1. Keywords

DA AUTHORIZATION RADIOISOTOPE
DOSIMETRY RECORD
ELECTRON MICROSCOPE
EXPOSURE
FILM BADGE
IN VITRO RADIOISOTOPE TEST
MONITORING METHOD AND EQUIPMENT
NRC LICENSED RADIOISOTOPE
PROTECTIVE SHIELD
RADIATION THERAPY
RADIOACTIVE CMDTY
RADIOACTIVE MATERIAL STORAGE
X-RAY DIFFRACTION EQUIPMENT

2. Start Date: FY 75 Quarter 4
End Date: FY 76 Quarter 1

3. HQ Division: 43 - HEALTH PHYSICS DIVISION

4. Phase:

5. Program NO: 28

6. Survey Type: RS - INDUSTRIAL RADIATION SURVEY

7. INSTALLATION OR SOURCE OF INFORMATION (CITY & STATE OR COUNTY ARE ESSENTIAL)
HS - USA HEALTH SERVICES COMMAND

8. Authors:

9. ARLOC/Activity: 11933 001 - WALTER REED AMC
Location: WASHINGTON
State: DC

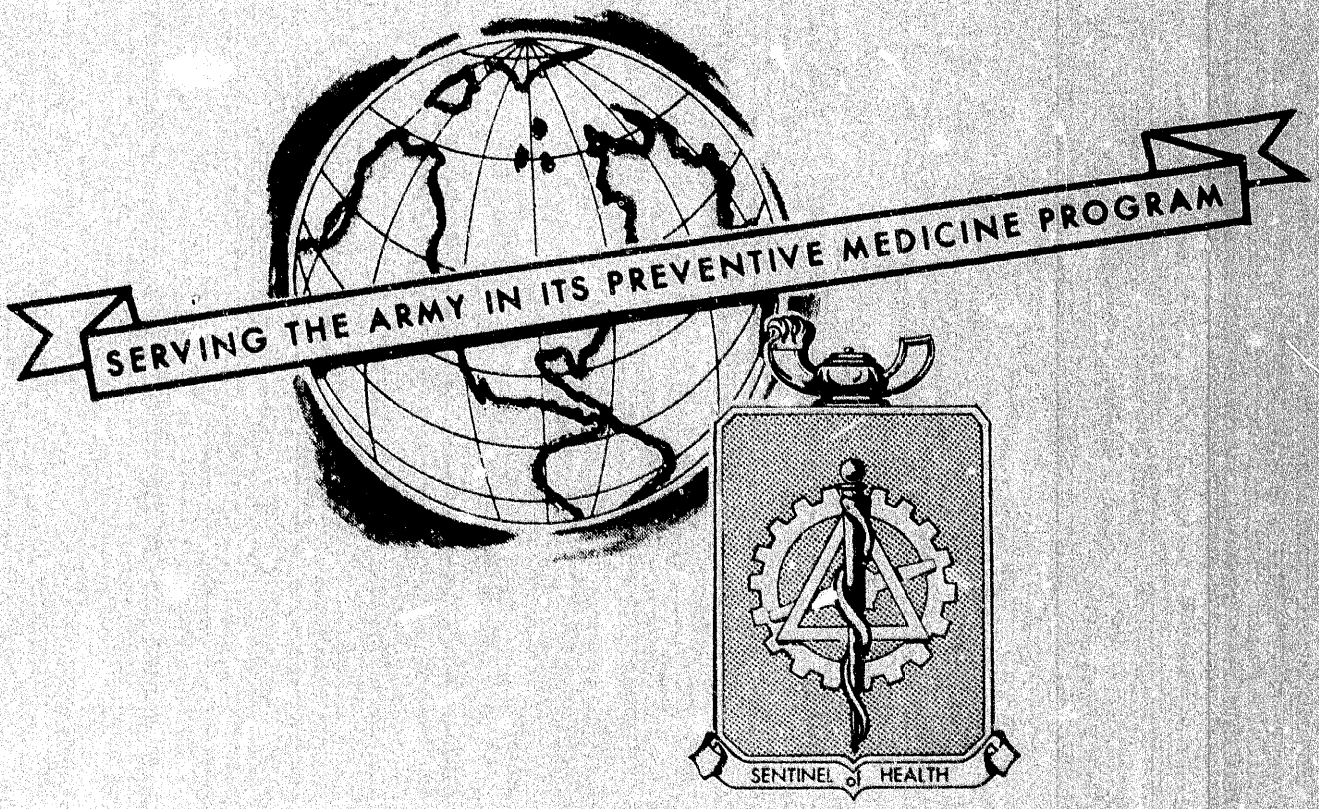
10. Project Control Number: 43-078-75/76

11. Title: IONIZING RAD SOURCES & MICROWAVE OVENS

12. DSA: 61

INACTIVE 1978

RADIATION PROTECTION SURVEY NO. 43-078-75/76
IONIZING RADIATION SOURCES AND MICROWAVE OVENS
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, DC 20012
3-13 JUNE 1975



REPLACED BY REPT NO. 43-0745-79
COMPLETED 6 November 1978

US ARMY
ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MD 21010

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

6 AUG 1975

HSE-RH/WP

RADIATION PROTECTION SURVEY NO. 43-078-75/76
IONIZING RADIATION SOURCES AND MICROWAVE OVENS
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, DC 20012
3-13 JUNE 1975

ABSTRACT

During the survey, six Nuclear Regulatory Commission Licenses, three Department of the Army Authorizations, the personnel dosimetry program, the use of radioactive materials in non-humans and humans, in-vitro research, the radiation therapy service and the overall health physics support of the radiation protection program at Walter Reed Army Medical Center, Walter Reed Army Institute of Research, Armed Forces Institute of Pathology, US Army Institute of Dental Research, Military District of Washington, and US Army Medical Research Institute of Infectious Diseases were evaluated and rated excellent.

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010

HSE-RH/WP

RADIATION PROTECTION SURVEY NO. 43-078-75/76
IONIZING RADIATION SOURCES AND MICROWAVE OVENS
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, DC 20012
3-13 JUNE 1975

1. REFERENCES.

a. AR 40-14, Control and Recording Procedures For Occupational Exposure to Ionizing Radiation, 20 May 1975.

b. AR 40-37, Radioisotope License Program (Human Use), 12 August 1963.

c. AR 40-44, Microwave Oven Radiation Protection Program, 21 January 1974.

d. AR 700-52, Licensing and Control of Sources of Ionizing Radiation, 22 May 1968.

e. TB MED 62, Diagnostic X-Ray, Therapeutic X-Ray, and Gamma-Beam Protection for Energies Up To 10 Million Electron Volts, 30 April 1973.

f. Code of Federal Regulations, Title 10, Part 20, Standards for Protection Against Radiation.

g. NBS Handbook 114, General Safety Standard for Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 MeV, February 1975.

h. Letter, HSE-RH, this Agency, 5 May 1975, subject: Radiation Protection Survey (RS) No. 43-078-75, Walter Reed Army Medical Center, Washington, DC 20012.

2. PURPOSE. The survey was performed to determine the presence and extent of any health hazards resulting from the use of ionizing radiation sources and microwave ovens at Walter Reed Army Medical Center (WRAMC) and all activities supported by WRAMC Health Physics Office; which includes, Walter Reed Army Institute of Research, Armed Forces Institute of Pathology, US Army Institute of Dental Research, Military District of Washington, and US Army Medical Research Institute of Infectious Diseases. Further, it was performed to evaluate the overall radiation protection program established for conformance with current directives for radiation protection.

3. GENERAL.

a. An entrance interview was held with LTC Bobby R. Adcock, Health Physics Officer, WRAMC.

b. An exit briefing, to include a discussion of the findings and recommendations, was held with BG Spencer B. Reid, Deputy Commander, WRAMC, and LTC Adcock.

c. The most recent evaluation of the overall radiation protection program at WRAMC, by this Agency, was conducted during the period 2-11 April 1973 (Radiation Protection Survey No. 43-052-73).

d. A list of abbreviations used is given in Appendix A. An inventory of ionizing radiation producing devices and microwave ovens surveyed is included as Appendix B.

4. FINDINGS.

a. General.

(1) Routine medical maintenance was accomplished by the Medical Maintenance Section, WRAMC.

(2) LTC Bobby R. Adcock, Health Physics Officer, had been appointed on orders as the WRAMC RPO.

(3) CPT Tommy Mosely had been appointed on orders as the alternate RPO.

(4) A Radioisotope Committee was established in accordance with AR 40-37. The committee was established by title and individual responsibilities were delineated by WRAMC Regulation 40-19. Minutes of the Radioisotope Committee meetings were available for review.

(5) In addition to the routine health physics support, the WRAMC Health Physics Officer provided several training programs for principal users and technicians in the health physics aspects associated with the use of radioactive materials.

b. Personnel Dosimetry Program.

(1) All personnel observed to be occupationally exposed to ionizing radiation utilized the Army film badge service.

(2) DD Forms 1141, Record of Occupational Exposure to Ionizing Radiation, were maintained in accordance with AR 40-14 and the instructions on the reverse side of the form.

21A

c. Diagnostic X-Ray Facilit[illegible] Radiation protection surveys of 89 medical units were being performed by the WRAMC Health Physics Officer in accordance with TB MED 62. A review of the survey reports indicated that findings were being made and deficiencies corrected in a timely manner. A General Electric (GE) Radiographic and a GE Radiographic-Fluoroscopic unit, each due a 3-year survey in June 1975, were surveyed and conformed to TB MED 62. (See Appendix B for description, location, and survey data).

d. Industrial X-Ray Facilities.

(1) Four electron microscopes and one x-ray diffraction unit were evaluated during the survey. No health hazards from the operation of the above units were observed.

(2) The identification and classification of each facility surveyed according to NBS Handbook 114 is given in Appendix B.

e. NRC Licenses and DA Authorizations. All licenses and authorization were current. Inventories of radioactive material were maintained in an outstanding manner. A listing of licenses and authorizations follow:

(1) BML 08-01738-02, expiration date 31 August 1979.

(2) BML 08-01738-03, expiration date 31 August 1975.

(3) BML 08-01738-04, expiration date 30 September 1979.

(4) BML 08-01738-05, expiration date 31 July 1979.

(5) SNM 472, expiration date 30 April 1975 (in the process of being renewed).

(6) SUB 603, expiration date 31 July 1978.

(7) DA Authorization A-08-17-01, expiration date 31 May 1979.

(8) DA Authorization A-53-02-01, expiration date 30 April 1976.

(9) DA Authorization A-70-01-01, expiration date 31 October 1979.

f. Calibration.

(1) Located in Building 509, Forest Glen Area, was the Health Physics Calibration Range. The calibration technician performed calibration procedures in close proximity to the radiation source beam without an area monitor or survey instrument being routinely utilized to determine if the area occupied by the technician was safe.

(2) The tertiary Carbon-14 standards in Building 509 were not calibrated annually according to the WRAMC Health Physics Calibration Standing Operating Procedure (SOP).

g. Storage of Radioactive Waste. A container of animal wastes containing Phosphorous-32 was stored in an unshielded, unmarked area of Room 3079, Walter Reed Army Institute of Research (WRAIR). The dose rate at the surface of the container was 450 mR/hr. Further discussion indicated that gamma emitters were occasionally stored in the same area in a similar manner. Also, approximately 200 exposed film badges were being temporarily stored without shielding in proximity to the above described radiation area.

h. Records, Reports, and Surveys.

(1) A review of records and reports indicated that the Radioisotope Committee met at periodic intervals to discuss major issues and to review actions taken by subcommittees.

(2) The report, Radioisotopes in Human Use Activities, RCS MED 197, was being prepared and submitted in accordance with AR 40-37.

(3) A copy of each users' authorization to use radioisotopes had been placed in appropriate individual 201 files in accordance with AR 40-37.

(4) In all areas where radioisotopes were being utilized, it was generally found that although physical surveys were reportedly being performed, only the wipe test results were being recorded and maintained. Radiation exposure rates at appropriate areas of radioisotope utilization were not being posted or recorded.

i. Nuclear Medicine Service, Department of Radiology, WRAMC.

(1) A review of the radioisotope receipt and dispensing records indicated that they were being maintained and used in accordance with the requirements of NRC License 08-01738-02. Radioisotope inventory records were being maintained on DA Forms 8-212, Narcotic and Controlled Drug Record, as well as on locally produced forms, with a separate form maintained for each lot number of the specific radiopharmaceutical.

(2) A survey was made of various areas where radioactive materials were used, stored, and disposed of, and the following comments are made with respect to the survey:

(a) Located in the "hot lab" was an area where used syringes and needles contaminated with radioactive materials were stored in an unshielded cardboard container under a laboratory bench. The exposure rate at the surface of the laboratory bench was measured to be 19 mR/hr. At waist level

12 inches from the laboratory bench, the exposure rate was 4 mR/hr. Three nuclear medicine technicians spent considerable time in this unposted, radiation area.

(b) A daily calibration log was not being maintained for the rectilinear scanner located in Room 4.

j. Microwave Oven Protection Program.

(1) The microwave oven protection program at WRAMC was being conducted by the WRAMC Health Physics Officer in accordance with AR 40-44.

(2) During the survey, six microwave ovens were evaluated. Five of the ovens conformed to AR 40-44. One oven produced a power density at the door seal in excess of 20 mW/cm^2. This oven, which had not yet been placed into routine use, was immediately disconnected and the vendor notified.

(3) An inventory of the microwave ovens surveyed is provided in Appendix B.

5. CONCLUSION. A review of the findings indicated that there were several potential health hazards resulting from the use of ionizing radiation sources and microwave ovens at WRAMC. With the exceptions for which recommendations are provided, the overall radiation protection program was excellent.

6. RECOMMENDATIONS.

a. Calibration.

(1) Position an appropriate exposure rate monitoring device in the immediate area to be occupied by the technician in the calibration range.

(2) Calibrate the tertiary Carbon-14 standards in accordance with the WRAMC Calibration SOP.

b. Storage of Radioactive Waste. Establish a properly shielded and marked area for the temporary storage of radioactive materials in Room B079 WRAIR in accordance with 10 CFR 20.105.

c. Records, Reports, and Surveys. Conduct periodic, complete physical surveys of areas where radioactive materials are utilized or stored, and maintain a written record of such surveys in accordance with 10 CFR 20.201.

d. Nuclear Medicine Service, Department of Radiology.

(1) Provide a shielded container in the "hot lab" of the nuclear medicine clinic for the storage of used syringes and needles contaminated with radioactive materials.

(2) Maintain a calibration log for the rectilinear scanner in the nuclear medicine clinic in accordance with paragraph 7ℓ(2)(f), AR 40-37.

ROY H. SMITH
LTC, MSC
Chief, Health Physics Division

for LARRY PETCOVIC
CPT, MSC
Nuclear Medical Science Officer
Health Physics Division

DAVID W. LEE
2LT, MSC
Nuclear Medical Science Officer
Health Physics Division

APPROVED:

WILLIAM G. PEARSON
COL, MSC
Director, Radiation and
Environmental Sciences

APPENDIX A

ABBREVIATIONS

1. AFIP - Armed Forces Institute of Pathology
2. CFR - Code of Federal Regulations
3. DA - Department of the Army
4. kVp - kilovolt peak
5. mA - milliampere
6. mAs - milliampere second
7. MDW - Military District of Washington
8. mR/hr - milliroentgens per hour
9. mW/cm^2 - milliwatts per square centimeter
10. NRC - Nuclear Regulatory Commission
11. NBS - National Bureau of Standards
12. RPO - Radiation Protection Officer
13. SN - Serial Number
14. SOP - Standing Operating Procedure
15. TCD - Target to Chamber Distance
16. WRAIR - Walter Reed Army Institute of Research
17. WRAMC - Walter Reed Army Medical Center
18. USAIDR - US Army Institute of Dental Research
19. USAMRIID - US Army Medical Research Institute of Infectious Diseases

APPENDIX B

INVENTORY OF RADIATION PRODUCING DEVICES SURVEYED

1. X-Ray Units - Department of Radiology, Room 6.

   a. General Electric, 150 kVp, 600 mA Radiographic
   Control: SN Inaccessible
   Radiographic Tube Housing: SN: 899487
   Output: 0.81 R/100 mAs @ 100 kVp, 24 inches TCD

   b. General Electric, 150 kVp, 5 mA Radiographic-Fluoroscopic
   Control: SN: Inaccessible
   Radiographic Tube Housing: Inaccessible
   Fluoroscopic Output: 3.2 R/mA min @ 90 kVp, tabletop

2. Electron Microscopes - Armed Forces Institute of Pathology.

   a. Room B045

   AMR, 30 kVp, 120 mA
   SN: F-1
   Protective Installation

   b. Room 3078

   Siemens, 125 kVp, 100 mA
   SN: 2204
   Protective Installation

   c. Room 3108

   RCA, 100 kVp, 50 mA
   SN: 4114
   Protective Installation

   d. Room 3118

   Z, 100 kVp, 50 mA
   SN: Inaccessible
   Protective Installation

3. X-Ray Diffraction Unit - Armed Forces Institute of Pathology, Room 3111.

   General Electric, 30 kVp, 25 mA
   SN: G52816
   Protective Installation

4. Microwave Ovens.

Oven Model	Location	Serial Number	Measured Microwave Leakage
Litton 550	Main Hospital Ward 11	16514GM	less than 1 mW/cm^2
Litton 70-50	Main Hospital Ward 15	42506N	less than 1 mW/cm^2
Litton 500	Hospital Snack Bar	6370	less than 1 mW/cm^2
Litton 70-30	Hospital Snack Bar	11534EP	less than 1 mW/cm^2
Litton 500	Food Cart	32645EK	less than 1 mW/cm^2
Litton 70-30	Bldg 101	ZHB-R-544	greater than 20 mW/cm^2

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DRES

INACTIVE 1978

HSW-YHP

18 SEP 1975

SUBJECT: Radiation Protection Survey No. 43-078-75/76, Ionizing Radiation Sources and Microwave Ovens, Walter Reed Army Medical Center, WASH, DC, 3-13 June 1975

Commander
US Army Health Services Command
ATTN: SGPA-H
Fort Sam Houston, TX 78234

Per your request, attached is a listing of actions taken with respect to recommendations contained in para 6 of subject report.

FOR THE COMMANDER:

1 Incl
as

FRED C. BRAND
LTC, MSC
Adjutant

Folder # 13,019 - Control # 43-078-75 (Also all 43-078-75 Folders, Washington, DC & Walter Reed Army Medical Center)

CF: HPP

CF: AEHA

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RADIATION PROTECTION SURVEY NO. 43-078-73/76

RECOMMENDATIONS	ACTION TAKEN
6.a.(1)	An appropriate exposure rate monitoring device was installed during the survey.
6.a.(2)	The tertiary Carbon-14 standards were calibrated during the survey.
6.b.	Shielding and markings were provided during the survey in accordance with 10CFR 20.105.
6.c.	A record of all appropriate data concerning physical surveys is now maintained.
6.d.(1)	Appropriate shielding and control was provided to insure that exposure to individuals is as low as practicable.
6.d.(2)	A calibration log for the rectilinear scanner was established per paragraph 7L(2)(f), AR 40-37.

Incl 1

LT Lee/bb/3502

INSCOM IN 1418

HSE-AS

6 AUG 1975

SUBJECT: Radiation Protection Survey No. 43-078-76/76, Ionizing Radiation Sources and Microwave Ovens, Walter Reed Army Medical Center, WRAIR, DC, 2-13 June 1975

Commander
US Army Health Services Command
ATTN: HSPA-N
Fort Sam Houston, TX 78234

43-078-75/76
COMPLETED
6 Aug 75

Inclosed are five copies of subject report.

For the Commander:

1 Incl
as

STEVEN G. PARKER
COL, MSC
Director, Radiation and Environmental Sciences

CF:
U.S. Army-Europe
Cdr, USAREUR (2 cy)
C, Sgn Air Health
Supt, AFH (HSA-Rad)

11 5 3 1 9 6 0

Writer DWL 8/4/75
C, HPD per 1-July-75
Dir RES 4/7/75

KEYWORD SHEET

Atch ✓ Not Rec

973-01 Walter Reed Army Medical Center WRAIR DC

27

CPT Dicey/bb/3502

5 MAY 1975

HSE-RH

SUBJECT: Radiation Protection Survey (RS), No. 43-070-75, Walter Reed Army Medical Center, Washington, DC 20012

Writer BBD
C. HPD
D. RES

Commander
Walter Reed Army Medical Center
6825 16th Street NW
Washington, DC 20012

1. In accordance with HSC Regulation 40-4, 1 April 1973; AR 700-52, 22 May 1968; and with prior concurrence of Headquarters, US Army Health Services Command, a radiation protection survey at Walter Reed Army Medical Center has been scheduled for the period 3-13 June 1975. This survey is scheduled concurrently with the Health Services Command IG Inspection; however, the radiation protection survey will start only after HSC-IG health physics activities have been completed. Coordination has been accomplished between LTC Bobby Adcock, Health Physics Officer, and CPT Bruce B. Dicey, this Agency.

2. This survey will include an evaluation of the radiation protection program, the personnel dosimetry program, diagnostic x-ray facilities, radioactive materials authorized by specific Nuclear Regulatory Commission licenses and Department of the Army authorizations, and any other ionizing radiation producing sources which may be located at Walter Reed Army Medical Center. Also, in accordance with the provisions of AR 40-44, the microwave ovens protection program will be evaluated.

3. The following individuals, with security clearance as indicated, will perform the survey:

a. Ray E. Smith, LTC, MSC 222-52-8212, Top Secret.

b. William L. Petravic, CPT, MSC, 171-24-5370, Secret.

c. David W. Lee, 2LT, MSC, 306-40-5658, Secret.

4. Request an inventory of all ionizing radiation sources and microwave ovens, a copy of the radiation protection program, and the name of a contact officer be forwarded to facilitate the planning of the survey. (Exempt from reports control under paragraph 7-2y, AR 335-15.)

KEYWORD SHEET

Atch ____ Not Req ✓

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SUBJECT: Radiation Protection Survey (RP), No. #3-028-75, Walter Reed Army Medical Center, Washington, DC 20012

5. The survey officers may be contacted at Autovon 584-4262.

FOR THE COMMANDER:

WILLIAM H. TOOMB
COL, MSC
Director, Radiation and Environmental Sciences

CF:
Cdr, MRC (HSPA-3)
C, Sgn Div, Ft Meade

ORES

~~43-78-70~~

43-78-11-1/7C

DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
WASHINGTON, D.C. 20012

HSHS-VA

11 April 1975

SUBJECT: Request for Radiological Survey

Commander
U.S. Army Hygiene Agency
Edgewood Arsenal, Maryland

Request that the X-Ray facilities at the Fort Myer and Forest Glen Veterinary Clinics be surveyed as required by Paragraph 3 a & b, TB MED 62.

X-Rays are taken approximately once a week. There is no previous record of a survey on file for their facilities.

THOMAS C. McCHESNEY
COL, VC
Chief, Vet Act, WRAMC

RECORD OF PROCESSING

4/25/75

TITLE OF REPORT	REPORT NUMBER	WRITER
RPS WRAMC, WASH, DC	43-078-75	LTC Smith/CPT Petcovic/LT Lee

INITIAL DRAFT

DATE	COORDINATION WITH **	INITIALS	CONCUR	NON-CONCUR *
23 Jun	LTC Smith	S	✓	Request Draft

FINAL DRAFT

DATE	COORDINATION WITH	INITIALS	CONCUR	NON-CONCUR *
3 Jul	C, HPD	S	✓	For Final

TYPIST RECORD

	INITIALS	DATE IN	DATE OUT
FIRST DRAFT	Bearce	24 Jun	26 Jun
Final	Bearce	30 Jul	10 Jul
FINAL DRAFT			

DATE FINAL REPORT TYPED

DATE DISPATCHED FROM DIVISION
15 July 1975

DATE DISPATCHED FROM DIRECTORATE
18 Jul

DATE DISPATCHED TO PRINTING PLANT
23 JUL 1975

DATE DISPATCHED FROM AEHA
6 AUG 1975

FINAL REPORT

	INITIALS	DATE IN	DATE OUT
WRITER	DWL	14 Jul	15 Jul 75
DIVISION CHIEF	S	11 Jul	13 Jul
DIRECTOR	✓	15 Jul	
COMMANDING OFFICER		17/21/75	

REMARKS: Use Reverse Side

* Explain on reverse side

** Resolve all professional, technical, administrative and policy matters while report is in initial draft stage to minimize repetitive writing and typing.

Does this report replace an existing report?

Yes ✓ No ___ Report No 43-052-73/74 CE