.com

GE Medical Systems

Service Record

Room Number	Dispatch Number	Customer	System ID#
MAMMO	804325	[illegible]	908532[illegible]

TRIP LOG

Date	Start Time	End Time	System Status	Travel Time	T&L Expense

Covered Hours STD Billed	
Labor	Travel

Non-Covered Hours O.T. Billed	
O.T. Labor	O.T. Travel

SVC CLS	FMI No.	FMI Code	Model Number	Serial Number	Account Number
			GE DMR [illegible]		

SYMPTOM

(1) DENSITY BACK[illegible]

(2) COMPRESSION

DIAGNOSIS AND SERVICE PERFORMED

(1) ADJUSTED DENSITY OK 9/12/03

(2) ADJUSTED COMPRESSION OK

PARTS USED

Qty.	Part Number	Consignment No.	Description	Unit Price	Total Price

THANK YOU FOR CHOOSING GE SERVICE. IF WE CAN BE OF FURTHER ASSISTANCE, PLEASE CALL US AT 1-800-437-1171.

Total Charge to Customer	Customer P.O. Number	Accepted By	Serviced By:
			[signature]

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
Fort Monmouth Fire Department Attn: SELFM-DPS-F Building 282 Fort Monmouth, NJ 07703	John Erichsen	
	3. PERMIT NUMBER 240	4. EXPIRATION DATE 5 December 2005

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Nickel 63 (Ni-63) incorporated in the APD 2000 Monitor Model : 2428800-10 SN: 1829 FM ID# Ni-18 and Model : 2428800-30 SN: 3234 FM ID# Ni-19	Electroplated Ni-63/Solid	Each APD 2000 – 10.0 mCi Total Activity – 20.0 mCi

8. CONDITIONS:

a. The Ni-63 sources listed in item 5 are used in the APD 2000 Monitor which is a portable, hand-held monitor and detector designed for emergency first response to hazardous chemical spills and terrorist attacks.

b. The authorized place of use for the APD 2000 is at emergency events on Fort Monmouth and mutual aid response to neighboring towns.

c. The APD 2000 will be utilized under the supervision of the individual listed in Item 2. Additional users shall be approved by the Fort Monmouth Radiation Safety Officer (RSO). The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation of the source/item listed in Item 5.

APPROVED:

DATE: 5 December 2003

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 240	EXPIRATION DATE: 5 December 2005

CONDITIONS:

d. No unauthorized personnel are allowed in the same area when the source is in use.

e. The Ni-63 source may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6444 or 6440 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the source listed in item 5, to include procuring additional sources.

g. The Ni-63 sources shall be leak tested at an interval not to exceed 6 months. The initial leak test for SN: 1829 was performed at the CECOM Radiological Engineering Laboratory on 12 November 2003. The initial leak test for SN: 3234 was performed by the manufacturer on 26 November 2003 and again at CECOM on 4 December 2003.

h. The storage area for the APD 2000 Monitors shall be secured at all times or its access controlled by an authorized user.

i. The APD 2000 Monitor is to be used IAW the Users Manual dated November 2003, as provided with the Radiological Permit Application, dated 10 November 2003.

j. Unless specifically provided otherwise, the monitors/sources listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 10 November 2003, and additional paperwork for the second monitor on 2 December 2003 signed by John Erichsen, Chief, FM Fire Department and Emergency Services.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 10 November 2003

X **Initial Permit Application** (assign # 240)

___ **Application for Amendment to Permit No.** _____

___ **Application for Renewal of Permit No.** _____

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: Ft Monmouth Fire Dept Building 282, Attn: SELFM-DPS-F Ft Monmouth NJ 07703

3. Radiation Area Supervisor: Name Scott Gould

4. Radioactive Material:

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Nickel 63	Electroplated	10
Incorporated in	Ni-63	
two APD 2000s		
SN: 1829 and 3234		
Model: 242800-1D		

5. Other Sources of Ionizing Radiation Producing Devices: N/A

6. Authorized Users:

Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

See attached list

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :** On Ft. Monmouth, or as part of mutual aid response to neighboring towns.

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.** Used ITW Mfgr. manual and FD SOGs.

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)** Self-contained in a transport case in firetruck.

10. **Signature of Director of Responsible Individual:**

Name: ~~JOHN~~ ERICHSEN **Signature** [signature]

CECOM Directorate for Safety USE ONLY:

Instrumentation: None required

Dosimetry: None required

Reviewed by: Hugo Bianchi **Date:** 19 Nov 2003

Approved by: CJ Gobby **Date:** 11/19/03

Radiological Permit Application Supplement

Name: (See attached lists)
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 2560	4 hrs.	(YES) NO	(YES) NO
(training provided by Mfgr.)		YES NO	YES NO
8-5-53 19 personnel total		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

FIRE PROTECTION TRAINING RECORD

(For use of this form, see AR 420-90; proponent agency is USACE)

1. DATE: 8-5-03

2. NAME, GRADE AND TITLE OF INSTRUCTOR: David L Gray

3. TIME: STARTED 0900 | FINISHED 1200 | DURATION 3

4. SUBJECT: HazMat WMD Meters

5. OBJECTIVE:

6. LOCATION OF TRAINING: BLDG 2501

7. EQUIPMENT AND TRAINING AIDS USED: APD 2000 CAD/PLUS; CAD MULTI RAE

8. AMOUNT OF AGENTS AND FUEL USED

AGENT	AMOUNT	FUEL	AMOUNT

9. DESCRIPTION OF TRAINING CONDUCTED: Went over operating Procedures

10. NUMBER OF PERSONNEL ATTENDED: 9

11. TOTAL MANHOURS: 27 Hours

12. REMARKS (Include Delays/Interruptions)

13. INSTRUCTOR'S SIGNATURE: David L Gray

14. TRAINING OFFICER'S SIGNATURE:

15. OFFICER IN CHARGE SIGNATURE:

16. DATA RECORDED ON INDIVIDUAL'S TRAINING RECORD

DATE	NAME GRADE AND TITLE OF RECORDER	SIGNATURE

DA FORM 5377-R, JAN 86

17.

PERSONNEL ATTENDING CLASS AND EVALUATION GRADE

NAME (Last, First, MI)	EVAL GR*	SIGNATURE OF ATTENDEE
Gould Scott		
DiStabulis Eugene		
Czyszanski John		
Sweeney, Elizabeth		
MILLER EDWARD		
MAGRA, VIC		
Whipple John		
Flannigan Chris		
CHYZIK Bill		

EVALUATION LEGEND

GRADE
1 – FIREFIGHTER I NFPA 1001
2 – FIREFIGHTER II NFPA 1001
3 – FIREFIGHTER III NFPA 1001

GRADE
1 – FIRE INSPECTOR I NFPA 1031
2 – FIRE INSPECTOR II NFPA 1031
3 – FIRE INSPECTOR III NFPA 1031

*Evaluation grade to be recorded on *Individual Training Evaluation Record*, DA Form 0001-R.

Reverse of DA Form 5377-R, Jan 88

FIRE PROTECTION TRAINING RECORD

(For use of this form, see AR 420-90; proponent agency is USACE)

1 DATE: 8-5-03

2 NAME, GRADE AND TITLE OF INSTRUCTOR: X David L Gray

3. TIME: STARTED 0900 | FINISHED 1200 | DURATION 3

4. SUBJECT: HAZMAT GAS METERS

5. OBJECTIVE: TO LEARN HOW TO OPERATE NEW METERS

6. LOCATION OF TRAINING: BLDG 2601

7 EQUIPMENT AND TRAINING AIDS USED: AAD 2000 CAD/PLUS CAD MULTI RAE

8 AMOUNT OF AGENTS AND FUEL USED

AGENT	AMOUNT	FUEL	AMOUNT

9 DESCRIPTION OF TRAINING CONDUCTED: Used new operators Manuals

10 NUMBER OF PERSONNEL ATTENDED: 10

11. TOTAL MANHOURS: 30

12 REMARKS (Include Delays/Interruptions)

13 INSTRUCTOR'S SIGNATURE: X David L Gray

14 TRAINING OFFICER'S SIGNATURE: Jack Rueda

15 OFFICER IN CHARGE SIGNATURE:

16 DATA RECORDED ON INDIVIDUAL'S TRAINING RECORD

DATE	NAME, GRADE AND TITLE OF RECORDER	SIGNATURE

DA FORM 5377-R, JAN 85

17.

PERSONNEL ATTENDING CLASS AND EVALUATION GRADE

NAME (Last, First, MI)	EVAL GR*	SIGNATURE OF ATTENDEE
KEGLEY, ROBERT J.		
KANE JASON W		
FOWLER, JOHN F.		
HARRELL, ROBERT		
SICILIANO THOMAS A.		
FORGIONE JOSEPH		
CATALDO JOHN R.		
CRAIG JOHN		
HUHN VIC		
PALUMBO NICK		

EVALUATION LEGEND

GRADE
1 – FIREFIGHTER I NFPA 1001
2 – FIREFIGHTER II NFPA 1001
3 – FIREFIGHTER III NFPA 1001

GRADE
1 – FIRE INSPECTOR I NFPA 1031
2 – FIRE INSPECTOR II NFPA 1031
3 – FIRE INSPECTOR III NFPA 1031

*Evaluation grade to be recorded on *Individual Training Evaluation Record*, DA Form 0001-R.

Reverse of DA Form 5377-R, Jan 68

DEPARTMENT OF THE ARMY
Headquarters
U.S. Army Communications - Electronics Command
and Fort Monmouth
Fort Monmouth, NJ 07703-5024

Reply to
Attention of:

AMSEL-SF-RE(LAB) (11-9f)

17 November 2003

MEMORANDUM FOR ATTN: SELFM-DPS-F, FORT MONMOUTH FIRE DEPARTMENT, BUILDING 282, FORT MONMOUTH, NJ 07703

SUBJECT: Leak Test(s) of Radioactive Commodities

1. The result for subject test made on 12 November 2003 are provided below.

Serial Number	Nomenclature	Microcuries
D1829	APD2000	
Source	1	≤ LLD

2. LLD is the Estimated Lower Limit of Detection for the instrumentation used to analyze your leak tests. LLD = 5.41E-06 microcuries (Beta)

3. The results for subject leak test(s) are within the limits set forth in U.S. Nuclear Regulatory Commission licenses.

4. Our POC is Nicholas J. Antonelli, Health Physics Technician, New World Technology, Contractor, DSN 987-5370, Commercial (732) 427-5370.

5. CECOM Bottom Line: THE WARFIGHTER.

Stephen G. LaPoint
Director, Directorate for Safety

smiths

Smiths Detection

APD 2000®

USERS' MANUAL

November 2003

APD 2000®

USERS' MANUAL

November 2003

Version 2.0

WARNING

RADIATION HAZARD

The APD 2000® contains a 10 millicurie Nickel 63 radioactive source. Do not attempt to open the APD 2000® housing. The use of this device is regulated by General License Provisions of the U.S. Nuclear Regulatory Commission, Agreement State or Licensing State under requirements outlined in appendix A of this manual.

PER LICENSING AGREEMENT, RADIATION WIPE TEST MUST BE PERFORMED EVERY 6 MONTHS. SEE APPENDIX B FOR WIPE TEST INSTRUCTIONS.

SAFETY PRECAUTIONS

Do not attempt to open the APD 2000® housing.

If the housing is broken or cracked, wrap the APD 2000® in a plastic bag and pack it in its original shipping container. Call Smiths Detection - Edgewood, Inc. at (410) 510-9141 and ask to speak to the APD 2000® program manager for further instructions.

WARNING

Exposure to chemical warfare agents is extremely dangerous. In any emergency event where CW agent contamination may be present, wear proper protective clothing, including mask, until you are sure that the area is clear.

WARNING

Do not start up the APD 2000® in an explosive atmosphere. An arc of electricity could cause an explosion.

WARNING

The confidence sample contains chemicals that may be irritating to the eyes, mucous membranes, and upper respiratory tract. Use the confidence sample only in a well ventilated area and avoid prolonged breathing of the vapor. Do not use if cracked or broken.

SEE APPENDIX C FOR MATERIAL SAFETY DATA SHEETS FOR CONFIDENCE SAMPLE CHEMICALS.

WARNING

An APD 2000® contaminated by CW agents or radiation can cause death or injury. If you suspect the APD 2000® has been contaminated, do not perform SHUTDOWN. Instead, perform DECONTAMINATION (see para 2.9).

smiths

Smiths Detection – Edgewood, Inc.
2202 Lakeside Boulevard
Edgewood, MD 21040
Ph: 410.510.9100

RADIOACTIVE MATERIAL GENERAL LICENSE

This Smiths Detection device contains a 10 millicurie Nickel 63 radioactive source. The use of this device is regulated by General License Provisions of the U.S. Nuclear Regulatory Commission, Agreement State or Licensing State under requirements substantially the same as those outlined below.

CODE OF MARYLAND REGULATIONS C.22.d

(1) A general license is hereby issued to commercial and industrial firms and to research, educational and medical institutions, individuals in the conduct of their business, and State or local government agencies to own, receive, acquire, possess, use or transfer in accordance with the provisions of C.22 (d) (2), (3), and (4), radioactive material, excluding special nuclear material, contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface locations, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

(2) The general license in C.22 (d) (1) applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with the specifications contained in a specific license issued by the Agency pursuant to C.28 (d) or in accordance with the specifications contained in a specific license issued by the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State, which authorizes distribution of devices to persons generally licensed by the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State and the device has been manufactured and installed so that:

(i) The dose rate is the radiation beam of the device at 18 inches (0.46 meters) from the radiation source with the device shutter in the open position does not exceed 125 millirem (1.25 mSv) per hour; and

(ii) There is not an accessible airgap of 18 inches (0.46 meters) or greater between the radiation source and detector which would allow insertion of a 12 inch (0.30 meters) diameter sphere into the radiation beam 5/.

(3) Any person who owns, receives, acquires, possesses, uses, or transfers radioactive material in a device pursuant to the general license in C.22 (d) (1):

(i) shall assure that all labels affixed to the device at the time of receipt, and bearing a statement that removal of the label is prohibited, are maintained theron and shall comply with all instructions and precautions provided by such labels;

(ii) shall assure that the device is tested for leakage of radioactive material and proper operation of the "on-off" mechanism and indicator, if any, at no longer than 6-month intervals or at such other intervals as are specified in the label, however,

(a) devices containing only krypton need not be tested for leakage of radioactive material, and

(b) devices containing only tritium or not more than 100 microcuries (3.7 MBq) of other beta- and/or gamma-emitting material or 10 microcuries (0.37 MBq) of alpha-emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose;

5/ Regulations under the Federal Food, Drug, and Cosmetic Act authorizing the use of radioactive control devices in food production require certain additional labeling thereon which is found in 21 CFR 179.21.

(iii) shall assure that the tests required by C.22 (d) (3) (ii) and other testing, installation, servicing, and removal from installation involving the radioactive material, its shielding or containment, are performed:

(a) in accordance with the instructions provided by the labels, or

(b) by a person holding an applicable specific license from the Agency, the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State to perform such activities;

(iv) shall maintain records showing compliance with the requirements of C.22 (d) (3) (ii) and (iii). The records shall show the results of tests. The records also shall show the dates of performance of, and the names of persons performing, testing, installation, servicing, and removal from installation concerning the radioactive material, its shielding or containment. Records of tests for leakage of radioactive material required by C.22 (d) (3) (ii) shall be maintained for 2 years after the next required leak test is performed or until the sealed source is transferred or disposed of. Records of tests of the "on-off" mechanism and indicator required by C.22 (d) (3) (ii) shall be maintained for 2 years after the next required test of the "on-off" mechanism and indicator is performed or until the sealed source is transferred or disposed of. Records which are required by C.22 (d) (3) (iii) shall be maintained for a period of 2 years from the date of the recorded event or until the device is transferred or disposed of;

(v) upon the occurrence of a failure of or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the "on-off" mechanism or indicator, or upon the detection of 0.005 microcuric (185 Bq) or more removable radioactive material, shall immediately suspend operation of the device until it has been repaired by the manufacturer or other person holding an applicable specific license from the Agency, the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State to repair such devices, or disposed of by transfer to a person authorized by an applicable specific license to receive the radioactive material contained in the device and, within 30 days, furnish to the Agency a report containing a brief description of the event and the remedial action taken;

(vi) shall not abandon the device containing radioactive material;

(vii) except as provided in C.22 (d) (3) (viii), shall transfer or dispose of the device containing radioactive material only by transfer to a specific licensee of the Agency, the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State whose specific license authorizes him to receive the device and within 30 days after transfer of a device to a specific licensee shall furnish to the Agency a report containing identification of the device by manufacturer's name and model number and the name and address of the person receiving the device. No report is required if the device is transferred to the specific licensee in order to obtain a replacement device;

(viii) shall transfer the device to another general licensee only:

(a) where the device remains in use at a particular location. In such case the transferor shall give the transferee a copy of this regulation and any safety documents identified in the label on the device and within 30 days of the transfer, report to the Agency the manufacturer's name and model number of device transferred, the name and address of the transferee, and the name and/or position of an individual who may constitute a point of contact between the Agency and the transferee; or

(b) where the device is held in storage in the original shipping container at its intended location of use prior to initial use by a general licensee; and

(ix) shall comply with the provisions of D.1201 and D.1202 of these regulations for reporting radiation incidents, theft, or loss of licensed material, but shall be exempt from the other requirements of Parts D and J of these regulations.

(4) The general license in C.22 (d) (1) does not authorize the manufacture of devices containing radioactive material.

(5) The general license provided in C.22 (d) (1) is subject to the provisions of A.4 through A.9, C.31, C.40, C.50, and Part T of these regulations.

TABLE OF CONTENTS

QUICK USERS' GUIDE

This guide is designed for operators who are already trained in first response techniques and in the use of the APD 2000®.

BEFORE YOU BEGIN

Survey the Environment

WARNING

Do not start up the APD 2000® in an explosive atmosphere. An arc of electricity could cause an explosion.

- Make sure you are in a clean environment. Always work from a clean to a contaminated area and minimize time spent in contaminated areas.
- Be aware of wind conditions. Try to stay upwind of suspected contamination.
- Know potential interferents in your environment.

Install Batteries

1. Remove APD 2000® and batteries from transit case.

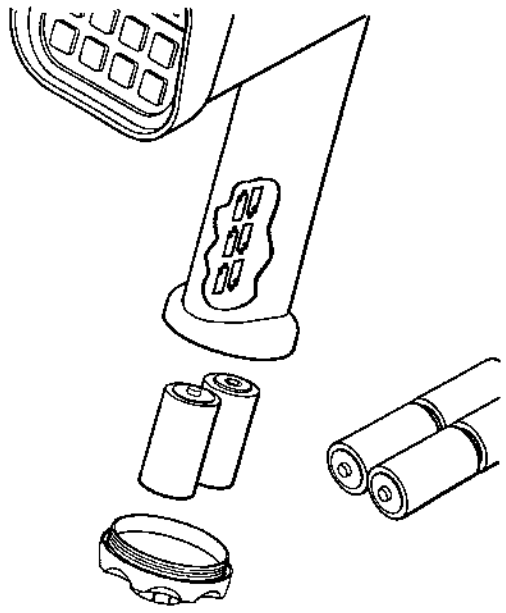
CAUTION

Never take the transit case into a contaminated area. To prevent contamination of the case, leave it in a clean area.

2. Install six high quality alkaline "C" batteries as shown on diagram inside battery compartment.

NOTE

Under normal conditions (70 °F), the batteries will last for up to 7 hours. Battery life will decrease as the temperature drops. At 43°F, average battery life will be less than 3 hours, and at 32°F it can be 1 hour or less.



INSTALL FILTERED NOZZLE STANDOFF

1. Remove nozzle protective cap and store it on battery cap retainer.

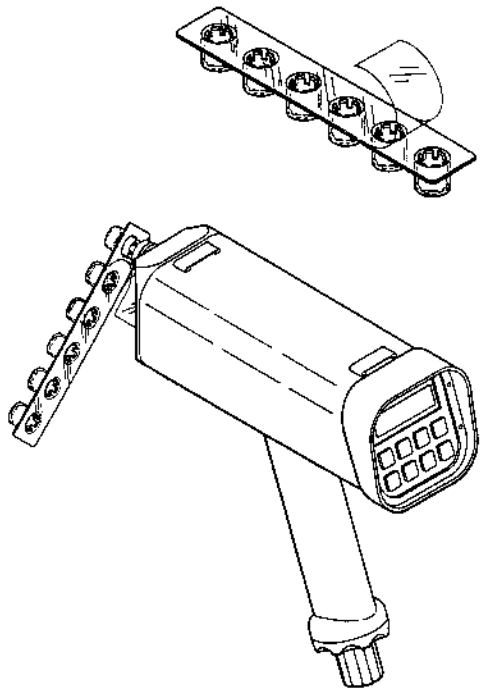
CAUTION

Do not touch the APD 2000® nozzle or the filtered nozzle standoff; touching could contaminate them. Try to install the filtered nozzle standoff quickly to prevent dust from entering the unit.

2. Remove filtered nozzle standoff package from transit case. Peel covering from package until one filter is exposed.

3. Press nozzle into exposed filter as shown.

4. Lay covering back in place over package.



START-UP / CONFIDENCE TEST

1. Press and hold POWER button (1) until APD 2000® appears on display.

2. Wait for APD 2000® to complete SELF TEST and STNDBY (approximately 3 minutes).

3. When display shows READY CW, unit is ready for confidence testing.

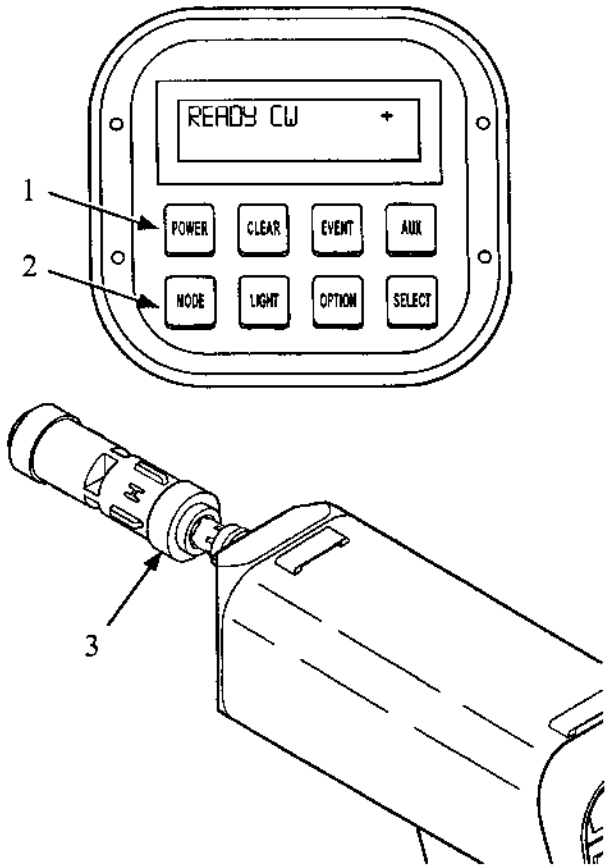
4. Press H end of confidence sample (3) to nozzle for **no longer than 1 second**. Make sure to press hard enough to open plunger at end of confidence sample.

5. Verify that horn sounds and display shows ALARM CW.

6. When display returns to READY CW, repeat steps 4 and 5 using G end of confidence sample.

7. Allow unit to clear until READY CW appears on the display.

The APD 2000® is now ready to operate.



OPERATING THE UNIT

When the APD 2000® display shows **READY CW** or **READY CWVX** (**Agent** mode), it is monitoring the environment for the chemical warfare agents. To change the Agent mode to pepper spray or mace, press the **MODE** key (1) until **READY IRRT** (2) appears on the display.

The following function keys are the only ones needed for most APD 2000® operations

POWER – Turns the unit on and off.

CLEAR – Toggles internal purging function on and off.

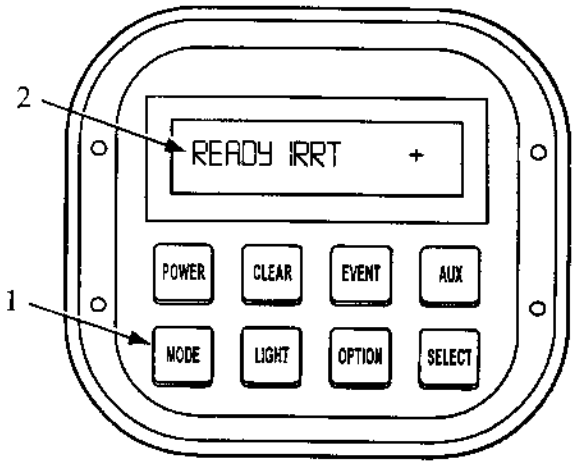
MODE – Changes Agent mode (CW, CWVX, IRRT, and TEST).

LIGHT – Turns display backlight on and off.

SELECT – When the APD 2000® alarms, silences the horn.

NOTE

The remaining function keys (EVENT, AUX, and OPTION) are for advanced operations by specially trained users (see chapter 3).



SHUTDOWN

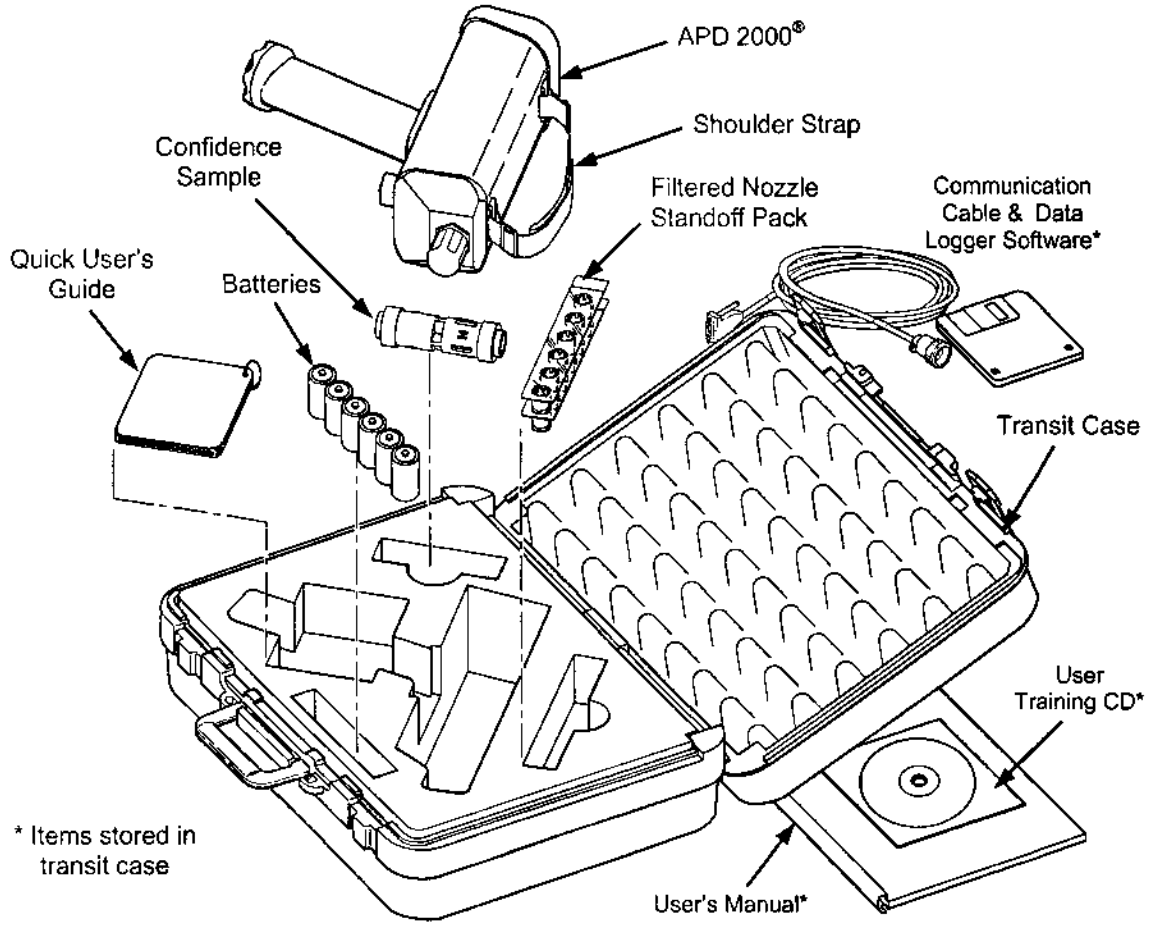
- Make sure environment is clean and APD 2000® is not alarming. If unit is alarming, indicated by ALARM on the display, wait for it to clear.

WARNING

An APD 2000® contaminated by CW agents or radiation can cause death or injury. If you suspect the APD 2000® has been contaminated, do not perform SHUTDOWN. Instead, perform DECONTAMINATION (see para 2.9).

- Press and hold POWER button for about 1 second. When POWER DOWN... appears on display, release POWER button.
- Remove nozzle standoff. Treat as hazardous waste if CW agents have been detected.
- Cover nozzle with protective cap.
- Remove batteries from handle.
- Return unit and batteries to transit case. Dispose of weak or dead batteries.

MAJOR COMPONENTS OF THE APD 2000®



APD 2000®. Monitors environment and detects chemical agents (GA, GB, GD, VX, HD, HN, L) and irritants (pepper spray and mace). Identifies threat and provides an audible and visual warning. As an option, the APD 2000® can be used as a radiation detector.

Shoulder Strap. Used to carry APD 2000® during a mission.

Batteries. Six C size alkaline batteries power the APD 2000®.

Filtered Nozzle Standoff. Prevents dust, rain, or contaminants, such as dirt and smoke, from entering the APD 2000® and causing false alarms. Particulate filters come in packs of six filters.

Confidence Sample. Test simulant used to ensure the APD 2000® is operational.

Communications Cable. Provides for connection of the APD 2000® to a PC. Used with the Datalogger Software (see para. 3).

User Training CD. Contains User Training presentation as well as Instructor's Guide, Student Notes, Quick User's Guide, and Users' Manual.

Transit Case. Houses and protects all APD 2000® components and spare parts during transport and storage.

1 INTRODUCTION

1.1 PURPOSE OF EQUIPMENT

The APD 2000® is a portable, hand-held monitor and detector designed for emergency first response to hazardous chemical spills and terrorist attacks. The APD 2000® simultaneously detects nerve and blister agents, and it recognizes pepper spray and mace. As options, the APD 2000® can monitor radiation levels and identify hazardous compounds.

The APD 2000® comes packed in its transit case with six "C" batteries, two packages of six filtered nozzle standoffs, a confidence sample, a Quick User's Guide, and this manual (see opposite page). The instructions in this manual cover only the items illustrated on the opposite page.

1.2 SCOPE OF THIS MANUAL

This manual provides operating instructions for the APD 2000®, information on the safe use and care of the equipment, troubleshooting procedures, and directions for contacting the manufacturer for warranty work, repairs, and service. The manual assumes that the reader has been trained in first response to emergencies in which chemical agent, irritant and/or radiation is alleged, suspected, or known to be present.

1.3 PRINCIPLES OF OPERATION

The APD 2000® automatically detects and identifies chemical warfare agents or irritants such as mace and pepper spray and provides a warning that agents or irritants are present in the atmosphere. The APD 2000® detects and identifies agents based on a technology called ion mobility spectrometry (IMS). An internal pump draws air into the APD 2000® through the nozzle on the front of the unit. The air passes by a heated membrane inside the APD 2000® and then exits back into the atmosphere through the nozzle. Any agent or irritant vapor in the air passes through the heated membrane and is drawn into a closed air sampling system called the cell assembly. In the cell assembly, the vapor molecules are ionized by a weak radiation source (Ni-63). Agent ions in the cell assembly are swept down a drift tube towards a collector electrode. During travel, they become separated according to their mass, and an electronic signature is produced for each ion based on the time required to reach the collector electrode.

A microprocessor analyzes the signatures and determines if they have the characteristics of chemical warfare agents or irritants. If there is a "match," the APD 2000® sounds an alarm, and provides a visual readout of the agent or irritant name and relative concentration.

The APD 2000® can be used as a monitor that continuously reports changes in the agent concentration. To protect the cell assembly from becoming saturated with agent, a backflush pump reverses the airflow in the unit if the agent concentration becomes too high. Air is drawn in through the nozzle and circulated through an activated charcoal filter inside the APD 2000®, providing a source of clean air for clearing contamination from the unit's interior. This process, called clear down, continues until the relative concentration is reduced to a medium or low level.

The APD 2000® can also be used as a point sampling detector that alarms when agent is detected and then purges itself of contamination within 5 minutes. In this mode, the clear down process continues until all contamination is purged from the unit. Whether operating as a point sampling detector or a monitor, the APD 2000® cannot detect agent or irritants while the backflush pump is on.

1.4 FEATURES AND SPECIFICATIONS

Features

- Lightweight, ergonomic design.
- Detects chemical warfare agents and civilian threats such as pepper spray and mace.
- Gives actual agent identity under most environmental conditions.
- Powered by six alkaline C batteries (ac, or 9 to 18 Vdc [optional]).
- Provides superior interferent resistance.
- Selectable operating modes.
- Easy to read visual display and audible alarm.
- Logging of all detection and monitoring events.

Specifications

Agents Detected:
GA, GB, GD, VX, HD, HN,
Lewisite (L), Pepper Spray, Mace

Sensitivity	Response Time
V – 4 ppb	30 seconds
G – 15 ppb	30 seconds
H – 300 ppb	15 seconds
L – 200 ppb	15 seconds

For high concentrations of these agents, detection time is 10 seconds

Radiation detection:

Gamma and x-ray	50 KeV to 6 MeV
Dose	0.1 mrem to 1000 rem
Dose rate:	1 mrem/hr to 1000 rem/hr
Response:	see para. 2.7.3

Self test:
BIT for electronic, pneumatic, and
power conditions

Temperature:
Operation – 22° to 126°F (-30 to 52°C)
(radiation detection accurate to 113°F, 45°C)
Storage: -80° to 160°F (-62° to 71°C)

Weight:
6 pounds (<3 kg)
including batteries

Operator Service:
5 minutes per 24 hours of operation

Size:
4" x 3 ½" x 11" (10 x 9 x 28 cm)
(excluding handle)

Power:
6 high quality alkaline "C" batteries,
ac, or 9 to 18 Vdc (optional)

1.5 APD 2000® OPTIONS

Available options for the APD 2000® include:

- Radiation monitoring (see para. 2.7.3)
- Remote communication*

* For information, contact manufacturer (see para 1.7) .

1.6 SAFETY, CARE, AND HANDLING

1.6.1 Rules and Regulations.

The APD 2000® contains a 10 millicurie Nickel 63 radioactive source. The use of this device is regulated by General License Provisions of the U.S. Nuclear Regulatory Commission, Agreement State, or Licensing State under requirements outlined in appendix A of this manual.

1.6.2 Emergency Procedures.

WARNING

Exposure to chemical warfare agents is extremely dangerous. In any emergency event where CW agent contamination may be present, wear proper protective clothing, including mask, until you are sure that the area is clear.

1.6.3 Fire.

In a fire emergency, the basic concern is airborne contamination carried out of flames by heated air and in smoke. Fire fighting personnel should stand upwind of the fire and should wear portable air systems. After the fire has been extinguished, debris must be surveyed for the presence of equipment containing Ni-63 sources as well as contamination that may have been spread by burning. Wipes must be taken and evaluated by a liquid scintillation spectrometer (or equivalent) to detect the presence of contamination. Follow-up evaluation of wipes on suitable laboratory equipment must be made.

1.7 CONTACTING THE MANUFACTURER

If you have questions about the use or care of your APD 2000®, you can contact the Smiths Detection Customer Service Center by phone or in writing as shown below. Address any correspondence to the attention of the APD 2000® Program Manager. Please make sure you know the model number and serial number of your unit before calling. This information is located on a label on the bottom of the unit behind the battery compartment. You may record the information in the space provided for your convenience.

MODEL # _____

SERIAL # _____

PHONE: (410) 510-9141

ADDRESS **Smiths Detection – Edgewood, Inc.**
2202 Lakeside Boulevard
Edgewood, MD 21040

EMAIL **APD2000.help@smithsdetection.com**

For **warranty** and **scheduled maintenance** or **repair** information, see appendix D. For spare part information, see appendix E.

NOTE

The APD 2000® should be returned to the manufacturer for maintenance whenever it continuously fails the confidence test.

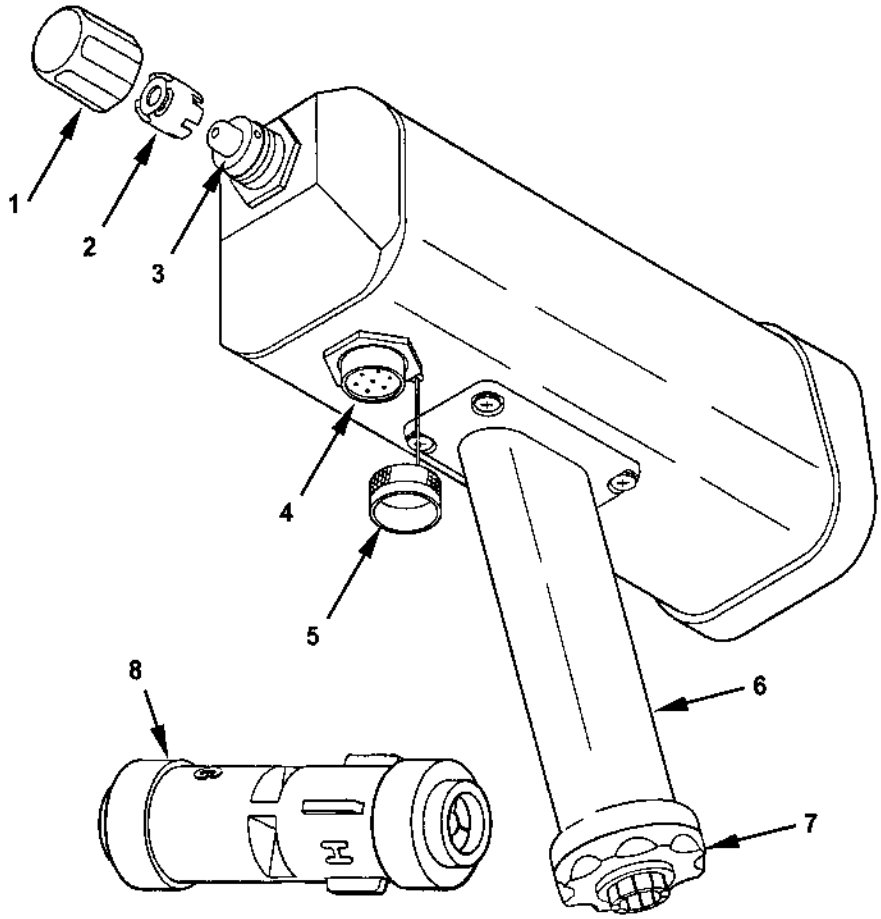
2 OPERATING THE APD 2000®

This chapter provides step-by-step instructions for operating the APD 2000®. It is organized as follows:

2.1 Controls and Indicators	Defines all of the parts of the APD 2000®, including the function keys and display.
2.2 APD 2000® Menu Tree	Provides an overview of the options available to the user through the APD 2000® menus.
2.3 Common Sense Operation	Directions for operating the APD 2000® in environments that may contain interferents and extreme conditions, including cold or hot temperatures and dusty or wet conditions.
2.4 Preparation for Use	Important information about the APD 2000® start-up environment. Also provides instructions for installing the batteries and filtered nozzle standoff.
2.5 Initial Power On	Instructions for powering up the APD 2000®. Also describes the start-up sequence.
2.6 Confidence Test	Procedure for performing the confidence test. This test exposes the unit to simulants to ensure that the APD 2000® is detecting both nerve and blister CW agents.
2.7 General Use	Typical operating scenarios for the APD 2000®. This paragraph explains the difference between the monitor and detect modes, and describes what happens when the unit alarms or malfunctions.
2.8 Shutdown	Instructions for powering down the APD 2000®.
2.9 Decontamination	Directions for Nuclear, Biological, and Chemical decontamination of the unit after use.

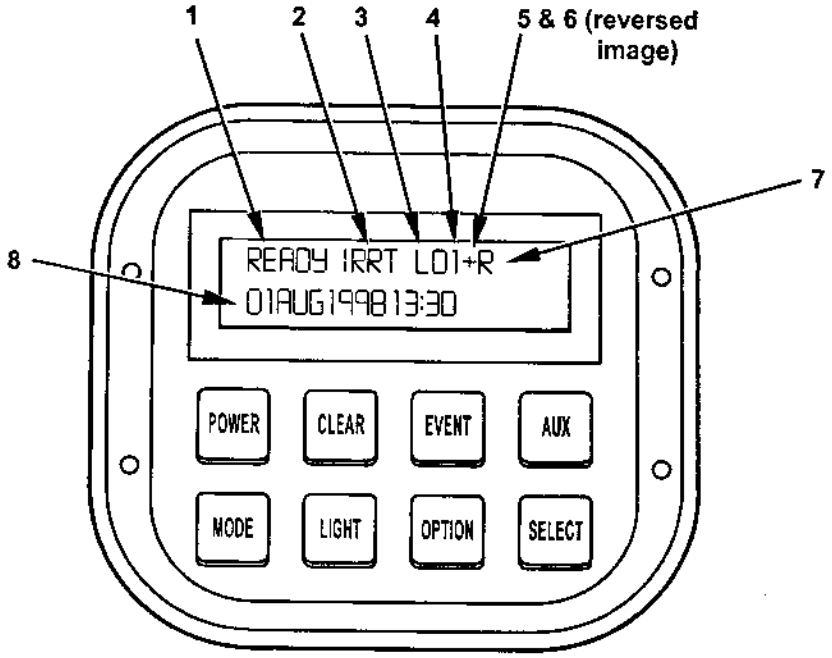
2.1 CONTROLS AND INDICATORS

APD 2000®



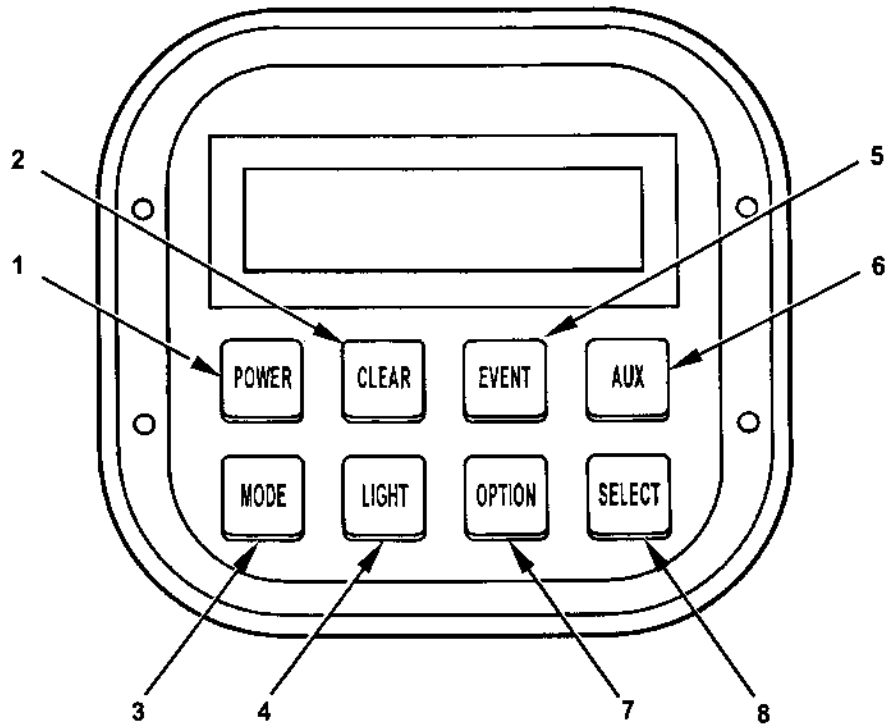
ITEM	CONTROL OR INDICATOR	FUNCTION
1	Nozzle protective cap	Covers nozzle when unit is not in use
2	Filtered nozzle standoff	Prevents dust from entering nozzle during operation.
3	Nozzle	Inlet through which outside air is drawn into and expelled from APD 2000®.
4	Auxiliary port	Provides input for external power source and/or remote communications interface to a personal computer.
5	Auxiliary port cap	Covers auxiliary port when not in use.
6	Battery compartment	Holds six C size alkaline batteries.
7	Battery compartment cap	Seals battery compartment and secures batteries in place.
8	Confidence sample	Test simulant used to ensure that the APD 2000® is fully operational (see para. 2.6, Confidence Test).

APD 2000® Display



ITEM	CONTROL OR INDICATOR	FUNCTION
1	Status indicator	Shows current status (STNDBY, READY, ALARM, AUTO CAL, CLEARING, UPLOADING).
2	Agent mode indicator	Indicates selected agent mode (chemical warfare agents [CW], agent VX [CWVX], or irritants [IRRT].
3	Log indicator	Indicates that the APD 2000®'s data logging capability is activated.
4	Event number	The two-digit numerical marker assigned to a data log entry when the EVENT key is pressed.
5	Polarity indicator + -	Indicates type of agent, irritant or test simulant unit is currently testing for as follows: **Positive** – nerve agents, pepper spray, and G simulant **Negative** – blister agents, mace, and H simulant. The steady cycling of the + and – indicators is a positive indication that the APD 2000® is working.
6	Backflush indicator ▪ ▪	Polarity symbol has a reverse image (dark background, light symbol) when the backflush pump is on
7	RAD indicator	Indicates that the APD 2000®'s radiation (RAD) capability is activated.
8	Data Line	During STANDBY, READY, and AUTO CAL, shows current date and time. During ALARM, shows alarm information (class [NERV, BLST, or IRRT], agent or irritant name, and relative concentration). Scrolls through menus and options when OPTION and SELECT keys are used.

APD 2000® KEYPAD

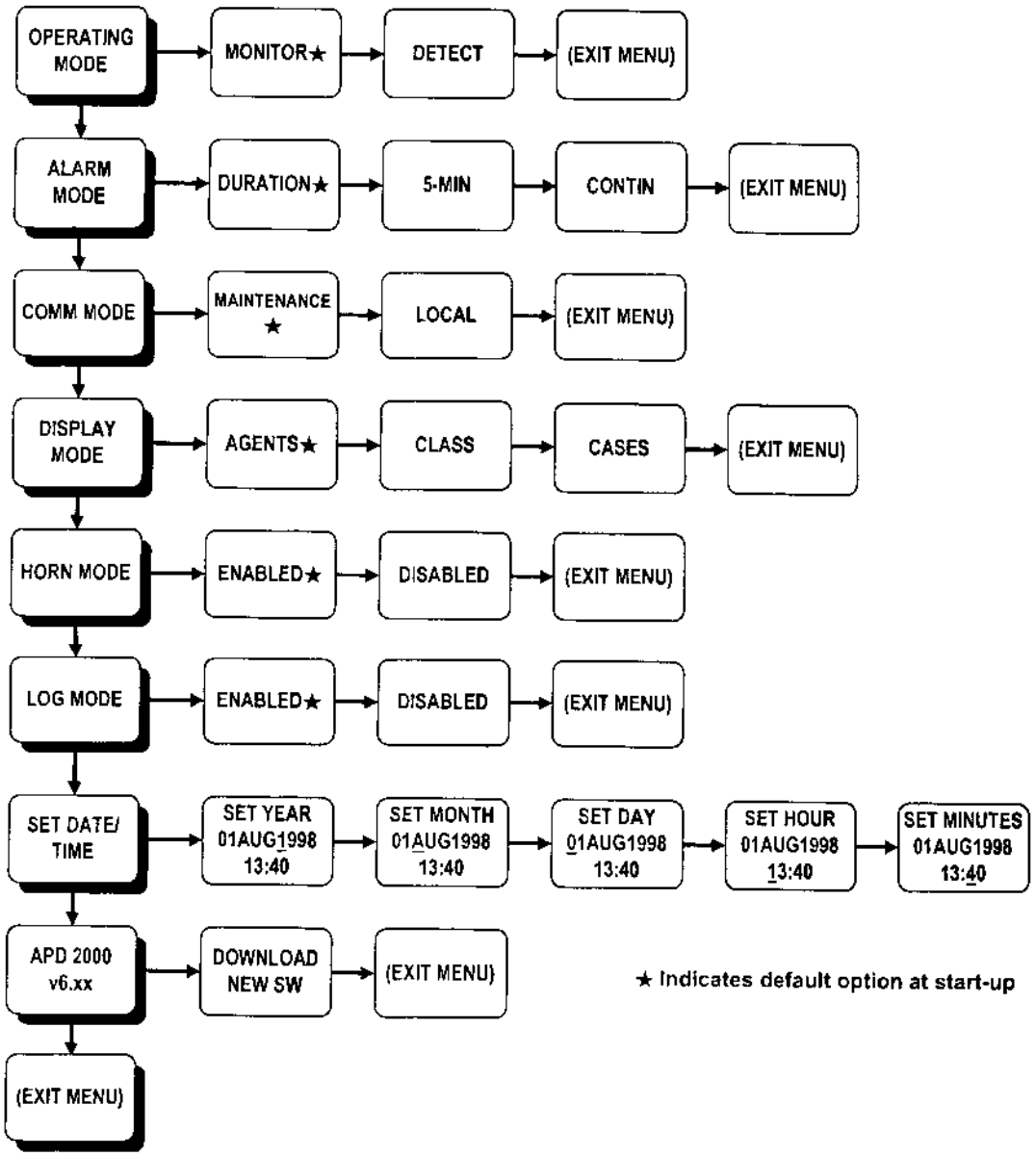


ITEM	CONTROL OR INDICATOR	FUNCTION
1	POWER	APD 2000® ON/OFF switch.
2	CLEAR	Turns on the backflush pump which draws clean filtered air into the unit to purge it of contaminants. The unit continues in this mode until the CLEAR key is pressed again. While clearing down, the unit cannot detect chemical agents or irritants.
3	MODE	Switches Agent mode: CW (chemical warfare agent), CWVX (agent VX), IRRT (pepper spray/mace).
4	LIGHT	Toggles display backlight on and off.
5	EVENT	When data logging is activated, assigns an event number to a data log entry.
6	AUX	Enables auxiliary capabilities. When the radiation (RAD) capability is installed, enables the radiation detection capability. The unit will continue to function as a chemical detector as well.
7	OPTION	Activates menus and cycles through options (see 3, Advanced Features).
8	SELECT	Silences horn during an alarm. Also, when menus are activated, used to select currently displayed menu option (see 3, Advanced Features).

2.2 APD 2000® MENU TREE

2.2.1 Overview

Controlled through the OPTION and SELECT keys, the APD 2000® uses a "menu tree" approach (see figure below) which allows the operator to browse through the system modes in increasing levels of detail and change the options.



Menu options. Top level menus are listed in the left column of the figure. The menu options extend to the right from the appropriate top level menu. Each of the menu options is briefly explained on the following pages. Options with an asterisk (*) are the default settings.

2.2.1 Overview (continued)

OPERATING MODE – The APD 2000® has two operating modes.

MONITOR – Operates as a monitor. Provides continuous alarm concentration updates. When the agent concentration is high, the unit goes into automatic backflush to expedite clearing down. This mode allows for monitoring of the changing conditions of the agent cloud.

NOTE

Relative agent concentrations are provided as numeric values that are roughly equivalent to the following:

0 – 25	below alarm threshold
26 – 50	low
51 – 75	medium
76 – 100	high

DETECT - Operates as a point sample detector. The unit alarms when agent is detected then goes into backflush and clears down. The APD 2000® is ready to detect agent again within 5 minutes.

(EXIT MENU) – Exits the menus and returns to the current APD 2000® state (STNDBY or READY). Note that this option is available from each menu.

ALARM MODE – The APD 2000® provides three alarm options. These options are for use in DETECT MODE only, and they describe what happens when the unit alarms and the horn is not silenced by pressing the SELECT key. If you do silence the horn, the alarm will only continue until the APD 2000® clears down.

DURATION – The unit remains in alarm until clear down is complete.

5-MIN – The APD 2000® remains in alarm for 5 minutes (even if the unit clears down in less than 5 minutes).

CONTIN – After it has cleared down, the APD 2000® remains in alarm indefinitely until the horn is silenced by pressing the SELECT key.

2.2.1 Overview (continued)

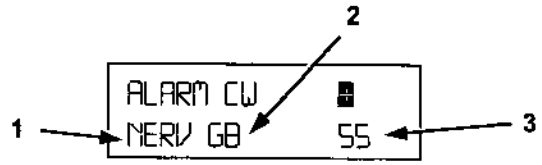
COMM MODE– The APD 2000® has two communication options.

MAINTENANCE - Provides an interface through the COMM port to a PC. The unit sends responses (such as signature data and status information) to a series of commands. This mode is used for diagnostic purposes.

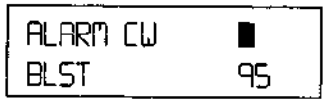
LOCAL - Provides an interface through the COMM port to a PC. The unit sends an ASCII status record that is used for monitoring the status of the APD 2000®. This mode is used for diagnostic purposes.

DISPLAY MODE – This option allows you to select the type of information the unit will display during an alarm.

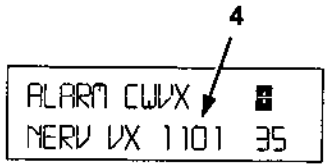
AGENT - Displays the class (NERV, BLST, IRRT) (1), name (2), and relative concentration (3) of the threat (see example below).



CLASS - Displays the class and relative concentration (see example below) of the threat.



CASES - Displays the class, name, and relative concentration of the threat as well as a numeric code (4) that is used for diagnostic purposes (see example below).



HORN MODE – Two options are available for the horn.

ENABLED – Horn will sound when agent is detected.

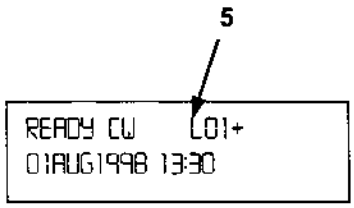
DISABLED – Horn will not sound when agent is detected.

2.2.1 Overview (continued)

LOG MODE – Allows the operator to enable or disable the automatic storing of data into the data log history (APD 2000®'s internal memory).

ENABLED – APD 2000® will store a data entry into the instrument's data log history when an alarm occurs, the radiation rate or cumulative dose changes, or the user marks an event. If no other significant change in status occurs, an event is recorded every 5 minutes. The Log indicator (5) appears on the display.

DISABLED – Events are not saved in the instrument's internal memory.



SET DATE/TIME – This option allows you to set the clock on the APD 2000® (see para 2.2.2.2 for instructions).

APD2000 v6.xx – This menu shows the current version of the APD 2000® operating software; it also provides one option.

DOWNLOAD NEW SW – This option allows the software version to be upgraded. The APD 2000® should be returned to the manufacturer for upgrades (see para 1.7).

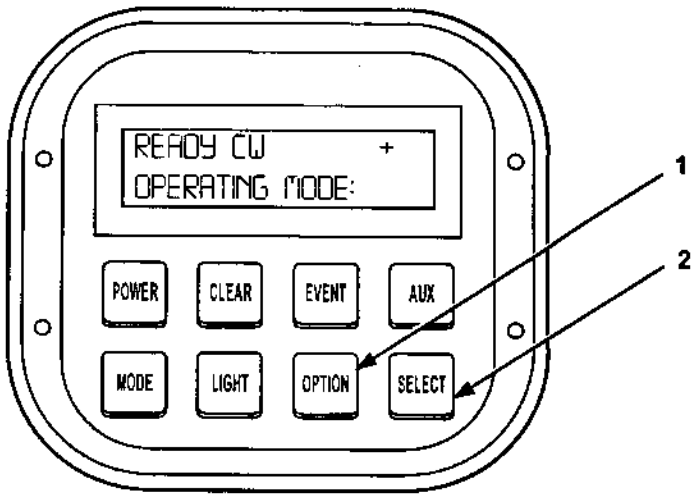
2.2.2 Selecting Modes and Options.

After the APD 2000® has completed start-up and passed the confidence test, it is ready for use. The default operating mode is Monitor. In Monitor mode, the unit tracks changes in the environment such as different agents and variations in concentration.

For instructions for changing the Operating mode or any of the menu options, go to paragraph 2.2.2.1. For instructions for changing the date and time, go to paragraph 2.2.2.2.

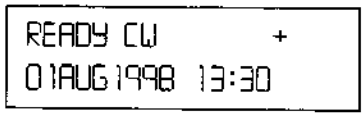
2.2.2.1 Changing Menu Options

1. Press OPTION (1) to activate menus. The display will appear as shown below. (Each time you press OPTION, the display will step through the next top level menu.)



2. Press SELECT key (2) to select the displayed menu.
The first option will be the current option. In this case, the default operating mode, "MONITOR" is the current option.

3. Press OPTION to scroll through the menu options. When the desired option is displayed, press SELECT. The option will be selected and the APD 2000® will return to its current state (see display below).

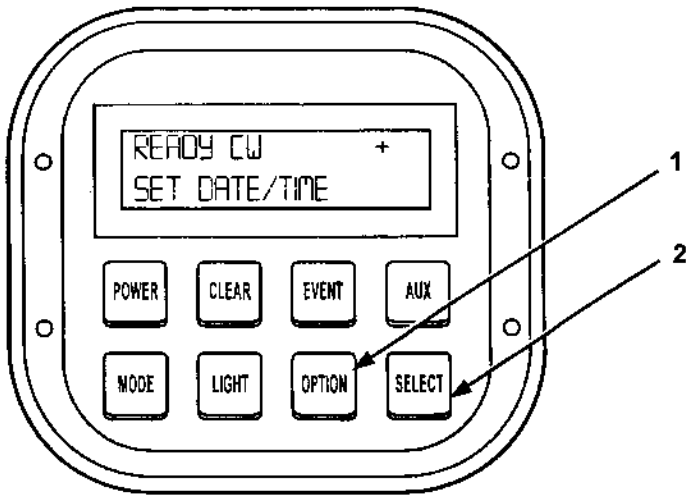


2.2.2 Selecting Modes and Options (continued)

2.2.2.2 Set Date And Time

Verify that the date and time are correct at power on (see para 2.5). Follow the steps below to change the date and time.

1. Press OPTION key (1) to activate menus. Continue pressing OPTION key until display appears as shown.



2. Press SELECT key (2) to select the displayed option. The display will appear as shown below. The underscore indicates the data field being edited.

```
SET YEAR      +
01AUG_1998  13:40
```

3. Press OPTION until the desired number appears in the first data field. Press SELECT to select the number and move to the next data field.

4. Continue changing the date and time using the OPTION and SELECT keys. When the last data field is selected for the minutes, the APD 2000® will return to its current state. If the current state is STNDBY, READY, or ALARM, the date and time will appear on the display data line as shown.

```
READY CW      +
22 SEP 1998  13:40
```

2.3 COMMON SENSE OPERATION

Special procedures must be used to operate the system during extreme conditions. In general, equipment that is kept clean will give the best performance and last longer.

CAUTION

Always use a clean filtered nozzle standoff when running the APD 2000®. To avoid contaminating the nozzle, do not touch the nozzle or the white filter area of the filtered nozzle standoff.

2.3.1 Interferents

There are a few vapors present in the atmosphere that can, in some circumstances, give a false response in the APD 2000®. The situations most likely to give a false response are in enclosed spaces or when sampling near strong vapor sources, such as,

(a) In a maintenance shop or engine test bay.

(b) Downwind from, or in, dense smoke and fumes.

(c) In enclosed spaces where there are vapor sources known to give false responses.

Get to know your local environment during training periods. Determine if, for example, there are any responses in particular areas of your work place. Some of the types of vapors that can give false readings are:

- **Cleaning compounds**. Some cleaning compounds and disinfectants contain additives which give them a pleasant smell. Some of these additives, such as menthol and methyl salicylate (MS, also known as oil of wintergreen) can give false responses. Cleaning materials are often spread over large surface areas and, therefore, provide a considerable vapor source, particularly in enclosed spaces.

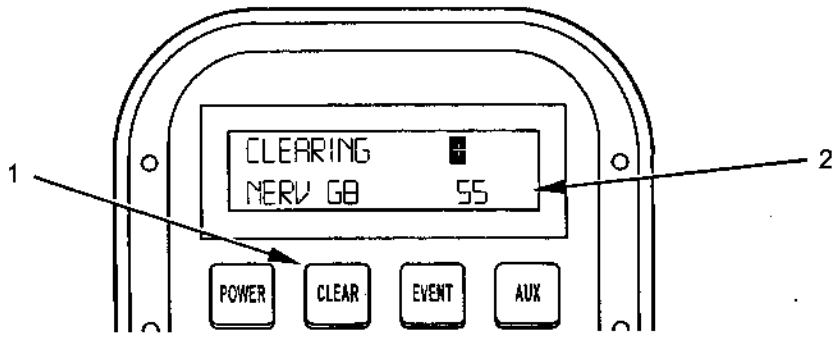
- **Aromatic vapors**. Included in this group of materials are perfumes and food flavorings. Some brands of aftershave and perfume can give a response when the APD 2000® is held close to the skin. Some sweets such as peppermints and cough lozenges and menthol cigarettes can cause a response if the breath is exhaled directly into the APD 2000® nozzle.

- **Smoke and fumes**. The exhaust from some motors and the fumes from some explosives and propellants can cause the APD 2000® to respond.

If you suspect that your APD 2000® is giving a false reading:

(a) Check for obvious vapor sources - smoke, etc., and known sources of interferences.

(b) If a false response occurs, the APD 2000® may not be operable in the immediate area. Remove the source of interferent (if possible), or press the CLEAR key (1) to force the unit to clear down and remove the APD 2000® from the area. When you are in a clean environment, let the unit continue to clear down until the alarm indications (2) no longer appear on the display. Press the CLEAR key (1) again to return to the READY state.



2.3.2 Operation in blowing sand or dust

During operation in blowing sand or dust, check the filtered nozzle standoff for collection of sand or dust. If any residue is visible, remove and replace the filter with a new filter.

2.3.3 Operation in temperatures below 40°F (4°C)

The APD 2000® may require a longer warm-up period in temperatures below 40° F. During periods of extreme cold, it is best to store the APD 2000® and its batteries in a heated building or vehicle until it is needed.

2.3.4 Operation in temperatures above 100°F (38°C)

In temperatures above 100° F, keep the APD 2000® out of direct sunlight whenever possible. Do not store the APD 2000® in the sun. Avoid exposing the unit to sudden changes in temperature, such as moving it directly from an air conditioned area to an area of extreme heat.

2.3.5 Operation in wet conditions

CAUTION

Do not immerse the APD 2000® in water or any other liquid.

The APD 2000® may be operated safely during rainy or wet conditions with a filtered nozzle standoff installed. Avoid getting the nozzle wet.

2.4 PREPARATION FOR USE

2.4.1 Survey the Environment

- Make sure that you are in a clean environment. Always work from a clean to a contaminated area and minimize time spent in contaminated areas.
- Be aware of wind conditions. Try to approach suspected contamination from the upwind direction.
- Know potential interferents in your environment.

CAUTION

Never carry the transit case into a contaminated area. The foam cushioning inside the case could become contaminated.

Never change the batteries in a contaminated area. The battery compartment could become contaminated.

2.4.2 Installing the Batteries

NOTE

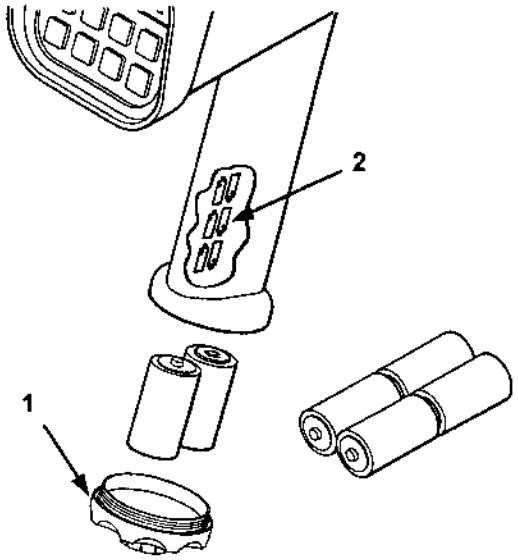
Expected battery life for the APD 2000® is up to 7 hours of operation at room temperature (70°F). Battery life will decrease as the temperature drops. At 43°F, average battery life will be less than 3 hours, and at 32°F it can be 1 hour or less. The use of the display backlight and frequent alarms will also contribute to shorter battery life. Rechargeable batteries are not recommended for use in the APD 2000®, since they vary widely by brand and technology. To maximize battery life, Smiths Detection recommends that you use the display backlight only in conditions of low visibility, use high quality alkaline batteries such as Duracell, and change all batteries at the same time.

1. Remove APD 2000® and six C batteries from transit case.

NOTE

Battery diagram is inside battery compartment.

2. Remove battery cap (1) and install batteries as shown on diagram (2) inside battery compartment.
3. Replace battery cap.

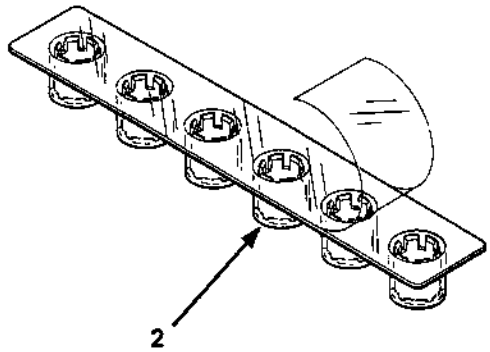


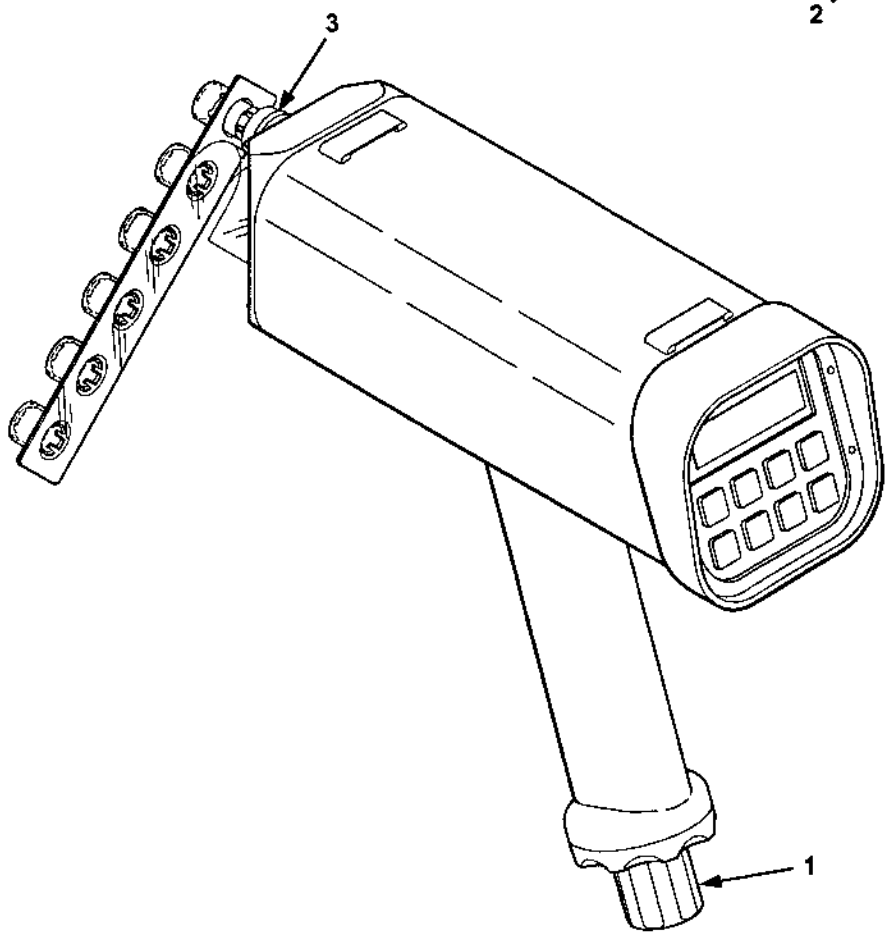
2.4.3 Installing the filtered nozzle standoff

CAUTION

Always use a clean filtered nozzle standoff when running the APD 2000®. To avoid contaminating the nozzle, do not touch the nozzle or the white filter area of the filtered nozzle standoff. Try to install the filtered nozzle standoff quickly to prevent dust from entering the unit.

1. Remove nozzle cap (1) and snap it onto battery cap retainer as shown.
2. Remove filtered nozzle standoff package (2) from transit case. Peel back covering from package until one filter is exposed.
3. Press nozzle (3) into exposed filter to install as shown.
4. Lay covering back in place over package.



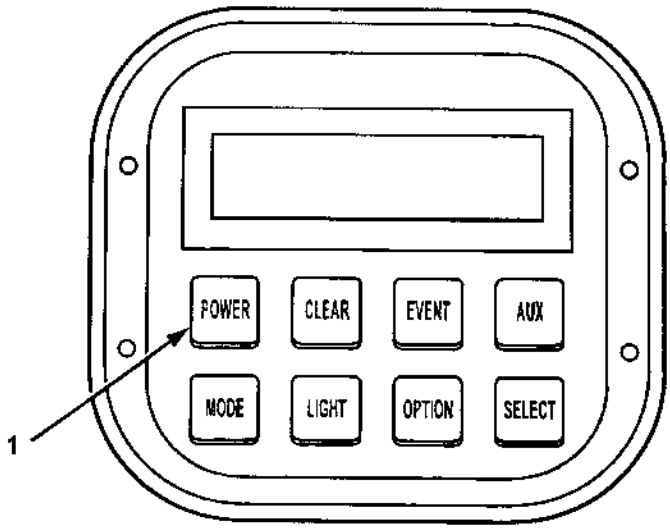


2.5 POWER-ON

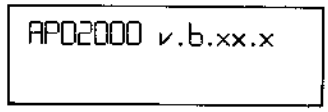
CAUTION

Before starting the APD 2000®, make sure that the nozzle protective cap has been removed and a clean filtered nozzle standoff is installed.

1. Press the POWER button (1) on the keypad.



2. The display will show the following information in sequence.

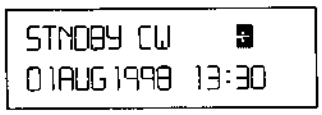


The software version installed in the unit.

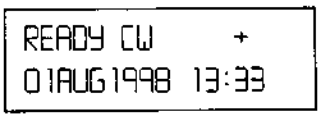
The horn sounds two beeps

2.5 POWER-ON (continued)

Checks electronic, pneumatic, and power conditions.



The unit is in backflush. and the polarity symbol cycles in reverse video (dark background/light text). This lasts approximately 2 ½ minutes. Verify that the date and time at the bottom of the display are correct. See chapter 3, Advanced Features for directions for setting the date and time.



The unit is ready for use. In its default mode, the APD 2000® monitors the environment for the presence of CW agents. To ensure the unit is operating properly, perform a confidence test (para 2.6).

NOTE

After the APD 2000® has been running for a while, the message AUTO CAL may occasionally appear on the display. This may be caused by changes in the environment (for example, temperature, humidity, or interferents). When this happens, do nothing. The APD 2000® is merely going through a renormalization process. The display will return to READY and the unit will be ready to continue its mission within 20 seconds.

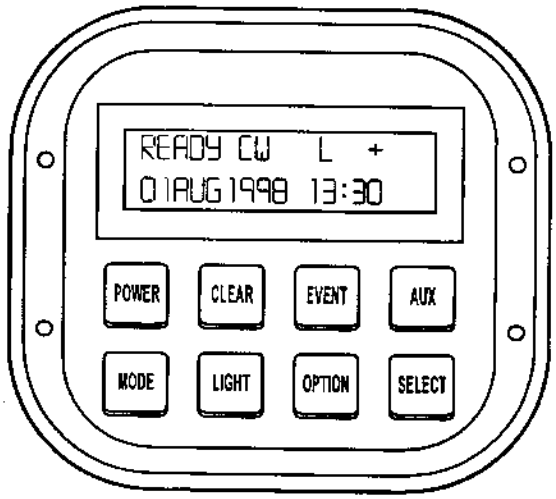
2.6 CONFIDENCE TEST

The confidence test ensures that the APD 2000® is fully operational. The H end of the confidence sample tests the unit's response to blister agents and the G end to nerve agents. Following each response, the APD 2000® goes into backflush and purges itself of simulant within 5 minutes.

NOTE

Make sure that a filtered nozzle standoff is installed on the nozzle. Run the confidence test every time you power up the APD 2000®.

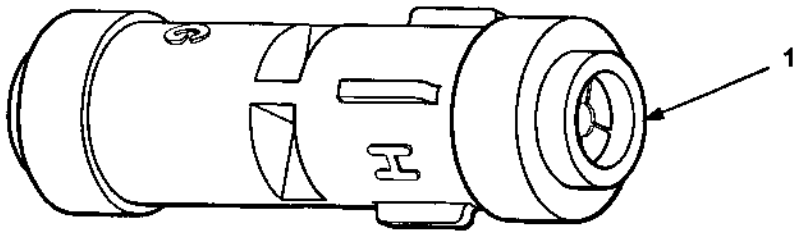
1. When display shows READY CW, the unit is ready for confidence testing.



WARNING

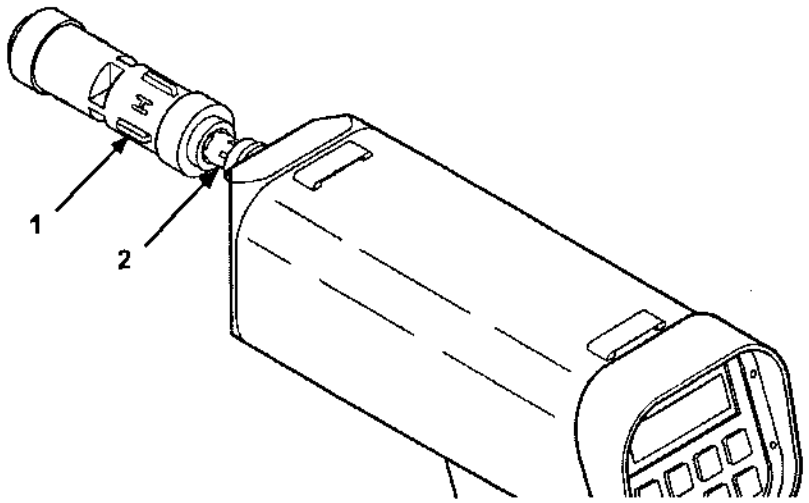
The confidence sample contains chemicals that may be irritating to the eyes, mucous membranes, and upper respiratory tract. Use the confidence sample only in a well ventilated area and avoid prolonged breathing of the vapor. Do not use if cracked or broken. See appendix C for material safety data sheets on confidence sample chemicals.

2. Locate H end of confidence sample (1).

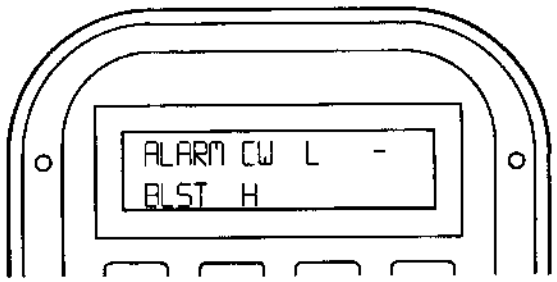


2.6 CONFIDENCE TEST (continued)

3. Press H end of confidence sample (1) to nozzle (2) for no longer than 1 second. Press hard enough to open plunger at end of confidence sample. Remove confidence sample from nozzle.



4. Verify that horn sounds and display appears as shown. Polarity symbol may be + or -. Silence the horn by pressing the SELECT key.



NOTE

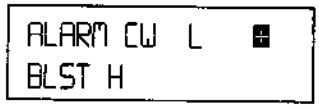
If APD 2000® does not alarm within 10 seconds of removing the confidence sample from the nozzle, repeat test, increasing time of exposure in 1-second increments until a maximum of 5 seconds of exposure.

A fully operational APD 2000® may fail a confidence test if it has not been used for some time. If this occurs, let the APD 2000® run for approximately 20 minutes and then repeat the test.

If the unit re-alarms immediately after clearing down from a confidence test alarm, there may be simulant liquid on the filtered nozzle standoff. Change the standoff.

2.6 CONFIDENCE TEST (continued)

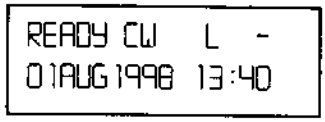
5. Verify that APD 2000® goes into backflush, indicated by reverse image polarity symbol.



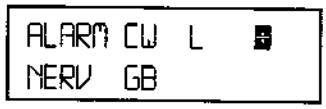
CAUTION

Do not switch the APD 2000® off while it is alarming to agent or simulant, or while it is in backflush following agent or simulant detection. Wait until it has completely cleared down (indicated by the word READY on the display). Switching the APD 2000® off during backflush will extend the start-up time on future use.

6. Verify that the display returns to READY CW.



7. Repeat steps 1 through 5 using G simulant. Verify that APD 2000® goes into clear down and display appears as shown. Polarity symbol will cycle between + and -.



NOTE

During confidence testing, , the APD 2000® may occasionally alarm BLST H in addition to NERV GB, which is not an equipment malfunction. In addition, when the ambient air is at low humidity, or there is a newly installed dry sieve pack or an excessively high concentration of G simulant, the APD 2000® may also alarm BLST H, which also is not an equipment malfunction. This condition will gradually reduce at higher humidity conditions or over time as the sieve pack absorbs moisture.

8. Verify that display returns to READY CW.

The APD 2000® is now ready for use. Go to para 2.7 for operating procedures.

NOTE

If the APD 2000® does not pass the confidence test, return it to the manufacturer (see appendix D) for service.

2.7 GENERAL USE

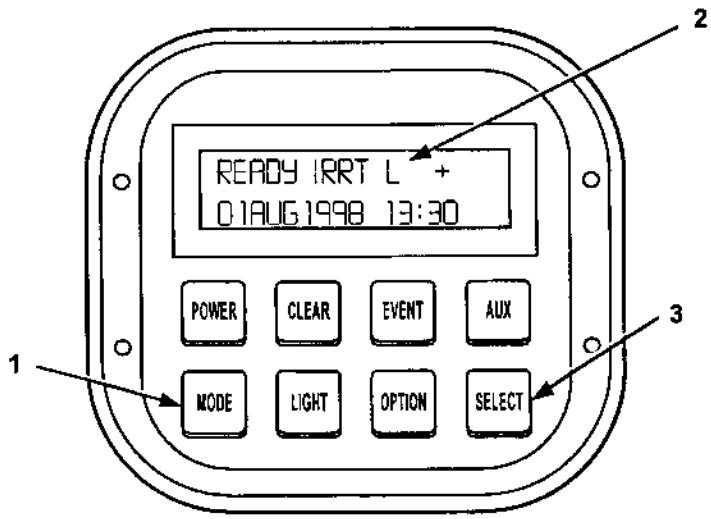
2.7.1 Agent Modes

The APD 2000® has three modes for selecting Agents and Irritants to identify. Each mode is exclusive; the instrument can only detect and identify the agent(s) or irritant(s) specific to the selected mode as shown in the table:

AGENT MODE	AGENT/IRRITANT TYPE	SPECIFIC AGENT/IRRITANT
CW	Nerve and Blister agents	GA, GB, GD, HD, HN, and Lewisite (L)
CWVX	Nerve	VX
IRRT	Irritants	Pepper spray and mace

To change the current Agent mode:

1. Press MODE key (1) until desired mode (2) appears on display.



2. Press SELECT key (3) to change to the displayed mode.

The display above indicates that IRRT is the current Agent mode, and the unit can only detect and identify irritants such as pepper spray and mace.

2.7 GENERAL USE (CONTINUED)

2.7.2 Operating Modes

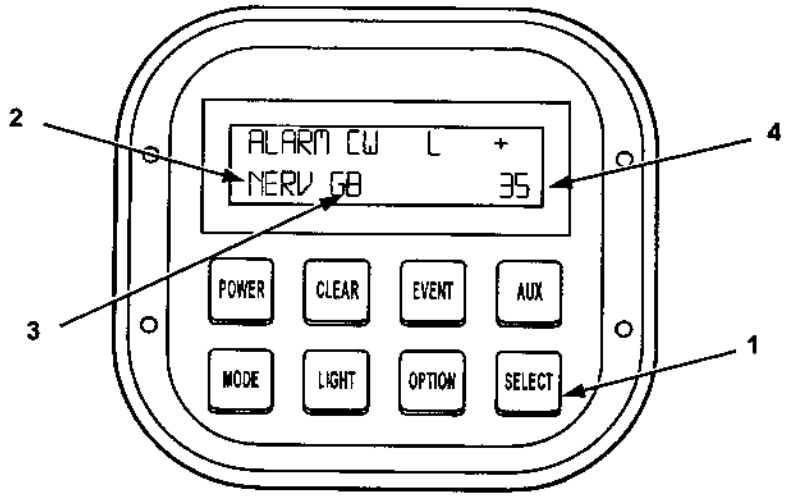
2.7.2.1 Monitor Mode

Monitor mode is the default operating mode for the APD 2000®. In this mode, the unit alarms to the presence of agent or irritants and, at the same time, continues to sample the environment for additional threats and for changes in the concentration of agent. It reports this information through continuous updates to the display.

If the concentration becomes too high, the APD 2000® goes into backflush and clear down. This feature protects the unit from damage caused by agent or irritant saturation. During clear down, the unit updates the information on the display. When the concentration is reduced to medium or low, the backflush pump is turned off and the unit resumes its monitoring activity.

When the APD 2000® alarms in monitor mode, it provides the following signals:

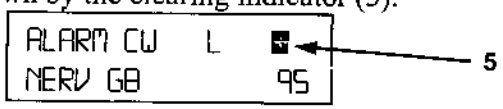
1. The horn beeps until it is silenced (press SELECT key (1)) or the agent dissipates.
2. In the default display mode, the display appears as shown. The class (2), name (3), and relative concentration (4) may change as the unit monitors changes in the environment.



NOTE

If more than one agent of the same class is detected, or the APD 2000® is unable to determine the agent name, the display shows only the class (NERV or BLST).

3. If the concentration becomes too high, the APD 2000® goes into automatic backflush and clear down, as shown by the clearing indicator (5).



The unit updates the display to show the change in agent concentration and continues its monitoring mission throughout clear down.

2.7 GENERAL USE (CONTINUED)

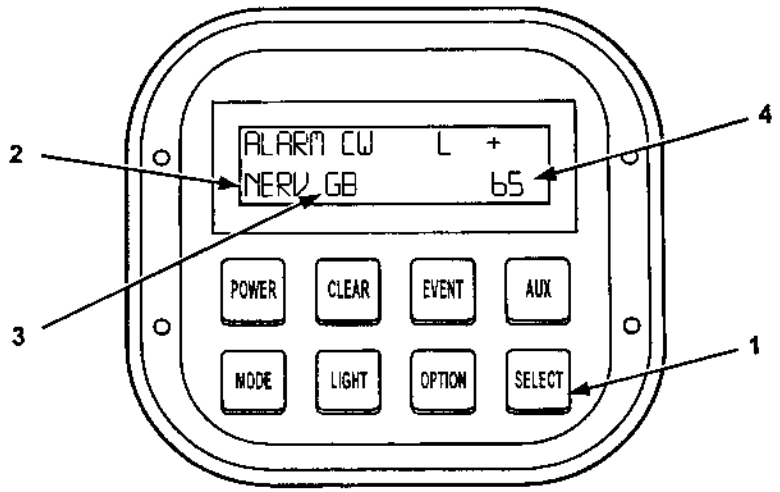
2.7.2.2 Detect Mode

In detect mode, the APD 2000® functions as a point sampling detector. Once it detects agent, it alarms immediately and then goes into automatic backflush and clear down. The unit cannot detect agent during clear down.

When the APD 2000® alarms in detect mode, it provides signals very similar to the signals it provides in monitor mode.

1. The horn beeps until it is silenced (press SELECT key (1)) or the cause of the alarm dissipates.

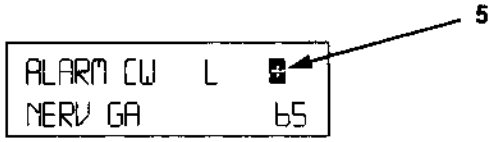
2. In the default display mode, the display appears as shown. The class (2), name (3), and relative concentration (4) appear on the display. The display may change if more than one agent is detected.



NOTE

If more than one agent of the same class is detected or the APD 2000® is unable to determine the agent name, the display shows only the class (NERV or BLST).

3. Immediately following agent detection, the APD 2000® goes into automatic backflush and clear down, as shown by the clearing indicator (5). It cannot detect agent while it is clearing down.



When clear down is complete (usually within 5 minutes), the unit resumes its detection mission.

2.7 GENERAL USE (CONTINUED)

2.7.3 Radiation Detection

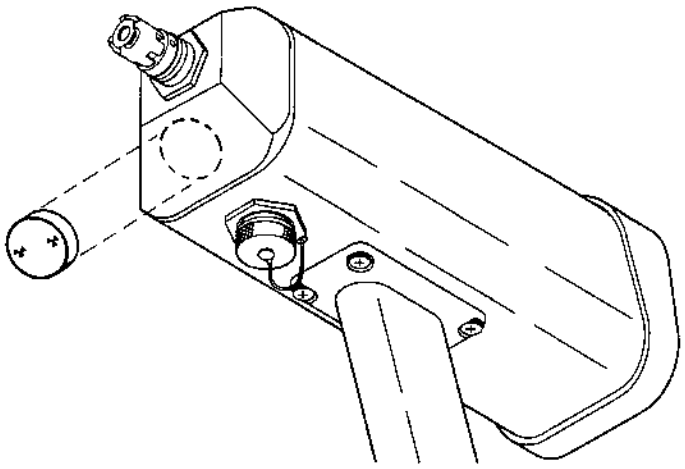
WARNING

The Radiation Detection capability may not provide accurate readings or alarm at temperatures above 45°C (113°F).

If your APD 2000® has the radiation option installed, the RAD indicator (1) will appear on the display when you turn the unit on and it reaches the STNDBY state. When the APD 2000® alarms to radiation, it provides the following signals:

NOTE

Using a Cs-137 check source at about 9.9 micro curies on the surface of the APD 2000®, the unit will achieve the alarm setpoint of about 3 mrem/hr in approximately 25 seconds.



NOTE

Smiths Detection uses a 10.0 micro curie Cs-137 Radioisotope Disk source supplied by:

Spectrum Techniques
Oak Ridge, TN
http://www.spectrumtechniques.com/
Phone: 865-482-9937

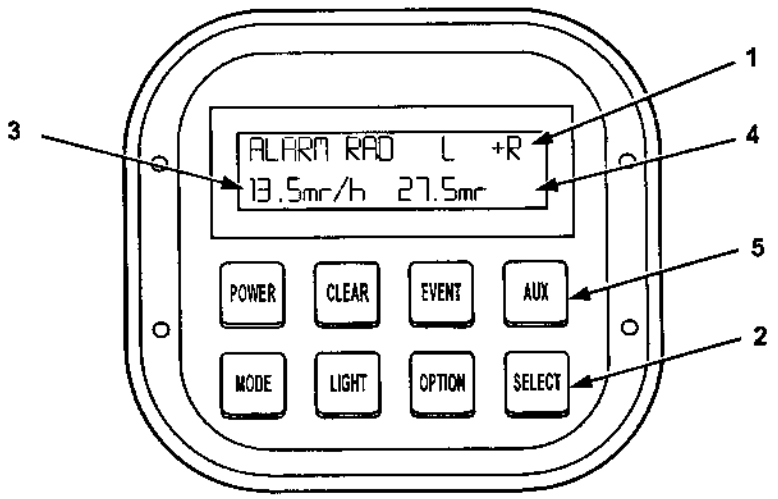
2.7 GENERAL USE (CONTINUED)

1. The horn beeps until it is silenced (press SELECT key [2]).

2. The display appears as shown. The amount of radiation detected is shown on the display data line.

a. The first number (3) shows the radiation rate in millirems per hour (mrem/hr).

b. The second number (4) shows the dose (cumulative amount of radiation detected) in millirems (mrem), since the RAD option was enabled.



3. The APD 2000® will continue to alarm as long as radiation is present.

4. To turn the RAD option off, press the AUX key (5). The AUX key toggles the radiation option on and off.

When the RAD option is turned on again, the cumulative radiation number (4) will be reset to zero.

During a radiation alarm, the APD 2000® can still detect and alarm to chemical threats. When simultaneous radiation and chemical alarms occur, the display cycles between the alarms.

2.7 GENERAL USE (CONTINUED)

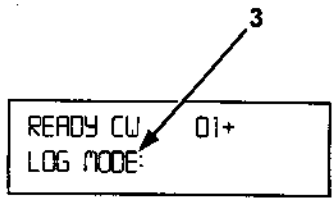
2.7.4 Data Logging

Data logging allows you to save a history of alarms, status, sample data and other operating characteristics for later uploading and analysis on a PC (see para 3). This history is retained in the APD 2000®'s internal memory even when the unit is turned off.

By default, automatic data logging is enabled on startup. The log indicator (1) appears on the display whenever data logging is enabled.

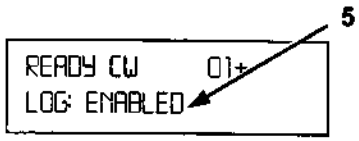
To Enable/Disable Data Logging:

1. Press OPTION key (2) until LOG MODE (3) appears on display.

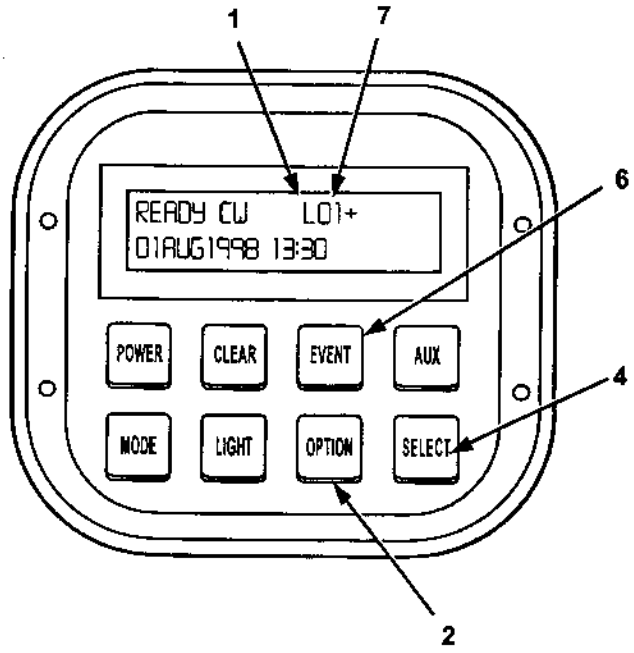


2. Press SELECT key (4)

3. Press OPTION key (2) until desired setting ((ENABLED or DISABLED (5)) appears on display.



4. Press SELECT key (4) to choose setting.



2.7 GENERAL USE (CONTINUED)

While data logging is enabled, the APD 2000® stores a data entry into its internal memory whenever an alarm occurs, the radiation rate or cumulative dose changes, the user marks an event or, if no other significant change in status occurs, every 5 minutes.

The mark an event:

1. Press the EVENT key (6).

2. A two-digit **Event** number (7) appears on the display for 3 seconds.

The event numbers range from "01" to "99", and are incremented every time an event is marked. The event number will roll over from "99" to "01" if necessary. The event number is reset back to "01" whenever the unit is turned off, or whenever data logging is disabled by selecting the disable option under LOG MODE menu option.

The data log history can be retrieved or cleared from the APD 2000® internal memory by using the APD 2000® Datalogger Software (see para 3). While the data log is being retrieved, the display shows that the unit is currently uploading information. While uploading, the APD 2000® will not be able to detect agents or irritants, change agent modes, mark events, or add new entries into the APD.

2.7 GENERAL USE (CONTINUED)

2.7.5 Malfunction alert

(1) If the APD 2000® malfunctions, a fault message appears on the display. The fault messages are listed below with a brief explanation.

NOTE

All of the fault messages are nonfatal. The APD 2000® will continue to operate to the maximum extent possible even with a fault message displayed.

AUTO CAL ERR - Indicates that the APD 2000® cannot calibrate within 5 minutes of STNDBY or an AUTO CAL message.

FLOW ERR – Indicates an obstruction in the airflow.

LOW FLOW – Indicates a partial obstruction in the airflow.

HIGH FLOW – Indicates a problem with the airflow.

RAD ERR – Indicates a malfunction with the radiation detector.

POWER LOW - Indicates either a weak battery(s) or dc input is below the minimum requirement.

POWER HIGH - Indicates dc input is above the maximum requirement.

INIT DIAG ERR - Indicates an internal diagnostic error.

The following fault messages indicate that the APD 2000® could not properly store information into the data log history:

LOG ERR

LOG MEMRY ERR

LOG WRITE ERR

LOG OVRUN ERR

(2) If there is a fault message on the APD 2000® display, refer to para 4 for the Troubleshooting Guide.

2.8 SHUTDOWN

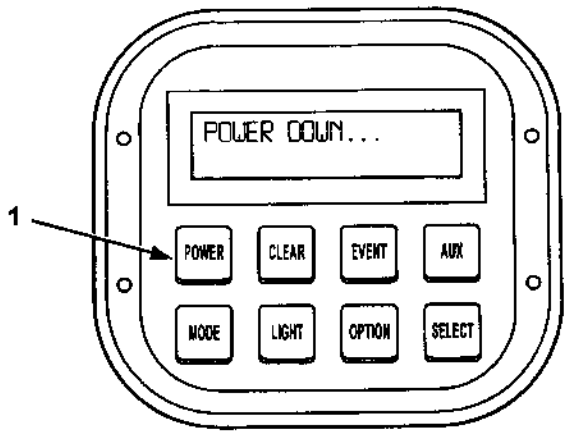
WARNING

An APD 2000® contaminated by CW agents or radiation can cause death or injury. If you suspect the APD 2000® has been contaminated, do not perform SHUTDOWN. Instead, perform DECONTAMINATION (see para 2.9).

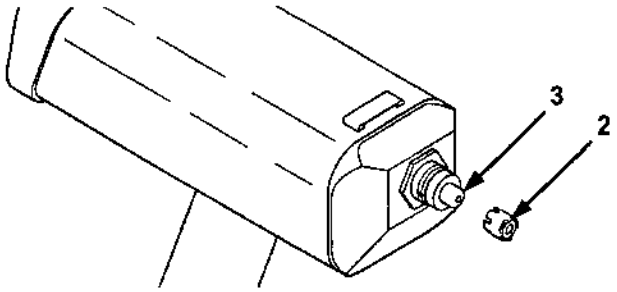
CAUTION

Do not remove power from the APD 2000® while it is alarming to agent or simulant or while it is clearing down following agent or simulant detection. Wait until it has completely cleared down (indicated by the word READY on the display. Switching the unit off at this time could extend the warm-up time on future use.

1. Press and hold POWER button (1) until POWER DOWN... appears on display. Release POWER button to shut unit down.



2. Remove filtered nozzle standoff (2) from nozzle (3) and discard.



2.8 SHUTDOWN (continued)

CAUTION

Do not touch the nozzle with your hands or attempt to wipe it off with a cloth or paper product that is dirty or that may have solvents or contaminants on it.

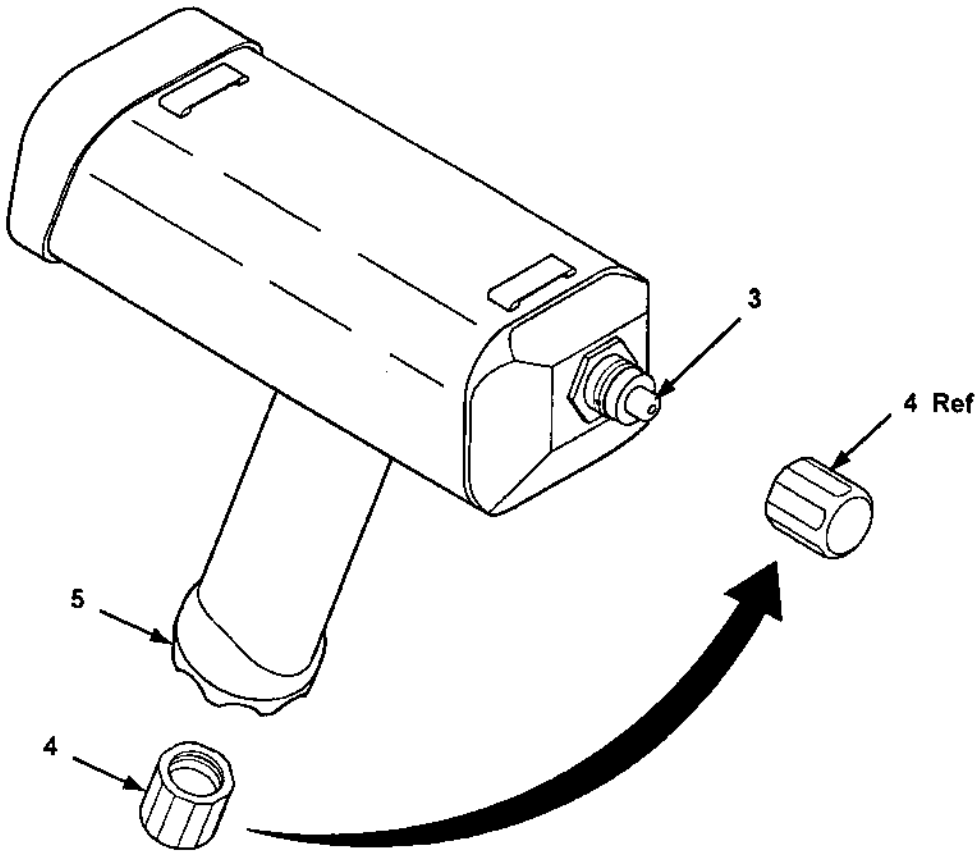
Do not put a damp or dirty nozzle protective cap over the nozzle. Doing so could increase start-up time, reduce sensitivity, or cause damage to the APD 2000®.

3. Inspect nozzle (3) for moisture. Wipe off moisture with a clean, dry paper towel or napkin.

4. Remove nozzle protective cap (4) from battery cap (5) retainer and place it over nozzle (3).

5. Remove battery cap (5) from battery compartment and remove batteries. Replace battery cap.

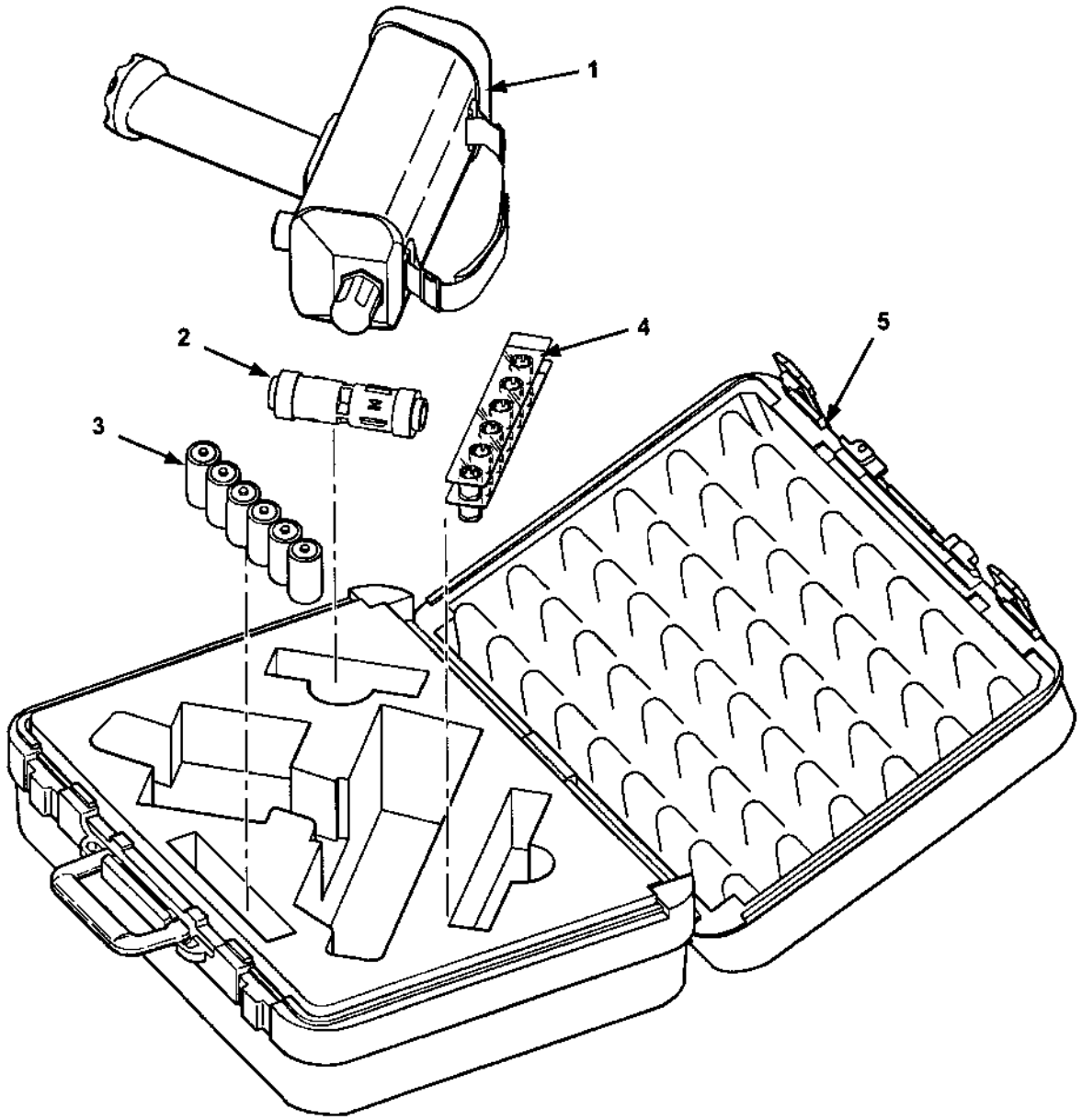
6. Discard weak or spent disposable batteries.



2.8 SHUTDOWN (continued)

7. Return APD 2000® (1), confidence sample (2), usable batteries (3), and filtered nozzle package (4) to transit case (5) for storage.

8. At first opportunity, replenish supplies in transit case.



2.9 DECONTAMINATION

NUCLEAR

For radiological contamination, brush, wipe, or vacuum contamination from equipment. The contamination is not destroyed — just moved from one place to another. Control runoff as contaminated waste.

Biological and Chemical.

If you suspect that the APD 2000® or its accessories are contaminated, perform the decontamination procedures described below.

CAUTION

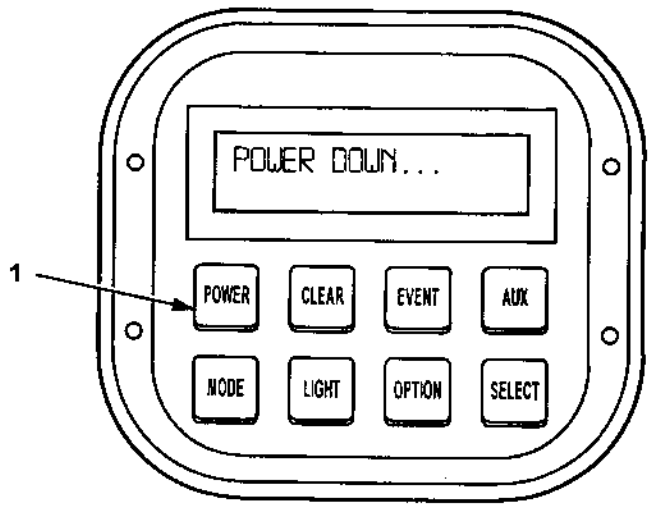
Do not decontaminate the APD 2000® or its accessories with M258A1 or M280 decontamination kits. These kits may cause false positives and temporarily render the APD 2000® inoperative.

Decontaminate NBC gloves with hot soapy water or M291 Skin Decontamination Kit.

Limit your work area to avoid spreading contamination.

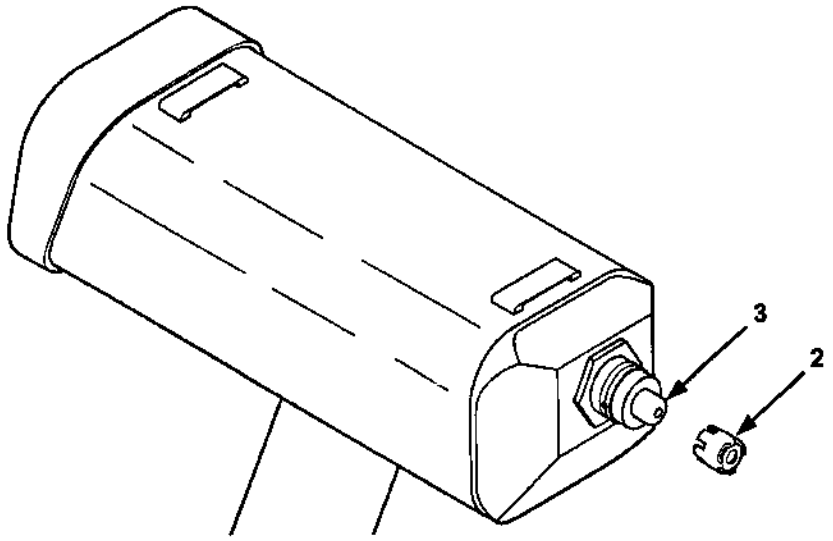
APD 2000® and Confidence Sample:

1. Press and hold POWER key (1) until POWER DOWN... appears on display. Release POWER button to shut unit down.



2.9 DECONTAMINATION (continued)

2. Remove filtered nozzle standoff (2) from nozzle (3). Discard filtered nozzle standoff as contaminated waste.



3. Decontaminate NBC gloves.
4. Lightly dampen cloth swipe with water and wipe APD 2000® nozzle thoroughly. Discard cloth swipe as contaminated waste.
5. Decontaminate NBC gloves.

CAUTION

Do not get nozzle wet with soap and water to avoid contamination to the interior of the APD 2000®.

6. Remove nozzle protective cap from battery cap retainer and install over nozzle.
7. Decontaminate the APD 2000® and confidence sample with a cloth and hot soapy water. Wipe both dry with a clean cloth or let air dry.
8. Decontaminate NBC gloves.
9. Check effectiveness of decontamination with M256-series detector kit, M8/M9 detector paper or, if available, another APD 2000®.
10. If the APD 2000® and/or confidence sample are still contaminated, repeat steps 7 through 9 until decontamination is complete.

2.9 DECONTAMINATION (continued)

11. Remove nozzle protective cap from nozzle and install a new filtered nozzle standoff on the nozzle.

12. Press POWER button to turn APD 2000® on. The unit will purge itself of any internal contamination.

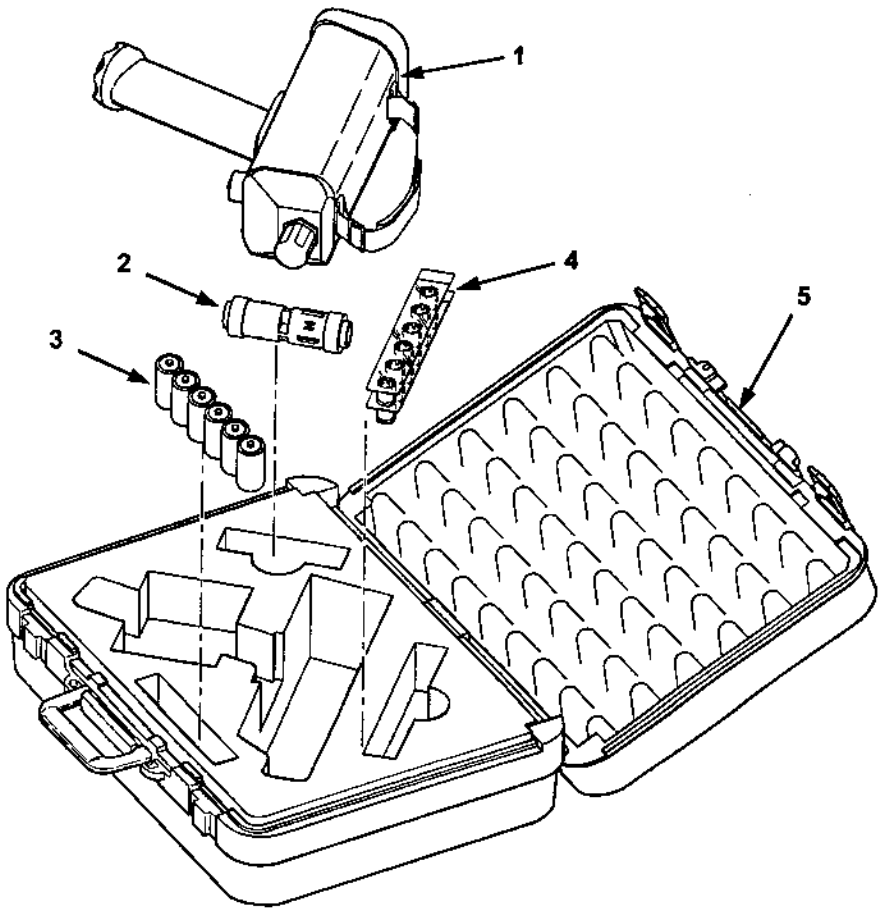
13. Let APD 2000® run until display returns to READY CW. Press and hold POWER button until POWER DOWN... appears on display. Release POWER button to shut unit down.

14. Remove the nozzle protective cap from the battery cap retainer and place it over nozzle .

15. Check the filtered nozzle package for contamination using an M256-series detector kit, M8/M9 detector paper, or, if available, another APD 2000®. Discard contaminated items as contaminated waste.

16. Decontaminate NBC gloves.

When decontamination is complete, return APD 2000® (1), confidence sample (2), usable batteries (3), and filtered nozzle package (4) to transit case (5) for storage. If necessary, replenish supplies in transit case.



2.9 DECONTAMINATION (continued)

Carrying Harness:

1. Press and hold POWER button until POWER DOWN... appears on display. Release POWER button to shut unit down.
2. Remove filtered nozzle standoff. Discard filtered nozzle standoff as contaminated waste.
3. Decontaminate NBC gloves.
4. Remove carrying harness from APD 2000®. Decontaminate carrying harness by submerging in hot soapy water. Rinse carrying harness thoroughly and let air dry.
5. Decontaminate NBC gloves.
6. Check effectiveness of carrying harness decontamination with M256-series detector kits, M8/M9 detector paper, or, if available, another APD 2000®.
7. If the carrying harness is still contaminated, repeat steps 4 through 6 until decontamination is complete.

3 APD 2000® DATALOGGER SOFTWARE

3.1 INTRODUCTION

The APD 2000® Datalogger Software allows users to collect, review, and archive data from the APD 2000®. Using this system, users can retrieve background, alarm, and event data from an APD 2000® in the field and store it on a PC for analysis.

3.2 SYSTEM REQUIREMENTS

Processor	486 or higher
Operating System	Windows 3.1, 95 or 98 or higher
Pointing Device	Mouse or Track ball
Other	Serial Port Available as COM1 or COM2

3.3 INSTALL THE SOFTWARE

1. Insert the Datalogger Software install disk in the floppy disk drive.
2. For Windows 3.1, from the Program Manager select Run from the File menu and type a:\setup in the dialog box.
3. For Windows 95 or higher, select Run from the Start menu and type a:\setup in the dialog box.
4. Follow the directions on the screen.

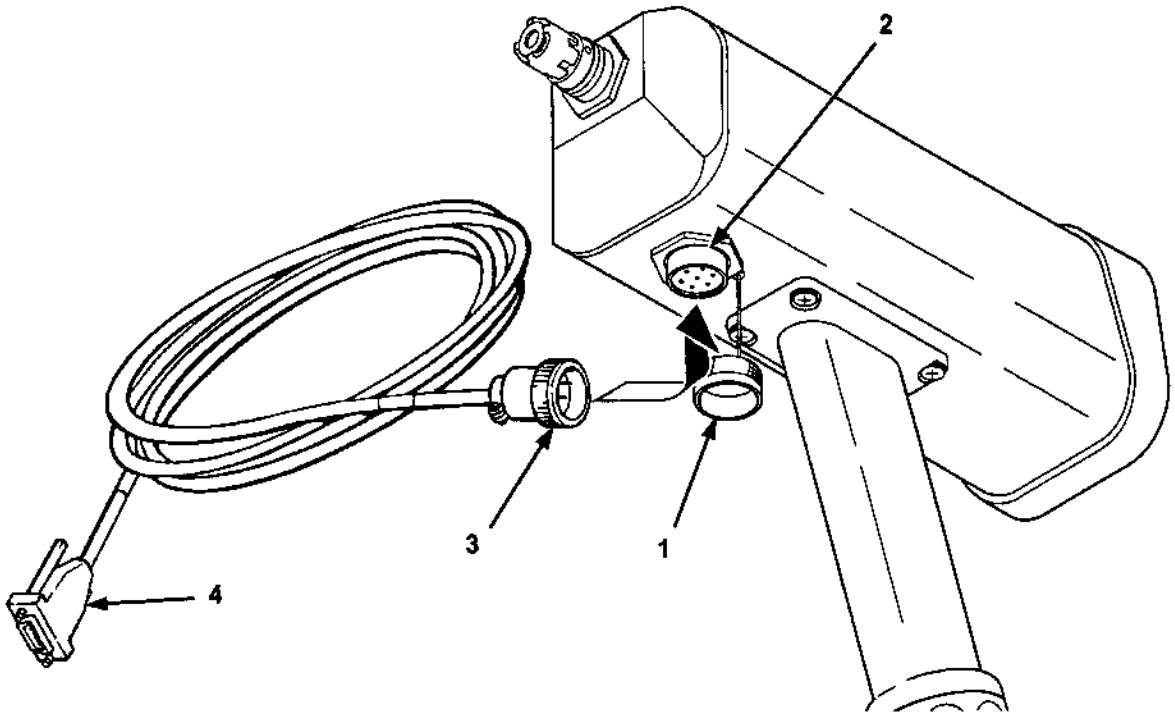
3.4 CONNECT APD 2000® TO PC

1. Remove the cap (1) from the APD 2000® auxiliary port (2).

NOTE

The communications cable connector is keyed so that it can only fit into the auxiliary port one way.

2. Connect communications cable connector (3) to auxiliary port (2) and screw connector down until fully seated.



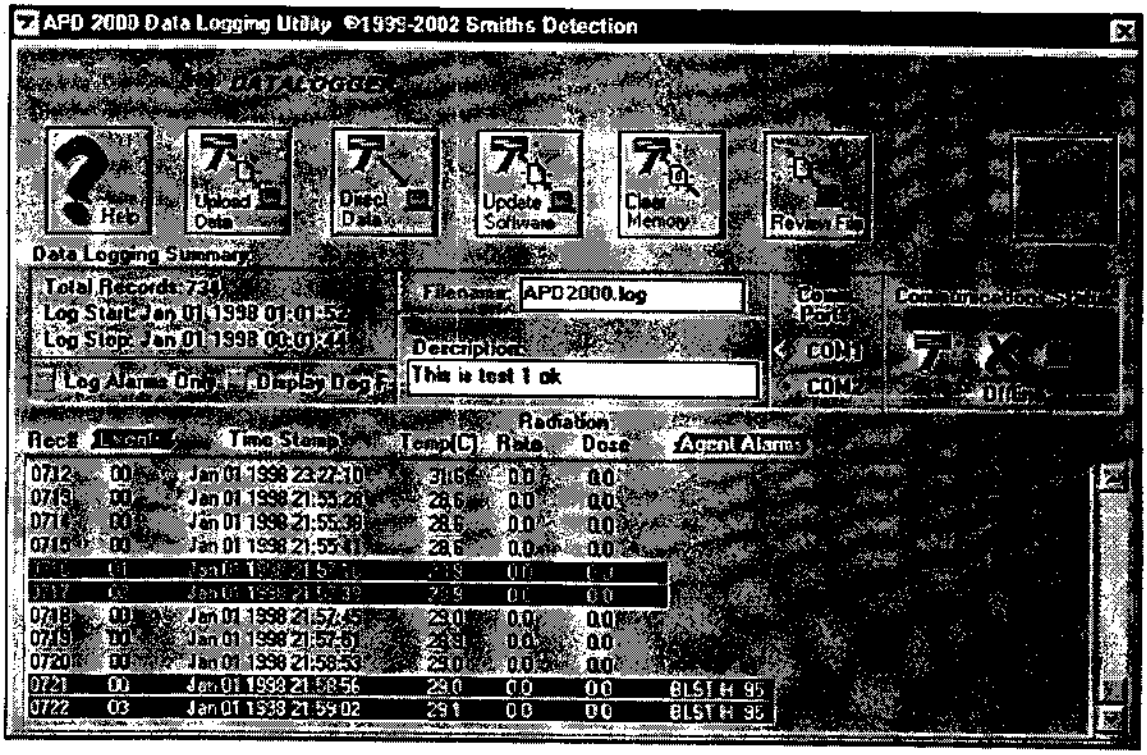
3. Connect other end of communications cable (4) to COM port on PC.

4. Turn on APD 2000®.

5. Launch Datalogger Software.

3.5 OPERATING THE SOFTWARE

The Datalogger software screen appears as shown below. Explanations of the available features and options are also provided.



Help

Displays the Application Help.

Upload Data

This button uploads collected data from the APD 2000® to the PC. Data will be stored in the filename indicated by the filename field. The APD 2000® must be connected to the PC and data must have been collected in the Datalogging mode. As each record is uploaded, it will be displayed in the main list box. Collected data can take up to 10 minutes to upload if the data buffer on the detector is full.

Direct Data

This button allow the user to collect data from the APD 2000® real time. To use this option, the APD 2000® must be directly connected to the PC using the serial cable. The APD 2000® is polled every five seconds and the current status including alarms, temperature and time is collected and stored in a file. The user will see each collected data point scroll by as data is collected. Collected data is stored in the file located in the filename box.

Update Software
This button updates the operating firmware in the APD 2000®. To update the software, put the APD 2000® in the download new software mode by selecting APD2000 v 6.xx - DOWNLOAD NEW SW from the Menu Tree (see para. 2.2.1). Press the Update Software button. The updated software should be present in the "a:" disk drive. If your computer has another drive assignment, switch to that drive and select the desired file. APD 2000® firmware has a 'HEX' filetype. The download will start as a DOS operating session and automatically return to the main window.

Clear Memory
This button will clear the datalogging memory of the APD 2000® for another run. Make sure any data in the APD 2000® is uploaded before executing this option.

Review File
This button allows the user to select a data file that has been previously captured and saved. The data will be displayed in the main review window.

Exit
This button causes the application to exit.

Total Records
This section displays the total records collected or in the file and the start and end times for the data.

Filename
Enter the name of the filename where collected data will be saved. If a filename already exists, data will be appended to it. Up to 10,000 records may be saved in a single file.

Description
A short (less than 80 character) description may be entered for data files that are being uploaded or captured in direct mode.

Comm Ports:
Select either COM1: or COM2: to reflect the port where the communications cable is installed. Clicking on this option will also reset the selected port to restore communications.

Communications Status
This animation box shows if communications is present between the PC and the APD 2000®. A moving link shows data is moving properly between the PC and APD 2000®. A blue 'X' shows the link is broken.

Log Alarms Only
If this button is checked, only alarm information is saved to the data file. If a file is being reviewed, this option will screen out non-alarm information.

Display Deg F
If this box is checked, all displayed data will be shown in degrees F.

Data List Box
This list box displays collected data from the APD 2000® in a color-coded format. Normal background data is shown as black text against a gray background. An alarm is shown as red text against a black background. Events are shown as green text against a black background. Data can be scrolled using the scroll bar located to the right of the window.

Exporting Files
Data files collected with the Datalogger software may be exported easily to almost all spreadsheets and word processors. Data in the files is stored in a text readable, comma separated format. When importing into a spreadsheet simply select "comma delimited" during the import process to align the data into different columns.

4 TROUBLESHOOTING GUIDE

This Troubleshooting Guide is designed to help you find and possibly correct some faults you may encounter while operating the APD 2000®. It is not intended to be an all-inclusive repair manual. In some cases, you will have to return the unit to the manufacturer for repair.

Symptoms that have the same possible cause and corrective action are grouped together.

Symptom	Possible Cause	Corrective Action
AUTO CAL ERR FLOW ERR LOW FLOW or HIGH FLOW or APD 2000® fails to purge itself within 5 minutes of starting clear down following confidence test or alarm	Cap on nozzle	Remove cap
	Nozzle obstructed	Clear obstruction
	Filtered nozzle standoff clogged	Replace filtered nozzle standoff (see para 2.4.3)
		Return unit to manufacturer

NOTE

Expected battery life for the APD 2000® is up to 7 hours of operation at room temperature (70°F). Battery life will decrease as the temperature drops. At 43°F, average battery life will be less than 3 hours, and at 32°F it can be 1 hour or less. The use of the display backlight and frequent alarms will also contribute to shorter battery life. Rechargeable batteries are not recommended for use in the APD 2000®, since they vary widely by brand and technology. To maximize battery life, Smiths Detection recommends that you use the display backlight only in conditions of low visibility, use high quality alkaline batteries such as Duracell, and change all batteries at the same time.

POWER LOW	Batteries weak	Replace six C batteries (see para 2.4.2).
	External power supply set to Low	Reset power supply
	Defective power supply.	Replace power supply.
POWER HIGH	External power supply set to High	Reset power supply
	Defective power supply	Replace power supply.
	APD 2000® malfunction	Return APD 2000® to manufacturer.

Symptom	Possible Cause	Corrective Action
	NOTE	
	In the case of a RAD ERR, the unit can still function as a chemical detector.	
RAD ERR	Radiation detector malfunction	Use AUX key to disable then re-enable radiation capability. Repeat twice. Shut APD 2000® down (para 2.8), then restart unit (para 2.5). Repeat twice. If problem continues, return APD 2000® to manufacturer.
INT DIAG ERR	Internal diagnostic error	Return APD 2000® to manufacturer.
Unit realarms constantly	Contaminated filtered nozzle standoff	Replace filtered nozzle standoff.
	Contaminated nozzle	See para 2.9 for directions for decontaminating nozzle.
	Contaminated room/area	Remove APD 2000® from area.
	NOTE	
	The APD 2000® should be run at least every six months. A fully operational APD 2000® may fail a confidence test if it has not been used for some time. If this occurs and you are sure the confidence sample is not defective, let the APD 2000® run for approximately 20 minutes and repeat the test. If the unit still fails the test, let it run for an additional 20 minutes. Repeat the confidence test once more (a total of three attempts). If the unit still fails the test, return it to the manufacturer (see appendix D).	
Unit fails to alarm to confidence sample	Confidence sample out of simulant	Replace confidence sample and repeat test.
	APD 2000® needs servicing.	Return APD 2000® to manufacturer.
The following fault messages indicate that the APD 2000® could not properly store information into the data log history: LOG ERR LOG MEMRY ERR LOG WRITE ERR LOG OVRUN ERR	Data Logging Malfunction	Disable data logging using the LOG MODE menu option If problem continues, return unit to manufacturer
If any of these messages appear on the APD 2000® display, disable data logging using the menu options, wait until the error message disappears from the display, then re-enable data logging. If the error continues or repeats, return the unit to the manufacturer for repair. Note that the unit can still be used for detection with Data Logging disabled, but must be returned to the manufacturer for repair of the Data Logging feature.		

APPENDIX A
RADIOACTIVE MATERIAL GENERAL LICENSE

APPENDIX B

RADIATION WIPE TEST INSTRUCTIONS

Perform radiation wipe test on your APD 2000® every 6 months as follows:

1. Obtain proper Radiation Wipe Test Kit from local radiation authority, authorized laboratory, or Smiths Detection - Edgewood, Inc. (See para. 1.7 for information on contacting Smiths Detection.)

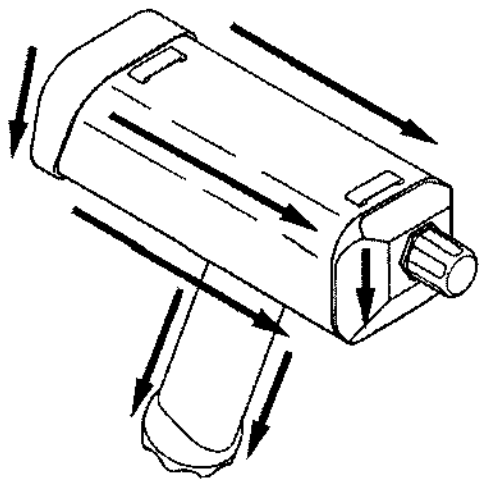
CAUTION

Read and follow all safety precautions and directions provided with the Radiation Wipe Test Kit.

2. Wipe the device as shown in the figure.

NOTE

Wipe **all** external areas of the device with filter paper maintaining an even pressure. Avoid wiping same area twice. Take care to wipe into corners and cavities to cover maximum surface area.



3. Mail wipes to a qualified radiation analysis laboratory.

4. You, as customer, are responsible to keep records of all Wipe Tests done on the APD 2000® under the NRC General License Agreement. Records must be retained for a minimum of 2 years.

5. The possession and use of this device is authorized under a General License issued by the State of Maryland (COMAR 10, 14, 02, 01 Sec C.22(d)). If you are using the device outside the State of Maryland, you are regulated by the U.S. Nuclear Regulatory Commission or another Agreement or Licensing State under requirements substantially the same.

APPENDIX C
CONFIDENCE SAMPLE CHEMICALS
MATERIAL SAFETY DATA SHEETS

Material Safety Data Sheet

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

24-Hour Emergency Phone Number: 989-636-4400

Product: DOWANOL* DPM GLYCOL ETHER

Product Code: 22345

Effective Date: 10/09/01 Date Printed: 12/17/01 MSD: 000045

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

2. COMPOSITION/INFORMATION ON INGREDIENTS

Dipropylene glycol monomethyl ether	CAS# 034590-94-8	99%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

****

* Clear, colorless liquid. Slight ether odor. Combustible. *

****

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

SKIN: Prolonged exposure not likely to cause significant skin irritation. Prolonged skin contact with very large amounts may cause drowsiness.

INGESTION: Single dose oral toxicity is considered to be extremely low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury.

INHALATION: Excessive exposure may cause irritation to upper respiratory tract. Signs and symptoms of excessive exposure may be anesthetic or narcotic effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Observations in animals include minor liver or kidney effects. Signs and symptoms of excessive exposure may be anesthetic or narcotic effects.

(Continued on page 2 , over)

TERATOLOGY (BIRTH DEFECTS): Birth defects are unlikely. Exposures having no adverse effects on the mother should have no effect on the fetus.

4. FIRST AID

EYE: Flush eyes with plenty of water.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES
FLASH POINT: 175F, 79.4C
METHOD USED: TCC
AUTOIGNITION TEMPERATURE: Not determined.

FLAMMABILITY LIMITS
LFL: 1.1 vol% @ 100C
UFL: 14 vol% @ 150C

HAZARDOUS COMBUSTION PRODUCTS: During a fire, smoke may contain the original material in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to: carbon monoxide, carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Violent steam generation or eruption may occur upon application of direct water stream to hot, liquids. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide,

(Continued on page 3)

dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

MEDIA TO BE AVOIDED: Do not use direct water stream.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Isolate area.

PROTECT THE ENVIRONMENT: Contain liquid to prevent contamination of soil, surface water or ground water.

CLEANUP: Clean up residual with non-combustible absorbent material and wash with water. Collect material in suitable and properly labeled open containers.

7. HANDLING AND STORAGE

HANDLING: Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.

STORAGE: Store in carbon steel, stainless steel, Teflon.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Local exhaust ventilation may be necessary for some operations.

PERSONAL PROTECTIVE EQUIPMENT

(Continued on page 4 , over)

EYE/FACE PROTECTION: Use safety glasses. Where contact with this material is likely, chemical goggles are recommended because eye contact may cause discomfort even though it is unlikely to cause injury.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use gloves impervious to this material when prolonged or frequently repeated contact could occur.

RESPIRATORY PROTECTION: When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.

EXPOSURE GUIDELINES: Dipropylene glycol methyl ether: ACGIH TLV and OSHA PEL are 100 ppm TWA, 150 ppm STEL. PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, colorless liquid
ODOR: Slight ether.
VAPOR PRESSURE: 0.41 mmHg @ 25C
VAPOR DENSITY: 5.14
BOILING POINT: 374F, 190C
SOLUBILITY IN WATER: Infinitely
SPECIFIC GRAVITY: 0.951 @ 25/25C
VOLATILE ORGANIC COMPOUNDS (VOC) CONTENT: 951 g/L or 7.91 lb/gal as per Rule 443.1 of California SCAQMD

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions. See Storage Section.

CONDITIONS TO AVOID: Avoid static discharge. Flammable vapors can be released at elevated temperatures.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: Does not normally decompose. Hazardous decomposition products depend upon temperature, air supply and the presence of other materials.

(Continued on page 5)

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The LD50 for skin absorption in rabbits is > 20 ml/kg.

INGESTION: The oral LD50 for rats is 5.4 ml/kg.

MUTAGENICITY: In vitro mutagenicity studies were negative.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: Bioconcentration potential is low (BCF less than 100 or Log Pow less than 3). Log octanol/water partition coefficient (log Pow) is estimated using the Pomona-Med Chem structural fragment method to be -0.064.

DEGRADATION & PERSISTENCE: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable. Reaches more than 70% mineralization in OECD test(s) for inherent biodegradability. Biodegradation under aerobic static laboratory conditions is moderate (BOD20 or BOD28/ThOD between 10 and 40%). Biodegradation rate may increase in soil and/or water with acclimation.
20-Day biochemical oxygen demand (BOD20) is 0.65 p/p.
Degradation is expected in the atmospheric environment within minutes to hours.
Biodegradation reached in CO2 Evolution Test (Modified Sturm Test, OECD Test No. 301 B) after 28 days: 34%.
Biodegradation reached in Modified OECD Screening Test (OECD Test No. 301 E) after 28 days: 72.9%.

ECOTOXICITY: Material is practically non-toxic to aquatic organisms on an acute basis (LC50 greater than 100 mg/L in most sensitive species).
Acute LC50 for emerald shiner (Notropis atherinoides) is greater than 150 mg/L.
Acute LC50 for fathead minnow (Pimephales promelas) is greater than 10000 mg/L.
Acute LC50 for water flea (Daphnia magna) is 1919 mg/L.
Acute LC50 for brown shrimp (Crangon crangon) is greater than

(Continued on page 6 , over)

1000 mg/L.
The 21 day no-observed effect concentration level (NOEC) (reproduction) for water flea (Daphnia magna) is >0.5 mg/L.
Growth inhibition threshold in bacteria is 4168 mg/L.

13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 517-832-1556 for further details.

14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): For DOT regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

CANADIAN TDG INFORMATION: For TDG regulatory information, if required, consult transportation regulations, product shipping papers, or your Dow representative.

15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements

(Continued on page 7)

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are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS
==========

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard
A fire hazard

TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

The CAS Number for TSCA is 034590-94-8

STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

New Jersey
Pennsylvania

OSHA HAZARD COMMUNICATION STANDARD:

(Continued on page 8 , over)

REGULATORY INFORMATION (CONTINUED)

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	0
Flammability	2
Reactivity	0

CANADIAN REGULATIONS

WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

B3 - combustible liquid with a flash point between 37.8C and 93.3C
Refer elsewhere in the MSDS for specific warnings and safe handling information. Refer to the employer's workplace education program.

CPR STATEMENT: This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

HAZARDOUS PRODUCTS ACT INFORMATION: This product contains the following ingredients which are Controlled Products and/or on the Ingredient Disclosure List (Canadian HPA section 13 and 14):

COMPONENTS:	CAS #	AMOUNT(%w/w)
DIPROPYLENE GLYCOL MONOMETHYL ETHER	034590-94-8	99%

16. OTHER INFORMATION

MSDS STATUS: Revised Section 15.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

Health	0
Flammability	2
Reactivity	0

SIGMA-ALDRICH

MATERIAL SAFETY DATA SHEET

Date Printed: 10/15/2003
Date Updated: 06/30/2003
Version 1.4

Section 1 - Product and Company Information

Product Name	METHYL SALICYLATE, 99+%
Product Number	240826
Brand	ALDRICH
Company	Sigma-Aldrich
Street Address	3050 Spruce Street
City, State, zip, Country	SAINT LOUIS MO 63103 US
Technical Phone:	314 771 5765
Emergency Phone:	414 273 3850 Ext. 5996
Fax:	800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
METHYL SALICYLATE	119-36-8	No

Formula C8H803

Synonyms o-Anisic acid, Benzoic acid, 2-hydroxy-, methyl ester, Betula, Betula oil, Exagien, Flucarmit, Gaultheria oil, artificial, Gaultheria oil, o-Hydroxybenzoic acid, methyl ester, 2-Hydroxybenzoic acid methyl ester, Methylester kyseliny salicylove (Czech), Methyl o-hydroxybenzoate, Methyl salicylate, Natural wintergreen oil, Oil of wintergreen, Salicylic acid, methyl ester, Synthetic birch sweet oil, Synthetic wintergreen oil, Teaberry oil, Wintergreen oil, Wintergreen oil, synthetic

RTECS Number: V04725000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Harmful.

Harmful if swallowed. Irritating to eyes, respiratory system and skin.

Possible sensitizer. Target organ(s): Central nervous system. Liver.

HMIS RATING

HEALTH: 2*
FLAMMABILITY: 1
REACTIVITY: 1

NFPA RATING

HEALTH: 2
FLAMMABILITY: 1
REACTIVITY: 1

*additional chronic hazards present

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

DERMAL EXPOSURE
In case of contact, immediately wash skin with soap and copious amounts of water.

EYE EXPOSURE
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT
204.8 °F 96 °C Method: closed cup

AUTOIGNITION TEMP
453 °C

FLAMMABILITY
N/A

EXTINGUISHING MEDIA
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL
Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP
Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING
User Exposure: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

STORAGE
Suitable: Keep tightly closed.

SPECIAL REQUIREMENTS
Heat and light sensitive.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS
Safety shower and eye bath. Mechanical exhaust required.

PERSONAL PROTECTIVE EQUIPMENT
Respiratory: Government approved respirator.
Hand: Compatible chemical-resistant gloves.
Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling.

Section 9 - Physical/Chemical Properties

Appearance	Physical State: Clear liquid Color: Slightly yellow-green	
Property	Value	At Temperature or Pressure
Molecular Weight	152.15 AMU	
PH	N/A	
BP/BP Range	219 - 221 °C	
MP/MP Range	-8 - -7 °C	
Freezing Point	N/A	
Vapor Pressure	1 mmHg	54 °C
Vapor Density	5.26 g/l	
Saturated Vapor Conc.	N/A	
SG/Density	1.184 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	Log KOW: 2.55	
Decomposition Temp.	N/A	
Flash Point	204.8 °F 96 °C	Method: closed cup
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	453 °C	
Refractive Index	1.537	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:Insoluble. Other Solvents: ETHANOL, GLACIAL ACETIC ACID	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Stable: Stable.

Conditions to Avoid: Sensitive to heat. Sensitive to light.
Materials to Avoid: Strong bases, Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

HAZARDOUS POLYMERIZATION
Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: Causes skin irritation.
Skin Absorption: Readily absorbed through skin. May be harmful if absorbed through the skin.
Eye Contact: Causes eye irritation.
Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.
Ingestion: Harmful if swallowed.

SENSITIZATION
Sensitization: Prolonged or repeated exposure may cause allergic reactions in certain sensitive individuals.

TARGET ORGAN(S) OR SYSTEM(S)
Central nervous system. Liver. Ears. Kidneys. Eyes.

SIGNS AND SYMPTOMS OF EXPOSURE
Mild chronic salicylate intoxication is termed salicylism. Symptoms include: headache, dizziness, ringing in the ears, difficulty in hearing, dimness of vision, mental confusion, lassitude, drowsiness, sweating, thirst, hyperventilation, nausea, vomiting, and occasionally diarrhea. A more severe degree of salicylate intoxication is characterized by more pronounced CNS disturbances (including generalized convulsions and coma), skin eruptions, and marked alterations in acid-base balance.

TOXICITY DATA

Oral
Man
101 mg/kg
LDLO
Remarks: Behavioral:Convulsions or effect on seizure threshold.
Gastrointestinal:Nausea or vomiting.

Oral
Man
1329 mg/kg
LDLO
Remarks: Behavioral:Convulsions or effect on seizure threshold.
Behavioral:Coma. Blood: Hemorrhage.

Oral
Child
228 mg/kg
LDLO
Remarks: Lungs, Thorax, or Respiration:Dyspnea
Gastrointestinal:Nausea or vomiting.

Oral

Child
700 mg/kg
LDLO
Remarks: Peripheral Nerve and Sensation:Flaccid paralysis without anesthesia (usually neuromuscular blockage). Behavioral:General anesthetic. Lungs, Thorax, or Respiration:Dyspnea.

Oral
Woman
355 mg/kg
LDLO
Remarks: Behavioral:Coma. Lungs, Thorax, or Respiration:Respiratory stimulation. Gastrointestinal:Nausea or vomiting.

Oral
Infant
1480 mg/kg
LDLO
Remarks: Lungs, Thorax, or Respiration:Respiratory stimulation Gastrointestinal:Nausea or vomiting.

Oral
Human
506 mg/kg
LDLO

Oral
Rat
887 mg/kg
LD50
Remarks: Behavioral:Somnolence (general depressed activity).

Oral
Mouse
1110 mg/kg
LD50

Oral
Dog
2100 mg/kg
LD50
Remarks: Lungs, Thorax, or Respiration:Other changes. Gastrointestinal:Hypermotility, diarrhea. Gastrointestinal:Nausea or vomiting.

Oral
Rabbit
1300 mg/kg
LD50

Oral
Guinea pig
700 mg/kg
LD50

IRRITATION DATA

Skin
Rabbit
500 mg

24H
Remarks: Moderate irritation effect

Eyes
Rabbit
500 mg
24H
Remarks: Mild irritation effect

Skin
Guinea pig
100 %
Remarks: Severe irritation effect

Eyes
Guinea pig
100 %
Remarks: Severe irritation effect

CHRONIC EXPOSURE - TERATOGEN
Result: Laboratory experiments have shown teratogenic effects.

Species: Rat
Dose: 500 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (11-12D PREG)
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Urogenital system.

Species: Rat
Dose: 500 MG/KG
Route of Application: Subcutaneous
Exposure Time: (10D PREG)
Result: Specific Developmental Abnormalities: Musculoskeletal system. Specific Developmental Abnormalities: Body wall. Specific Developmental Abnormalities: Central nervous system.

Species: Rat
Dose: 500 MG/KG
Route of Application: Subcutaneous
Exposure Time: (10D PREG)
Result: Specific Developmental Abnormalities: Hepatobiliary system. Specific Developmental Abnormalities: Eye, ear. Specific Developmental Abnormalities: Craniofacial (including nose and tongue).

Species: Hamster
Dose: 1750 MG/KG
Route of Application: Oral
Exposure Time: (7D PREG)
Result: Specific Developmental Abnormalities: Central nervous system.

Species: Hamster
Dose: 5250 MG/KG
Route of Application: Skin
Exposure Time: (7D PREG)
Result: Specific Developmental Abnormalities: Central nervous system.

CHRONIC EXPOSURE - REPRODUCTIVE HAZARD

Species: Rat
Dose: 36450 MG/KG
Route of Application: Oral
Exposure Time: (MULTIGENERATIONS)
Result: Effects on Newborn: Live birth index (# fetuses per litter; measured after birth). Effects on Newborn: Viability index (e.g., # alive at day 4 per # born alive). Effects on Newborn: Weaning or lactation index (e.g.,# alive at weaning per # alive at day 4).

Species: Rat
Dose: 400 MG/KG
Route of Application: Intraperitoneal
Exposure Time: (12D PREG)
Result: Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: Xn
Indication of Danger: Harmful.
R: 22 36/37/38
Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin.
S: 26 36
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Harmful.
Risk Statements: Harmful if swallowed. Irritating to eyes, respiratory system and skin.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

US Statements: Possible sensitizer. Target organ(s): Central nervous system. Liver.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.

WARRANTY
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

APPENDIX D

WARRANTY INFORMATION, SCHEDULED MAINTENANCE, AND REPAIRS

APD 2000® Warranty

Smiths Detection - Edgewood, Inc., (Smiths Detection) warrants that the hardware product you purchased from Smiths Detection or from an authorized Smiths Detection distributor, is free from defects in materials and/or workmanship under normal use consistent with the APD 2000® User's Manual during the warranty period. The warranty period is for one year commencing on the date of purchase. The date of the invoice for the hardware product is your proof of the date of purchase. This warranty extends only to you, the original purchaser. It is not transferable to anyone who subsequently purchases the hardware product. This warranty does not cover spares or consumable items such as filters and sieve packs.

Smiths Detection may make exceptions to the nontransferability on a case-by-case basis. You may request an exception in writing to the Smiths Detection Contracts Manager. Should such an exception be approved, you will be informed in writing. A copy of Smiths Detection's exception approval should be retained by both you, the original purchaser, and the subsequent purchaser.

During the warranty period, Smiths Detection will, at no additional charge, repair or replace defective parts with new parts or, at the option of Smiths Detection, serviceable used parts. All exchanged parts and products replaced under this warranty will become the property of Smiths Detection. If, after repeated efforts, Smiths Detection is unable to restore the product to good working order, the product will be replaced by a functioning unit.

This limited warranty does not extend to any product not purchased from Smiths Detection or from a Smiths Detection authorized distributor without written exception from Smiths Detection. This limited warranty also does not extend to any product that has been damaged or rendered defective (a) as the result of accident, misuse, or abuse; (b) by operation, maintenance, or storage outside the usage parameters stated in the APD 2000® Instruction Manual; (c) by the use of parts not manufactured or sold by Smiths Detection; (d) by modifications/alterations to the product or integration/interface with non-Smiths Detection product; or (e) as a result of service by anyone other than Smiths Detection. Smiths Detection is not responsible for damage to or the loss of any parts or accessories to this product.

EXCEPT AS EXPRESSLY SET FORTH IN THIS WARRANTY, SMITHS DETECTION EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SMITHS DETECTION DOES NOT WARRANTY, GUARANTEE, OR MAKE ANY REPRESENTATION REGARDING THE USE OF, OR THE RESULTS OF THE USE OF, THE PRODUCT IN TERMS OF CORRECTNESS, ACCURACY, RELIABILITY, CURRENTNESS, OR OTHERWISE. SMITHS DETECTION'S RESPONSIBILITY TO REPAIR OR REPLACE A DEFECTIVE PRODUCT IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE BUYER FOR BREACH OF THIS WARRANTY. SMITHS DETECTION EXPRESSLY DISCLAIMS ALL WARRANTIES NOT STATED IN THIS LIMITED WARRANTY. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY SMITHS DETECTION OR ITS DISTRIBUTORS, AGENTS, OR EMPLOYEES SHALL CREATE A WARRANTY OR IN ANY WAY INCREASE THE SCOPE OF THIS WARRANTY. ANY IMPLIED WARRANTIES THAT MAY BE IMPOSED BY LAW ARE LIMITED TO THE TERMS OF THIS EXPRESS WARRANTY. OTHER THAN THE LIABILITY SET FORTH ABOVE IN THIS EXPRESS WARRANTY, SMITHS DETECTION SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR ANY OTHER TYPES OF DAMAGES, LOSS, INJURY OR DEATH, OR FOR ANY LOSS OF DATA, USE, PROFITS, OR GOODWILL RESULTING FROM OR CAUSED BY THE USE, OPERATION, FAILURE, MALFUNCTION, OR DEFECT OF ANY ITEM DELIVERED.

How to Obtain Warranty, Maintenance, or Repair Service

You should return the APD 2000® to the manufacturer for maintenance whenever it continuously fails the confidence test. This can be arranged through purchase of a Maintenance Agreement from Smiths Detection. Maintenance actions not covered under a Maintenance Agreement will be invoiced in accordance with the work performed. Cost estimates for the work will be provided upon request.

To return your product for warranty repair, scheduled maintenance, or repair, please follow the steps below:

1. Call the Smiths Detection Customer Service Center at 410-510-9141. Prior to placing your call, please determine your product model and product serial number (located on a label directly behind the battery compartment), and prepare a detailed description of the problem.

2. A technician will contact you within 24 hours with either a corrective action you can perform or instructions to return the unit to Smiths Detection. If the technician determines that a hardware problem exists that is covered by the warranty and that your product must be returned for repair, you will be issued a Return Authorization Number (RAN). Be sure to record this number.

3. For warranty service, Smiths Detection will supply you with a prepaid shipping number so the product can be received at Smiths Detection the following business day. Smiths Detection must receive your call prior to 4 p.m. EST Monday through Friday to ensure next day delivery to Smiths Detection.

   For scheduled maintenance or repair service, the method of shipment is at your discretion.

4. It is your responsibility to download any data you have stored in memory before returning the product to Smiths Detection. Smiths Detection is not responsible for any damage to or loss of any data or other information stored on or in any part of any product returned to Smiths Detection for repair.

5. Be sure to remove all features, parts, options, alterations, and attachments not under warranty service prior to returning the Product to Smiths Detection. Smiths Detection is not liable for any loss of or damage to these items.

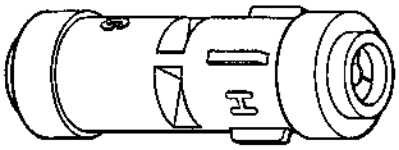
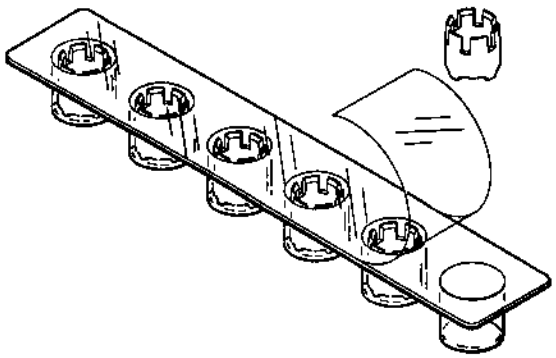
6. Package the unit in its original shipping container, and return the APD 2000® using the addresses below.

   Smiths Detection – Edgewood, Inc.
   2202 Lakeside Boulevard
   Edgewood, MD 21040

Smiths Detection will make every attempt to repair and/or replace the unit within a reasonable amount of time. If Smiths Detection determines that damage exists that is not covered by the warranty, you will be contacted to determine whether such damage should be repaired by Smiths Detection for a charge or whether the APD 2000® should be returned to you as received by Smiths Detection. Should you have an APD 2000® maintenance agreement, Smiths Detection will repair the unit under the maintenance agreement, if covered, with no additional charge to you. All repairs will be made in accordance with this warranty (or the maintenance agreement, if applicable).

APPENDIX E

APD 2000® SPARE PARTS

ITEM	PART NUMBER	UNIT OF ISSUE
Confidence Sample 	442-642	1
Filtered Nozzle Standoff 	2450204	6 filters per pack Min. order = 5 packs

For pricing and availability, please contact:

Smiths Detection – Edgewood, Inc.
2202 Lakeside Boulevard
Edgewood, Maryland 21040 USA

Phone: 410-510-9141
Fax: 410-510-9498

smiths

Smiths Detection

2202 Lakeside Boulevard
Edgewood, MD 21040, USA
T +1 410 510 9100 F: +1 410 510 9495
www.smithsdetection.com

CERTIFICATE OF CONFORMANCE

We hereby certify that on November 26, 2003, Smiths Detection, shipped 1 of item APD 2000 Rad Option part number 2428800-30 on Packing Slip # 3244 as specified on order number G00316 on Contract Number PO 03-15723 Purchase Order number N/A and that these items are in compliance with the drawing requirements and/or approved deviations and waivers.

T. Si 11/26/03

Quality Assurance Representative

Smiths

Smiths Detection - Edgewood, Inc.
2202 Lakeside Boulevard
Edgewood, MD 21040
Ph: 410.510.9100

RADIOACTIVE MATERIAL GENERAL LICENSE

This Smiths Detection device contains a 10 millicurie Nickel 63 radioactive source. The use of this device is regulated by General License Provisions of the U.S. Nuclear Regulatory Commission, Agreement State or Licensing State under requirements substantially the same as those outlined below.

CODE OF MARYLAND REGULATIONS C.22.d

(1) A general license is hereby issued to commercial and industrial firms and to research, educational and medical institutions, individuals in the conduct of their business, and State or local government agencies to own, receive, acquire, possess, use or transfer in accordance with the provisions of C.22 (d) (2), (3), and (4), radioactive material, excluding special nuclear material, contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface locations, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

(2) The general license in C.22 (d) (1) applies only to radioactive material contained in devices which have been manufactured and labeled in accordance with the specifications contained in a specific license issued by the Agency pursuant to C.28 (d) or in accordance with the specifications contained in a specific license issued by the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State, which authorizes distribution of devices to persons generally licensed by the U.S. Nuclear Regulatory Commission, an Agreement State or a Licensing State and the device has been manufactured and installed so that:

(i) The dose rate is the radiation beam of the device at 18 inches (0.46 meters) from the radiation source with the device shutter in the oper. position does not exceed 125 millirem (1.25 mSv) per hour; and

(ii) There is not an accessible airgap of 18 inches (0.46 meters) or greater between the radiation source and detector which would allow insertion of a 12 inch (0.30 meters) diameter sphere into the radiation beam [5].

(3) Any person who owns, receives, acquires, possesses, uses, or transfers radioactive material in a device pursuant to the general license in C.22 (d) (1).

(i) shall assure that all labels affixed to the device at the time of receipt, and bearing a statement that removal of the label is prohibited, are maintained theron and shall comply with all instructions and precautions provided by such labels;

(ii) shall assure that the device is tested for leakage of radioactive material and proper operation of the "on-off" mechanism and indicator, if any, at no longer than 6-month intervals or at such other intervals as are specified in the label, however,

(a) devices containing only krypton need not be tested for leakage of radioactive material, and

(b) devices containing only tritium or not more than 100 microcuries (3.7 MBq) of other beta- and/or gamma-emitting material or 10 microcuries (0.37 MBq) of alpha-emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose;

---

[5] Regulations under the Federal Food, Drug, and Cosmetic Act authorizing the use of radioactive control devices in food production require certain additional labeling thereon which is found in 21 CFR 179.21

RADIOACTIVE MATERIAL TRANSFER

CERTIFICATE NUMBER 1444

From:
Shipping Address
Smiths Detection
2202 Lakeside Boulevard
Edgewood, MD. 21040

Mailing Address
Smiths Detection
2202 Lakeside Boulevard
Edgewood, MD. 21040

To: Ft. Monmouth Fire Department
CTSC C/O David Parker
Bldg. 282, Fire Headquarters
Ft. Monmouth, NJ 07703

POC: David Parker
Hazmat Coordinator
732-532-3495

1. Material

A. Isotope: Ni-63

B. Device: APD 2000 (p/n 2428800-30)

C. Activity/Device: 10 mCi

D. Form: Sealed Source

E. Serial No: **3234**

F. Total Activity: 10 mCi

If more than one unit is being transferred, list serial numbers.

H. Reason (Circle One) (Initial Test) Re-Examination Repair

2. Monitoring Results

A. Method: Liquid Scintillation Instrument: Packard

B. Results: REMOVEABLE CONTAMINATION: less than 0.005 microCuries / 100 cm^2.

This package conforms to the conditions and limitations specified in 49 CFR 173.424 for excepted radioactive material and articles, UN2910.

3. Shipment

A. Mode: UPS

B. Special Labeling Requirements: None

4. Authorization

Released By (RSO Signature): [signature] Date: 11-26-03

Received By (RSO Signature): Date:

Assay Definition-

Assay Description:
APD2000 unit wipes

Assay Type: DPM (Single)
Report Name: APD 2000 Unit wipe
Output Data Path: C:\Packard\Tricarb\Results\Ivory\APD2000 unit wipes
Raw Results Path: C:\Packard\Tricarb\Results\Ivory\APD2000 unit wipes
Comma-Delimited File Name: C:\Packard\Tricarb\Results\Ivory\APD2000 unit wipes\APD 2000 unit wipe.1156

Count Conditions-

Nuclide: Ni63
Quench Indicator: tSIE/AEC
External Std Terminator (sec): 0.5 2s
Pre-Count Delay (min): 0.00
Quench Set:
Low Energy: Ni63
Count Time (min): 1.00
Count Mode: Normal
Assay Count Cycles: 1 Repeat Sample Count: 1
#Vials/Sample: 1 Calculate t Reference: Off

Background Subtract: On - 1st Vial
Low CPM Threshold: Off
2 Sigma t Terminator: Off

Regions	LL	UL	Bkg Subtract
A	0.0	68.0	1st Vial
B	0.0	0.0	1st Vial
C	0.0	0.0	1st Vial

Count Corrections-

Static Controller: On Luminescence Correction: Off
Colored Samples: Off Heterogeneity Monitor: Off
Coincidence Time (nsec): 18 Delay Before Burst (nsec): 75

Half Life-

Half Life Correction: Off

Regions	Half Life	Units	Reference Date	Reference Time
A				
B				
C				

Cycle 1 Results

S#	Count Time	DPM1	tSIE	MESSAGES	DATE	SMPL_ID	Eff nuclide
1	10.00	0	820.67	B	11/17/03	1st Vial Bkgnd	0.00
2	1.00	0	803.16	E	11/17/03	3209	91.70
3	1.00	1	809.51	E	11/17/03	3214	91.94
4	1.00	2	814.37	E	11/17/03	3225	92.13
5	1.00	5	797.55	E	11/17/03	3226	91.49
6	1.00	4	808.03	E	11/17/03	3231	91.89
7	1.00	3	794.55	E	11/17/03		

11/17/03

U. S. ARMY
COMMUNICATIONS – ELECTRONICS COMMAND
AND
FORT MONMOUTH RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
JPM NBC Contamination Avoidance Attn: SFAE-CBD-NBC-DR Bldg. 2700, Room 1AB112, Fort Monmouth	Ed Groeber	
	3. PERMIT NUMBER 220	4. EXPIRATION DATE 7 November 2005

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
a. Cesium-137	a. Cesium Chloride	a. 50.5 mCi

8. CONDITIONS:

a. The Cs-137 source listed in item 5 is used for research and development of RADIAC meters.

b. The authorized place of use is Building 2540, Charles Wood Area, Fort Monmouth or other areas as approved by the Fort Monmouth Radiation Safety Officer.

c. The Cs-137 source will be utilized under the supervision of the individual listed in Item 2. The Fort Monmouth Radiation Safety Officer (RSO) shall approve additional users. The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation of the source listed in Item 5.

APPROVED: **DATE: 7 November 2003**

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS – ELECTRONICS COMMAND
AND
FORT MONMOUTH RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 220	EXPIRATION DATE: 7 November 2005

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter and use a calibrated RADIAC meter to measure ambient radiation levels when using the Cs-137 source.

e. No unauthorized personnel are allowed in the controlled area when the source is in use.

f. The Cs-137 source may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

g. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6440 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the source listed in item 5, to include procuring additional sources.

h. The Cs-137 source shall be leak tested at an interval not to exceed 6 months.

i. The Fort Monmouth RSO or designee will survey the Cesium-137 source on a monthly basis.

j. The Cs-137 source is to be used IAW SOP RD-01, approved 7 November 2003, as provided with the Radiological Permit Application, dated 3 October 2003.

k. Unless specifically provided otherwise, the sources listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 3 October 2003, signed by Edward Groeber, Director, JPM NBC Contamination Avoidance Project Manager, Bldg. 2700, Fort Monmouth.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 3 Oct 03

___ **Initial Permit Application**
✓ **Application for Amendment to Permit No.** _____
✓ **Application for Renewal of Permit No.** 220

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: JPM NBC Contamination Avoidance Attn: SFAE-CBD-NBC-DR B.2700 Rm 1AB112, Ft. Monmouth

3. Radiation Area Supervisor: Name Ed Groeber

4. Radioactive Material:

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Cs 137	Cesium Chloride	Solid, 50.5
(FM ID # CS-06)		

5. Other Sources of Ionizing Radiation Producing Devices: None

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

1. Ed Groeber
2. Walt Swaylik
3. Jason Simpson

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :** Building 2540 exposure room and various military/R&D locations in New Jersey. (i.e., Ft. Monmouth, Ft. Dix, Lakehurst, Warren Grove)

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.** See attached SOP.

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)** Source (CS-06) is housed in a lead container when not in use. Remote handling tools will be used when removing source from the storage container. TLD(s) will be worn by authorized users when the source is in use.

10. **Signature of Director of Responsible Individual:**

Name: [signature] **Signature** EDWARD GROSSER

CECOM Directorate for Safety USE ONLY:

Instrumentation: Assigned by CECOM DS, use per SOP # RD-01

Dosimetry: Assigned by CECOM DS, use per SOP # RD-01

Reviewed by: Hugo Bianchi **Date:** 5 Nov 2003

Approved by: [signature] **Date:** 7 NOV 03

Radiological Permit Application Supplement

Name: Groeber (Last) EDWARD (First) OTTO (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
AFWL KIRTLAND AFB, NM	4 years	(YES) NO	(YES) NO
USACECOM FT. MON, NJ	18 years	(YES) NO	(YES) NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co^{60}	100K Curies	KAFB, NM	3 years	Research
Cs^{137}	UDM-1A	KAFB, NM	4 years	Research/ Testing
Co^{60}	Vault	FT. MONMOUTH	18 years	Testing
Cs^{137}	UDM-1A	FT. MONMOUTH	18 years	Testing

Radiological Permit Application Supplement

Name: Swaylik Walter
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FT. Monmouth	8 years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	3500 curies	EVANS Area	4 years	Development Testing
VDM-1 Cs-137	120 curies	EVANS Area	4 years	Development Testing
Am-241	microcuries	EVANS Area	6 years	Development Testing

Radiological Permit Application Supplement

Name: Simpson (Last) Jason (First) R (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM DS, FT. Monmouth, NJ	6 weeks	(YES) NO	(YES) NO
CECOM RSO Course	40 hours	YES (NO)	(YES) NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cs-137	~~136~~ 150 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration
Pu-239	1.66 E-03 mCi	BLDG 2540 FT. Monmouth	6 weeks	Calibration
X-Ray	300 KeV	BLDG 2540 FT. Monmouth	6 weeks	Calibration
various isotopes	Atomic Numbers 1-95, < 1 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration

SOP NUMBER: RD-01
EFFECTIVE DATE: 03 October 03
FILE NAME: RD-01.DOC
REVISION: B

Standing Operating Procedure for the Use of the Low Range Cesium-137 Source (CS-06)

1. **PURPOSE:** This document defines procedures for the safe use of the Cesium-137 Low Range Source (LRS), Fort Monmouth ID number CS-06, located in building 2540, Charles Wood Area.

2. **APPLICABILITY:** This procedure applies to all authorized users of the LRS.

3. **DISCUSSION:** The LRS contains 50.5 millicuries of Cesium-137 and is stored in a lead shield when not being used. Authorized users in building 2540 shall use the source for research and development (R & D) experiments. The source may be used at various military and R&D locations throughout New Jersey such as Ft. Dix, Lakehurst and Warren Grove. Prior coordination and approval from the installation Radiation Safety Officer (RSO) must be requested and received prior to using source CS-06 at any location other than Fort Monmouth. Coordination shall be made through the Fort Monmouth RSO.

4. **PROCEDURES:**

a. Pre-Requisites

(1) The LRS will be stored in an approved-posted "Radioactive Material Storage Area" when not in use. Prior to removing the LRS from the storage area it is the responsibility of the Radiation Area Supervisor to control access and inform personnel that **EATING, DRINKING, SMOKING, CHEWING OR APPLYING OF COSMETICS** is prohibited when the source is in use!

(2) Dosimetry is required when using the LRS. At a minimum, each individual participating in the experiment must wear a whole body Thermoluminescent Dosimeter (TLD) badge. The Radiation Area Supervisor or a member of the Directorate for Safety Radiological Engineering Division will assign dosimetry.

(3) A calibrated gamma survey meter is required to monitor the area radiation levels when using the LRS. Perform the following pre-operational checks prior to use:

(a) Valid calibration label
(b) Calibrated "ACTIVE"
(c) Battery checks

(d) Response Test with a radioactive source
(e) Physical damage

b. Source operation

(1) Remote handling tools must be used when transferring the LRS from the lead shield to the experimental setup location. **Direct handling of the LRS is not authorized.**

(2) Approval from the DS Radiation Safety Officer or designee must be obtained prior to using the LRS outside of the 2540 fenced-in compound.

(3) To minimize exposure to personnel the LRS must remain in the lead shield when not in use.

(4) Perform the required exposure/experiment.

NOTE

At no time will the source be left unattended while in use.

(5) Upon completion of the experiment transfer the LRS to the storage shield utilizing remote handling tool.

(6) Return the lead storage shield to the approved Radioactive Material Storage area.

(7) Monitor the storage area to ensure no elevated dose rates are present. If elevated readings are observed control access to the area and contact the Radiation Safety Officer or designee.

5. **EMERGENCY PROCEDURES:**

a. If the source is damaged or readings are observed above normal storage radiation readings, control access to the area, and contact the Radiation Safety Officer or designee immediately. Do not attempt to correct the problem yourself.

b. EMERGENCY PHONE NUMBERS:

Ft. Monmouth Radiation Safety Officer - X73112
Radiation Area Supervisor - X75159
Fire Department - 911
Police - 911
Ambulance - 911

Prepared By: _____ Date: 4 NOV 03
EDWARD GROEBER
RADIAC Product Manager

Reviewed By: _____ Date: 5 Nov 2003
HUGO BIANCHI
Health Physicist
CECOM DS

Approved By: _____ Date: 7 NOV 03
CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
JPM NBC CA Attn: SFAE-CBD-NBC-D Building 2700, Room 1AB112 Fort Monmouth, NJ 07703-5211	Ed Groeber	
	3. PERMIT NUMBER 87-02	4. EXPIRATION DATE 18 December 2005

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
Seifert Isovolt 320D X-Ray Machine	N/A	N/A

8. CONDITIONS:

a. The x-ray machine listed in Item 5 is used for research and development of RADIAC meters.

b. The authorized place of use is in the exposure room, Building 2540, Charles Wood Area, Fort Monmouth.

c. The x-ray machine shall be utilized under the supervision of the individual listed in Item 2. Additional users shall be approved by the Fort Monmouth Radiation Safety Officer (RSO). The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation of the device listed in Item 5.

APPROVED:

DATE: 18 December 2003

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 87-02	EXPIRATION DATE: 18 December 2005

CONDITIONS:

d. Authorized users shall wear a whole body dosimeter and use a calibrated RADIAC meter to measure ambient radiation levels when using the x-ray machine.

e. No unauthorized personnel are allowed in the same room when the x-ray machine is in use.

f. The x-ray machine may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

g. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6440 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in Item 5, to include procuring additional devices.

h. The x-ray machine shall be surveyed on a semi-annual basis by the CECOM Directorate for Safety.

i. The x-ray machine is to be used IAW SOP 10-11 Revision C, approved 18 December 2003, as provided with the Radiological Permit Renewal Application, dated 3 November 2003.

j. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 3 November 2003, signed by Edward Groeber, Director, JPM NBD CA.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 3 Nov 2003

___ **Initial Permit Application**
___ **Application for Amendment to Permit No.** _____
X **Application for Renewal of Permit No.** 87-02

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: JPM, NBC CA ATTN: SFAE-CBD-NBC-D Building 2700, Room 1AB112 Fort Monmouth, NJ 07703-5211

3. Radiation Area Supervisor: Name Edward O. Groeber

4. Radioactive Material: N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
	N/A	

5. Other Sources of Ionizing Radiation Producing Devices:

Seifert Isovolt 320HS X-Ray Machine

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

a. Bert Cummings	f. Hugo Bianchi	k. Ira A. Kaplowitz
b. Al Perella	~~g. Edward O. Groeber~~ HB	
~~c. Fred Gentner~~ HB	~~h. Walter Swaylik~~ HB	
~~d. Ed Bechtel~~ HB	i. Michael Basso	
e. Mary Chislett	j. Jason Simpson	

RADIOLOGICAL PERMIT APPLICATION

7. Location where source(s) of ionizing radiation will be used (Bldg, rm) :

Exposure Room, Building 2540, Fort Monmouth, New Jersey

8. Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.

See Attached SOP #10-~~01~~ 11 (CA)

X-Ray system will be used for research, development, and calibration.

9. Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)

Same as original RWP.

Item in paragraph 5 is to be used in the sheilded exposure room incorporating a series of safety interlocks on the X-Ray machine.

10. Signature of Director of Responsible Individual:

Name: EDWARD GROEBER **Signature**

CECOM Directorate for Safety USE ONLY:

Instrumentation:

Same as original RWP.

Beta/Gamma radiac meter provided by CECOM DS.

Dosimetry:

Same as original RWP.

Beta/Gamma Dosimetry provided by CECOM DS.

Reviewed by: Hugo Bianchi **Date:** 19 Nov 2003

Approved by: C J Kelly **Date:** 18 DEC 03

Radiological Permit Application Supplement

Name: Cummings (Last) Burt (First) C. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM Ft. Monmouth	1993-1998	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, Beta, Gamma	UP To 2000 Curies	Various Nuclear Power Facilities	1993-1992	Calibration
" " "	UP To 1100 Curies	CECOM DIRECTORATE FOR Safety	1992-Present	Calibration
X-Ray	3200 Isovolt X-ray machine	Ft. Monmouth	1992-Present	Survey & Use

Radiological Permit Application Supplement

Name: Perrella (Last) Albert (First) R (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM FT MONMOUTH	1993-1998	YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, beta, GAMMA	up to 160 curies	CECOM Directorate for SAFETY	1993-present	CALIBRATION
X-RAY	320D ISOVOLT X-RAY	Ft. MONMOUTH	1993-1998	SURVEY & USE

Radiological Permit Application Supplement

Name: Chislett (Last) Mary (~~First~~) L. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Ft. Monmouth - Bldg 2540 Directorate for Safety	Started - 3/21/00	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cesium	130 ci	Ft Monmouth Bldg. 2540 Rm 108	3 MO.	calibration
Americium-241	10 u ci	Ft Monmouth Bldg 2540 Rm 108	3 MO.	Calibration
PU-238	Calibration Standard	Ft Monmouth Bldg 2540 Rm 108	3 MO.	Calibration
PU-239	2 u ci	Ft Monmouth Bldg 2540 Rm 108	3 MO	Calibration

Radiological Permit Application Supplement

Name: Bianchi (Last) Hugo (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FSH, S.A. TX 91X Course	16 weeks	YES NO	(YES) NO
ORAU, Applied HP course	5	YES NO	(YES) NO
FSH, X-Ray Survey Techniques	2	YES NO	(YES) NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Atomic #s 1-83	4Ci - Ci range, sealed &	Ft. Mon.	13 yrs.	Survey, use and
and transuranics	unsealed sources	—	—	R&D.
X-Ray Machine Survey	320D Isovolt	Ft. Mon.	13 yrs.	Survey

Radiological Permit Application Supplement

Name: Basso Michael J
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth	40 Years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	5000 Curies	Evans	20 yrs.	Research + Development
Cs-137	120 Curies	Evans	20 yrs	"
X-ray	300 Kev	Evans	20 yrs	"
gamma neutron	1 MeV Accelerator	Evans	20 yrs	"

Radiological Permit Application Supplement

Name: Simpson (Last) Jason (First) R (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM DS, FT. Monmouth, NJ	6 weeks	(YES) NO	(YES) NO
CECOM RSO Course	40 hours	YES (NO)	(YES) NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cs-137	~~136~~ 150 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration
Pu-239	1.66 E-03 mCi	BLDG 2540 FT. Monmouth	6 weeks	Calibration
X-Ray	300 KeV	BLDG 2540 FT. Monmouth	6 weeks	Calibration
various isotopes	Atomic Numbers 1-95, < 1 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration

Radiological Permit Application Supplement

Name: Kaplowitz (Last) Ira (First) A (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM Fort Monmouth	2000-2003	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
X-Ray	320D Isovolt X-Ray	Ft. Monmouth	2000 - Present	R&D

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320D Isovolt X-Ray Machine

On this day: 18 Oct. 00, the following individual: Mary Chislett, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: Mary Chislett

Trainer signature: Stanley Kronenberg

STANLEY KRONENBERG Ph.D.
Research Physical Scientist

Enclosure 1

SOP NUMBER: ~~10-11~~ 20-05
EFFECTIVE DATE: 9FEB01 PJ 10/3/01
FILE NAME: SOP10-11.DOC
REVISION: ~~B~~ 1

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 2/01/02, the following individual:

JASON SIMPSON, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number ~~10-11~~. 20-05 JS 2/1/02

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: [signature]

Trainer signature: [signature]

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 26 Nov 03, the following individual: Hugo Bianchi, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: Hugo Bianchi

Trainer signature: Hugo Bianchi
ALT RM RSO

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 26 Nov 03, the following individual: Al Perrella, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: Al Perrella

Trainer signature: Hugo Bianchi
ALT FM RSO

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 26 Nov 03, the following individual: Burt Cummings, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: Burt Cummings

Trainer signature: Hugo Bianchi
ALT FM RSO

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 26 Nov 03, the following individual: Mike Basso, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: Michael Basso

Trainer signature: Hugo Blanchi
ALT PM R50

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: 26 Nov 03, the following individual: Ira Kaplowitz, completed subject training given by the Radiation Area Supervisor. Training included the following topics:

a. Authorized usage and operation of the x-ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature: I. Kaplowitz

Trainer signature: Hugo Bianchi
Alt. FM RSO

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

STANDARD OPERATING PROCEDURE
FOR THE USE OF THE
SEIFERT ISOVOLT 320HS X-RAY MACHINE

1. Purpose: To provide a procedure for use of the Seifert Isovolt 320HS X-Ray machine located in Building 2540.

2. Applicability: This procedure applies to authorized personnel of the CECOM Directorate for Safety (DS), Radiological Engineering Division, Building 2539 and JPM NBC CA, RADIAC Project Office, Building 2700.

3. Reference: Description and Operation Manual, Seifert Isovolt 320HS X-Ray Machine, dated 2/2000.

4. Discussion: The Seifert Isovolt 320HS X-Ray machine delivers X-Ray doses for discrete quantum energy groups between 14 keV and 249 keV. The selection of quantum energies is accomplished via NIST traceable filters. Closed circuit TV makes viewing of the exposure room possible from the operator's console.

5. Approved Operator: Before an individual is permitted to operate the X-Ray machine, he must be trained. Training shall be conducted by the Fort Monmouth RSO, his designee or the Radiation Area Supervisor. A copy of the training documentation is provided at enclosure 1.

6. Procedures:

a. *Pre-Operation Procedures and Safety Requirements.*

NOTE: AT NO TIME IS AN INDIVIDUAL ALLOWED TO USE THE X-RAY MACHINE WITHOUT APPROVAL OF THE RADIATION AREA SUPERVISOR!

(1) Report to the Radiation Area Supervisor for a briefing. Topics normally covered in the briefing will be proposed use of the X-Ray machine and its safe use.

(2) Users shall wear a TLD whole body dosimeter when operating the X-Ray machine. TLD badges will be assigned by the Radiation Area Supervisor or the CECOM DS Dosimetry Custodian.

(3) In addition, operators shall have an Eberline RO-2 or equivalent RADIAC meter on hand while using the X-Ray machine. Perform the following checks of the RADIAC meter prior to its use.

(a) Check the calibration label to ensure it is calibrated and possesses an "ACTIVE" sticker.

(b) Batteries checked.

(c) Visual inspection of meter.

(d) Passed a functional operation test with a radioactive source. The results of the source test shall be logged on a Response Test Worksheet/LOG, see enclosure 2.

(4) Secure the keys for the X-Ray machine and exposure room from the key control box.

(5) Visually check to ensure that the door interlocks are not bypassed.

(6) Ensure the exposure room is clear of personnel.

b. *Warm-up and Operation of the X-Ray Machine.*

(1) Ensure that water supply valves in the exposure room and the shop room are opened (i.e., lever is in-line with water flow).

(2) Turn on the main power switch located on the Seifert Control Console to "STAND-BY." The time and date will appear on the screen. Change if necessary.

(3) Turn X-Ray shutter power "ON" by turning the key then pressing the key switch inward.

(4) On the Seifert Control Console, turn the switch from the "STAND-BY" to "ON" position. **NOTE: If a maintenance advisory message appears, notify the radiation area supervisor before you proceed.** The last voltage that was used will appear on the screen. The system is now ready for operational "WARM-UP." Depending upon the voltage that was last ran and the time of non-operation, the screen will show either "MANUAL MODE" or "WARM-UP MODE" (i.e., if the desired voltage is $\leq$ half of the tube voltage last run or the non-operation interval is $\leq$ 8 hours, warm-up is not necessary and "MANUAL MODE" will appear). **NOTE: Ensure the water faucet symbol appears at the bottom right hand corner of the screen.**

(5) If the operating voltage to be used is the same as indicated on the screen, follow the prompts on the screen. If the voltage needs to be changed, press "F1" and set the desired voltage

using the keypad, then press "ENTER." After the voltage is set, press "START." The high voltage lamp and the high voltage symbol (i.e., yellow lamp) will start flashing on the display. The time remaining for warm-up, if required, will also be displayed on the bottom of the screen. Check to ensure that water is running from the cooling pipe into the shop sink.

(6) At the completion of the warm-up, the highlighted bar on the screen will display "WARM-UP COMPLETED" or any malfunction that has prevented the "WARM-UP" cycle to be completed. Clear the malfunction and start "WARM-UP" cycle again. If there are three (3) consecutive failures, you have to turn off the mains (power), remove the keys and notify the area supervisor that maintenance is required. **NOTE: Ensure that you use the constant current mode only, i.e., the "I" is displayed over the "F5"button.**

(7) At this time ensure that the "indicator lights" on the control console on the left and the "emergency stop" buttons are operational on both consoles.

(8) The operator can set the exposure distance to the desired value manually or use the track position controller (i.e., plug the table position controller power cord into the wall outlet).

(9) Manually select the desired filter that will produce the appropriate effective quantum energy and dose rate for your work.

(10) Upon leaving the exposure room, ensure that the door is closed before attempting to open the shutter.

(11) Ensure that the current (13 mA max) and time are set to the desired values. Note that the current will always be set to the maximum allowed for the selected voltage.

(12) Open the X-Ray shutter with the key switch (i.e., turn the key then press inward), then press the "START" button on the Seifert Control Console to initiate an exposure. **NOTE: When the Hi Voltage is "ON" and the shutter is closed, do not enter the exposure room without the RADIAC meter in hand, monitoring the radiation levels!**

(13) Press the "STOP" button to turn off the unit when the exposure is complete or use a pre-set time for exposure.

c. *Post-Operation Procedures.*

(1) Ensure the shutter is closed.

(2) Remove the key, turn the X-Ray power button to OFF.

(3) Turn off the main power switch on the Seifert Control Console and remove the key.

(4) If used, unplug the track position controller from the wall outlet in the exposure room.

(5) Secure the exposure room and lock the door.

(6) Return all keys to key control box.

(7) Return TLD(s) to the storage box.

(8) Return the RADIAC meter.

7. Emergency Procedures:

a. Report any radiation levels at the control console greater than 1.0 mR/hr. to the Radiation Area Supervisor.

b. EMERGENCY TELEPHONE NUMBERS:

Radiation Area Supervisor - X75159,
Fire Department - 911
Police - 911
Ambulance - 911
Directorate for Safety - X73112

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

Prepared by: _____ Date: 08 Dec 2003
IRA A. KAPLOWITZ
Project Leader
JPM NBC CA RADIAC Project Office

Reviewed by: _____ Date: 8 Dec 03
EDWARD O. GROEBER
Project Manager
JPM NBC CA RADIAC Project Office

Reviewed by: Hugo Bianchi Date: 18 Dec 03
HUGO BIANCHI
Health Physicist
Radiological Engineering Division
CECOM Directorate For Safety

Approved by: _____ Date: 18 DEC 03
CRAIG GOLDBERG
Chief, Radiological Engineering Division
CECOM Directorate For Safety

MEMORANDUM FOR TRAINING

Subject: Operator Training for the Seifert 320HS Isovolt X-Ray Machine

On this day: _____, the following individual:

_____, completed subject training given by,

_____. Training included the following topics:

a. Authorized usage and operation of the X-Ray machine.

b. A review and understanding of SOP Number 10-11.

c. Dosimetry and RADIAC meter usage.

d. Emergency procedures.

Trainee signature:_____

Trainer signature:_____

Enclosure 1

SOP NUMBER: 10-11
EFFECTIVE DATE: 3NOV03
FILE NAME: SOP10-11.DOC
REVISION: C

NOVEMBER/DECEMBER 2003

RESPONSE TEST WORKSHEET/LOG

Instrument: Eberline RO-2 **Serial Number:** 3511
Check Source SN: TH-15 **Isotope:** TH-232

RO-2 RESPONSE TEST LOG		
DATE	RESPONSE SAT/UNSAT	INITIALS
11/03/03		
11/04/03		
11/05/03		
11/06/03		
11/07/03		
11/10/03		
11/11/03		
11/12/03		
11/13/03		
11/14/03		
11/17/03		
11/18/03		
11/19/03		
11/20/03		
11/21/03		
11/24/03		
11/25/03		
11/26/03		
11/27/03		
11/28/03		

RO-2 RESPONSE TEST LOG		
DATE	RESPONSE SAT/UNSAT	INITIALS
12/01/03		
12/02/03		
12/03/03		
12/04/03		
[illegible]		
[illegible]		
12/09/03		
12/10/03		
12/11/03		
12/12/03		
12/15/03		
12/16/03		
12/17/03		
12/18/03		
12/19/03		
12/22/03		
12/23/03		
12/24/03		
12/25/03		
12/26/03		
12/29/03		
12/30/03		
12/31/03		

The Response Test Range is equal to ± 20% of the average value. Response test each instrument daily or prior to use, whichever is less frequent.

Enclosure 2

AMSEL-SF-RE (11-9h) 8 December 2003

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Annual Radioactive Source Inventory Notification

1. Reference AR 11-9, The Army Radiation Safety Program, 28 May 1999.

2. In accordance with the above reference, a physical inventory of radioactive sources on Fort Monmouth was completed on 15 November 2003. At enclosure 1 is a listing of radioactive sources that may present potential hazards to emergency responders. The listing of sources is presented by building number location.

3. Our POC is Mr. Nicholas Antonelli, Health Physics Technician, New World Technologies Contractor, at X75370.

4. CECOM Bottom Line: THE WARFIGHTER.

Encl
as

STEPHEN G. LaPOINT
Director
Directorate for Safety

DISTRIBUTION:
Chief, Physical Security, SELFM-PMO-S (Welsh)
Chief, Fire and Emergency Services Division, SELFM-PW-F
Chief, Garrison Safety Office, SELFM-SO
PAHC, ACC, ATTN: Ambulance Section

BLDG 2540 ROOM 106A

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
CS-100	JL SHEPHERD PANORAMIC	Cs-137	2.00E+02

BLDG 2540 ROOM 108

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
A-03	VEX	Am-241	9.90
A-04	VEX	AM-241	9.90
A-05	VEX	AM-241	9.90
A-08	M43A1 CHEM AGENT MON	Am-241	2.50E-01
A-13	M43A1 CHEM AGENT MON	Am-241	2.50E-01
A-27	M43A1 CHEM AGENT MON	Am-241	2.50E-01
CS-13	JL SHEPHERD 81-14Q	Cs-137	1.25E+05
CS-18	CC-775 CALIBRATOR	Cs-137	6.81E-02
H-38	ULTIMA GOLD STANDARD	H-3	1.29
N-17	ULTIMA GOLD STANDARD	Ni-63	1.0E-01
S-05	MODEL 3FIG	Sr-90	2.78E+01
S-19	CALIBRATION STANDARD	Sr-90	1.50E-02

BLDG 2540 ROOM 109 (Radwaste/Excess Storage)

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
A-47-62	SMOKE DETECTORS	Am-241	9.80E-02
CO-14	TYPE 7810 CAPSULE	Co-60	5.00E+01
H-35	COMPASSES	H-3	1.14E+03
H-36	COMPASS	H-3	1.20E+02
H-37	COMPASSES	H-3	1.20E+03
H-39	COMPASSES	H-3	5.71E+05
H-42	ISOLITE EXIT SIGNS	H-3	3.95E+04
K-03	MX-7338 (SN:K-4451)	Kr-85	5.00
K-05	MX-7338 (SN:K-376)	Kr-85	5.00
K-17	PLASMA BOARDS	Kr-85	9.04E+04
K-18	MX-7338 (SN:K-1013)	Kr-85	5.00
K-19	MX-7338 (SN:K-3351)	Kr-85	5.00
K-20	MX-7338 (SN:K-23807)	Kr-85	5.00
K-21	MX-7338 (SN:K-23871)	Kr-85	5.00
K-22	MX-7338 (SN:N-00659)	Kr-85	5.0E-01
MG-32	MIXED GAMMA SOURCE	Mixed	2.0E-02
MG-33	MIXED GAMMA SOURCE	Mixed	2.0E-02
MG-34	MIXED GAMMA SOURCE	Mixed	2.0E-02
N-14	ACADA	Ni-63	2.00E+01
R-01	RA-BE NEUTRON SOURCE	Ra-226	1.96E+01
S-46	AN/UDM-2 (SN:323)	Sr-90	1.80E+02
TH-12	SOURCES	Th-232	1.20E-02

TH-13	NIGHT VISION LENSES	Th-232	1.10E-01

BLDG 2540A EXPOSURE ROOM

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
CF-01	NUETRON SOURCE	Cf-252	2.97E+01
CS-05	LOW RANGE SRC SN:CS478	Cs-137	3.91
CS-06	SMALL CALIB SOURCE	Cs-137	6.40E+01
MG-21	JL SHEPHERD MOD 81-22	MIXED	2.84E+06

BLDG 116

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
N-16	VAPOR TRACER 2	Ni-63	8.00

BLDG 173

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
N-04	GAS CHROMATOGRAPH	Ni-63	1.50E+01
N-05	GAS CHROMATOGRAPH	Ni-63	1.50E+01
N-08	GAS CHROMATOGRAPH	Ni-63	1.50E+01
N-09	GAS CHROMATOGRAPH	Ni-63	1.50E+01
N-10	GAS CHROMATOGRAPH	Ni-63	1.50E+01
N-11	GAS CHROMATOGRAPH	Ni-63	1.50E+01

FD HQ

ID	NOMENCLATURE	ISOTOPE	MILLICURIE
N-18	APD2000 COMMERICAL CAM	Ni-63	1.0E+01

MCHL-HP (385-11a) 15 August 2003

MEMORANDUM FOR Patterson Army Health Clinic, Radiology, Ft Monmouth, NJ, 07703

SUBJECT: Health Physics Survey #03-116 of Picker General Purpose x-ray Machine (MMCN: H2372)

1. References:

a. AR 40-5, 15 October 1985, Preventive Medicine.

b. Title 21, Code of Federal Regulations, Part 1020, Performance Standards for Radiation Emitting Products.

c. TB MED 521, 15 June 1981, Management and Control of Diagnostic X-ray, Therapeutic X-ray, and Gamma-Beam Equipment.

2. On 11 August 2003, Health Physics survey 03-116 was conducted on the Picker General Purpose x-ray machine, MMCN: H2372, that is located at Ft. Monmouth Patterson Army Health Clinic. A copy of the survey worksheet is maintained in the health physics office at WRAMC and is available on request.

3. Findings: The radiation output is 20.93 mR/mAs at 24" TCD with techniques of 200 mA, 100 ms, and 90 kVp. The half value layer is 3.45 mm Al with a total filtration of 3.28 mm Al at the same technique.

4. Recommendations: None

5. Questions about this survey can be addressed to MAJ Ronnie Davis at (202)356-0058.

PAHC X-Ray Survey

Signature Authenticated by AprovelT
Approved by: DAVISRR,
on:9/2/2003 at 2:14:13 PM

Ronnie Davis
MAJ, MS
Chief, Technical Services Branch

CF:
Patterson Army Health Clinic, Medical Maintenance, Fort Monmouth, NJ 07703

MCHL-HP (385-11a) 15 August 2003

MEMORANDUM FOR Patterson Army Health Clinic, Radiology, Ft Monmouth, NJ, 07703

SUBJECT: Health Physics Survey #03-117 of GE General Purpose and Fluoro x-ray Machine (MMCN: H2391)

1. References:

a. AR 40-5, 15 October 1985, Preventive Medicine.

b. Title 21, Code of Federal Regulations, Part 1020, Performance Standards for Radiation Emitting Products.

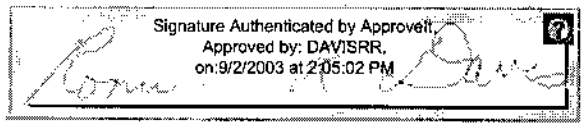
c. TB MED 521, 15 June 1981, Management and Control of Diagnostic X-ray,Therapeutic X-ray, and Gamma-Beam Equipment.

2. On 11 August 2003, Health Physics survey 03-117 was conducted on the Picker General Purpose and Fluoro x-ray machine, MMCN: H2391, that is located at Ft. Monmouth Patterson Army Health Clinic. A copy of the survey worksheet is maintained in the health physics office at WRAMC and is available on request.

3. Findings: The radiation output is 24.78 mR/mAs at 24" TCD with techniques of 250 mA, 100 ms, and 90 kVp. The half value layer is 3.41 mm Al with a total filtration of 3.21 mm Al at the same technique.

4. Recommendations: None

5. Questions about this survey can be addressed to MAJ Ronnie Davis at (202)356-0058.



Ronnie Davis
MAJ, MS
Chief, Technical Services Branch

CF:
Patterson Army Health Clinic, Medical Maintenance, Fort Monmouth, NJ 07703

MCHL-HP (385-11a) 15 August 2003

MEMORANDUM FOR Patterson Army Health Clinic, Radiology, Ft Monmouth, NJ, 07703

SUBJECT: Health Physics Survey #03-114 of Gendex Othoralix Panoramic x-ray Machine (MMCN: H0016)

1. References:

a. AR 40-5, 15 October 1985, Preventive Medicine.

b. Title 21, Code of Federal Regulations, Part 1020, Performance Standards for Radiation Emitting Products.

c. TB MED 521, 15 June 1981, Management and Control of Diagnostic X-ray, Therapeutic X-ray, and Gamma-Beam Equipment.

2. On 11 August 2003, Health Physics survey 03-114 was conducted on the Gendex Orthoralix Panoramic X-ray machine, MMCN: H0016, that is located at Ft. Monmouth Patterson Army Health Dental Clinic. A copy of the survey worksheet is maintained in the health physics office at WRAMC and is available on request.

3. Findings: The radiation output is 1.06 mR/mAs at 24" TCD with techniques of 10 mA, 12000 ms, and 74 kVp. The half value layer is 6.29 mm Al with a total filtration of 13.82 mm Al at the same technique.

4. Recommendations: None

5. Questions about this survey can be addressed to MAJ Ronnie Davis at (202)356-0058.

Ronnie Davis
MAJ, MS
Chief, Technical Services Branch

CF:
Patterson Army Health Clinic, Medical Maintenance, Fort Monmouth, NJ 07703

MCHL-HP (385-11a) 15 August 2003

MEMORANDUM FOR Patterson Army Health Clinic, Radiology, Ft Monmouth, NJ, 07703

SUBJECT: Health Physics Survey #03-115 of Philips Intra-Oral x-ray Machine (MMCN: H2573)

1. References:

a. AR 40-5, 15 October 1985, Preventive Medicine.

b. Title 21, Code of Federal Regulations, Part 1020, Performance Standards for Radiation Emitting Products.

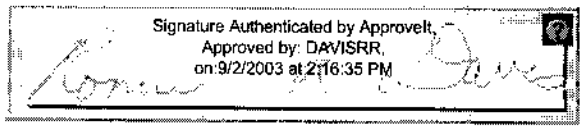
c. TB MED 521, 15 June 1981, Management and Control of Diagnostic X-ray,Therapeutic X-ray, and Gamma-Beam Equipment.

2. On 11 August 2003, Health Physics survey 03-115 was conducted on the Philips Dens O Mat intra-Oral x-ray machine, MMCN: H2573, that is located at Ft. Monmouth Patterson Army Health Dental Clinic. A copy of the survey worksheet is maintained in the health physics office at WRAMC and is available on request.

3. Findings: The radiation output is 12.20 mR/mAs at 24" TCD with techniques of 7 mA, 380 ms, and 70 kVp. The half value layer is 2.14 mm Al with a total filtration of 2.56 mm Al at the same technique.

4. Recommendations: None

5. Questions about this survey can be addressed to MAJ Ronnie Davis at (202)356-0058.



Ronnie Davis
MAJ, MS
Chief, Technical Services Branch

CF:
Patterson Army Health Clinic, Medical Maintenance, Fort Monmouth, NJ 07703

Model 101GT Radiation Survey Form

S/N GT-342

FINAL RADIATION SURVEY AT EXTERNAL SURFACE

The figure outlines the locations at which radiation levels must be measured when conducting the Final Radiation Survey on Model101GT system.

The measurements shall be taken with a test suitcase in the beam using the survey meter probe at a distance of 2 inches (5 cm) from the surface. The arrows pointing out from the letter symbols in the figure indicate the areas to be scanned.

The measurements at all accessible locations shall be less than .3 mR/hr using 0.1x scale.

Operating conditions for the survey 135 kV, 4 mA

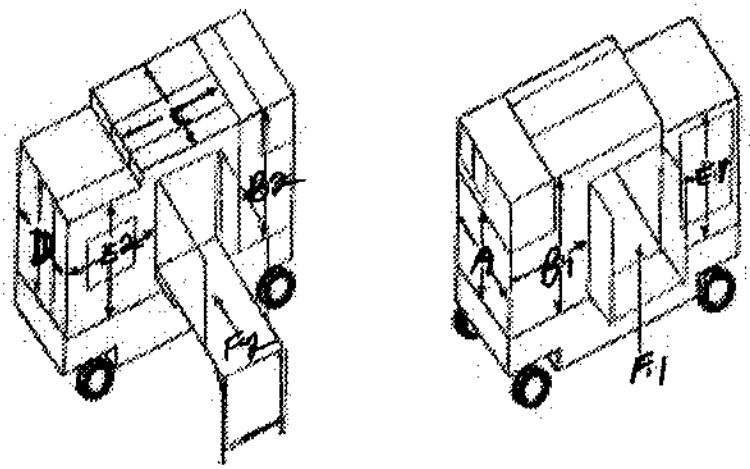


Figure 1. Model 101GT Radiation Survey Locations

CTSC X-Ray Survey

		Area to be Scanned
1.	A	.01
2.	B1	.01
3.	B2	.02
4.	C	.02
5.	D	.01
6.	E1	.01
7.	E2	.02
8.	F1	.04
9.	F2	.04

System Serial Number GT 342 Location MAIL SERVICES CTR. BLDG. 451

Date of Survey 12/10/03 HEAT Call ID Number 42523 FT. MONMOUTH NJ

Survey Meter Model LUDLUM 2402 Survey Meter SN 181511

Survey Meter Probe Type ENERGY COMPENSATED Probe SN 185916

Last Calibration Date 6/10/03 Battery Level O.K. ✓

Source Check Reading .2 MHR

FSE Signature Walter L. Brooks Customer Signature _____

5.0 RADIATION SURVEY

A formal radiation survey is required upon product installation, after a design change or whenever service involving the X-ray source, collimating device or shielding is performed. The purpose of this requirement is to monitor the continuing safety of the system and to help ensure that the installation continues to comply with all applicable standards for Cabinet X-ray Systems.

Radiation Surveys must be performed by qualified service personnel utilizing the appropriate calibrated equipment.

Contact AS&E for further information.

RADIATION DOSAGE COMPARISONS

AS &E patented Micro-Dose® X-ray scanning technology is safe for both operators and subjects. The charts below demonstrate that it would require many thousands of scans to equal the annual background radiation to which people are exposed just by living on earth.

	Average Radiation Dose per Year (millirem)	Subjects Equivalent Number of Scans Received
Background radiation, anywhere on earth	300	60,000
Cosmic rays	28	5,600
Round trip flight(New York – Los Angeles)	5	1,000
Radioisotopes in construction materials	3.6	720
Average cigarette smoke	1300	260,000
Radon gas	200	40,000
One dental X-ray	400	80,000
Additional dose in Denver, due to altitude	50	10,000
Domestic drinking water	3	600

References:

A Primer on Low-Level Ionizing Radiation and Its Biological Effects
Published for the American Association of Physicists in Medicine by the American Institute of Physics, AAPM Report No. 18.

Ionizing radiation Exposure of the Population of the United States
Published by the National Council on Radiation Protection and measurements, NCRP Report No. 93.

AMSEL-SF-RE (11-9h) 16 December 2003

MEMORANDUM FOR RECORD

SUBJECT: Physical Inventory of License Material

1. Reference
   a. U.S. Nuclear Regulatory Commission (NRC) Material License Numbers 29-01022-06, 29-01022-07, and 29-01022-14.

   b. AR 11-9, The Army Radiation Safety Program, 28 May 1999.

2. A semi-annual physical inventory of all radioactive sources which fall under the aforementioned licenses was completed on 15 December 2003.

3. ~~An annual physical~~ COPY OF THE inventory of all radioactive sources, located on Fort Monmouth, was ~~completed on 15 December 2003.~~ PROVIDED TO EMS, GARRISON SAFETY, AND PMO. (CY)

4. All radioactive sources were accounted for during this physical inventory. In addition, ionizing radiation producing devices were inventoried and accounted for.

5. Our POC is Mr. Nicholas Antonelli, Health Physics Technician, New World Technologies, at X75370.

Prepared by: Nicholas Antonelli Date: 16 Dec 2003
Nicholas Antonelli
Health Physics Technician
New World Technologies

Reviewed by: Hugo Bianchi Date: 18 Dec 2003
Hugo Bianchi
Health Physicist

Approved by: Craig Goldberg Date: 18 DEC 03
Craig Goldberg
Chief, Radiological
Engineering Division

Semi-Annual Inventory

Semi-Annual Radioactive Inventory (NRC License #29-01022-06 & -07, #29-01022-14) performed 12/15/03

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
A-03		VEX,(SN:3843)	Am-241	9.90	2540/108		U	29-01022-14	NO ASSY DATE
A-04		VEX,(SN:3841)	Am-241	9.90	2540/108		U	29-01022-14	NO ASSY DATE
A-05		VEX (SN:3842)	Am-241	9.90	2540/108		U	29-01022-14	NO ASSY DATE
A-08		M43A1 CHEM AGENT MON	Am-241	2.5E-01	2540/108	TEACHING AID-SAV AD	U	12-00722-06	SN: Z03-D-33711 Z03-C-
A-12		CALIBRATION STANDARD	Am-241	5.9E-03	2540/108	SN: S1285003-4	U	29-01022-06	ASSY 12/7/89
A-13		M43A1 CHEM AGENT MON	Am-241	2.5E-01	2540/108	TEACHING AID SAV AD	U	12-00722-06	SN: ZO3-D-33884 Z03-C
A-14		CALIBRATION STANDARD	Am-241	1.468E-05	2540/108 B	SN: R-452 (389-44-2)	U	29-01022-06	32,600 DPM, ASSY 10/15/
A-19		CALIBRATION SOURCE	Am-241	1.927E-05	2540/108 B	DD-408	U	29-01022-06	ASSY 1 MAY 95
A-20		CALIBRATION SOURCE	Am-241	1.883 E-5	2540/108	DD-409	U	29-01022-06	
A-21		CALIBRATION SOURCE	Am-241	1.804 E-5	2540/109	DD-410	U	29-01022-06	MOBILE LAB #2
A-22		CALIBRATION SOURCE	Am-241	1.905 E-5	2540/102	DD-411	U	29-01022-06	
A-23		CALIBRATION SOURCE	Am-241	1.903 E-5	2540/108	DD-412	U	29-01022-06	
A-24		UNQUENCHED STANDARD	Am-241	2.25E-05	2540/108	SN: 89	U	29-01022-06	10ML, ASSY 6 AUG 92
A-25		UNQUENCHED STANDARD	Am-241	2.25E-05	2540/108	SN: 90	U	29-01022-06	10ML, ASSY 6 AUG 92
A-26		UNQUENCHED STANDARD	Am-241	2.25E-05	2540/108	SN: 91	U	29-01022-06	10ML, ASSY 6 AUG 92
A-27		M43A1 CHEM AGENT MON	Am-241	2.5E-01	2540/108	SN: Z03-D-24825	U	12-00722-06	Z03-C-26015, TRANSFE
A-28	B	LIQUID ALPHA SOURCE	Am-241	9.00E-06	2540/102	20 ML OF LIQUID	U	29-01022-06	BRAC, ONE CONTAINER
A-30	B	SIMULATED LIQUID PLANCH	Am-241	1.9E-05	2540/108 B	53324-435	U	29-01022-06	BRAC, ASSY 1/24/97
A-31	B	SIMULATED LIQUID PLANCH	Am-241	1.8E-05	2540/109	53325-435	W	29-01022-06	RADWASTE
A-32	B	SIMULATED LIQUID PLANCH	Am-241	1.8E-05	2540/108 B	53326-435	U	29-01022-06	BRAC, ASSY 1/24/97
A-33	B	SIMULATED LIQUID PLANCH	Am-241	1.8E-05	2540/108 B	53327-435	U	29-01022-06	BRAC, ASSY 1/24/97
A-34	B	SIMULATED LIQUID PLANCH	Am-241	1.8E-05	2540/108 B	53328-435	U	29-01022-06	BRAC, ASSY 1/24/97
A-35	B	SIMULATED LIQUID PLANCH	Am-241	1.9E-05	2540/108 B	53323-435	U	29-01022-06	BRAC, ASSY 1/24/97
A-36	B	LIQUID ALPHA SOURCE	Am-241	8.9E-05	2540/102	100 ML LIQUID	U	29-01022-06	BRAC 54021B-435, ON
A-37	B	SIMULATED LIQUID PLANCH	Am-241	1.80E-05	2540/108 B	SN: 54072-435	U	29-01022-06	ASSY 6/18/97
A-38	B	SIMULATED LIQUID PLANCH	Am-241	1.80E-05	2540/108 B	SN: 54071-435	U	29-01022-06	ASSY 6/18/97
A-39	B	SIMULATED LIQUID PLANCH	Am-241	1.90E-05	2540/108 B	SN: 54070-435	U	29-01022-06	ASSY 6/18/97
A-40	B	SIMULATED LIQUID PLANCH	Am-241	1.90E-05	2540/108 B	SN: 54069-435	U	29-01022-06	ASSY 6/18/97
A-41	B	LIQUID ALPHA SOURCE	Am-241	4.56E-04	2540/102	SN: 54659-435	U	29-01022-06	ASSY 9/16/97, TWO CON
A-42	B	SIMULATED LIQUID PLANCH	Am-241	2.80E-05	2540/109	SN: 55432-435	W	29-01022-06	RADWASTE, PIECE BRO
A-43	B	SIMULATED LIQUID PLANCH	Am-241	2.70E-05	2540/108 B	SN: 55433-435	U	29-01022-06	ASSY 1/1/98
A-45		CHECK SOURCE	Am-241	6.19E-03	2540/102	SN:DW664	U	29-01022-06	
A-46		SMOKE DETECTOR	Am-241	9.9E-04	2540/109		W	29-01022-06	RADWASTE, PIECE BRO

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
A-47		SMOKE DETECTORS	Am-241	1.0E-01	2540/109	HONEYWELL	W	12-12267-02	135 REMOVED FROM BA
A-48		SMOKE DETECTORS	Am-241	9.9E-03	2540/109	LIFESAVER (KID	W	0915	11 REMOVED FROM BAS
A-49		SMOKE DETECTORS	Am-241	1.4E-02	2540/109	BRK ELECTRONI	W	86RAC	14 REMOVED FROM BAS
A-50		SMOKE DETECTORS	Am-241	1.0E-03	2540/109	FIRST ALERT	W	SA88	1 REMOVED FROM BASE
A-51		SMOKE DETECTORS	Am-241	1.6E-03	2540/109	DI-3 PYROTRON	W	005132	1 REMOVED FROM BASE
A-52		SMOKE DETECTORS	Am-241	1.6E-03	2540/109	DI-3 PYROTRON	W	005222	1 REMOVED FROM BASE
A-53		SMOKE DETECTORS	Am-241	2.6E-02	2540/109	HONEYWELL	W	12-15023-02E	26 REMOVED FROM BAS
A-54		SMOKE DETECTORS	Am-241	2.0E-01	2540/109	ADEMCO	W	12-15023-02E	26 REMOVED FROM BAS
A-55		SMOKE DETECTORS	Am-241	2.25E-02	2540/109	LIFESAVER	W	32-23858-01E	25 REMOVED FROM BAS
A-56		SMOKE DETECTORS	Am-241	2.0E-03	2540/109	BRK ELECTRONI	W	12-15023-02E	2 REMOVED FROM BASE
A-57		SMOKE DETECTORS	Am-241	9.0E-04	2540/109	SOUTHWEST LA	W	04-21357-0E	1 REMOVED FROM BASE
A-58		SMOKE DETECTORS	Am-241	1.0E-03	2540/109	FIREX	W	12-15537-02E	1 REMOVED FROM BASE
A-59		SMOKE DETECTORS	Am-241	2.0E-03	2540/109	FIREX C1-18	W	12-25537-02E	2 REMOVED FROM BASE
A-60		SMOKE DETECTORS	Am-241	3.0E-03	2540/109	FIREX MODEL 3	W	12-15557-02E	3 REMOVED FROM BASE
A-61		SMOKE DETECTORS	Am-241	2.0E-03	2540/109	FIREX FXB-1A	W	12-15537-02E	2 REMOVED FROM BASE
A-62		SMOKE DETECTORS	Am-241	6.0E-03	2540/109	FIREX FXB-1	W	12-15537-02E	6 REMOVED FROM BASE
C-02		SOURCE, NEN #048	C-14	5.0E-05	2540/108 B	SN: 048	U	29-01022-06	ASSY 8/82
C-07		ULTIMA GOLD STANDARD	C-14	6.04E-04	2540/109	SN: 9000239	U	29-01022-06	134,000 DPM PER VIAL, 1
C-10		UNQUENCHED STANDARD	C-14	1.01E-04	2540/109	SN: 406294	U	29-01022-06	C14 STANDARD, 15 ml.;
C-11		UNQUENCHED STANDARD	C-14	5.60E-05	2540/109	SN: 406295	U	29-01022-06	C14 STANDARD, 15 ml.
C-13	B	UNQUENCHED STANDARD	C-14	5.65E-05	2540/108	SN: 40	U	29-01022-06	C14 STANDARD, 15 ml.
C-14	B	UNQUENCHED STANDARD	C-14	5.85E-05	2540/108	SN: 169	U	29-01022-06	ASSAY 05 SEP 97
C-15	B	UNQUENCHED STANDARD	C-14	1.85E-05	2540/108	SN: 23	U	29-01022-06	ASSAY 16 FEB 98
C-16		PHOTOMETER	C-14	5.00E-02	2540/109	SN: 6730-00-PHO	U	29-01022-06	
C-17	B	UNQUENCHED STANDARD	C-14	1.35E-04	2540/102	6008512, SN:9	U	29-01022-06	ASSAY DATE 22 JUN 200
C-18	B	UNQUENCHED STANDARD	C-14	2.0E-06	2540/108	6018912, SN: 11	U	29-01022-06	ASSAY DATE 05 JUN 200
CF-01		NUETRON SOURCE	Cf-252	29.73	2540A/EXP	SN: 485	U	29-01022-06	MODEL # 50200
CL-01		UNQUENCHED STANDARD	Cl-36	2.25E-05	2540/108	SN: 89	U	29-01022-06	10ML, ASSY 7 AUG 92
CL-02		UNQUENCHED STANDARD	Cl-36	2.25E-05	2540/108	SN: 90	U	29-01022-06	10ML, ASSY 7 AUG 92
CL-03		UNQUENCHED STANDARD	Cl-36	2.25E-05	2540/108	SN: 91	U	29-01022-06	10ML, ASSY 7 AUG 92
CO-11	B	EPA LIQUID SOURCE	Co-60	2.41E-04	2540/102		U	29-01022-06	ONE AMPULE, ASSY 3/1/
CO-14		TYPE 7810 CAPSULE	Co-60	50	2540/109	SN: 4732-1	U	29-01022-06	SHEPHERD
CS-05		LOW RANGE SOURCE SN:	Cs-137	2.71	2540A/EXP	CECOM NV LAB	U	29-01022-06	ASSAY DATE- 3 FEB 200

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
CS-06		SMALL CALIBRATION SOU	Cs-137	50.5	2540A/EXP	SN:187350	W	29-01022-06	ASSAY DATE-18NOV69
CS-100		PANORAMIC IRRADIATOR	Cs-137	200	2540/106A	MODEL 142-10 S	U	29-01022-06	SOURCE TYPE 6810 CAP
CS-101		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2038	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-102		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2082	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-103		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2085	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-104		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2088	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-105		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2092	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-106		EXPLORANIUM KIT	Cs-137	2.5E-04	2540/108	SN: 2099	U	29-01022-06	ASSY. JAN 03; SOURCES
CS-11		CALIBRATION STANDARD	Cs-137	1.25E-05	2540/108	IPL SN:BB-960	U	29-01022-06	27,900 dpm ON 15NOV94
CS-12		CALIBRATION STANDARD	Cs-137	1.44E-05	2540/109	IPL SN:FF-049	U	29-01022-06	31,860 DPM ON 1 NOV 95
CS-13		SHEPHARD MODEL 81-14Q	Cs-137	1.25E05	2540/108	ACTY-DATE, Jun	U	29-01022-06	SN:7140, (5) SOURCES
CS-15	B	EPA LIQUID SOURCE	Cs-137	1.45E-04	2540/102		U	29-01022-06	ONE AMPULE, ASSY 1/23
CS-16	B	BETA SOIL PLANCHET	Cs-137	4.9E-07	2540/108	G-1	U	29-01022-06	
CS-18		CC-775 CALIBRATOR	Cs-137	6.81E-02	2540/108		U	29-01022-06	
CS-99Q	B	LIQUID BETA SOURCE	Cs-137	4.57E-04	2540/102	SN: 54660-435	U	29-01022-06	ASSY 9/16/97, 3 CONTAI
CS-99R	B	SIMULATED LIQUID PLANC	Cs-137	2.60E-05	2540/108 B	SN: 55434-435	U	29-01022-06	
CS-99S	B	SIMULATED LIQUID PLANC	Cs-137	8.50E-05	2540/108 B	SN: 55435-435	U	29-01022-06	ASSY 2/25/98
EPA-40		EPA QC SAMPLE	H-3	<3.0E-05	2540/109	H-3 IN WATER	U	29-01022-06	07 MARCH 1997
EPA-55		EPA QC SAMPLE	H-3	<3.0E-05	2540/109	H-3 IN WATER	U	29-01022-06	13 MARCH 1998
EPA-61		EPA QC SAMPLE	H-3	<3.00E-05	2540/109	H-3 IN WATER	U	29-01022-06	7 AUG 98
H-08		10 QUENCHED STANDARD	H-3	1.16E-03	2540/109	SN: 026	U	29-01022-06	
H-14		H3 GAS, OVERHOFF SOUR	H-3	<1E-06	2540/108	SN: 1563	U	29-01022-06	CALIBRATION STANDAR
H-16	B	ULTIMA GOLD STANDARD	H-3	1.14E-3	2540/109	SN: 05	U	29-01022-06	253,200 DPM PER VIAL, 1
H-19		UNQUENCHED STANDARD	H-3	1.30E-4	2540/109	SN: 406294	U	29-01022-06	H3 STANDARD, 15 ml.; L
H-20		UNQUENCHED STANDARD	H-3	1.30E-4	2540/109	SN: 406295	U	29-01022-06	H3 STANDARD, 15 ml.
H-23	B	UNQUENCHED STANDARD	H-3	1.20E-04	2540/109	SN: 040	U	29-01022-06	H3 STANDARD, 15 ml.
H-25	B	EPA LIQUID SOURCE	H-3	1.10E-04	2540/102		U	29-01022-06	ONE AMPULE, ASSY 3 JU
H-26	B	ULTIMA GOLD STANDARD	H-3	1.17E-03	2540/109	SN: 1	U	29-01022-06	260,700 DPM PER VIAL, 1
H-27		ULTIMA GOLD STANDARD	H-3	1.17E-03	2540/109		U	29-01022-06	260,700 DPM PER VIAL, 1
H-28	B	UNQUENCHED STANDARD	H-3	1.25E-04	2540/109	SN: 169	U	29-01022-06	ASSAY 05 SEP 97
H-29		WASTE	H-3	1.97E-01	2540/109	VIALS	W	29-01022-06	
H-30	B	UNQUENCHED STANDARD	H-3	3.86E-05	2540/109	SN: 23	U	29-01022-06	ASSAY 16 FEB 98
H-31		ULTIMA GOLD STANDARD	H-3	1.35E-03	2540/109	SN: 5	U	29-01022-06	259,600 DPM PER VIAL, 1

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
H-32		ULTIMA GOLD STANDARD	H-3	1.19E-03	2540/109	SN:20	U	29-01022-06	ASSAYED VALUE: 263,5
H-34		TRITIUM IN WATER	H-3	3.67E-02	2540/109		U	29-01022-06	
H-35		COMPASSES	H-3	1.14E+03	2540/109	NSN: 6605-00-15	U	29-01022-14	
H-36		COMPASS	H-3	1.90E02	2540/109	NSN: 6605-151-5	W	29-01022-14	
H-37		COMPASSES	H-3	6.0 E+02	2540/109		U	21-26460-02E	
H-38		ULTIMA GOLD STANDARD	H-3	1.29E-03	2540/108	SN: 27	U	29-01022-06	286,300 DPM PER VIAL, 1
H-39		COMPASSES	H-3	7.6 E+02	2540/109	NSN 6605-00-151	W	29-01022-14	FROM BLDG 116 (TURN-I
H-40	B	UNQUENCHED STANDARD	H-3	6.70E-05	2540/102	6008513, SN: 9	U	29-01022-06	ASSAY DATE 22 JUN 200
H-41	B	UNQUENCHED STANDARD	H-3	4.0E-06	2540/108	6018911, SN: 11	U	29-01022-06	ASSAY DATE 05 JUN 200
H-42		EXIT SIGNS	H-3	3.95 E04	2540/109	ISOLITE EXIT SI	W	37-00030-09G	SN: CIN144, AN1864, A70
H-43		ULTIMA GOLD STANDARD	H-3	1.29E-03	2540/108	SN: 10	U	29-01022-06	270,000 DPM PER VIAL, 1
K-03		MX-7338 (SN:K-4451)	Kr-85	1.70	2540/109	WITH METER #1	U	29-01022-14	
K-05		MX-7338 (SN:K376)	Kr-85	5.00	2540/109		U	29-01022-14	
K-17		PLASMA BOARDS	Kr-85	9.04E-03	2540/109	FROM MEYER C	W	29-01022-06	
K-18		MX-7338 (SN:K 1013)	Kr-85	5.00	2540/109	FROM EXCESS	U	29-01022-14	FROM DR. K TRAILER
K-19		MX-7338 (SN:K 3351)	Kr-85	5.00	2540/109	FROM EXCESS	U	29-01022-14	FROM DR. K TRAILER
K-20		MX-7338 (SN:K 23807)	Kr-85	5.00	2540/109	FROM EXCESS	U	29-01022-14	FROM DR. K TRAILER
K-21		MX-7338 (SN:K 23871)	Kr-85	5.00	2540/109	FROM EXCESS	U	29-01022-14	FROM DR. K TRAILER
K-22		MX-7338 (SN: N00659)	Kr-85	5.00	2540/109	FROM NAVSURF	U	29-01022-14	RECV'D FROM NAVSURF
M-01		MIXED WASTE	MIXED	1.82E-04	2540/109	MIXED WASTE	W	29-01022-06	
M-02		MIXED WASTE	MIXED	3.65E-04	2540/109	MIXED WASTE	W	29-01022-06	AM-241 AND CS-137, 405,
MA-01	B	MIXED CALIBRATION STD	MIXED	1.74E-07	2540/108 B	SERIAL #FSU-2	U	29-01022-06	
MG-03		MIXED GAMMA SOURCE	Eu-154	5.0E-03	2540/108 B	EU155,SB125.	U	29-01022-06	ASSY 9/1/88
MG-10		MIXED GAMMA SOURCE	MIXED	9.75E-2	2540/108	CAL SOURCE	U	29-01022-06	100ML SOLID IN 250 ML L
MG-11		MIXED GAMMA SOURCE	MIXED	1.00E-3	2540/108	CAL SOURCE 7/	U	29-01022-06	100GM SAND IN 250 ML L
MG-12		MIXED GAMMA SOURCE	MIXED	9.98E-2	2540/108	CAL SOURCE 7/	U	29-01022-06	90GM SHREDDED PAPE
MG-13	B	MIXED GAMMA SOURCE	MIXED	1.023E-3	2540/108	CAL SOURCE 7/	U	29-01022-06	500ML SAND IN 130G BE
MG-14	B	MIXED GAMMA SOURCE	MIXED	1.047E-3	2540/108	CAL SOURCE 7/	U	29-01022-06	500ML SOLID IN 130G BE
MG-15	B	MIXED GAMMA SOURCE	MIXED	9.58E-2	2540/108	CAL SOURCE 7/	U	29-01022-06	500ML VEGETATION IN 1
MG-16		MIXED GAMMA SOURCE	MIXED	1.003E-03	2540/108	CAL SOURCE	U	29-01022-06	100ML SOLID IN 250 ML L
MG-17		MIXED GAMMA SOURCE	MIXED	1.011E-03	2540/108	CAL SOURCE	U	29-01022-06	100GM SAND IN 250 ML L
MG-18		MIXED GAMMA SOURCE	MIXED	1.067E-03	2540/108	CAL SOURCE 4/	U	29-01022-06	90GM PAPER IN 250 ML L
MG-19	B	MIXED GAMMA SOURCE	MIXED	1.006E-03	2540/108	CAL SOURCE 7/	U	29-01022-06	500ML SOLID IN 130G BE

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
MG-20	B	MIXED GAMMA SOURCE	MIXED	1.008E-03	2540/108	CAL SOURCE 7/	U	29-01022-06	500ML SAND IN 130G BE
MG-21	B	J.L. SHEPHERD MODEL 81-	MIXED	2.841E+06	2540A/EXP	SN: 7149	U	29-01022-07	Co-60(2000,40,1Ci-total-2,
MG-22	B	MIXED GAMMA SOURCE	MIXED	3.65E-04	2540/108	SN: 57180-435	U	29-01022-06	
MG-23	B	MIXED GAMMA SOURCE	MIXED	3.65E-04	2540/108	SN: 57181-435	U	29-01022-06	
MG-24		MIXED GAMMA SOURCE	MIXED	2.02E-03	2540/108		U	29-01022-06	100 ML SOLID IN 250 ML
MG-25		MIXED GAMMA SOURCE	MIXED	2.11E-03	2540/108		U	29-01022-06	100 GRAMS SAND IN 250
MG-26		MIXED GAMMA SOURCE	MIXED	2.14E-03	2540/108		U	29-01022-06	90 GRAMS SHREDDED P
MG-27		MIXED GAMMA SOURCE	MIXED	2.01E-03	2540/108		U	29-01022-06	200 ML SOLID IN 250 ML
MG-28		MIXED GAMMA SOURCE	MIXED	2.13E-03	2540/108		U	29-01022-06	200 GRAMS SAND IN 250
MG-29		MIXED GAMMA SOURCE	MIXED	2.00E-03	2540/108		U	29-01022-06	300 ML SOLID UB 250 ML
MG-30		MIXED GAMMA SOURCE	MIXED	2.15E-03	2540/108		U	29-01022-06	300 GRAMS SAND IN 250
MG-31		MIXED GAMMA SOURCE	MIXED	1.73E-03	2540/108 B		U	29-01022-06	POINT SOURCE IN TAPE
MG-32		MIXED GAMMA SOURCE	MIXED	2.00E-2	2540/109	SN: 47E04-28	U	29-01022-06	EU-155/NA-22 ACRYLIC D
MG-33		MIXED GAMMA SOURCE	MIXED	2.00E-2	2540/109	SN: 47E04-31	U	29-01022-06	EU-155/NA-22 ACRYLIC D
MG-34		MIXED GAMMA SOURCE	MIXED	2.00E-2	2540/109	SN: 47E04-33	U	29-01022-06	EU-155/NA-22 ACRYLIC D
N-03		ULTIMA GOLD STANDARDS	Ni-63	8.84E-04	2540/109	SN: 9000414	U	29-01022-06	10 STANDARDS 196,290
N-04		GAS CHROMATOGRAPH	Ni-63	15	BLDG 173	HP MODEL 5890	U	29-01022-06	K1472
N-05		GAS CHROMATOGRAPH	Ni-63	15	BLDG 173		U	29-01022-06	K3559
N-06		NIST STANDARDS	Ni-63	2.70E-06	2540/108		U	29-01022-06	15 AUGUST 1995
N-07		ULTIMA GOLD STANDARDS	Ni-63	9.20E-04	2540/108	SN: 9000513	U	29-01022-06	10 STANDARDS 204,300
N-08		GAS CHROMATOGRAPH	Ni-63	15	BLDG 173		U	29-01022-06	U0323
N-09		GAS CHROMATOGRAPH	Ni-63	15	BLDG 173		U	29-01022-06	U0423
N-10		GAS CHROMA	Ni-63	15	BLDG 173		U	29-01022-06	U1560
N-11		GAS CHROMA	Ni-63	15	BLDG 173		U	29-01022-06	U1630
N-12		WASTE	Ni-63	7.20E-05	2540/102	VIALS	W	29-01022-06	
N-13		NIST QC	Ni-63	2.70E-06	2540/109	#1384, SET 4	U	29-01022-06	1 BOX, LIQUID SAMPLE V
N-14		ACADA	NI-63	20	2540/109	Y14-C-05905	U	P29-0130	TEMPORARY TO FT BEL
N-15		ULTIMA GOLD STANDARDS	Ni-63	1.20E-03	2540/108	SRS 60872 TO 6	U	29-01022-06	10 STANDARDS, TOTAL
* N-16		ION TRACK, VAPOR TRACE	Ni-63	8.0	BLDG 116	SN: 08014892086	U	15-5254	IN USE AT BUILDING 116
N-17		ULTIMA GOLD STANDARDS	Ni-63	0.1	2540/108	SRS 65589 TO 6	U	29-01022-06	10 STANDARDS, TOTAL
N-18		APD2000 D1829	Ni-63	10	FD HQ	MODEL 2428800-	U	MD-25-044-01	COMMERCIAL CAM APD
N-19		APD2000 D3234	Ni-63	10	FD HQ	MODEL 2428800-	U	MD-25-044-01	COMMERCIAL CAM APD
PU-04		AN/UDM-6 (SN:A1002)	Pu-239	1.4E-03	NRC CORP		U	29-01022-14	POC AL ZIRKES, 973-361-

* Note: Item removed to manufacturer for repair per Greg Kewereski

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
PU-05		EBERLINE 94-1 SN:A0026	Pu-239	1.4E-03	2540/108		U	29-01022-14	ASSY 9/28/64
PU-06		AN/UDM-6 (SN:A1003)	Pu-239	1.4E-03	2540/108		U	29-01022-14	ASSY 7/24/64
PU-09		AN/UDM-6 (SN:A1160)	Pu-239	1.4E-03	2540/108		U	29-01022-14	NO ATTENUATOR, ASSY
PU-10		CALIBRATION STANDARD	Pu-238	9.74E-05	2540/108 B	SN: R-451 (389-4	U	29-01022-06	ASSY 10/01/91
PU-18		WIDE AREA ALPHA SOURC	Pu-238	2.20E-05	2540/108	SN: GE-715	U	29-01022-06	ASSY 17 NOV 98
PU-19		WIDE AREA ALPHA SOURC	Pu-238	2.17E-04	2540/108	SN: GE-716	U	29-01022-06	ASSY 17 NOV 98
PU-20		WIDE AREA ALPHA SOURC	Pu-238	1.56E-03	2540/108	SN: GE-717	U	29-01022-06	ASSY 17 NOV 98
PU-21		WIDE AREA ALPHA SOURC	Pu-238	2.32E-05	2540/108	SN: GE-718	U	29-01022-06	ASSY 17 NOV 98
PU-22		WIDE AREA ALPHA SOURC	Pu-238	2.15E-04	2540/108	SN: GE-719	U	29-01022-06	ASSY 17 NOV 98
PU-23		WIDE AREA ALPHA SOURC	Pu-238	1.66E-03	2540/108	SN: GE-720	U	29-01022-06	ASSY 17 NOV 98
R-01		RA-BE NEUTRON SOURCE	Ra-226	1.96E01	2540/109		U	A29-10-01	
R-07		METER MOVEMENTS	Ra-226	<3.0E-03	2540/108	TRAINING AIDS-	U	A29-10-06	
R-13	B	EPA LIQUID SOURCE	Ra-226	6.00E-05	2540/102	1 BOX, 20 PIECE	U	A29-10-01	ONE AMPULE, ASSY 1/21
R-14		MOVEMENT FACES	Ra-226	2.56E-02	2540/109	9.49E-05Bq total	U	A29-10-06	
R-15		DIALS	Ra-226	1.56E-02	2540/109		W	A29-10-06	
R-16		DIALS	Ra-226	<1.0E-03	2540/109	4 DIALS FROM I	W	A29-10-06	FORT TILDEN DEMIL
R-17		MX-10838/PDR-27	Ra-226	7.00E-03	2540/109	LEAD WRAPPED	W	06-01450-47	RECEIEVED FROM UNIV.
S-01		AN/UDM-2 (SN:054)	Sr-90	1.65E02	NRC CORP	CECOM NV LAB I	U	29-01022-14	POC AL ZIRKES, 973-361-
S-03		AN/UDM-2 (SN:029)	Sr-90	1.65E02	NRC CORP	CECOM NV LAB I	U	29-01022-14	POC AL ZIRKES, 973-361-
S-05		MODEL 3FIG	Sr-90	2.78E01	2540/108		U	29-01022-14	ASSY 6/1/82
S-13		CHECK SOURCE	Sr-90	<2.0E-05	2540/108 B	NEN	U	29-01022-06	ASSY 9/83
S-14		SOURCE, NEN #046	Sr-90	5.0E-05	2540/108 B	SN: 046	U	29-01022-06	ASSY 7/82
S-19		CALIBRATION STANDARD	Sr-90	1.50E-02	2540/108	SN: R-454 (389-4	U	29-01022-06	33500 dpm MOBILE L
S-20	B	CALIBRATED STANDARD	Sr-90	1.8E-05	2540/109	SN: T-305	U	29-01022-06	40,100 DPM SR-90, ASSY
S-22		CALIBRATION STANDARD	Sr-90	1.39E-05	2540/102	IPL SN:FF-035	U	20-01022-06	30,960 DPM ON 15 NOV 9
S-27	B	EPA LIQUID SOURCE	Sr-90	3.10E-05	2540/102		U	29-01022-06	ONE VIAL, ASSY 6/25/96
S-28	B	SIMULATED LIQUID PLANC	Sr-90	1.9E-05	2540/108 B	53329-435	U	29-01022-06	BRAC, ASSY 1/24/97
S-29	B	SIMULATED LIQUID PLANC	Sr-90	1.8E-05	2540/108	53330-435	U	29-01022-06	BRAC
S-30	B	SIMULATED LIQUID PLANC	Sr-90	1.8E-05	2540/109	53331-435	W	29-01022-06	RADWASTE
S-31	B	SIMULATED LIQUID PLANC	Sr-90	1.8E-05	2540/108 B	53332-435	U	29-01022-06	BRAC, ASSY 1/24/97
S-32	B	SIMULATED LIQUID PLANC	Sr-90	1.8E-05	2540/108 B	53333-435	U	29-01022-06	BRAC, ASSY 1/24/97
S-33	B	SIMULATED LIQUID PLANC	Sr-90	1.8E-05	2540/108 B	53334-435	U	29-01022-06	BRAC, ASSY 1/24/97
S-34		SIMULATED LIQUID PLANC	Sr-90	1.4E-05	2540/108 B	53825A-435	U	29-01022-06	ASSY 4/30/97

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
S-35		SIMULATED LIQUID PLANC	Sr-90	1.4E-05	2540/108 B	53826A-435	U	29-01022-06	ASSY 4/30/97
S-36	B	SIMULATED LIQUID PLANC	Sr-90	1.80E-05	2540/108 B	SN: 54076-435	U	29-01022-06	ASSY 6/18/97
S-37	B	SIMULATED LIQUID PLANC	Sr-90	1.70E-05	2540/108 B	SN: 54075-435	U	29-01022-06	ASSY 6/18/97
S-38	B	SIMULATED LIQUID PLANC	Sr-90	1.80E-05	2540/108 B	SN: 54074-435	U	29-01022-06	ASSY 6/18/97
S-39	B	SIMULATED LIQUID PLANC	Sr-90	1.80E-05	2540/108 B	SN: 54073-435	U	29-01022-06	ASSY 6/18/97
S-46		AN/UDM-2 (SERIAL #355)	Sr-90	1.80E02	2540/109	NSN:6665-00-179	U	29-01022-14	
S-49		NIST SR-90 SOURCE	Sr-90	8.108E-5	2540/108 B	RS NO. 00-0124	U	29-01022-06	ASSY 1 SEP 00
SET-01		CHECK SET	MIXED	<1.0E-02	2540/108	NEN#14G	U	29-01022-06	
SET-04		BETA CHECK SET	MIXED	<1.0E-02	2540/108	ICNC #12	U	29-01022-06	
SET-09		BETA REFERENCE SET	MIXED	<1.0E-02	2540/108	SN: 076140	U	29-01022-06	
SET-11		SOURCE TRAINING SET	MIXED	1.05E-02	KOREA	LAO YUNG-SAN,	U	29-01022-06	SEE DATA SHEET FOR LI
SET-12		SOURCE TRAINING SET	MIXED	1.05E-02	2540/108	10 SOURCES	U	29-01022-06	SEE DATA SHEET FOR LI
SET-13		SOURCE TRAINING SET	MIXED	1.05E-02	2540/108	10 SOURCES	U	29-01022-06	SEE DATA SHEET FOR LI
T-01		TRAINING AIDS	MIXED		2540/108	MANTELS, LAW		29-01022-06	18 LANTERN MANTELS (
TC-01		BETA CALIBRATION SOUR	Tc-99	1.53E-05	2540/108	4 SOURCES	U	29-01022-06	
TH-02		CHECK SOURCE IN PLASTI	Th-232	2.94E-03	2540/108	KRONENBERG	U	29-01022-06	
TH-03		CHECK SOURCE IN PLASTI	Th-232	2.94E-03	2540/108	KRONENBERG	U	29-01022-06	
TH-11		CHECK SOURCE	Th-232	1.50E-02	2540/109	250 PCS IN BOX	U	29-01022-06	ORIGINAL 1400 PCS 60n
TH-13		NIGHT VISION LENSES	Th-232	1.10E-01	2540/109		W	A29-10-12	
TH-14		VDR-2 CHECK SOURCE	Th-232	<4.0E-06	2540/109	2 SOURCE	W	29-01022-14	SOURCE REMOVED FRO
TH-15		CHECK SOURCE	Th-232	<2.0E-06	2540/108	SOURCE IN PLA	U	29-01022-06	TAKEN FROM TH-11 SOU
TH-16		CHECK SOURCE	Th-232	<2.0E-06	2540/109	VDR-2 SOURCE	U	29-01022-06	SOURCE COVER RIPPE
U-02		CALIBRATED STANDARD	U-238	1.23E-06	2540/108 B	SN: T-303	U	29-01022-06	2,740 DPM, 1 MAY 92
U-03		CALIBRATED STANDARD	U-238	1.23E-06	2540/108 B	SN: T-304	U	29-01022-06	2,740 DPM, 1 MAY 92
U-04		CALIBRATION SLAB	U-238	<1.0	2540/108	SN: 1084/92	U	29-01022-06	
U-05		LASER TUBE	U-238	N/A	2540/109	SN:7675	W	N/A	MODEL: CW-302 (RUBY L
X-15		INDUSTRIAL X-RAY UNIT	N/A	N/A	2540A/EXP	CECOM NV LAB	U	N/A	MODEL:ISOVOLT 320D
X-19		X-RAY,RAD MOBILE TO 299	N/A	N/A	1075	SN: C3874	U	N/A	MODEL: 46-329267GI
X-20		X-RAY, RF, ABOVE 500 MA	N/A	N/A	1075	SN: H2391	U	N/A	MODEL: MVP60
X-21		X-RAY,RADIO, ABOVE 500	N/A	N/A	1075	SN: H2378	U	N/A	MODEL: BCX 625
X-22		X-RAY, R/F ABOVE 500 MA	N/A	N/A	1075	SN: H2372	U	N/A	MODEL: VECTOR 80
X-23		X-RAY, MAMMOGRAPHY	N/A	N/A	1075	SN: C3940	U	N/A	MODEL: ZFOODMR H240
X-24		X-RAY, DENTAL INTRA-OR	N/A	N/A	814 ROOM	SN: 9220224	U	N/A	MODEL: ORALIX 70, PHIL

ID	STATUS	NOMENCLATR	ISOTOPE	MILLICURIE	LOCATION	COMMENTS	COI	LIC_DARA	COMMENT2
7		X-RAY, DENTAL PANO STA	N/A	N/A	814 ROOM	SN: 773002	U	N/A	MODEL: GENDEX ORTH

AMSEL-SF-RE 19 March 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 11 March 2004

1. In accordance with Army Regulation (AR) 11-9 and U. S. Nuclear Regulatory Commission (NRC) licensing requirements, the second FY04 quarterly meeting of the Fort Monmouth Radiation Safety Committee (FMRSC) convened at 1005 hours on 11 March 2004, at the CECOM Directorate for Safety (DS), Building 2539.

2. Attendance.

a. Members Present:

Mr. Craig Goldberg, CECOM DS Radiological Engineering Division (AMSEL-SF-RE)/Chairman
Mrs. Alice Kearney, AMSEL-SF-RE/Recorder
Mr. Walter Swaylik, Research Development and Engineering Center, Intelligence Information Warfare Directorate (AMSEL-RD-IW-EC) (Alternate)
Ms. Wanda Green, U.S. Army Garrison Fort Monmouth (USAG-FM), Directorate of Public Works (DPW) Environmental Office (SELFM-PW-EV) (Primary)
Ms. Gail Paustian, USAG-FM Directorate for Public Safety, OSHA Management Office (SELFM-SO) (Alternate)
Mr. Charles Goebel, Chenega Technology Services Corporation (CTSC), (Primary)
Mr. Greg Kucharewski, CTSC (Alternate)
CPT Aaron Miallus, U.S. Army Medical Command-Preventive Medicine (MCXS-PVM), Patterson Army Health Clinic (PAHC)
SPC Seth Odette, MCXS-PVM, PAHC

b. Visitor.

Mr. Kenneth Proctor, Fort Monmouth Microwave Safety Officer (MSO), AMSEL-SF-RE.

3. Old Business.

a. Review/approval of the 18 December 2003 FMRSC minutes. The minutes of the 18 December 2003 FMRSC meeting, dated 31 December 2003, were reviewed and approved unanimously as written.

ACTION: None.

b. Smoke Alarms on Fort Monmouth. Although smoke detectors containing Americium-241 are routinely turned in to AMSEL-SF-RE for controlled disposal, the Committee recommended that the DPW demolition checklist also be annotated with information regarding smoke detectors. Ms. Wanda Green, SELFM-PW-EV RSC Member, assured the Committee that the appropriate guidance regarding smoke alarms has been included in the demolition checklists maintained by DPW.

ACTION: None.

c. Written Policy for Outdoor Freespace Radiation Tests at Fort Monmouth. FMRSC members were tasked to review the policy and provide comments to the Committee Recorder NLT 31 January 2004. One response was received, from Mr. Gregory Kucharewski, the CTSC Alternate RSC member, who recommended that some type of temporary permit be required for any outdoor freespace radiation testing, and that said permit be posted at the worksite. The Committee approved a motion to have the OSHA Management Office incorporate this aspect into the policy, and to move forward with the staffing of this policy so that it can be distributed to all activities at Fort Monmouth. SELFM-SO will notify the RSC Chairman when the policy has been approved and distributed.

ACTION: SELFM-SO will staff the Policy and notify the RSC Chairman when the policy has been approved and distributed.

d. CECOM Regulation (CECOM-R) 385-XX. FMRSC members were tasked to review the regulation and were requested to provide comments by 20 February 2004. No responses were received by that date. All members indicated their concurrence with the regulation as written. The FM MSO will send the regulation forward for staffing by 16 April 2004 and will report the progress to the Committee.

ACTION: AMSEL-SF-RE will send CECOM-R 385-XX forward for staffing no later than 16 April 2004.

e. Radiation Protection and Medical Physics Survey-Radiation Protection Program and Mammographic, PAHC. PAHC was surveyed by North Atlantic Regional Medical Command on 8-11 September 2003 to evaluate the Radiation Protection Program and Mammographic.

There was no representation of PAHC at the previous meeting, therefore a discussion of the survey results was tabled until this meeting. CPT Miallus stated that the results indicated that PAHC had not passed the initial inspection due to a mammographic equipment malfunction, which did not involve radiation exposure, and once the equipment was adjusted PAHC was in compliance.

ACTION: None.

f. Disposal of Low Level Radioactive Materials. DS shipped five 55-gallon drums and one 30-gallon drum consisting of 6 EXIT signs containing tritium, and 700 smoke detectors containing Americium-241, which had been stored at Building 2540, to Wright Patterson Air Force Base (AFB) for disposal/recycling. As of the December meeting, the items were delivered to Wright Patterson AFB but we had not received a shipping manifest. The shipping manifest was obtained on 13 January 2004. At that time DS was notified that only 401 of the 700 smoke detectors actually contained Am-241. As a result of this, the RE Lab has initiated a new policy that requires the Lab manager to validate that smoke alarms contain radioactive material prior to shipping them out for disposal/recycling.

ACTION: None.

g. Replacement of Alternate Member for AMSEL-RD-IW-EC. Walter Swaylik has been appointed as a replacement for Ted Do. His appointment memorandum was approved/signed by the FM Garrison Administrative Officer on 19 December 2003. A new FMRSC membership appointment memorandum was approved by the FM Garrison Administrative Office on 9 January 2004 and provided to FMRSC members.

ACTION: None.

h. Administrative Radiation Dose for Craig Goldberg. The record of occupational exposure to radiation was incorrect for Mr. Craig Goldberg during 6 July to 4 October 2003, as he did not wear dosimetry issued by CECOM during this period while participating in a RADCON Exercise. The FMRSC Recorder/FM Dosimetry Custodian submitted a request to U.S. Army Ionizing Radiation Dosimetry Center (AIRDC), Redstone Arsenal, AL, on 24 December 2003 to assign an administrative dose to Mr. Goldberg

for that period. An administrative dose was issued on 22 January 2004.

ACTION: None.

i. 2003 Annual Radiation Safety Training. All personnel received annual radiation safety training as of 9 January 2004. Records are being maintained by the dosimetry custodian.

ACTION: None.

j. Dosimetry for CTSC Personnel. A review of the radiation exposure records since the establishment of the personal dosimetry program at CTSC in 2000 indicated only occasional, very minimal, exposures commensurate with the employees' duties. As a result, it was recommended during the December 2003 RSC meeting that CTSC RSC members discuss the option of discontinuing personal dosimetry with CTSC employees. Mr. Kucharewski, CTSC Alternate RSC Member, informed the Committee that he obtained 100% concurrence from employees to discontinue personal dosimetry at buildings 451 and 1005, while maintaining the area badges on the X-Ray machines. The FM Dosimetry Custodian will discontinue employees' dosimetry beginning with the next badging cycle, which begins on 4 April 2004.

ACTION: The FM Dosimetry Custodian will take the necessary actions to discontinue personal dosimetry for CTSC employees, NLT 9 April 2004.

4. New Business. Radiation Protection Program:

a. Automated Dosimetry Reports, 5 October 2003 - 3 January 2004.

(1) **CECOM.**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(2) **Chenega Technology Services Corporation (CTSC).**

(a)	Collective exposure.....	0.022 REM
(b)	Average rem/quarter.....	0.002 REM
(c)	Highest exposure.....	0.012 REM

(3) **EOD.**

(a)	Collective exposure.....	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

(4) **Patterson Army Health Clinic (PAHC).**

(a)	Collective exposure	0.000 REM
(b)	Average rem/quarter.....	0.000 REM
(c)	Highest exposure.....	0.000 REM

b. Health Physics Surveys. Required health physics surveys were completed for the months of January and February 2004, with no unusual findings. The surveys for March 2004 will be conducted prior to 31 March 2004. Any unusual findings will be reported at the next RSC meeting.

ACTION: None.

c. Nuclear Regulatory Commission (NRC) License Actions.

(1) NRC License Number 29-01022-14 (CECOM worldwide): Army Radiation Authorization Numbers A43-0150-DPG and A63-0151-IRAQ were issued to Dugway Proving Ground, UT, and the Combined Joint Task Force 7, Iraq, respectively, for the possession and use of the Cobalt-60 version of the Science Applications International Corporation Mobile Vehicle and Cargo Inspection System.

(2) NRC License Number 29-01022-14 (CECOM Worldwide): Region I, NRC, King of Prussia, PA, approved CECOM's renewal application for a radioactive materials license issued for the life cycle management of commodities containing radioactive material. This NRC license amendment is a complete revision of our license, reflects our current radiation safety program and authorizes CECOM, to the Year 2013, to field, manage and utilize commodities containing radioactive material worldwide.

(3) NRC License Number 29-01022-14 (CECOM worldwide): We performed Independent Government Testing of the Lensatic Compass, NSN 6605-01-196-6971, under Contract Number DAAB07-99-D-D808, of five each, Lensatic Compass, from Lot Numbers 04-01-02, 04-02-03, and 04-03-04. The following tests were performed on the above completely assembled units as stipulated in MIL-PRF-10436M, 15 September 1998, Performance Specification, Compass, Magnetic, Unmounted: Lensatic, Luminous, 5 Degree and 20 MIL Graduations, with Carrying Case: Contamination (paragraph 4.4.3.2.1), Diffusion (paragraph 4.4.3.2.2), Luminosity (paragraph 4.4.1.9.4.1 - photometric) and Water Leakage (paragraph 4.4.2.1). Results of the Contamination, Diffusion, Luminosity and Water Leakage tests for all of the above Lot Numbers were acceptable. The Logistics Manager of the contract and the Contractor were notified of the acceptable results.

ACTION: None.

d. Radiation Work Permits (RWP).

(1) RWP #180F was issued to Chenega Technology Service Corporation on 15 January 2004. The RWP authorizes mailroom personnel to use the SCANMAX and AS&E x-ray detection systems to image incoming mail and packages at Fort Monmouth. In addition, the RWP authorizes personnel to monitor for illegal drugs and explosives using the GE/ION TRACK VaporTracer 2 detector. The VaporTracer 2 detector contains a radioactive source and requires an annual leak test. The RWP expires on 15 January 2006.

(2) RWP #250 was issued to Chenega Technology Service Corporation on 19 February 2004. The RWP authorizes security personnel to monitor incoming vehicles for illegal drugs and explosives using the GE/ION TRACK VaporTracer 2 detector. The VaporTracer 2 detector contains a radioactive source and requires an annual leak test. The RWP expires on 19 February 2006.

(3) RWP #270 was issued to the CECOM Directorate for Safety on 3 March 2004. RWP #270 authorizes calibration personnel to use all of the calibration sources in building 2540 that are needed to calibrate various RADIAC instruments. This RWP replaced two permits that were about to expire, #139 and #160. This RWP expires on 3 March 2006.

ACTION: None.

e. National Voluntary Laboratory Accreditation Program (NVLAP). The U.S. Army Radiation Standards & Dosimetry Laboratory at Redstone Arsenal, AL, has received it's NVLAP Certificate of Accreditation for 2004. The FM Dosimetry Custodian maintains this Certificate as part of the official dosimetry program records.

ACTION: None.

f. Energy Savings Performance Contract (ESPC), Building 2700. As part of the ESPC, as directed by Mr. James Ott in a memorandum dated 30 January 2004, replacement of lighting fixtures, emergency lighting, and exit signs was scheduled to occur starting on 17 February and continue until 31 October 2004, and will affect all of Building 2700. The replacement of the lighting is necessary to provide energy efficient lighting upgrades throughout the facility. Ms. Wanda Green, the DPW RSC member, was contacted on 2 February to ensure she had been informed of the ESPC, and to make sure that personnel involved in any exit sign replacements are aware that H3 exit signs (if removed) should not be disposed of through normal means, but should be collected and turned into this Directorate for controlled disposal. Ms. Green confirmed at this meeting that Mr. Harold Hornung, Directorate for Installation Logistics, was aware of the need to ensure the correct disposal of H3 signs which are removed during the execution of the ESPC. The RSC Recorder has contacted Mr. Hornung, DPW Environmental Field Supervisor, to inform him to contact this office if his organization needs any further assistance with this tasking. NOTE: Per electronic mail received on 18 Mar 2004 from Mr. Joseph Fallon, DPW Lead Environmental Protection Specialist, the Project Managers for the ESPC have informed him that the contractor will not be removing exit signs that contain tritium.

ACTION: None.

g. Appointment of New Members for PAHC. CPT Miallus, the former Primary RSC member, and SGT John Castillo, Alternate member, have both separated from Fort Monmouth. SPC Seth Odette will be the new RSC Primary member, and SFC Debra Eaton will serve as Alternate. PAHC will appoint both SPC Odette and SFC Eaton on orders. The FMRSC Recorder will initiate a new appointment memorandum for the PAHC members, as well as revise

the FMRSC Committee Membership, for approval/signature of the FM Garrison Administrative Officer. **NOTE: The FMRSC Recorder has obtained approval/signature on a new appointment memorandum for the new PAHC members, as well as a revised FMRSC appointment memorandum, dated 16 March 2004. The new FMRSC membership memorandum is being provided to all members with these minutes.**

ACTION: PAHC will appoint SPC Odette and SFC Eaton on orders NLT 19 March 2004.

h. Installation of New RAPISCAN X-Ray Machine at Building 1005. Mr. Kucharewski, CTSC member, informed the Committee that another RAPISCAN X-Ray Machine will be installed at the Post Mail Facility located in Building 1005. He was tasked to notify AMSEL-SF-RE when the date of installation has been determined and to ensure initial user training is conducted by the manufacturer prior to operation of the X-Ray Machine by employees. Mr. Kucharewski notified us on 15 March of the proposed date of 22 March 2004 for installation and user training. The RAPISCAN will be added onto a RWP prior to the next RSC meeting.

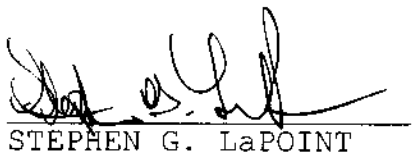
ACTION: AMSEL-SF-RE will add the new RAPISCAN to an RWP prior to the next RSC meeting.

5. The FMRSC meeting was adjourned at 1045 hours.

Prepared by:
ALICE M. KEARNEY
Recorder, FMRSC

Reviewed by:
CRAIG S. GOLDBERG
FMRSC Chairman/Fort Monmouth
Radiation Safety Officer

AMSEL-SF-RE
SUBJECT: Minutes of the Fort Monmouth Radiation Safety Committee Meeting, 11 March 2004

Approved by: 

STEPHEN G. LaPOINT
Commanding General's
Representative

DISTRIBUTION:
AMSEL-CS (COL Bridges)
SELFM-CO (LTC Reyes)
AMSEL-SF (LaPoint/Goldberg/Kearney)
AMSEL-SF-RE (Bianchi/Proctor/Perrella/Cummings/Ziola)
MCXS-PVM (CPT Miallus/SPC Odette/SFC Eaton)
AMSEL-RD-IW-EB (Kaplowitz/Swaylik) (Email)
SELFM-PW-EV (Green/Desai) (Email)
SELFM-SO (Paquet/Paustian) (Email)
Charles Goebel, CTSC, QC & Safety Mgr, Bldg 286, Room 017 (Email)
Greg Kucharewski, CTSC, Admin. Svcs. Supervisor, Bldg 886 (Email)

TRACKING LIST FOR FMRSC ACTIONS
(as of 16 March 2004)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
SELFM-SO	OSHA Management Office will incorporate work permit concept into the Freespace Radiation Policy, and move forward with staffing. FMRSC Chairman will be notified when this is done.	11 Mar 04	**OPEN.**	**Prior to next RSC Mtg, o/a 17 Jun 04.**
AMSEL-SF-RE	The FM MSO will send CECOM-R 385-XX forward for staffing and report the progress to the Committee.	11 Mar 04	**OPEN.**	**16 Apr 04**
AMSEL-SF-RE	The FM Dosimetry Custodian will take the necessary actions to discontinue personal dosimetry for CTSC employees.	11 Mar 04	**OPEN.**	**9 Apr 04**
MCXS-PVM	PAHC will appoint SPC Seth Odette and SFC Debra Eaton as new RSC members.	11 Mar 04	**OPEN.**	**19 Mar 04**
AMSEL-SF-RE	The FMRSC Recorder will initiate a new appointment memo for the PAHC members, as well as revise the FMRSC Committee Membership, for approval/signature of the FM Garrison Administrative Officer. The new Committee Membership memo will be provided to all members.	11 Mar 04	**CLOSED. Memos signed off on 16 Mar 2004; provid-ed to members**	**N/A**
AMSEL-SF-RE	DS will add the new RAPISCAN to an RWP.	11 Mar 04	**OPEN.**	**Prior to next RSC Mtg, o/a 17 Jun 04.**

TRACKING LIST FOR FMRSC ACTIONS
(as of 16 March 2004)

ACTION OFFICE	ACTION ITEM	ORIGIN DATE	STATUS	SUSPENSE DATE
SELFM-PW-EV	DPW will ensure that checklists for construction and demolition of buildings at FM include appropriate guidance for disposal of smoke alarms w/Am-241.	18 Dec 03	**CLOSED.**	**N/A**
ALL MEMBERS	FMRSC members will review draft policy for Outdoor Freespace Radiation Tests on Fort Monmouth and provide comments to DS NLT 31 Jan 04.	18 Dec 03	**CLOSED.**	**N/A**
AMSEL-SF-RE	FMRSC members will review regulation and provide comments to DS NLT 20 Feb 2004.	18 Dec 03	**CLOSED.**	**N/A**
AMSEL-SF-RE	DS will ensure shipping manifest for disposal of H3 EXIT signs and Am-241 smoke detectors is received by DS.	18 Dec 03	**CLOSED. Mani-fest rec'd 1/13/04**	**N/A**
AMSEL-SF-RE	FMRSC Recorder will prepare an appointment memorandum for Mr. Walter Swaylik for approval/signature of FM Garrison Administrative Officer.	18 Dec 03	**CLOSED. Appt memo signed off 19 Dec 03.**	**N/A**
AMSEL-SF-RE	A new FMRSC membership appointment memorandum has been prepared for approval of the FM Garrison Administrative Officer. Recorder will ensure memo is approved/signed by the Administrative Officer and provided to FMRSC members.	18 Dec 03	**CLOSED. Memo signed off and sent to members 9 Jan 04.**	**N/A**
AMSEL-SF-RE	FMRSC Recorder/FM Dosimetry Custodian will submit a request to U.S. AIRDC to assign an admin dose to Mr. Goldberg for 6 Jul-4 Oct 03.	18 Dec 03	**CLOSED. Admin dose assign. 1/22/04**	**N/A**

AMSEL-SF (15-1a) 16 March 2004

MEMORANDUM FOR Fort Monmouth Radiation Safety Committee (FMRSC)

SUBJECT: FMRSC Appointments from Patterson Army Health Clinic (PAHC)

1. The following individuals are appointed as members of the FMRSC to represent PAHC:

a. SPC Seth Odette, Primary Member.

b. SFC Debra Eaton, Alternate Member.

2. AUTHORITY: AR 11-9 and CECOM-R 385-18.

3. EFFECTIVE: This appointment supersedes all previous PAHC appointments and is effective immediately.

4. PERIOD: Until officially relieved or released from appointment.

5. PURPOSE: To serve as Primary and Alternate Members, respectively, of the FMRSC.

6. CECOM BOTTOM LINE: The Warfighter.

FOR THE COMMANDER:

JOAN C. HUSSEY
Administrative Officer

DISTRIBUTION:
Individuals Concerned
AMSEL-CS
SELFM-CO
AMSEL-SF-RE
SELFM-RM-AP
SELFM-ADJ

AMSEL-SF (15-1a) 16 March 2004

MEMORANDUM FOR Fort Monmouth Radiation Safety Committee (FMRSC)

SUBJECT: FMRSC Appointments

1. The following personnel are recognized as appointed members of the FMRSC:

NAME	POSITION	ORGANIZATION
Mr. Stephen G. LaPoint	CG Representative	AMSEL-SF
Mr. Craig Goldberg	Chairman/Fort Monmouth Radiation Safety Officer	AMSEL-SF-RE
Mr. Barry Silber	Co-Chairman	AMSEL-SF-RE
Ms. Alice Kearney	Recorder	AMSEL-SF-RE
Mr. Ira Kaplowitz	Member	AMSEL-RD-IW-EC
Mr. Walter Swaylik	Alternate	AMSEL-RD-IW-EC
SPC Seth Odette	Member	MCXS-PVM
SFC Debra Eaton	Alternate	MCXS-PVM
Ms. Wanda Green	Member	SELFM-PW-EV
Mr. Dinkerrai Desai	Alternate	SELFM-PW-EV
Mr. Ted Paquet	Member	SELFM-SO
Ms. Gail Paustian	Alternate	SELFM-SO
Mr. Charles Goebel	Member	CTSC
Mr. Gregory Kucharewski	Alternate	CTSC

2. AUTHORITY: AR 11-9 and CECOM-R 385-18.

3. EFFECTIVE: This appointment supersedes all previous FMRSC appointments and is effective immediately.

4. PERIOD: Until officially relieved or released from appointment.

5. PURPOSE:

a. The FMRSC serves as the advisory body to the Commander on ionizing radiation. The FMRSC will establish the local rules and procedures for procurement, storage, and safe use of radiation sources, and also study reports of incidents and adverse findings.

b. The FMRSC will advise the Commander on non-ionizing radiation hazards, and methods to control these hazards, as well.

6. CECOM BOTTOM LINE: The Warfighter.

FOR THE COMMANDER:

JOAN C. HUSSEY
Administrative Officer

DISTRIBUTION:
Individuals Concerned
AMSEL-CS
SELFM-CO
AMSEL-SF-RE
SELFM-RM-AP
SELFM-ADJ

AMSEL-SF (15-1a) 11 March 2004

Fort Monmouth Radiation Safety Committee (FMRSC) Sign-in Sheet

1. The following personnel attended the **11 March 2004** FMRSC meeting as MEMBERS/ALTERNATES:

NAME	ORGANIZATION	SIGNATURE
Mr. Stephen LaPoint	AMSEL-SF (Commanding General's Representative)	
Mr. Craig Goldberg	AMSEL-SF-RE/Chairman/ Fort Monmouth Radiation Safety Officer	
Ms. Alice Kearney	AMSEL-SF-RE/Recorder	
Mr. Ira Kaplowitz	AMSEL-RD-IW-EC (Primary)	
Mr. Walter Swaylik	AMSEL-RD-IW-EC (Alternate)	
SPC Seth Odette ~~SGT John Castillo~~	MCXS-PVM	SPC Odette for CPT
Ms. Wanda Green	SELFM-PW-EV (Primary)	
Mr. Dinkerrai Desai	SELFM-PW-EV (Alternate)	
Mr. Ted Paquet	SELFM-SO (Primary)	
Ms. Gail Paustian	SELFM-SO (Alternate)	
Mr. CHARLIE ~~George~~ Goebel	Chenega Technology Services Corporation (Primary)	
Mr. Greg Kucharewski	Chenega Technology Services Corporation (Alternate)	

2. The following personnel attended the 2nd QTR FY04 FMRSC meeting as visitors:

PRINT NAME/SIGNATURE	ORGANIZATION	PURPOSE
CPT Aaron Miaullis	PAHC	training SPC Odette
KEN PROCTOR/	DS	ACTION UPDATE MONITORING

3. Additional Remarks:

Kearney, Alice M CECOM DS

From: Kucharewski, Gregory MONMOUTH DOIM CTSC
Sent: Thursday, January 29, 2004 8:29 AM
To: Kearney, Alice M CECOM DS
Cc: Goebel, Charles D MONMOUTH USAG CTSC
Subject: RE: REMINDER OF ACTION ITEM

Alice,

I only had one comment.....and it regards to CECOM -R 385-XX Page 13. # 13. Specific Procedures for Laboratory Maintenance Locations: para. c. Outdoor RFR test equipment should be labeled with approval POC,s and phone numbers to accommodate short suspense notification and better outdoor test documentation.

Gregory Kucharewski, Security Manager
Chenega Technology Services Corporation
Phone: X-25801
Fax: 732-532-1527

-----Original Message-----
From: Kearney, Alice M CECOM DS
Sent: Monday, January 26, 2004 9:00 AM
To: Kaplowitz, Ira CECOM RDEC I2WD; Swaylik, Walter CECOM RDEC I2WD Windermere; Paustian, Gail A MONMOUTH USAG; Green, Wanda S MONMOUTH USAG; Paquet, Theodore MONMOUTH USAG; Kucharewski, Gregory MONMOUTH DOIM CTSC; Goebel, Charles D MONMOUTH USAG CTSC; 'PAHC'; Desai, Dinkerrai M MONMOUTH USAG
Subject: REMINDER OF ACTION ITEM
Importance: High

Good morning,

Just wanted to remind you about the following 31 Jan 04 suspense from the Dec 03 RSC meeting:
"FMRSC members will review draft policy for Outdoor Freespace Radiation Tests on Fort Monmouth and provide comments to DS."

Thanks,

Alice Kearney
U.S. Army CECOM
Radiological Engineering Division
Fort Monmouth, NJ 07703-5024
DSN 987-3112 x6432

Comm (732) 427-3112 x6432
Fax (732) 532-6403/DSN 992-6403

God Bless America

FORT MONMOUTH RADIATION SAFETY COMMITTEE
CECOM DIRECTORATE FOR SAFETY, BUILDING 2539
11 March 2004

AGENDA

1. Old Business:

   a. Review/approve the 18 December 2003 RSC minutes.

   b. Smoke Alarms on Fort Monmouth.

   c. Written Policy for Outdoor Freespace Radiation Tests at Fort Monmouth.

   d. CECOM Regulation (CECOM-R) 385-XX.

   e. Radiation Protection and Medical Physics Survey-Radiation Protection Program and Mammographic, PAHC.

   f. Disposal of Low Level Radioactive Materials.

   g. Replacement of Alternate Member for AMSEL-RD-IW-EC.

   h. Administrative Radiation Dose for Craig Goldberg.

   i. 2003 Annual Radiation Safety Training.

   j. Dosimetry for CTSC Personnel.

2. New Business:

   a. Automated Dosimetry Reports, 5 Oct 2003 - 3 January 2004.

   b. Health Physics Surveys.

   c. Nuclear Regulatory Commission (NRC) License Actions.

   d. Radiation Work Permits.

   e. National Voluntary Laboratory Accreditation Program (NVLAP).

   f. Energy Savings Performance Contract (ESPC), Building 2700.

   g. Appointment of Additional Member for PAHC.

SELFM-PW 30 Jan 04

MEMORANDUM FOR Building Tenants, Myer Center

SUBJECT: Energy Savings Performance Contract (ESPC), Building 2700

1. Replacement of lighting fixtures, emergency lighting, and exit signs is scheduled to occur starting on February 17, 2004 and continue until October 31, 2004 and will affect all of Building 2700.

2. The replacement of the lighting is necessary to provide energy efficient lighting upgrades throughout the facility. Surveys will be conducted by the contractor and members of the Myer Center Building Management Office starting on February 2, 2004. Effected areas will be given ample notice when the replacements will take place in that area and every effort will be made not to disrupt daily business.

3. If you have any additional questions, please contact Ms Barbara Folk, x71523, or Mr. Terry Matthews, x25662.

/original signed/ James Ott
Director, Public Works

CF:
SELFM-CO/CDR Garrison
SELFM-PW-F/Chief Erichsen
SELFM-DPS /Chief Hoppe
SELFM-PW-CMD/Mr. Maier
TVS

SELFM-PW 30 Jan 04

MEMORANDUM FOR Building Tenants, Myer Center

SUBJECT: Energy Savings Performance Contract (ESPC), Building 2700

1. Replacement of lighting fixtures, emergency lighting, and exit signs is scheduled to occur starting on February 17, 2004 and continue until October 31, 2004 and will affect all of Building 2700.

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/original signed/ James Ott
Director, Public Works

CF:
SELFM-CO/CDR Garrison
SELFM-PW-F/Chief Erichsen
SELFM-DPS /Chief Hoppe
SELFM-PW-CMD/Mr. Maier
TVS

CTSC CHENEGA TECHNOLOGY SERVICES CORPORATION
A subsidiary of Chenega Corporation

A Tribally-owned, 8(a), Alaska Native Corporation

26 February 2004

SM/04-M-013

Subject: Dosimeter Badges

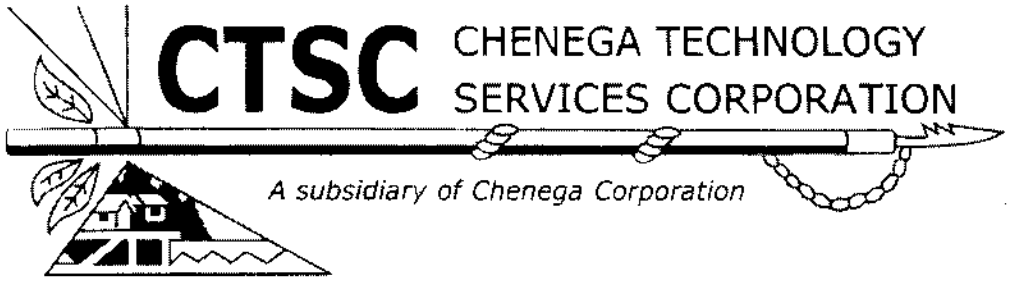
Since 1998, personnel dosimetry (whole body Thermoluminescent Dosimeter badges) were issued by the CECOM Safety Office to individuals working in PWS-21 based on the type and amount of radioactive materials being used, to examine packages for Improvised Explosive Devices. It was discussed at our last annual radiological training (30 December 2003) that PWS-21 employees would consider signing the attached document to eliminated the use of personnel dosimeters for the following reasons:

- Equipment audits containing radioisotopes and/or other sources of ionizing radiation did not record an exposure on area dosimeter badges affixed to x-ray shielded containers.
- Dosimeters issued to CTSC employees did not record an employee exposure since the inception of the CECOM Safety dosimetry program.
- X-ray equipment design and it's shielding resulted in no detectable radiation leakage.

Note: All employees (100 percent) listed below must agree to discontinue the dosimetry program.
Please complete the attached document:

Gail Bouie
Robyn Brunicardi
Rebecca Burgess
Alexander Bacon
Carol Connelley
Sandy Hussey
Angela Johnson
Greg Kucharewski
Diane Nielebock
Joshua Johnson
Rachelle Watson
Charles Goebel
Kevin Courtney

Gregory Kucharewski, CSSO/FSO



A Tribally-owned, 8(a), Alaska Native Corporation

I agree to discontinue the Personnel Dosimetry (whole body Thermoluminescent Dosimeter badges) program, because no employee exposure was recorded over a significant period of time and CECOM Safety will continue area dosimetry in PWS-21.

LNAME	FNAME	Sign/Date
Bacon	Alexander	
Bouie	Gail	
Brunicardi	Robyn	
Burgess	Rebecca	
Connelley	Carol	
Courtney	Kevin	
Goebel	Charles	
Hussey	Sandy	
Johnson	Angela	
Johnson	Joshua	
Kucharewski	Gregory	
Nielebock	Diane	
Roberson	Marilyn	
Watson	Rachelle	

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
Chenega Technology Service Corporation P.O. Box 60, Building 286 (Russell Hall) Fort Monmouth, NJ 07703	Gregory Kucharewski	
	3. PERMIT NUMBER 180F	4. EXPIRATION DATE 15 January 2006

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
a. Desk Top Cabinet Security X-Ray Screening System Fitted with Colour Camera Model: SCANMAX 20 CC Manufactured by: SCANNA MSC Inc. Sarasota, FL SN: SR3152 and SN: SR3153 BC: 2678M and BC: 2679M	a. N/A	a. N/A
b. Portable Contraband Detection and Identification System – 3 Total Model: Vapor Tracer 2, SN: 08014892086; SN: 10034938731; SN: 10034938675 Manufactured by: GE Ion Track Instruments, LLC	b. Nickel-63	b. 30 millicuries
c. X-Ray Detection System Model: 101GT SN: GT-342 Manufactured by: AS&E, Inc.	c. N/A	c. N/A

8. CONDITIONS:

a. The two SCANMAX 20 CCs, the three Vapor Tracer 2s and the AS&E x-ray detection system listed in item 5 are used to x-ray letters/packages, detect explosives, metallics, organics, plastic explosives, plastic weapons, drugs and agricultural products mailed to Fort Monmouth,

b. Authorized place of use is Building 451 Mail Room, Main Post.

APPROVED:

DATE: 15 January 2004

CRAIG S. GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 180F	EXPIRATION DATE: 15 January 2006

CONDITIONS:

c. The SCANMAX 20 CC x-ray machines, the Ion Track Vapor Tracer 2s and the AS&E x-ray detection system will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual, Issue 1 (Scanmax), Vapor Tracer 2 Manual Rev. 1 and the X-Ray Image Reference Manual (AS&E) as provided with the Radiological Permit Amendment Application #180F, dated 16 December 2003.

d. Authorized users shall wear a whole body dosimeter when operating the SCANMAX 20 CC x-ray machine.

e. The SCANMAX 20 CC, the 101 GT x-ray system or Vapor Tracer 2 may not be removed, reconfigured or modified in any manner.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6440 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in item 5, to include procuring additional devices.

g. The SCANMAX 20 CC and the 101 GT x-ray system shall be surveyed annually for leakage.

h. The Vapor Tracer 2 shall be leak tested annually.

i. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Amendment Application, dated 16 December 2003, signed by Gregory Kucharewski, Chenega Technology Service Corporation.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 12-16-2003

Initial Permit Application:
Application for Amendment to Permit No.: X (RWP# 180F)
Application for Renewal of Permit No.: _____

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: Chenega Technology Service Corporation P.O. Box 60, Building 286 Fort Monmouth, NJ 07703

3. Radiation Area Supervisor: Greg Kucharewski

4. Radioactive Material: N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)

5. Other Sources of Ionizing Radiation Producing Devices: A. Two SCANNMAX 20 CC > 65kVp, 7 mA GEN TLO 424/3 Tube Y475 BC: 2679M SN: SR3151 and SR3153
B. Three Portable Contraband Detection and Identification System, Model: Vapor Tracer II Manufactured by Ion Track Instruments, LLC , b. Nickel-63 b. 8 millicuries
(1) SN: 08014892086, (2) SN: 10034938731 (3) SN: 10034938675.
One AS&E Micro-Dose system: Model 101GT SN: GT-342

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Gail Bouie	Robyn Brunicardi	Rebecca Burgess
Alexander Bacon	Carol Connelley	Sandy Hussey
Angela Johnson	Greg Kucharewski	Diane Nielebock
Joshua Johnson	Rachelle Watson	
Charles Goebel	~~Kevin Courtney~~ KB 15Jan04	

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) : BUILDING 451**

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP. SEE ATTACHED MANUAL**

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.) SELF-CONTAINED AND INTERLOCKED.**

10. **Signature of Director of Responsible Individual:**

Name: GREG KUCHAREWSKI **Signature** Greg Kucharski

CECOM Directorate for Safety USE ONLY:

Instrumentation: NOT REQUIRED

Dosimetry: PROVIDED BY CECOM DIR. FOR SAFETY (WHOLE BODY DOSIMETERS)

Reviewed by: Hugo Bianchi **Date:** 13 Jan 2004

Approved by: [signature] **Date:** 1/15/04

Radiological Permit Application Supplement

Name: Boule (Last) Gail (First) H (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Scanna Scannmax 20 CC & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
761 Mail Center	1 Hour	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Brunicardi (Last) Robyn (First) L (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Scanna Scannmax 20 CC & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
761 Mail Center	1 Hour	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Burgess (Last) Rebecca (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna Ltd. & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 976-1A		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Bacon (Last) Alexander (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: SCANNA LTD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 451	One Hour	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Connelley Carol
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna Ltd. & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 116		YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Hussey (Last) Sandy (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD. & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 116		(YES) NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Johnson (Last) Angela (First) H (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Scanna Scannmax 20 CC & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
761 Mail Center	1 Hour	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Kucharewski (Last) Gregory (First) W (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD. 180E & VT² TNG HB

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 1005	1 hr	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Nielebock (Last) Diane (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Scanna Scannmax 20 CC & Vapor Tracer 2

Where Trained	Duration of Training	On the Job	Formal Course
761 Mail Center	1 Hour	YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Johnson (Last) Joshua (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: SCANNA LTD.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 451	One Hour	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Watson (Last) Rachelle (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LtD 180E & VT2 TNG #B

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 1005	1 hr	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Goebel (Last) Charles (First) D. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training: Scanna LTD. 180 E & VT2 TNG HB

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 1005	1 hr	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

GE Ion Track

November 7, 2003

CTSC (FT. MONMOUTH, NJ):

Congratulations on the purchase of your **VAPOR TRACER 2®** detection system. We trust that it will give you many years of service.

The instrument, (device), contains an ultra sensitive Ion Trap Mobility Spectrometer, which utilizes a radioactive source to provide a means of ionizing the sampled air. The radioactive source is a Ni-63 beta radiation source. Ni-63 is a low-energy beta emitter: none of the radiation from this source can penetrate the internal assembly and expose the operator. However, in order to ensure that no Ni-63 leaks from the source holder, the device must be leak tested annually. You will be contacted approximately 30 days prior to the leak test due date with more information on this leak test requirement. There are no serviceable parts in the detector and no attempt to access the source or detector must be made.

Possession and use of the device is governed by Code of Massachusetts Regulations 105CMR 120.122(D) (Certain Measuring, Gauging, or Controlling Devices) or by the U.S. Nuclear Regulatory Commission or Agreement State under requirements substantially the same as those in 105 CMR 120.122(D). Copies of the relevant sections are enclosed together with a list of agreement states and U.S. NRC regions. We would ask you to examine these and acquaint yourself with the regulatory responsibilities and check with your state or other radiation control agency to verify if further registration is required. The device is registered with the Massachusetts Radiation Control Program under ITI's Sealed Source Device Registration, Number MA-0399-D-104-G, and distributed under license# 15-5254.

Please do not hesitate to call me if any questions arise regarding the enclosed regulations or wipe testing your **VAPOR TRACER 2®**.

Serial number of Source/Instrument: **Source #09-9734; Inst. S/N 10034938731**

Sincerely yours,

Technical Services Manager

CTI
Calibration Technology

A Division of RSCS, Inc.

Leak Test Certificate

Leak Test Number: 02-9226

Customer: Ion Track Instruments
205D Lowell Street
Wilmington, MA 01887

Contact: Mary Serafini
Phone Number(s):
Main 978-658-3767

Source Data

Serial Number: 09-9734 **Isotope:** Ni-63 **Activity (mCi):** 10
Equipment s/n: **Assay Date:**

Description: Outside the bottle

Analysis Data

Collected By: Kenji Foley **Analyzed By:** CAG/JWB
Collection Date: 09/24/2003 **Analysis Date:** 09/25/2003
Analysis Instrument: Tennelec LB5100 S/N: L11263 **Calibration Due Date:** 02/06/2004

Leak Test Results: < 0.005 µCi

Comments:

RSCS Representative 09/25/2003 Date

Please contact your RSCS representative if you have any further questions. RSCS, Inc. is licensed by the New Hampshire Bureau of Radiological Health (License # 381R) to perform and analyze leak tests of radioactive sources.

Radiation Safety and Control Services, Inc.
91 Portsmouth Ave. Stratham, NH 03885
1-800-525-6339 (603) 778-2871 Fax (603) 778-6879 www.radsafety.com

GE Ion Track

November 7, 2003

CTSC (FT. MONMOUTH, NJ):

Congratulations on the purchase of your **VAPOR TRACER 2®** detection system. We trust that it will give you many years of service.

The instrument, (device), contains an ultra sensitive Ion Trap Mobility Spectrometer, which utilizes a radioactive source to provide a means of ionizing the sampled air. The radioactive source is a Ni-63 beta radiation source. Ni-63 is a low-energy beta emitter: none of the radiation from this source can penetrate the internal assembly and expose the operator. However, in order to ensure that no Ni-63 leaks from the source holder, the device must be leak tested annually. You will be contacted approximately 30 days prior to the leak test due date with more information on this leak test requirement. There are no serviceable parts in the detector and no attempt to access the source or detector must be made.

Possession and use of the device is governed by Code of Massachusetts Regulations 105CMR 120.122(D) (Certain Measuring, Gauging, or Controlling Devices) or by the U.S. Nuclear Regulatory Commission or Agreement State under requirements substantially the same as those in 105 CMR 120.122(D). Copies of the relevant sections are enclosed together with a list of agreement states and U.S. NRC regions. We would ask you to examine these and acquaint yourself with the regulatory responsibilities and check with your state or other radiation control agency to verify if further registration is required. The device is registered with the Massachusetts Radiation Control Program under ITI's Sealed Source Device Registration, Number MA-0399-D-104-G, and distributed under license# 15-5254.

Please do not hesitate to call me if any questions arise regarding the enclosed regulations or wipe testing your **VAPOR TRACER 2®**.

Serial number of Source/Instrument: **Source #09-9842; Inst. S/N 10034938675**

Sincerely yours,

Technical Services Manager

CTI
Calibration Technology

A Division of RSCS, Inc.

Leak Test Certificate

Leak Test Number: 02-9278

Customer: Ion Track Instruments
205D Lowell Street
Wilmington, MA 01887

Contact: Mary Serafini
Phone Number(s):
Main 978-658-3767
Fax 866-249-9105

Source Data

Serial Number: 09-9842 **Isotope:** Ni-63 **Activity Level:** 10 mCi
Equipment s/n: **Assay Date:**

Description: Outside the bottle

Analysis Data

Collected By: Kenji Foley **Analyzed By:** CAG/JWB
Collection Date: 10/06/2003 **Analysis Date:** 10/07/2003
Analysis Instrument: Tennelec LB5100 S/N: L11283 **Calibration Due Date:** 02/06/2004

Leak Test Results: < 0.005 µCi

Comments:

RSCS Representative 10/07/2003 Date

Please contact your RSCS representative if you have any further questions. RSCS, Inc. is licensed by the New Hampshire Bureau of Radiological Health (License # 381R) to perform and analyze leak tests of radioactive sources.

Angela & Sandy

PROTECTING TOMORROW'S TECHNOLOGY TODAY

Operator Vapor Tracer II Training

DATE 11-21-2003

SECURITY AWARENESS BRIEFING ATTENDEE SIGN-UP LOG SHEET

	EMPLOYEE'S NAME (PRINT)	SIGNATURE	BADGE NUMBER
1.	ALEXANDER BACON	Alexander Bacon	519034
2.	Lisa DeBenedetto	L. DeBenedetto	
3.	Diane Nieleback		
4.	Gail H Boule		
5.	Rebecca Burgess	R Burgess	
6.	Robyn L. Brunicardi		0730
7.	Marilyn ROBERSON	Marilyn Roberson	
8.	Mike Zebon	M. Zebon	0461
9.	CHARLIE GOEBEL	Charlie Goebel	0349
10.	Shirley Jefferson		0715
11.	Rachelle Watson	Rachelle Watson	0452
12.			
13.			
14.			
15.			
16.			
17.			

PROTECTING TOMORROW'S TECHNOLOGY TODAY

Vapor Tracer II Training

DATE 01-16-2004

SECURITY AWARENESS BRIEFING ATTENDEE SIGN-UP LOG SHEET

	EMPLOYEE'S NAME (PRINT)	SIGNATURE	BADGE NUMBER
1.	Josh Johnson	Josh Johnson	0936
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			

Model 101GT Radiation Survey Form

S/N GT-342

FINAL RADIATION SURVEY AT EXTERNAL SURFACE

The figure outlines the locations at which radiation levels must be measured when conducting the Final Radiation Survey on Model101GT system.

The measurements shall be taken with a test suitcase in the beam using the survey meter probe at a distance of 2 inches (5 cm) from the surface. The arrows pointing out from the letter symbols in the figure indicate the areas to be scanned.

The measurements at all accessible locations shall be less than .3 mR/hr using 0.1x scale.

Operating conditions for the survey 135 kV, 4 mA

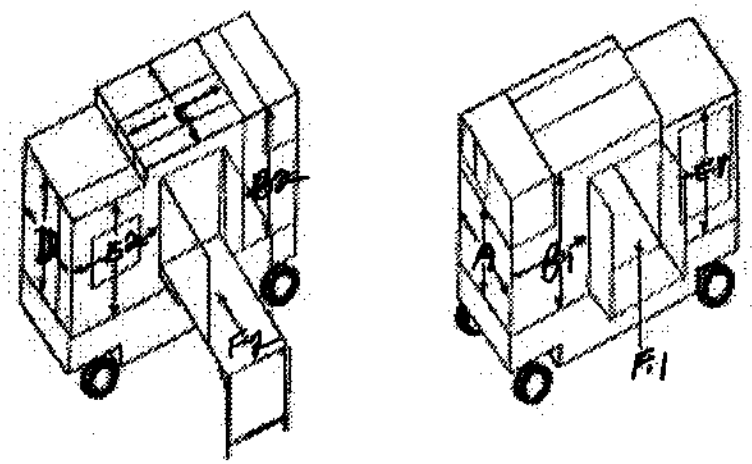


Figure 1. Model 101GT Radiation Survey Locations

Area to be Scanned

1.	A	.01
2.	B1	.01
3.	B2	.02
4.	C	.02
5.	D	.01
6.	E1	.01
7.	E2	.02
8.	F1	.04
9.	F2	.04

System Serial Number GT 342 Location MAIL SERVICES CTR. BLDG. 451 FT. MAMMOUTH

Date of Survey 12/10/03 HEAT Call ID Number 42523

Survey Meter Model LUDLUM 2402 Survey Meter SN 181511

Survey Meter Probe Type ENERGY COMPENSATED Probe SN 185916

Last Calibration Date 6/10/03 Battery Level O.K. ✓

Source Check Reading .2 MHR

FSE Signature Walter L. Beatty Customer Signature _____

PROTECTING TOMORROW'S TECHNOLOGY TODAY

New X-Ray Equipment Training

DATE 11 December 2003

SECURITY AWARENESS BRIEFING ATTENDEE SIGN-UP LOG SHEET

	EMPLOYEE'S NAME (PRINT)	SIGNATURE	BADGE NUMBER
1.	Gail H Bouie	Gail H Bouie	0474
2.	Greg Kuchapewski	Greg Kuchapewski	0386
3.	Shirley L Jefferson		0715
4.	Charlie Goebel	Charlie Goebel	0349
5.	Rebecca Burgess	Rebecca Burgess	0301
6.	Diane Nielebock		0728
* 7.	Marilyn L. Robertson	Marilyn L Robertson	
8.	ALEXANDRA BACON	Alexandra Bacon	
9.	Angela Johnson	Angela Johnson	0569
10.	Robyn Brunicardi		0730
* 11.	Sandy J Hussey	Sandy J Hussey	0369
12.	Mike Zebora	Mike Zebora	0461
13.	Rachelle WATSON	Rachelle Watson	0452
14.			
15.			
16.			
17.			

AS&E

American Science and Engineering, Inc

MICRO-DOSE X-RAY INSPECTION SYSTEM
TRAINING COURSE

Joshua Johnson

has successfully completed the AS&E Operator Training course for:

101GT

this 11th day of December, 2003

Walter L. Buote Jr

Walter L. Buote, Jr.
Senior Field Service Engineer

Location: Building 451

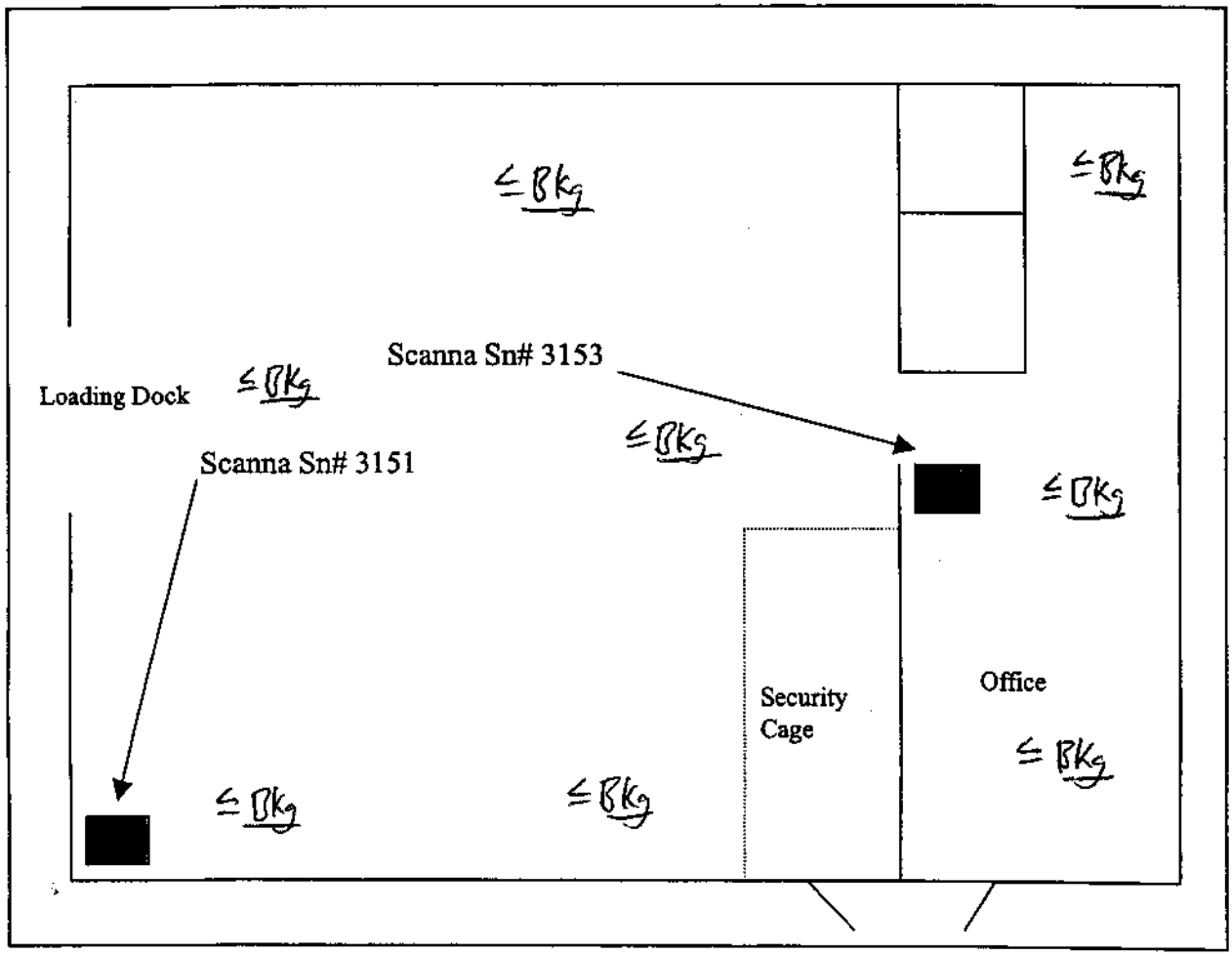
Instrument: R-02 Serial #: 6252 Cal Due Date: 31 Jan 04
Probe: NA Serial #: NA
Pre-Op checks performed: (Sat)/Unsat

Postings:

Dosimetry Requirements: ✓ SOP/Radiation Permit: ✓

NRC Form 3: ✓ Section 206: ✓ Notice To Workers: ✓

Interlock (Door) Check: Sn# 3151 (Passed)/Failed: ✓ Sn# 3151 (Passed)/Failed: ✓



LEGEND: * Contact Reading O Wipe Location Background: 0.0 mR/hr

NOTE: All readings are in mR/hr at waist level unless otherwise indicated.

Performed By: M. Cantwell Date: 8/27/03

SCANNA SCANMAX 20 CC, SN# 3151, Building 451

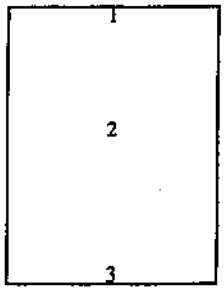
Instrument: R-02 Serial #: 6252 Cal Due Date: 31 Jan 04

Pre-Op checks performed: (Sat)/Unsat

Operators Manual: ✓ NRC Form 3: ✓ Section 206: ✓

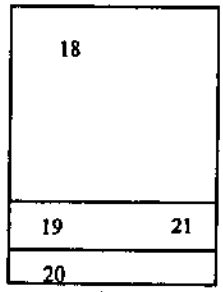
Notice To Workers: ✓

Left Panel View



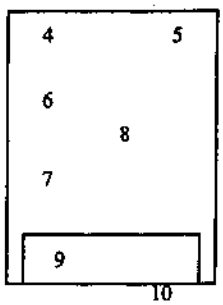
Location	Reading
1 Vertical Seam	0.0
2 Side Panel	0.0
3 Bottom Edge	0.0

Front Panel View



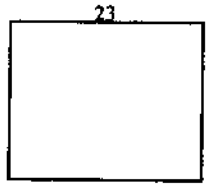
Location	Reading
18 Panel	0.0
19 Viewing Boot	0.0
20 Control Panel	0.0
21 Bottom Edge	0.0

Back Panel View



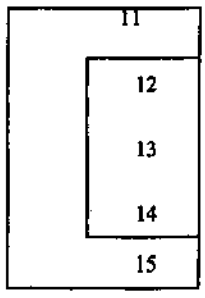
Location	Reading
4 Vertical Seam	0.0
5 Vertical Seam	0.0
6 Top Hinge	0.0
7 Bottom Hinge	0.0
8 Back Panel	0.0
9 Electrical Plug	0.0
10 Bottom Plug	0.0

Lid View



Location	Reading
23 Back Seam	0.0
24 Right Seam	0.0
25 Front Seam	0.0
26 Left Seam	0.0

Right Panel View



Location	Reading
11 Top Panel	0.0
12 Door Seam	0.0
13 Door	0.0
14 Bottom Seam	0.0
15 Bottom Panel	0.0
16 Front Seam	0.0
17 Bottom Edge	0.0

All points are contact readings in mR/hr

Background: 0.0 mR/hr

Performed By: M. Cantwell Date: 8/27/03

SCANNA SCANMAX 20 CC, SN# 3153, Building 451

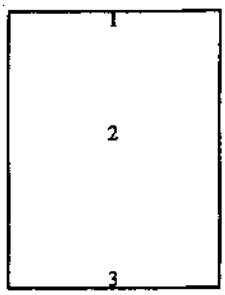
Instrument: R-02 Serial #: 6252 Cal Due Date: 31 Jan 04

Pre-Op checks performed: (Sat)/Unsat

Operators Manual: ✓ NRC Form 3: ✓ Section 206: ✓

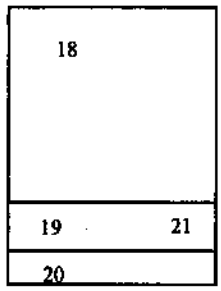
Notice To Workers: ✓

Left Panel View



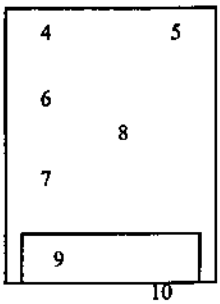
Location	Reading
1 Vertical Seam	0.0
2 Side Panel	0.0
3 Bottom Edge	0.0

Front Panel View



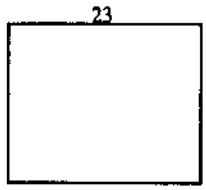
Location	Reading
18 Panel	0.0
19 Viewing Boot	0.0
20 Control Panel	0.0
21 Bottom Edge	0.0

Back Panel View



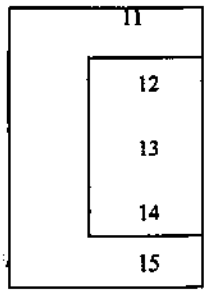
Location	Reading
4 Vertical Seam	0.0
5 Vertical Seam	0.0
6 Top Hinge	0.0
7 Bottom Hinge	0.0
8 Back Panel	0.0
9 Electrical Plug	0.0
10 Bottom Plug	0.0

Lid View



Location	Reading
23 Back Seam	0.0
24 Right Seam	0.0
25 Front Seam	0.0
26 Left Seam	0.0

Right Panel View



Location	Reading
11 Top Panel	0.0
12 Door Seam	0.0
13 Door	0.0
14 Bottom Seam	0.0
15 Bottom Panel	0.0
16 Front Seam	0.0
17 Bottom Edge	0.0

All points are contact readings in mR/hr

Background: 0.0 mR/hr

Performed By: M. Antonelli Date: 8/27/03

AS&E Micro-Dose 101GT, SN# GT-342, Building 451

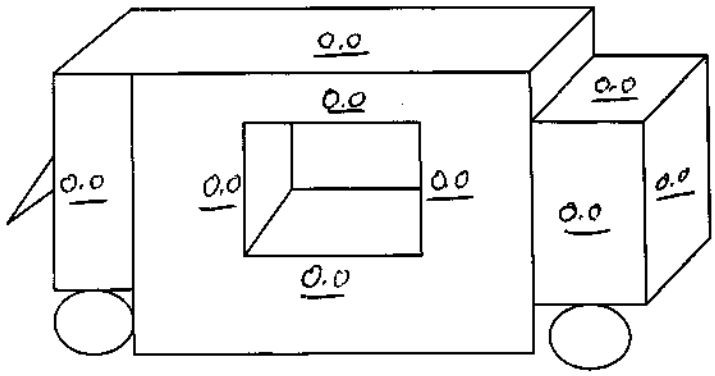
Instrument: RO-2 Serial #: 6022 Cal Due Date: 31 May 04

Pre-Op checks performed: (Sat)/Unsat

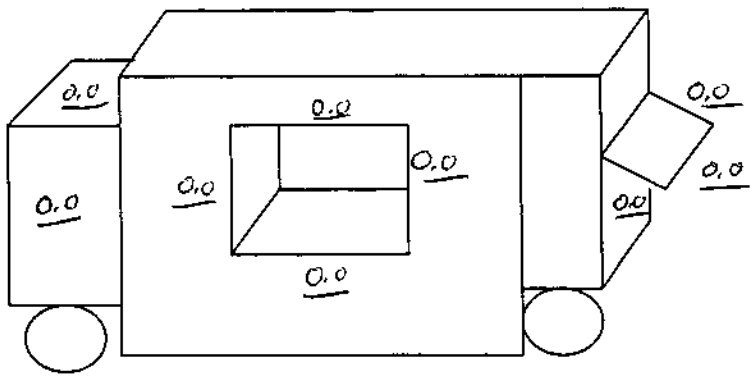
Operators Manual: ✓ NRC Form 3: ✓ Section 206: ✓

Notice To Workers: ✓ Warning Indicators ✓ Safety Locks ✓

Front View



Back View



Operating Facotrs: 120V, 20A

All points are contact readings in mR/hr Background: 0.0 mR/hr

Performed By: M. Antonell Date: 12/30/07

Location: Building 451

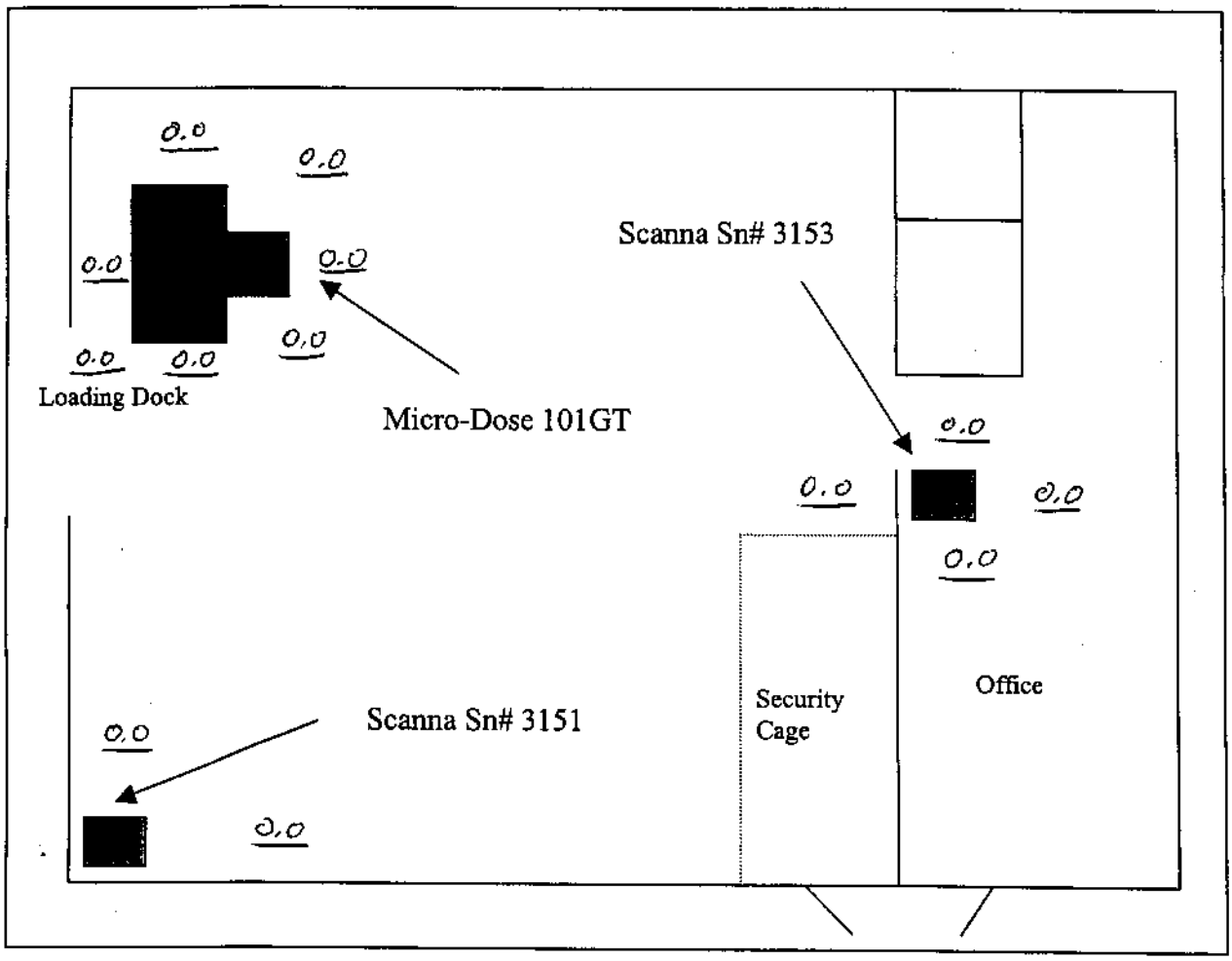
Instrument: RO-2 Serial #: 6022 Cal Due Date: 31 May 04
Probe: NA Serial #: NA
Pre-Op checks performed: Sat/Unsat

Postings:

Dosimetry Requirements: ✓ SOP/Radiation Permit: ✓

NRC Form 3: ✓ Section 206: ✓ Notice To Workers: ✓

Interlock (Door) Check: Sn# 3151 Passed/Failed: NA Sn# 3153 Passed/Failed: NA



LEGEND: * Contact Reading O Wipe Location Background: 0.0 mR/hr

NOTE: All readings are in mR/hr at waist level unless otherwise indicated.

Performed By: M. Archuleta Date: 12/30/03

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
CECOM Directorate for Safety Attn: AMSEL-SF-RE Building 2540 Fort Monmouth, NJ 07703	Craig Goldberg	
	3. PERMIT NUMBER 270	4. EXPIRATION DATE 3 March 2006

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
a. Cesium 137, JLS Calibrator (Model 81, SN: 7140)	a. Cesium Chloride/Solid	a. 125 Curies
b. Technetium 99, Beta Calibration Standards (Model DNS-19, SN: 3026; 3026; 3027; 3028), The Source Inc.	b. Technetium 99/Solid	b. 0.878 microCuries
c. Cesium 137, JLS Calibrator (Model 142-10, SN: 6082)	c. Cesium Chloride/Solid	c. 200 milliCuries
d. Plutonium 238 Alpha Wide Area Reference Sources, Amersham Type PPRB6879 SN: GE 715; GE 716; GE 717; GE 718; GE 719; GE 720.	d. Pu-238 Foil/Solid	d. Total Activity - 25.0 microCuries

8. CONDITIONS:

a. The sources listed in item 5 are used to calibrate RADIAC meters.

b. The authorized place of use is Building 2540, Charles Wood Area, Fort Monmouth.

c. The sources will be utilized under the supervision of the individual listed in Item 2. Additional users shall be approved by the Fort Monmouth Radiation Safety Officer (RSO). The individual identified in Item 2 is responsible for ensuring all users meet minimum training and education requirements for operation of the sources listed in Item 5.

APPROVED:

DATE: 3 March 2004

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 270	EXPIRATION DATE: 3 March 2006

CONDITIONS:

d. The sources listed in item 5 may not be removed, reconfigured or modified in any manner without first informing and receiving permission from the installation Radiation Safety Officer.

e. No unauthorized personnel are allowed in the same room when the sources listed in item 5 are in use.

f. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6440, 6405 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the source listed in item 5, to include procuring additional sources.

g. Calibrators in paragraph 5a and 5c, shall be surveyed on a monthly basis by the CECOM Directorate for Safety.

h. Authorized users shall wear a whole body dosimeter when using sources 5a and 5c.

i. Sources 5a, and 5d shall be leak tested at an interval not to exceed 6 months. Source 5c shall be leak tested at an interval not to exceed 3 months. Source 5b does not require a periodic leak test.

j. Sources 5a, 5b, 5c, and 5d are to be used IAW SOP #'s 20-04, 20-07, 20-06 and 20-02, respectively. These SOPs are on file with the CECOM radiological engineering Laboratory and are available for review.

k. In addition to the material listed in item 5, sources used for RADIAC instrument calibration and laboratory counting instrumentation are authorized for use in building 2540 if: (1) the Atomic Number (Z=1-83) for sealed sources does not exceed 1 Curie per nuclide with a total not to exceed 10 Curies, (2) the Atomic Number of material (Z= 84-95) for any source not to exceed a total of 1 millicurie.

l. Sources used under this permit shall be stored in Building 2540, room 109, when they are no longer useable or deemed as excess. Disposal of sources shall be in accordance with AR 11-9.

m. This RWP combines the sources previously contained in RWPs 139 and 160. RWPs 139 and 160 are terminated as of this date.

n. Unless specifically provided otherwise, the sources listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Amendment Application, dated 1 March 2004, signed by Craig Goldberg, Fort Monmouth RSO.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 1 March 2004

X **Initial Permit Application** (Combine #139 & #160, assign #270)

___ **Application for Amendment to Permit No.** _____

___ **Application for Renewal of Permit No.** _____

1. To: CECOM Dir. for Safety AMSEL-SF-RE Ft. Monmouth, NJ 07703	2. Organization Applying for Permit: CECOM DS AMSEL-SF-RE Ft. Monmouth, NJ 07703

3. Radiation Area Supervisor: Name Craig Goldberg

4. Radioactive Material:

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)
Cs-137	Cesium Chloride	solid, 125 Ci (Model 81)
Tc-99	Tc-99 in/on metal	solid, 0.8784 Ci (Model DNS-19)
Cs-137	Cesium Chloride	solid, 200 mCi (Model 142-10
Pu-238	Pu-238 in aluminum foil	solid, 25 Ci (Type PPRB6879)

5. Other Sources of Ionizing Radiation Producing Devices: None

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Burt Cummings
Al Ferrella
Jason Simpson
Mary Chislett
Hugo Bianchi
Mike Basso
Walt Swaylik
Ed Groeber
Otto Bismarck

RADIOLOGICAL PERMIT APPLICATION

7. **Location where source(s) of ionizing radiation will be used (Bldg, rm) :**
Bldg. 2540, room 108

8. **Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP.**
All sources will be used with SOP #'s 20-02, -04, -06 & -07.

9. **Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.)** Sources will be used in an ISO registered laboratory.

10. **Signature of Director of Responsible Individual:**

Name: Stephen G. Lafoint **Signature** [signature]

CECOM Directorate for Safety USE ONLY:

Instrumentation:
Alpha, Beta & Gamma RADIAC is provided by CECOM DS for use with all sources listed in Item 4.

Dosimetry:
CECOM DS will provide personal dosimeters for use with the Cs-137 sources.

Reviewed by: Hugo Bianchi **Date:** 2 March 2004

Approved by: Cy Kelly **Date:** 3 MAR 2004

Radiological Permit Application Supplement

Name: Cummings (Last) Burt (First) C. (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM Ft. Monmouth	1993-1998	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, Beta, Gamma	UP TO 2000 Curies	Various Nuclear Power Facilities	1993-1992	Calibration
" " "	UP TO 1600 Curies	CECOM Directorate for Safety	1992-Present	Calibration
X-Ray	320D Isovolt X-ray machine	Ft. Monmouth	1992-Present	Survey & use

Radiological Permit Application Supplement

Name: Perrella (Last) Albert (First) R (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM FT MONMOUTH	1993-1998	YES NO	YES NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Alpha, beta, GAMMA	up to 160 curies	CECOM Directorate for SAFETY	1993-present	CALIBRATION
X-RAY	320D ISOVOLT X-RAY	Ft. MONMOUTH	1993-1998	SURVEY & USE

Radiological Permit Application Supplement

Name: Simpson (Last) Jason (First) R (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
CECOM DS, FT. Monmouth, NJ	6 weeks	(YES) NO	(YES) NO
CECOM RSO Course	40 hours	YES (NO)	(YES) NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cs-137	~~136~~ 150 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration
Pu-239	1.66 E-03 mCi	BLDG 2540 FT. Monmouth	6 weeks	Calibration
X-Ray	300 KeV	BLDG 2540 FT. Monmouth	6 weeks	Calibration
various isotopes	Atomic Numbers 1-95, < 1 Ci	BLDG 2540 FT. Monmouth	6 weeks	Calibration

Radiological Permit Application Supplement

Name: Chislett (Last) Mary (First) L (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Ft. Monmouth - Bldg 2540 Directorate for Safty	Started - 3/21/00	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Cesium	130 ci	Ft Monmouth Bldg 2540 Rm 108	3 MO.	calibratio
Americium-241	10 ci	Ft Monmouth Bldg 2540 Rm 108	3 MO.	Calibratio
PU-238	Calibration Standard	Ft Monmouth Bldg 2540 Rm 108	3 MO.	Calibratio
PU-239	2 ci	Ft Monmouth Bldg 2540 Rm 108	3 MO	Calibratio

Radiological Permit Application Supplement

Name: Bianchi (Last) Hugo (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FSH, S.A.TX 91X Course	16 weeks	YES NO	(YES) NO
ORAU, Applied HP course	5	YES NO	(YES) NO
FSH, X-Ray Survey Techniques	2	YES NO	(YES) NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Atomic #s 1-83	4Ci - Ci range, sealed &	Ft. Mon.	13 yrs.	Survey, use and
and transuranics	unsealed sources	—	—	R&D.
X-Ray Machine Survey	320D Isovolt	Ft. Mon.	13 yrs.	Survey

Radiological Permit Application Supplement

Name: Basso Michael J
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
Fort Monmouth	40 Years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	5000 Curies	Evans	20 yrs.	Research + Development
Cs-137	120 Curies	Evans	20 yrs	"
X-ray	300 Kev	Evans	20 yrs	"
gamma Neutron	1 MeV Accelerator	Evans	20 yrs	"

Radiological Permit Application Supplement

Name: Swaylik Walter
(Last) (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FT. Monmouth	8 years	(YES) NO	(YES) NO
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co-60	3500 curies	EVANS Area	4 years	Development Testing
VDM-1 Cs-137	120 curies	EVANS Area	4 years	Development Testing
Am-241	micro curies	EVANS Area	6 years	Development Testing

Radiological Permit Application Supplement

Name: Groeber (Last) EDWARD (First) OTTO (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
AFWL KIRTLAND AFB, NM	4 years	(YES) NO	(YES) NO
USACECOM FT. MON, NJ	18 years	(YES) NO	(YES) NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
Co^{60}	100K Curies	KAFB, NM	3 years	Research
Cs^{137}	VDM-1A	KAFB, NM	4 years	Research/ Testing
Co^{60}	Vault	FT. monmouth	18 years	Testing
Cs^{137}	VDM-1A	FT. monmouth	18 years	Testing

Radiological Permit Application Supplement

Name: Bismarck (Last) Otto (First) B (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation:

1. Training:

Where Trained	Duration of Training	On the Job	Formal Course
FT Monmouth, N.J.		(YES) NO	YES NO
FT Monmouth, N.J. CAMP EVANS AREA	1997-1999	(YES) NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use
AM-241	INSTRUMENT SOURCE CHECK	BLDG 9045 CAMP EVANS	1997-1999	INSTRUMENT RESPONSE
Cs-137	CS-137 140 Ci	BLDG 2540 CAL + LAB	2000-	CALIBRATION

11-9n 13 January 2004

Memorandum for Record

SUBJECT: RWP #139 for Wide Area Alpha Source Expiring on 14 January 2004

1. Subject RWP has been submitted in a timely manner and is in the process of being renewed. In addition, RWP #160 issued to permit the use of various calibrators in building 2540, is due to expire on 6 March 2004. It is our intent to combine the materials used in both RWPs into one permit.

2. Therefore, RWP #139 will be extended for a period of 3 months from this day and combined with RWP #160 on or before 6 March 2004.

3. Our POC is the undersigned at X73112 extension 6405.

4. CECOM Bottom Line: THE WARFIGHTER

/S/

CRAIG GOLDBERG
Fort Monmouth
Radiation Safety Officer

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

AMSAM-TMD-SRN

U.S. Army Test, Measurement, and Diagnostic Equipment Activity
U.S. Army Primary Standards Laboratory Directorate
Radiation Standards and Dosimetry Laboratory
Building 5417, Redstone Arsenal, AL 35898-5000

REPORT OF CALIBRATION

RADIAC Calibrator
J.L. Shepherd Model 81-14Q
Serial No. 7140

FOR

W4GV91

The calibrator was calibrated in accordance with SRN-6, "Calibration Technique for Gamma Ray Sources" using APSL standard Shonka-Wyckoff ionization chambers models A$, A5, and A6. This calibration is traceable to the National Institute of Standards and Technology. Supporting documentation relative to traceability is on file and is available for examination upon request. Calibration uncertainty (k=2) is +/- 3.5 percent at the 95% confidence level over the calibration interval. The user should be aware that factors exist which may cause the source to drift out of calibration prior to expiration of the recommended interval.

Calibration measurements were normalized to 22° Celsius and one standard atmosphere pressure. No correction to the calibration data for these atmospheric conditions is required.

This calibration is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA Cert No 1256.01) and fully complies with the provisions of ANSI/NCSL Z540-1-1994. In addition, the quality system of the Army Primary Standards Laboratory is registered to ISO 9002.1994. This report shall not be reproduced except in full without written permission of the Radiation Standards and Dosimetry Laboratory.

Calibrated By:

PAUL O. PITTMAN
Senior Technician, Nucleonics
DSN 746-1302 / Commercial (256) 876-1302

Reviewed By:

STEVEN C. ROGERS
Team Leader, Nucleonics
Rad Stds and Dos Lab

Calibration Report No. 7140

Date: 28 October 2002
Calibration Due: 17 October 2004

ACCREDITED
CERT. NO. 1256.01

NSF
QUALITY SYSTEM REGISTERED TO ISO 9002:1994

AMSAM-TMD-SRN

The accompanying chart lists measured dose rates at various distances from the source at the time of calibration. The detector was centered in the radiation beam 5 inches above the intersection of the "0" lines on the calibration table. The table height was set at 43 inches.

EXPOSURE RATE VS. DISTANCE

Distance (mm)	130 Ci Exposure Rate (R/hr)	5.2 Ci Exposure Rate (R/hr)	200 mCi Exposure Rate (mR/hr)	25 mCi Exposure Rate (mR/hr)	1 mCi Exposure Rate (mR/hr)
330	278	12.9	507	64.4	1.45
400	188	8.70	348	43.8	1.01
500	120	5.62	221	27.9	0.652
600	83.2	3.86	161	19.2	0.462
700	61.0	2.82	117	13.9	0.331
800	46.6	2.16	87.8	10.4	0.275
900	36.8	1.71	69.0	8.30	0.222
1000	29.8	1.37	54.6	6.54	0.172
1500	13.0	0.602	24.3	3.12	0.0954
2000	7.31	0.342	13.7	1.78	0.0682
2500	4.68	0.220	8.91	1.19	0.0425
3000	3.24	0.153	6.16	0.782	0.0317
4000	1.81	0.0861	3.45	0.441	0.0222
5000	1.17	0.0554	2.21	0.288	0.0171

The distance indication with the table at its forward-most point on the track is 330 mm.

TC-01

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

Certificate of Calibration
(Beta Source)

The Technetium 99 beta source was measured in a gas proportional counter using P-10 as counting gas. The beta emissions from the surface of the source were measured at it's plateau voltage to determine it's 2π cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. Beta standard 93TC4704196 is our NIST referenced source used in establishing NIST traceability.

REF.PO# 10715
Model DNS-19

Active Diameter(or area) 25mm Mounting Material SS
Total Diameter(or area) 32mm Thickness 0.79mm

110	cpm ±	11	cpm 2π
180	dpm ±	18	dpm 4π
0.0000811	microcurie		
05-17-95	date of measurement		
95TC3203025	source serial number		
10.0	overall uncertainty(percent)		
25	backscatter (percent)		

Michael A. Ortiz
Calibration Manager

Charles L. Gonzales
Quality Assurance Manager

less than 2200 leak test results(dpm /100cm^2)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

BC007-95

TC-01

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

Certificate of Calibration
(Beta Source)

The Technetium 99 beta source was measured in a gas proportional counter using P-10 as counting gas. The beta emissions from the surface of the source were measured at it's plateau voltage to determine it's 2π cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. Beta standard 93TC4704196 is our NIST referenced source used in establishing NIST traceability.

REF.PO# 10715
Model DNS-19

Active Diameter(or area) 25mm Mounting Material SS
Total Diameter(or area) 32mm Thickness 0.79mm

845	cpm ±	42	cpm 2π
1,350	dpm ±	68	dpm 4π
0.000608	microcurie		
05-17-95	date of measurement		
95TC3203026	source serial number		
5.0	overall uncertainty(percent)		
25	backscatter (percent)		

Michael A. Ortiz
Calibration Manager

Charles L. Gonzales
Quality Assurance Manager

less than 2200 leak test results(dpm /100cm^2)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

BC007-95

TC-01

THE SOURCE INC.

Radiation standards and check sources
2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

Certificate of Calibration
(Beta Source)

The Technetium 99 beta source was measured in a gas proportional counter using P-10 as counting gas. The beta emissions from the surface of the source were measured at it's plateau voltage to determine it's 2π cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. Beta standard 93TC4704196 is our NIST referenced source used in establishing NIST traceability.

REF.PO# 10715
Model DNS-19

Active Diameter(or area) 25mm Mounting Material SS
Total Diameter(or area) 32mm Thickness 0.79mm

9,040	cpm ±	452	cpm 2π
14,500	dpm ±	725	dpm 4π
0.00653	microcurie		
05-17-95	date of measurement		
95TC3203027	source serial number		
5.0	overall uncertainty(percent)		
25	backscatter (percent)		

Michael A. Ortiz
Calibration Manager

Charles L. Gonzales
Quality Assurance Manager

less than 2200 leak test results(dpm /100cm^2)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

BC007-95

TC-01

THE SOURCE INC.

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2810 Siler Lane Santa Fe, NM 87501
(505)473-9538 FAX(505)473-5805

Certificate of Calibration
(Beta Source)

The Technetium 99 beta source was measured in a gas proportional counter using P-10 as counting gas. The beta emissions from the surface of the source were measured at it's plateau voltage to determine it's 2π cpm rate. Corrections were applied for background, coincidence loss and backscatter factors when applicable. Beta standard .93TC4704196 is our NIST referenced source used in establishing NIST traceability.

REF.PO# 10715
Model DNS-19

Active Diameter(or area)	25mm	Mounting Material	SS
Total Diameter(or area)	32mm	Thickness	0.79mm

112,000	cpm ±	5,600	cpm 2π
179,000	dpm ±	8,950	dpm 4π

0.0806 microcurie
05-17-95 date of measurement
95TC3203028 source serial number
5.0 overall uncertainty(percent)
25 backscatter (percent)

Michael A. Ortiz
Calibration Manager

Charles L. Gonzales
Quality Assurance Manager

less than 2200 leak test results(dpm /100cm^2)

The overall uncertainty of the measurement is three times the value found from combining quadratically the sum of the overall uncertainty reported by NIST in the radioactive measurements assurance program; the standard deviation of the mean for the NIST standard as measured in the system used for calibration; and the standard deviation of the mean for the source measurements.

BC007-95

DEPARTMENT OF THE ARMY
UNITED STATES ARMY AVIATION AND MISSILE COMMAND
REDSTONE ARSENAL, ALABAMA 35898-5000

REPLY TO
ATTENTION OF

AMSAM-TMD-SRN

U.S. Army Test, Measurement, and Diagnostic Equipment Activity
U.S. Army Primary Standards Laboratory Directorate
Radiation Standards and Dosimetry Laboratory
Building 5417, Redstone Arsenal, AL 35898-5000

REPORT OF CALIBRATION

RADIAC Calibrator (Panoramic Irradiator)
J.L. Shepherd Model 142-10
Serial No. 6082

FOR

W4GV91

The calibrator was calibrated using a Radcal MDH Model 1515, S/N 15-1251, with calibration traceable to the National Institute of Standards and Technology through the APSL standard Shonka Wyckoff ionization chamber Model A5, S/N 118. Supporting documentation relative to traceability is on file and is available for examination upon request. Uncertainty (k=2) of individual exposure rate measurements is +/- 5 percent at the 95% confidence level over the calibration interval. The user should be aware that factors exist which may cause the source to drift out of calibration prior to expiration of the recommended interval.

Calibration measurements were normalized to 22° Celsius and one standard atmosphere pressure. No correction to the calibration data for these atmospheric conditions is required.

This calibration is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA Cert No 1256.01) and fully complies with the provisions of ANSI/NCSL Z540-1-1994. In addition, the quality system of the Army Primary Standards Laboratory is registered to ISO 9002.1994. This report shall not be reproduced except in full without written permission of the Radiation Standards and Dosimetry Laboratory.

Calibrated By:

PAUL O. PITTMAN
Senior Technician, Nucleonics
DSN 746-1302 / Commercial (256) 876-1302

Reviewed By:

STEVEN C. ROGERS
Team Leader, Nucleonics
Rad Stds and Dos Lab

Calibration Report No. 6082
Page 1 of 2 pages
Date: 29 October 2002
Calibration Due: 18 October 2004

A2LA ACCREDITED CERT. NO. 1256.01

NSF QUALITY SYSTEM REGISTERED TO ISO 9002:1994

Exposure rate measurements were made for each of the six irradiator "rings" (10 cm, 20 cm, 30 cm, 40 cm, 50 cm, 60 cm) using the following method:

The MDH Model 10X5-6 detector, S/N 14476, was positioned such that its center was approximately 2 cm "inside" the ring (toward the source) and approximately 5 cm above the table surface. Using this set-up, exposure rate measurements were made at five positions around the circumference of each ring and averaged to obtain the average exposure rate for each distance listed in the table below.

No ring was removed during this calibration, and the table was NOT rotated.

Ring / Distance		Average Exposure Rate	Variation (2 std dev)
1	10 cm	118 mR/min (7.08 R/hr)	+/- 8.0 %
2	20 cm	26.9 mR/min (1.61 R/hr)	+/- 4.9 %
3	30 cm	11.5 mR/min (690 mR/hr)	+/- 3.7 %
4	40 cm	6.66 mR/min (400 mR/hr)	+/- 2.1 %
5	50 cm	4.21 mR/min (253 mR/hr)	+/- 4.0 %
6	60 cm	2.98 mR/min (179 mR/hr)	+/- 4.2 %

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

AEA Technology QSA GmbH
Postfach 58 42 Gieselweg 1
D-38049 Braunschweig D-38110 Braunschweig

Tel. +49 (0) 5307 932-0
Fax +49 (0) 5307 932-194

Source no. GE 715

05412
DKD-K-06501
98-10

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 715**
Auftraggeber *Customer*	**Amersham Holdings, Inc.** **USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

Der Deutsche Kalibrierdienst ist Unterzeichner des multilateralen Übereinkommens der European cooperation for Accreditation of Laboratories (EAL) zur gegenseitigen Anerkennung der Kalibrierscheine.

Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

This calibration certificate documents the traceability to national standards, which realize the units of measurement according to the International System of Units (SI).

The Deutscher Kalibrierdienst is signatory to the multilateral agreement of the European cooperation for Accreditation of Laboratories (EAL) for the mutual recognition of calibration certificates.

The user is obliged to have the object recalibrated at appropriate intervals.

Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

05412
DKD-K-06501
98-10

Alpha Wide Area Reference Source

Source no.	GE 715
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	815 Bq
Alpha surface emission rate	361 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

AEA Technology QSA GmbH
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Tel. +49 (0) 5307 932-0
Fax +49 (0) 5307 932-194

Source no. GE 716

05413
DKD-K-06501
98-10

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 716**
Auftraggeber *Customer*	**Amersham Holdings, Inc.** **USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

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Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

05413
DKD-K-06501
98-10

Alpha Wide Area Reference Source

Source no.	GE 716
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	8.02 kBq
Alpha surface emission rate	3.49E03 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

DEUTSCHER KALIBRIERDIENST **DKD**

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

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Source no. GE 717

05414
DKD-K-06501
98-10

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 717**
Auftraggeber *Customer*	**Amersham Holdings, Inc.** **USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

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Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

05414
DKD-K-06501
98-10

Alpha Wide Area Reference Source

Source no.	GE 717
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	57.9 kBq
Alpha surface emission rate	2.61E04 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

AEA Technology QSA GmbH
Postfach 58 42 Gieselweg 1
D-38049 Braunschweig D-38110 Braunschweig

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Source no. GE 718

05415
DKD-K-06501
98-10

Kalibrierzeichen
Calibration mark

Kalibrierschein
Calibration Certificate

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 718**
Auftraggeber *Customer*	**Amersham Holdings, Inc. USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

Dieser Kalibrierschein dokumentiert die Rückführung auf nationale Normale zur Darstellung der Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI).

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The user is obliged to have the object recalibrated at appropriate intervals.

Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

AEA TECHNOLOGY

Alpha Wide Area Reference Source

Source no.	GE 718
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	857 Bq
Alpha surface emission rate	379 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

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Source no. GE 719

05416
DKD-K-06501
98-10

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 719**
Auftraggeber *Customer*	**Amersham Holdings, Inc. USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

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Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

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The user is obliged to have the object recalibrated at appropriate intervals.

Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

AEA TECHNOLOGY

Alpha Wide Area Reference Source

Source no.	GE 719
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	7.95 kBq
Alpha surface emission rate	3.46E03 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

DEUTSCHER KALIBRIERDIENST DKD

Kalibrierlaboratorium für Meßgrößen der Radioaktivität
Calibration laboratory for measurements of radioactivity

AKKREDITIERT DURCH DIE
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (PTB)

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Source no. GE 720

05417
DKD-K-06501
98-10

Kalibrierschein
Calibration Certificate

Kalibrierzeichen
Calibration mark

Gegenstand *Object*	**Alpha Wide Area Reference Source**
Hersteller *Manufacturer*	**AEA Technology QSA GmbH**
Typ *Type*	**PPRB6879**
Strahler-Nr. *Source number*	**GE 720**
Auftraggeber *Customer*	**Amersham Holdings, Inc. USA-Arlington Heights, IL 60005**
Auftragsnummer *Order No.*	**105352**
Anzahl der Seiten des Kalibrierscheines *Number of pages of the certificate*	**2**
Referenzdatum *Reference date*	**1 October 1998**

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The Deutscher Kalibrierdienst is signatory to the multilateral agreement of the European cooperation for Accreditation of Laboratories (EAL) for the mutual recognition of calibration certificates.

The user is obliged to have the object recalibrated at appropriate intervals.

Stempel *Seal*	Datum *Date*	Leiter des Kalibrierlaboratoriums *Head of the calibration laboratory*	Stellvertreter *Deputy*	Bearbeiter *Person in charge*
Deutscher Kalibrierdienst DKD-K-06501	13 October 1998	Dr. Thieme	Schott	Linke / Schott / Schüler

AEATECHNOLOGY

Alpha Wide Area Reference Source

Source no.	GE 720
Drawing	VZ-676/6
Nuclide	Plutonium-238
Activity	61.4 kBq
Alpha surface emission rate	2.77E04 s^{-1} in 2 π steradian
Reference date	1 October 1998 at 12.00 GMT
Dimensions of active surface	203 mm x 127 mm
Overall dimensions	219 mm x 143 mm x 7 mm
Leakage and contamination test	The amount of the removable activity is less than 0.1 % of the total activity but does not exceed 200 Bq. (Wipe test according to ISO 9978, no. 5.3.1)
Date of wipe test	12 October 1998
Construction	Pu-238 is incorporated into the surface of an anodized aluminium foil of 0.3 mm thickness. The thickness of the activated layer is approx. 6 µm. The activated foil is mounted into a holder.
Measuring method	The activity was determined by comparison with a reference source of the same construction. The alpha surface emission rate was measured using a windowless proportional counter.
Traceability	Additional to the direct traceability to the PTB through the DKD this product complies with the requirements for traceability to NIST specified in the American National Standard "Traceability of Radioactive Sources to the NIST and Associated Instrument Quality Control (ANSI N42.22-1995)". As a requirement of the ANSI N42.22-1995 Amersham participates in the NEI/NIST Measurements Assurance Program of the Nuclear Power Industry.
Uncertainty	The relative uncertainty of the activity is 3 %, the relative uncertainty of the alpha surface emission rate is 3 %. The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95 %. (Ref. NIST Technical Note 1297/"Guide to the Expression of Uncertainty in Measurement" ISO Guide, 1995)
Radioactive impurities	Related to Pu-238 (equal 100 %) the following radioactive impurities were detected: none
Uniformity	The uniformity of the surface emission rate is better than ± 15 %.
Remark	

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

In reliance on statements and representations made by the applicant, authority is hereby granted to receive, utilize and store the materials and/or devices in Item 5.

1. ACTIVITY GRANTED PERMIT	2. POC / RESPONSIBLE INDIVIDUAL	
Chenega Technology Service Corporation P.O. Box 60, Building 286 (Russell Hall) Fort Monmouth, NJ 07703	Edward Lynch	
	3. PERMIT NUMBER 250	4. EXPIRATION DATE 19 February 2006

5. MATERIAL / DEVICE	6. CHEMICAL/ PHYSICAL FORM	7. ACTIVITY
a. Portable Contraband Detection and Identification System – 2 Total Model: Vapor Tracer 2, SN: 09-9531 (FM ID# N-22) SN: 09-9518 (FM ID# N-23) Manufactured by: GE Ion Track Instruments, LLC	b. Nickel-63	b. 20 millicuries

8. CONDITIONS:

a. The Vapor Tracer 2 is used to detect explosives and drugs mailed to or transported to Fort Monmouth,

b. Authorized place of use is Building 460, Main Post of Fort Monmouth and at other points of entry to Fort Monmouth and the Charles Wood Area.

APPROVED: DATE: 19 February 2004

CRAIG S. GOLDBERG
Fort Monmouth
Radiation Safety Officer

U. S. ARMY
COMMUNICATIONS - ELECTRONICS COMMAND
AND
FORT MONMOUTH
RADIOLOGICAL PERMIT

SUPPLEMENTARY SHEET

PERMIT NUMBER: 250	EXPIRATION DATE: 19 February 2006

CONDITIONS:

c. The Vapor Tracer 2s will be utilized under the supervision of the Fort Monmouth Radiation Safety Officer and IAW the Operating and Maintenance Manual, Vapor Tracer 2 Manual Rev. 1 as provided with the Radiological Permit Amendment Application #250, dated 3 February 2004.

d. The Vapor Tracer 2 may not be removed, reconfigured or modified in any manner, all authorized maintenance will be performed IAW with the Vapor Tracer 2 Manual Rev 1.

e. Notify the CECOM Directorate for Safety, Attn: AMSEL-SF-RE, Fort Monmouth, NJ 07703-5024, Voice: (732) 427-3112, extensions 6405, 6440 or 6444 as soon as practical concerning any administrative or technical changes to the Radiological Permit Application for the device listed in item 5, to include procuring additional devices.

f. The Vapor Tracer 2 shall be leak tested annually.

g. Unless specifically provided otherwise, the device listed in item 5 shall be possessed and used IAW statements, representations and procedures contained in the Radiological Permit Application, dated 3 February 2004, signed by Gregory Kucharewski, Chenega Technology Service Corporation.

RADIOLOGICAL PERMIT APPLICATION

Check One **Date** 02-03-2004

Initial Permit Application: X (RWP# 250F)
Application for Amendment to Permit No.: _____
Application for Renewal of Permit No.: _____

1. To: CECOM Dir. for Safety **AMSEL-SF-RE** **Ft. Monmouth, NJ 07703**	**2. Organization Applying for Permit:** **Chenega Technology Service Corporation** **P.O. Box 60, Building 286** **Fort Monmouth, NJ 07703**

3. Radiation Area Supervisor: Edward Lynch

4. Radioactive Material: N/A

Element & Mass Number	Chemical Form	Physical Form Activity (mCi)

5. Other Sources of Ionizing Radiation Producing Devices:

1. Two Portable Contraband Detection and Identification System, Model: Vapor Tracer II Manufactured by GE Ion Track Instruments, LLC , b. Nickel-63 b. 8 millicuries (1) SN: 09-9518, (2) SN: 09-9531.

6. Authorized Users:
Note: Attached Radiological Permit Supplement must be filled out for each person listed below.

Katherine Bruno	Nancy Capozza	Evan Egerton
Keith Farrow	John Hardina	Edward Lynch
Robin Mc Gaskey	Sean Ramsey	Warren Scianimanico
Pamela Tiggs	Alicia Koeiman	Marilyn Roberson
Carolyn Castelli		

RADIOLOGICAL PERMIT APPLICATION

7. Location where source(s) of ionizing radiation will be used (Bldg, rm) : BUILDING 460

8. Describe procedure(s) in which radioisotope(s) and/or other sources of ionizing radiation will be used or attach current SOP. **SEE ATTACHED DOCUMENT**

VT^2 To be used IAW Tech Manual.

9. Describe laboratory facilities and equipment, (containers, shielding, fume hoods, protective clothing, etc.) **ANNUAL LEAK TEST**

10. Signature of Director of Responsible Individual:

Name: GREG KUCHAREWSKI **Signature** Greg. Kucharewski

CECOM Directorate for Safety USE ONLY:

Instrumentation: NOT REQUIRED

Dosimetry: ~~**PROVIDED BY CECOM DIR. FOR SAFETY (WHOLE BODY DOSIMETERS).**~~

Not required HB

Reviewed by: Hugo Bianchi **Date:** 17 Feb 04

Approved by: [signature] **Date:** 19 Feb 04

Radiological Permit Application Supplement

Name: Bruno (Last) Katherine (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Canozza (Last) Nancy (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Egerton (Last) Evan (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Farrow (Last) Keith (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Hardina (Last) John (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Lynch (Last) Edward (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: McGaskey (Last) Robyn (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Ramsey (Last) Sean (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Scianimanico (Last) Warren (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Tiggs (Last) Pamela (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Koeiman (Last) Alicia (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 977	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

Radiological Permit Application Supplement

Name: Roberson (Last) Marilyn (First) (Middle)

List below your training and experience with radioisotopes and/or other sources of ionizing radiation identified in paragraphs 4 and/or 5 of the Radiological Permit Application

1. Training: Vapor Tracer II.

Where Trained	Duration of Training	On the Job	Formal Course
Bldg. 451	Two Hours	(YES) NO	YES (NO)
		YES NO	YES NO
		YES NO	YES NO

2. Experience:

Isotope or Other Source(s)	Maximum Amount or Description of Source	Location	Duration	Type of Use

PROTECTING TOMORROW'S TECHNOLOGY TODAY

Vapor Tracer II Training

DATE 01-06-2004

SECURITY AWARENESS BRIEFING ATTENDEE SIGN-UP LOG SHEET

	EMPLOYEE'S NAME (PRINT)	SIGNATURE	BADGE NUMBER
1.	Carolyn L. Castelli	Carolyn L Castelli	0932
2.	Alicia Koeiman	Alicia Koeiman	0951
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			

DEPARTMENT OF THE ARMY
Headquarters
U.S. Army Communications - Electronics Command
and Fort Monmouth
Fort Monmouth, NJ 07703 - 5024

Reply to
Attention of: 19 February 2004

AMSEL-SF-RE(LAB) (11-9f)

MEMORANDUM FOR CECOM, BUILDING 2539/2540, LABORATORY ROAD, FORT MONMOUTH, NJ 07703-5024

1. The result(s) for wipe test(s) performed on 13 February 2004 are provided below.

S #	Description	Isotope	Result (dpm)
1	N-22 09-9531	Ni-63	≤LLD
2	N-23 09-9518	Ni-63	≤LLD

Comments: N-22 & N-23 VAPOR TRACER 2

2. The estimated lower limit of detection (LLD) for Ni-63, beta radiation is 11.49 dpm.

3. The above results are below the contamination limits as specified in AR 11-9, Table 5-2, The Army Radiation Safety Program, 28 May 1999.

4. Our POC is Nicholas J. Antonelli, Health Physics Technician, New World Technology, contractor, DSN 987-5370, Commercial (732) 427-5370

5. CECOM Bottom Line: THE WARFIGHTER.

Stephen G. LaPoint
Director, Directorate for Safety

Patterson Army Health Clinic
General Electric DMR

MEDICAL PHYSICIST MAMMOGRAPHIC EQUIPMENT EVALUATION REPORT

Date of Report: September 11, 2003

Date of Survey: September 11, 2003

Evaluation Performed by:

John C. Ramsey
Medical Physicist
BIO-MED ASSOCIATES, INC.

JCR/tlb
pattersonarmy-gedmr-r2

MAMMOGRAPHIC EQUIPMENT EVALUATION

Patterson Army Health Clinic
1075 Stephenson Street/Radiology Dept.
Ft. Monmouth NJ 07703

Date of Survey: September 11, 2003

ACR Expiration Date: April 27, 2004
FDA Expiration Date: May 27, 2004

Equipment

Location of Unit: MAMMOGRAPHY
X-ray Unit Manufacturer: General Electric — Model: DMR
Processor Manufacturer: Kodak — Model: X-OMAT 480 RA
Screen Manufacturer: Kodak — Type: MR-2
Film Manufacturer: Kodak — Type: MR-2

Mammography Phototimer Technique Chart

SEE PAGE 5

1. MAMMOGRAPHIC UNIT ASSEMBLY EVALUATION

Free-standing dedicated unit is mechanically stable.	PASS
All moving parts move smoothly,without obstructions to motion.	PASS
All locks and detents work properly.	PASS
Image receptor holder assembly is free from vibrations.	PASS
Image receptor slides smoothly into holder assembly.	PASS
Image receptor is held securely by assembly in any orientation.	PASS
Compressed breast thickness scale is accurate to +/- 0.5 cm, reproducible to +/- 2 mm	FAIL
Patient or operator is not exposed to sharp or rough edges, or other hazards	PASS
Operator technique control charts are posted	PASS
Operator protected during exposure by adequate radiation shielding.	PASS
All indicator lights working properly	PASS
Automatic decompression can be overriden to maintain compression (status displayed)	PASS
Manual emergency compression release can be activated in the event of a power failure	PASS

Mammography Phototimer Technique Chart

	FATTY BREAST				50% FATTY - 50% DENSE				DENSE BREAST			
Breast Thickness (cm)	AEC Exposure Mode	Target / Filter	kVp Setting	AOP	AEC Exposure Mode	Target / Filter	kVp Setting	AOP	AEC Exposure Mode	Target / Filter	kVp Setting	AOP
< 3 cm		Mo/Mo	25	CNT		Mo/Mo	25	CNT		Mo/Mo	26	CNT
3 to 5 cm		Mo/Mo	26	CNT		Mo/Mo	25	CNT		Mo/Rh	27	CNT
5 to 7 cm		Mo/Mo	27	CNT		Mo/Rh	27-29	CNT		Rh/Rh	28-29	STD
> 7 cm		Mo/Rh	28-30	CNT		Rh/Rh	31	STD		Rh/Rh	31-34	DOSE

Implant Displacement Views

Photo-time using the above chart

Manual Technique for Implanted Breasts

	FATTY BREAST				50% FATTY - 50% DENSE				DENSE BREAST			
Breast Thickness (cm)	AEC Exposure Mode	Target / Filter	kVp Setting	mAs	AEC Exposure Mode	Target / Filter	kVp Setting	mAs	AEC Exposure Mode	Target / Filter	kVp Setting	mAs
< 3 cm		Rh/Rh	25	100		Rh/Rh	26	100		Rh/Rh	27	120
3 to 6 cm		Rh/Rh	26	120		Rh/Rh	27	120		Rh/Rh	28	140
> 7 cm		Rh/Rh	27	140		Rh/Rh	28	140		Rh/Rh	29	160

Phantom Image:

Cassette #	13
AOP Mode	CNT

Photocell Position
2

Revised 09/11/03

2. COLLIMATION ASSESSMENT

Source to image receptor distance (SID) in mm: 660 mm

Deviation between x-ray field and light field:

Anode Material	Mo	Mo	Rh	Rh
Focal Spot Size	0.3	0.3	0.3	0.3
Collimator : (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Left Edge Deviation	0.5	0	1	0
Right Edge Deviation	3.5	2.5	6	2
Sum of left and right edge deviations	4	2.5	7	2
Sum as % of SID	**0.6%**	**0.4%**	**1.1%**	**0.3%**
Anterior Edge Deviation	4.5	4.5	4.5	2
Chest Edge Deviation	3.5	1.5	9	10.5
Sum of anterior & chest edge deviations	8	6	13.5	12.5
Sum as % of SID	**1.2%**	**0.9%**	**2.0%**	**1.9%**

ACTION LIMIT: ACR/MQSA - If sum of left plus right edge deviation or anterior plus chest edge deviations exceed 2% of SID, seek service adjustment.

Difference between x-ray field and edges of the image receptor:

Collimator: (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Left edge deviation	0.5	2	2	1
% of SID (retain sign)	**0.1%**	**0.3%**	**0.3%**	**0.2%**
Right edge deviation	1	-2	-1.5	-1
% of SID (retain sign)	**0.2%**	**-0.3%**	**-0.2%**	**-0.2%**
Anterior edge deviation	-4	-33	-4	-33
% of SID (retain sign)	**-0.6%**	**-5.0%**	**-0.6%**	**-5.0%**
Chest edge deviation	8.5	8.5	1	1.5
% of SID (retain sign)	**1.3%**	**1.3%**	**0.2%**	**0.2%**

ACTION LIMIT: ACR/MQSA - If x-ray field dimensions differ from the dimensions of the image receptor at any side by more than +/- 2% of SID or if x-ray field falls within image receptor on the chest wall side, seek service adjustment.
ACR - If x-ray field falls within image receptor by more than -4% on the anterior side, seek service adjustment.
MQSA - X-ray field can not extend beyond any of the 4 sides of the image receptor by more than +2% of the SID.

Alignment of chest wall edges of compression paddle and film:

Collimator: (cm)	18 x 24	20 x 30	18 x 24	20 x 30
Difference between paddle edge and film	4	3.5	4	4
Difference as % of SID:	**0.6%**	**0.5%**	**0.6%**	**0.6%**

ACTION LIMIT: ACR/MQSA - If chest wall edge of compression paddle is within the image receptor or projects beyond the chest wall edge of the image receptor by more than 1% of SID, seek service correction.

3. EVALUATION OF SYSTEM RESOLUTION

X-Ray Tube Manufacturer:	General Electric
X-Ray Tube Model Number:	GS412-49, Sn. 1698TX0

Nominal focal spot size, from		0.3	0.3	0.1	0.1
Anode material		Mo	Rh	Mo	Rh
Grid used?		Yes	Yes	Yes	Yes
Paddle used?		Yes	Yes	Yes	Yes
Nominal kVp setting		26	28	27	28
Nominal mA setting					
Density control setting		0	0	0	0
mAs		177	55	141	55
Magnification Factor		1.0	1.0	1.8	1.8
Limiting resolution	bars parallel to A-C axis	15	16	18	16
In line-pairs per mm	bars pependicular to A-C axis	18	15	12	11

ACTION LIMIT: If the limiting resolution is <13 line-pairs per mm with the bars parallel to the anode-cathode axis or is <11 line-pairs per mm with the bars perpendicular to the anode-cathode axis, then a more detailed investigation of the reason should be made and corrective action should be taken.

4. AUTOMATIC EXPOSURE CONTROL (AEC) SYSTEM PERFORMANCE

AEC Sensor Position: 2 Density Control: 0

Small Cassette ID: 8, 9, 10, 11 Large cassette I.D.: 5

4a. Performance Capability:

Thickness / kVp Tracking: 50% fatty - 50% dense breast							
Imaging mode:	small image receptor with grid						
Focal Spot:	large focal spot						
mA:							
Phantom Thickness	*AEC Mode*	*Anode*	*Filter*	*kVp*	*mAs*	*Density Control Setting*	*Optical Density*
2 cm	CNT	Mo	Mo	25	33	0	1.65
4 cm	CNT	Mo	Mo	25	137	0	1.59
6 cm	CNT	Mo	Rh	27	285	0	1.43
8 cm	STD	Rh	Rh	31	305	0	1.57
Mean Density (2-6 cm)	**Density Range**			**MQSA Allowable Range**			
1.56	**1.43**	**to**	**1.65**	**1.41**	**to**		**1.71**

Unit complies with final regulation 10/28/02 for 2cm - 6cm.

Image Mode Tracking for 4 cm thick phantom						
mA:	100/30					
Anode / Filter:	Mo/Mo					
Image Mode	*AEC Mode*	*Focal Spot*	*kVp*	*mAs*	*Density Control Setting*	*Optical Density*
18 x 24 cm	CNT	0.3	26	137	0	1.59
24 x 30 cm	CNT	0.3	25	134	0	1.65
MAG - no grid	CNT	0.1	27	101	0	1.79

* Mo/Rh

Overall AEC Performance				(10/28/02)		
Mean Density	**Density Range**			**Recommended Range**		
1.61	**1.43**	**to**	**1.79**	**1.46**	**to**	**1.76**

ACTION LIMIT: ACR - The AEC system should be able to maintain constant film optical density to within +/-0.30 of the average over the phantom thicknesses and imaging modes tested.

ACR/MQSA - The AEC system must be capable of maintaining film optical density within +/-0.30 of the mean (+/-0.15 after 10/28/2002) when the thickness of the phantom is varied over 2 - 6 cm and the kVp is varied over the range of those used clinically for those thicknesses. The optical density in the center of the phantom image must not be less than 1.20. If these standards are not met, seek service adjustment.

4.b. Density Control Function:

Imaging mode: Normal
mA setting: N/A
Phantom thickness: 4

Focal Spot Size: 0.3
kVp setting: 25
Cassette ID: 10

Density Selector Setting	Target/Filter	Image #	Recorded mAs	% Step Change	Measured Density	Density Change
-2	Mo/Mo	1	136		1.56	
-1	Mo/Mo	2	147	8.1%	1.64	0.08
0 / Normal	Mo/Mo	3	159	8.2%	1.69	0.05
+ 1	Mo/Mo	4	171	7.5%	1.76	0.07
+ 2	Mo/Mo	5	187	9.4%	1.79	0.03

ACTION LIMIT: (ACR) Each step should result in a 12 to 15% change in mAs, or approximately a 0.15 change in film optical density. If not, seek service.

5. UNIFORMITY OF SCREEN SPEED AND AEC REPRODUCIBILITY

Screen type:	MR-2
Film type:	MR-2
Focal spot size:	0.3

Processor:	X-OMAT 480 RA
kVp setting:	25
Imaging mode:	Normal
Density setting:	0

Small Cassettes:

Phantom Size	4.0	cm
Film Emulsion Number:	514 033 15	

Large Cassettes:

Phantom Size	4.0	cm
Film Emulsion Number:	515 030 13	

Cassette ID #	Artifacts ?	mAs	Density
Control Cassette:			
8	Yes	137	1.59
[redacted]	Yes	137	1.55
	Yes	137	1.53
Mean of control cassette densities:			1.56
Std Dev control cassette densities:			0.03
Other Cassettes:			
9	Yes	137	1.59
10	Yes	137	1.55
11	Yes	136	1.60
12	Yes	136	1.52
13	Yes	136	1.56
[redacted]			
Mean Density			1.56
Minimum Density			1.52
Maximum Density			1.60
Density Range			0.08

Cassette ID #	Artifacts ?	mAs	Density
Control Cassette:			
7	Yes	134	1.65
[redacted]	Yes	135	1.61
	Yes	134	1.59
Mean of control cassette densities:			1.62
Std Dev control cassette densities:			0.03
Other Cassettes:			
8	Yes	134	1.61
9	Yes	134	1.62
10	Yes	134	1.62
11	Yes	134	1.57
12	Yes	133	1.54
[redacted]			
Mean Density			1.60
Minimum Density			1.54
Maximum Density			1.65
Density Range			0.11

ACTION LIMIT: ACR/MQSA - If standard deviation of control cassette densities is less than 0.05 AND density range exceeds 0.3, then corrective action is needed.

6. ARTIFACT EVALUATION

Type of Attenuator:	Lucite
Thickness of Attenuator:	4.0
kVp Setting:	25, 26
Density Control Setting:	0

Image receptor size	18x24cm	24x30cm	18x24cm MAG
Cassette Number	9, 10	7, 8	9
Anode	Mo	Mo	Mo
Filter	Mo	Rh	Mo
Focal Spot size	0.3	0.3	0.1
Emulsion Orientation	Up	Up	Up
Resultant film O.D.	1.59	1.42	1.79
mAs	114	61	101
Artifacts visible?	Yes	Yes	Yes
Processor ?	Yes	Yes	Yes
Acceptable ?	Yes	Yes	Yes
Describe artifacts:	Roller marks, guide-shoe marks.	Roller marks, guide-shoe marks, mottle.	Roller marks.
Cassette-film-screen ?	Yes	Yes	Yes
Acceptable ?	Yes	Yes	Yes
Describe artifacts:	Dust	Dust.	Dust.
X-Ray Equipment ?	No	No	Yes Collimation.

ACTION LIMIT: ACR/MQSA - If significant artifacts are visible, contact the appropriate person maintaining or servicing the processor or x-ray equipment.

6. ARTIFACT EVALUATION

Type of Attenuator:	Lucite
Thickness of Attenuator:	4
kVp Setting:	25
Density Control Setting:	0

Image receptor size	18x24cm
Cassette Number	8, 12
Anode	Rh
Filter	Rh
Focal Spot size	0.3
Emulsion Orientation	Up
Resultant film O.D.	1.46
mAs	77
Artifacts visible?	Yes
Processor ?	Yes
Acceptable ?	Yes
Describe artifacts:	Roller marks, guide-shoe marks.
Cassette-film-screen ?	Yes
Acceptable ?	Yes
Describe artifacts:	Dust.
X-Ray Equipment ?	No

ACTION LIMIT: ACR/MQSA - If significant artifacts are visible, contact the appropriate person maintaining or servicing the processor or x-ray equipment.

7.a. IMAGE QUALITY EVALUATION

Phantom used:	B 545
AEC Detector Position:	2
Image Receptor and Size:	18 x 24
Cassette No.:	13

	Previous Film	Current Film	Comments
Date	8/6/2002	9/11/2003	
kVp setting	25	25	
Density Control setting	0	0	
Phototimed mAs (or exposure time)	148	147	
mAs change (or exposure time change, +t)		-1.0	
% mAs change (or % t change =+t/t x 100%)		-0.7%	
Background O.D.	1.78	1.56	
Background O.D. Change		-0.22	
O.D. outside disc	1.70	1.49	
O.D. inside disc	1.18	1.04	
O.D. difference (outside O.D. - inside O.D.)	0.52	0.45	
O.D. difference change		-0.07	
Number of fibers seen	4.5	5.0	
Fibers seen after deduction	4.5	4.5	
Fiber Change		0.0	
Number of speck groups seen	3.5	4.0	
Speck groups after deduction	3.5	3.5	
Speck group change		0.0	
Number of masses seen	4.0	4.0	
Masses seen after deduction	4.0	4.0	
Mass change		0.0	

ACTION LIMIT: **ACR/MQSA** - The largest 4 fibers, 3 speck groups, and 3 masses must be visible. Background optical density must be at least 1.20. Corrective action must be taken before any further examinations are performed if the results of this test fail any MQSA regulations.

ACR - The density difference should be at least 0.40 for a 4-mm thick acrylic disk. Background optical density should be at least 1.40 and must be 1.20. If %mAs change exceeds +/-15%, if background density change exceeds +/-0.20, if density difference change exceeds +/-0.05, or if fiber, speck group or mass score decreases by more than 0.5, the source of the change should be identified and corrected.

8. kVp ACCURACY / REPRODUCIBILITY

kVp meter used: see Appendix A Setting: Normal

Nominal kVp setting		25	27	28	32	27
Nominal focal spot size		0.3	0.3	0.3	0.3	0.1
Exposure time		56.7	51.3	50.5	45.2	157.8
mA setting		~88	~96	99.1	~111	~32
mAs setting		5	5	5	5	5
Measured kVp values						
	1	25.5	27.1	28.0	31.7	27.0
	2	25.5				
	3	25.4				
	4	25.5				
Mean kVp		25.5	27.1	28.0	31.7	27.0
Standard deviation (SD)		0.05		0.00		
Mean kVp - Nominal kVp		0.5	0.1	0.0	-0.3	0.0
0.05 x Nominal kVp		1.25	1.35	1.4	1.6	1.35
% Error		1.9%	0.4%	0.0%	-0.9%	0.0%
Coefficient of variation		0.002				

ACTION LIMIT: ACR/MQSA - If the mean kVp differs from the nominal kVp by more than +/- 5% of the nominal kVp, or if the kVp coefficient of variation exceeds 0.02, then seek service correction.

9. BEAM QUALITY (HVL) MEASUREMENT

Dosimetry system used: See Appendix A

Nominal kVp Setting		25	27	28
Anode		Mo	Mo	Mo
Filter		Mo	Rh	Mo
mA setting				
Time setting				
mAs setting		16	16	16
Exposure Measurements: (mR)	No aluminum filtration, E_{0a}	184.0	204.0	271.0
	0.2 mm of added aluminum, E_2			
	0.3 mm of added aluminum, E_3	96.9	119.4	150.9
	0.4 mm of added aluminum, E_4	79.9	101.5	126.5
	0.5 mm of added aluminum, E_5			
Repeat E_0 measurement E_{0b},		183.4	203.8	271.0
Measurment E_{0b} within 2% of E_{0a} ?		Yes	Yes	Yes
Average E_0		183.7	203.9	271.0
Average E_0 / 2		91.9	102.0	135.5
Recorded thickness and exposures that bracket $E_0/2$:	(t_a<t_b) t_a	0.3	0.3	0.3
	t_b	0.4	0.4	0.4
	(E_a>E_b) E_a	96.9	119.4	150.9
	E_b	79.9	101.5	126.5
Calculated HVL:		0.33	0.40	0.36
Minimum allowed HVL		0.28	0.30	0.31
Maximum allowed HVL		0.37	0.45	0.40

$$\text{Calculated HVL} = \frac{t_b \ln\left(\frac{2E_a}{E_0}\right) - t_a \ln\left(\frac{2E_b}{E_0}\right)}{\ln\left(\frac{E_a}{E_b}\right)}$$

ACTION LIMIT: **ACR:** If measured HVL < kVp/100 + 0.03 (in mmAl)
or
If measured HVL > kVp /100 + C (In mmAl),
Where C = 0.12 for Mo/Mo, C = 0.19 for Mo/Rh,
C = 0.22 for Rh/Rh, and C = 0.30 for W/Rh, then seek service correction.

MQSA: HVL > kVp/100 (in mmAl)

10. BREAST ENTRANCE EXPOSURE, AEC REPRODUCIBILITY, AVERAGE GLANDULAR DOSE, AND RADIATION OUTPUT

Dosimetry system used:	SEE APPENDIX A			
Imaging mode:			SID (cm)	66 cm
Screen type:	MR-2		Source-detector distance (cm):	60.6 cm
Film type:	MR-2		Source-bucky distance (cm):	64.4 cm
Cassette size (cm):	18 x 24 cm		Dosimeter used:	See Appendix A
Field restriction (cm):	18 x 24 cm			
Phantom and thickness:	B 545, 4.2cm			

Breast Thickness (cm)	4.2 cm	4.2 cm	4.2 cm
Phantom	B 545	B 545	B 545
Nominal kVp setting	25	27	28
Anode material	Mo	Mo	Mo
Filter	Mo	Rh	Mo
AEC Mode	CNT	AEC	AEC
AEC density control setting	2	2	2
Measured HVL (mmAl)	0.33	0.40	0.36

Breast Entrance Exposure and AEC Reproducibility

	R	mAs	R	mAs	R	mAs
Exposure #1	1.247	171.0	0.609	81.0	0.883	88.0
Exposure #2	1.245	170.0	0.609	81.0	0.883	88.0
Exposure #3	1.245	170.0				
Exposure #4	1.239	169.0				
Mean values	1.244	170.0	0.609	81.0	0.883	88.0
Standard deviation (SD)	0.004	0.816	0.000	0.000	0.000	0.000
Coefficients of variation (CV)	0.003	0.005	0.000	0.000	0.000	0.000

Average Glandular Dose:

Inv Square corrected skin exp	1.0	1.0	1.0
Dose Conversion factor (mrad/R)*	166	204	183
Computed Average Glandular Dose (mrad):	207	124	162

* From Tables 1-3

ACTION LIMIT: If coefficient of variation for either R or mAs exceeds 0.05, seek service. If average glandular dose exceeds 300 mrads (3 mGy) for 4.2 cm effective breast thickness, seek service or technique adjustment. Corrective action must be taken before examinations are performed if the test results fail MQSA regulations.

Radiation Output Rate:

	kVp	Anode/ Filter	SID (cm)	Exp (mR)	mA	mAs	Time (sec)	Rate mR/sec	Kerma (mGy/s)
3 sec, 4.5 cm above breast support	28	Mo/Mo	66	3265.1	100	320	3.2	1020	8.91
	28	Mo/Mo	66	2049.7	100	200	2	1025	8.95
	$mR/mAs_1 \langle X_1 \rangle =$		10.203	$mR/mAs_2 \langle X_2 \rangle =$		10.249	$\lvert \langle X1 \rangle - \langle X2 \rangle \rvert =$		0.05

Air Kerma (mGy/sec) = Exp Rate (mR/sec) x 0.00873 mGy/mR

Action Limit: ACR: If output rate is less than 800 mR/sec (7.0 mGy air kerma/sec), seek service.
MQSA: If output rate is less than 513 mR/s (4.5 mGy/s), seek service.
After 10/28/2002, this value changes to 800 mR/s (7.0 mGy/s).

APPENDIX A

Instrumentation:

Keithley Model 35050A Dosimeter, Serial No. 45572, calibrated October 09, 2001.

Keithley Model 96035 15cc Chamber, Serial No. 46404, calibrated October 09, 2001.

Calculations:

Absorbed Dose (rads) = Entrance Exposure x f

Where: f is the rads/R conversion factor for the HVL and breast thickness indicated from: American College of Radiology Medical Physicists Manual, 1999, Tables 1 - 3.

DENSITOMETER: X-Rite 331, S/N 018972

Calibration	0.03	0.22	1.47	2.98	3.71
Reading	0.04	0.23	1.5	3.05	3.78
Difference	0.01	0.01	0.03	0.07	0.07

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Date	Start Time	End Time	System Status	Travel Time	T&L Expense

Covered Hours STD Billed	
Labor	Travel

Non-Covered Hours O.T. Billed	
O.T. Labor	O.T. Travel

SVC CLS	FMI No.	FMI Date	Model Number	Serial Number	Account Number
			GE DMR SENOGRAPH		

SYMPTOM

① DENSITY B[illegible]

② COMPRESSION

DIAGNOSIS AND SERVICE PERFORMED

① ADJUSTED DENSITY OK · 9/12/03

② ADJUSTED COMPRESSION OK

PARTS USED

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This certifies that the radioactive material described below and in the shipment control number request was received by the USAF Radioactive Material Recovery and Recycling Center. 88 Air Base Wing is authorized to receive the described radioactive material under the authority of USAF Radioactive Material Permit Number OH-00472-01/XXAFP (expiration date 17 August 2006) issued by the USAF Radioisotope Committee pursuant to the USAF Master Materials License Number 42-23539-01AF issued by the U.S. Nuclear Regulatory Commission. Certification of transfer and receipt demonstrates compliance with 10 CFR 30.41 (Transfer of byproduct material), 10 CFR 40.51 (Transfer of source or byproduct material), 10 CFR 30.51 (Records), and 10 CFR 40.61 (Records), as appropriate to the material being transferred.

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DATE RECEIVED: 29 December 2003

AUTHORIZED SIGNATURE:
Mark L. Mays, WPAFB Radiation Safety Officer
or
Christopher L. Anthony, Radiation Safety Specialist

Radioactive Material Received:

Radionuclide	Description	NSN	Quantity	Activity (mCi)
Tritium	Exit Signs	Unknown	6 each	93000.0
Americium 241	Smoke Detectors	Unknown	401 each	0.4014

Discrepancies: None Noted.

for Alice 1/13/04