U.S. Army Center for Health Promotion and Preventive Medicine

USCHPPM

INDUSTRIAL RADIATION SURVEY NO. 27-MH-6999-97
FACILITY CLOSE-OUT VERIFICATION SURVEY
FORT MCCLELLAN, ALABAMA
17-22 AUGUST 1997

Distribution limited to U.S. Government agencies only; protection of privileged information evaluating another command; Feb 98. Requests for this document must be referred to Commander, U.S. Army Training and Doctrine Command, ATTN: ATBO-SE, Fort Monroe, VA 23651-5451

Readiness Thru Health

U.S. Army Center for Health Promotion and Preventive Medicine

The lineage of the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) can be traced back over 50 years. This organization began as the U.S. Army Industrial Hygiene Laboratory, established during the industrial buildup for World War II, under the direct supervision of the Army Surgeon General. Its original location was at the Johns Hopkins School of Hygiene and Public Health. Its mission was to conduct occupational health surveys and investigations within the Department of Defense's (DOD's) industrial production base. It was staffed with three personnel and had a limited annual operating budget of three thousand dollars.

Most recently, it became internationally known as the U.S. Army Environmental Hygiene Agency (AEHA). Its mission expanded to support worldwide preventive medicine programs of the Army, DOD, and other Federal agencies as directed by the Army Medical Command or the Office of The Surgeon General, through consultations, support services, investigations, on-site visits, and training.

On 1 August 1994, AEHA was redesignated the U.S. Army Center for Health Promotion and Preventive Medicine with a provisional status and a commanding general officer. On 1 October 1995, the nonprovisional status was approved with a mission of providing preventive medicine and health promotion leadership, direction, and services for America's Army.

The organization's quest has always been one of excellence and the provision of quality service. Today, its goal is to be an established world-class center of excellence for achieving and maintaining a fit, healthy, and ready force. To achieve that end, the CHPPM holds firmly to its values which are steeped in rich military heritage:

★ *Integrity is the foundation*
★ *Excellence is the standard*
★ *Customer satisfaction is the focus*
★ *Its people are the most valued resource*
★ *Continuous quality improvement is the pathway*

This organization stands on the threshold of even greater challenges and responsibilities. It has been reorganized and reengineered to support the Army of the future. The CHPPM now has three direct support activities located in Fort Meade, Maryland; Fort McPherson, Georgia; and Fitzsimons Army Medical Center, Aurora, Colorado; to provide responsive regional health promotion and preventive medicine support across the U.S. There are also two CHPPM overseas commands in Landstuhl, Germany and Camp Zama, Japan who contribute to the success of CHPPM's increasing global mission. As CHPPM moves into the 21st Century, new programs relating to fitness, health promotion, wellness, and disease surveillance are being added. As always, CHPPM stands firm in its commitment to Army readiness. It is an organization proud of its fine history, yet equally excited about its challenging future.

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

EXECUTIVE SUMMARY
INDUSTRIAL RADIATION SURVEY NO. 27-MH-6999-97
FACILITY CLOSE-OUT VERIFICATION SURVEY
FORT MCCLELLAN, ALABAMA
17-22 AUGUST 1997

1. PURPOSE. This facility close out verification survey was conducted upon the completion of remediation and final status surveys performed by Allied Technology Group, to verify that the final status survey results for Building 3192 (Hot Cell), Building 3182 (Military Police Museum) and the surrounding outdoor areas meet the decontamination criteria for unrestricted use, as agreed upon by the Licensee, the Nuclear Regulatory Commission and the State of Alabama Department of Public Health.

2. CONCLUSION. A review of the verification survey results indicates that there were no radiological health hazards identified as a result of past activities, radiological surveys or decommissioning activities of Building 3192 (Hot Cell), Building 3182 (Military Police Museum) and the surrounding outdoor areas. All radiation protection surveys were performed in accordance with NRC guidance and regulations to meet the NRC release criteria.

3. RECOMMENDATION. We recommend that Building 3192 (Hot Cell), Building 3182 (Military Police Museum), and the surrounding outdoor area be released for unrestricted use.

DEPARTMENT OF THE ARMY
U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE
5158 BLACKHAWK ROAD
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

MCHB-TS-OIP

INDUSTRIAL RADIATION SURVEY NO. 27-MH-6999-97
FACILITY CLOSE-OUT VERIFICATION SURVEY
FORT MCCLELLAN, ALABAMA
17-22 AUGUST 1997

1. REFERENCES. See Appendix A for a list of references.

2. AUTHORITY. AEHA Form 250-R, 25 July 1997.

3. PURPOSE.

a. To assess the radiological contamination, if any, remaining in Building 3192 (Hot Cell), Building 3182 (Military Police Museum) and the surrounding outdoor areas after remediation and final status surveys were performed by Allied Technology Group. This report addresses only those areas and buildings identified in the Allied Technology Group "Radiological Remediation of Building 3192 (Hot Cell) and Grounds, and Building 3182 Military Police Museum Fort McClellan, Anniston, AL", Final Report, 1996.

b. To determine by confirmatory surveys that any residual radiological contamination remaining after the completion of decommissioning activities is in compliance with state and federal clean release criteria.

4. GENERAL.

a. Meetings and briefings were conducted with Mr. John May, Fort McClellan, Radiation Protection Officer (RPO), and Mr. Scott Kaeppel, Health Physicist, Henry M. Jackson Foundation Participant, U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), to discuss the findings and recommendations.

b. Project management for the close-out survey was conducted through the U.S. Army Environmental Center, which in-turn contracted Allied Technical Group to perform the remediation and final radiation protection surveys; the USACHPPM Industrial Health

Physics Program (IHPP) was requested to perform radiation protection surveys to verify or confirm final survey results obtained by Allied Technical Group.

c. The verification survey was performed by Mr. James Mullikin, Health Physicist, Henry M. Jackson Foundation Participant, USACHPPM; Mr. Lorus Miller, Team Leader, Henry M. Jackson Foundation Participant, USACHPPM, and SSG David Collins Health Physics Specialist, USACHPPM.

d. Laboratory analyses were performed by the U.S. Airforce Armstrong Laboratory. Laboratory quality assurance and procedures oversight were managed by the Radiologic, Classic, and Clinical Chemistry Division, Directorate of Laboratory Services, USACHPPM. The Standing Quality Assurance Policy for the laboratory during sample analysis for Fort McClellan can be found in Appendix D.

5. BACKGROUND.

a. The history of the use, storage and disposal of radioactive material was documented in Allied Technology Group "Radiological Remediation of Building 3192 (Hot Cell) and Grounds and Building 3182 Military Police Museum, Fort McClellan, Anniston, AL" Final Report, 1996.

b. The radiation protection surveys were conducted using the procedures outlined in the "Radiological Remediation of Building 3192 (Hot Cell) and Grounds and Building 3182 Military Police Museum Fort McClellan, Anniston, AL" Final Report, 1996. The procedures outlined in the final report were used as a guide to reproduce the requisite 10% of the measurements in the final status surveys.

c. The Fort McClellan Directorate of Environment office was used as the base of operations for the USACHPPM radiation protection survey team throughout the duration of this project.

d. After completion of the radiation protection surveys for Building 3192 Hot Cell and Grounds and Building 3182 Military Police Museum Building, no areas were identified by USACHPPM as

having radiological contamination levels above the limits specified by the Nuclear Regulatory Commission (NRC) Regulatory Guide 1.86 and the Release Criteria listed in Appendix E.

e. Identity of Potential Contaminants/Release Guidelines. The release guidelines for the suspected radionuclides, cobalt-60 (Co-60), and cesium-137 (Cs-137) are listed in Appendix E.

6. RADIATION SURVEYS AND RESULTS.

a. Instrumentation.

(1) A complete list of the instruments used for this survey, their respective operational parameters and calibrated efficiencies are provided in Appendix F. Minimum Detectable Activities (MDA) of each instrument is supplied in Appendix C. All survey meters were calibrated on a quarterly basis and after any maintenance or repair. Efficiencies were determined with radioisotopes traceable to the National Institute of Standards and Technology (NIST) and each calibration source had energies similar to the energies of the isotopes used and stored at Fort McClellan.

(2) The efficiency value for each instrument was used to record the final readings into standardized regulatory criteria expressed in disintegrations per minute per 100 centimeters squared (dpm/100 cm^2). The survey values for gross alpha and gross beta-gamma in the tables of Appendix C are presented in units of dpm/100 cm^2.

(3) The sensitivity of the gamma survey meter is in agreement with NUREG/CR-5849, page 5-14, Table 5-6.

(4) All portable survey meters were checked for operability prior to packaging and shipping to Fort McClellan. Upon each instrument was check for operability, operability checks on each meter were made before each work day; midday of each work day, at the end of each work day, and after any malfunctions or repairs. Response checks for all field instruments were performed in accordance with Chapter 5, page 17, of NUREG/CR-5849. Instrument variation of $\pm$ 2 standard deviations from the mean of 30

(4) For each survey area randomly selected by USACHPPM, the original grid pattern developed by Allied Technical Group for the final status survey was used. A minimum of 10% of Allied Technical Group designated sample points were selected. However, the USACHPPM collected additional bias samples where survey readings above background were detected during the verification surveys.

(5) Flag values, or action levels, for alpha and beta-gamma survey measurements were determined for each type of survey instrument. Flag values were determined by taking 75% of the guideline values found in Appendix E.

(6) In addition, bias samples were collected, and measurements were taken in areas where residual r most likely would have been found; these areas in walls and floors, seams where walls met floors, h walls, drains and vents.

Blds 3169 per J Moore Phys 2/17/98

c. Survey Results.

(1) Background Radiation Results.

(a) The background measurements for inside of the buildings were taken from buildings of similar construction and age; the building had no documented history of radioactive material use. Background measurements were taken for alpha, beta-gamma and gamma radiations. The average indoor background values were established at a 95% confidence level.

(b) Background soil samples and instrument readings were taken in five outdoor locations. Locations included, Sumeral Gate, Baker Gate, Balizell Gate, Galloway Gate and the Cemetery in front of the Floral Sign. Instrumentation measurements were taken at each site with a pressurized ionization chamber. The readings were averaged to determine the gamma background at each location. The results for the background study may be found in Appendix H.

(c) The background measurements for buildings interiors were taken from buildings of similar construction and age; the building had no documented history of radioactive material use.

Background measurements were taken for alpha, beta-gamma and gamma radiations. The average indoor background values were established at a 95% confidence level.

(2) Survey Measurements and Results.

(a) Alpha Instrumentation Results. The gross alpha readings ranged from a low of -4.0 dpm/100 cm^2 to a high of 2.8 dpm/100 cm^2 with an average background of 1.0 dpm/100 cm^2. Meter readings were taken in each grid square at less than 1 cm from the surface for an integrated count time of 60 seconds. All alpha activity results and location of survey results are presented in Appendix C. No readings above the release criteria were noted.

(b) Beta-Gamma Instrumentation Results. Gross beta-gamma readings ranged from a low of -582 dpm/100 cm^2 to a high of 3966 dpm/100 cm^2 with an average background of 157 dpm/100 cm^2. Meter readings were taken in each grid square at approximately 1 cm from the surface for an integrated count time of 60 seconds. All beta-gamma survey results and locations are presented in Appendix C. No readings above the release criteria were noted.

(c) Gamma Instrumentation Results. Gross gamma readings ranged from a low of -4.0 micro roentgen per hour(uR/hr) to a high of 22.0 uR/hr with an average background of 12.0 uR/hr. Each grid square was surveyed at approximately 1 meter from the surface, and the location with the highest exposure reading was recorded. All gamma survey results and locations are presented in Appendix C. No readings above the release criteria were noted.

(d) Scanning Instrumentation Results. Ten percent of the surface area of surveyed areas were scanned.

(3) Laboratory Analysis.

(a) Wipe Test Surveys. Wipe tests for this report were performed to determine the presence of removable contamination on surface areas. Wipe tests were performed in 10% of the original grid squares surveyed by Allied Technology group. All wipe test samples were collected and analyzed for gross alpha and gross beta.

(1) The gross alpha activity ranged from a low of -0.2 (+/-) 0.2 dpm/100 cm^2 to a high of 2.8 (+/-) 2.5 dpm/100 cm^2. The MDA was determined to be less than 2 dpm/100 cm^2. All gross alpha activity results and locations where wipe tests were taken are included in Appendix C. Results from the gross alpha analysis show that all sample data meet the release criteria as found in
Appendix E.

(2) The gross beta activity ranged from a low of -1.9 (+/-) 1.5 dpm/100 cm^2 to a high of 20.5 (+/-) 7 dpm/100 cm^2. The MDA was determined to be 5 dpm/100 cm^2. All gross beta-gamma activity results and locations where wipe tests were taken are included in Appendix C. Results from the gross beta analysis show that all sample data meet the release criteria as found in Appendix E.

(3) Thirty random soil samples were taken throughout the outdoor area. The samples were analyzed for beta emmiters as a gross screening tool, and further analyzed the soils for Co-60 and Cs-137 by Gamma Spectroscopy. The environmental soil sample data may be found in Appendix I. Gamma readings were taken at each soil sampling location. No readings above the release criteria were noted.

(4) Due to the destructive nature of the close-out and termination survey of the buildings, and the fact that readings above background were not detected, building material samples were not taken. Environmental data collected during this verification survey includes soil samples. The collection process of the samples was followed according to USAEHA TG No. 155, Environmental Sampling Guide, February 1993.

7. CONCLUSIONS.

a. A review of the survey results indicate that there were no radiological health hazards identified, as a result of decommissioning activities for Building 3192 Hot Cell, Building 3182 Military Police Museum, and the surrounding surveyed grounds as defined by Allied Technology Group "Radiological Remediation of Building 3192 (Hot Cell) and Grounds and Building 3182 Military Police Museum Fort McClellan", Anniston, AL, Final Report, 1996.

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

b. Lists of buildings/areas that were surveyed are included in Appendix C.

8. RECOMMENDATIONS. That building 3192 (Hot Cell) and Grounds, and Building 3182 (Military Police Museum), Fort McClellan, Anniston AL, be released for unrestricted use.

JAMES MULLIKIN
Health Physicist
Henry M. Jackson Foundation
Participant
Industrial Health Physics

APPROVED:

HARRIS EDGE
Program Manager
Industrial Health Physics

APPENDIX A

REFERENCES

1. NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination, Draft Report for Comment, June 1992.

2. NRC Reg Guide 1.86, Termination of Operating Licenses for Nuclear Reactors, June 1974.

3. AR 385-11, Ionizing Radiation Protection (Licensing, Control, Transportation, Disposal, and Radiation Safety), 1 May 1980.

4. Title 10, Code of Federal Regulations (CFR), Part 20, Standards for Protection Against Radiation, 1996 Rev.

5. Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material, August 1987.

6. NUREG-1500, Working Draft Regulatory Guide on Release Criteria for Decommissioning: NRC Staff's Draft for Comment, August 1994.

7. USAEHA TG No. 155, Environmental Sampling Guide, February 1993.

8. Allied Technology Group, "Radiological Remediation of Building 3192 (Hot Cell) and Grounds and Building 3182 Military Police Museum Fort McClellan, Anniston, AL", Final Report, 1996.

APPENDIX B

ABBREVIATIONS

CFR	Code of Federal Regulations
cm^2	centimeter
Co-60	cobalt-60
Cs-137	cesium-137
dpm	disintegrations per minute
IHPP	Industrial Health Physics Program
MDA	Minimum Detectable Activity
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
NUREG	Nuclear Regulatory Guide
RPO	Radiation Protection Officer
USACHPPM	U. S. Army Center for Health Promotion and Preventive Medicine
USAEHA	U.S. Army Environmental Hygiene Agency
µR/hr	microroentgen per hour

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

APPENDIX C

LIST OF BUILDINGS/AREAS TO BE SURVEYED

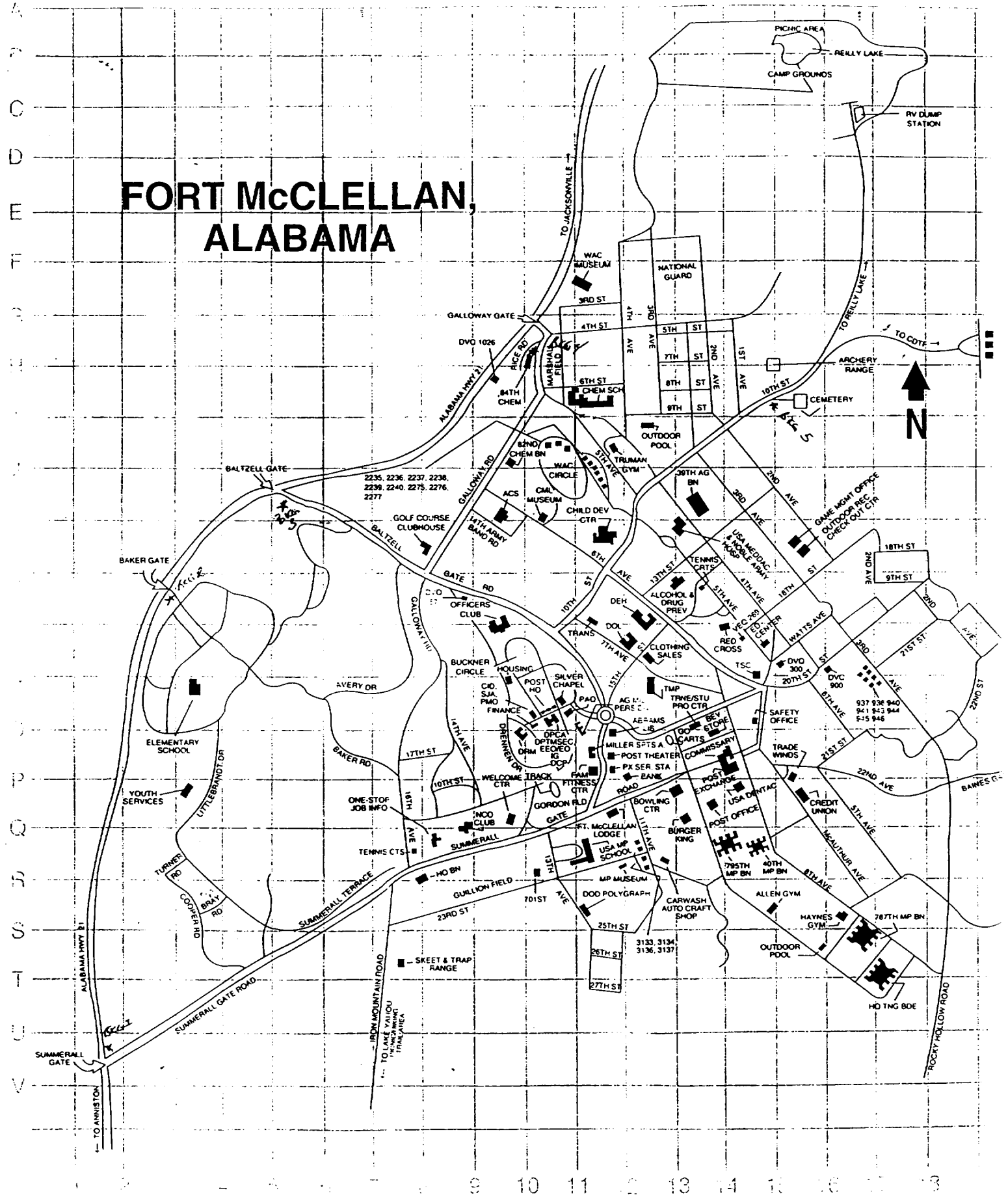
INSTALLATION DIAGRAM

RADIOLOGICAL SURVEY RESULTS

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

BUILDINGS/AREAS AT Fort McClellan TO BE RADIOLOGICALLY SURVEYED

1. Building 3192
2. Building 3182
3. Surrounding Outdoor Area's


FORT McCLELLAN, ALABAMA
PICNIC AREA
REILLY LAKE
CAMP GROUNDS
RV DUMP STATION
TO JACKSONVILLE
TO REILLY LAKE
TO COTE
WAC MUSEUM
NATIONAL GUARD
GALLOWAY GATE
DVO 1026
RICE RD
MARSHALL FIELD
84TH CHEM
6TH ST CHEM SCH
ALABAMA HWY 21
ARCHERY RANGE
CEMETERY
OUTDOOR POOL
TRUMAN GYM
82ND CHEM BN
WAC CIRCLE
BALTZELL GATE
2235, 2236, 2237, 2238, 2239, 2240, 2275, 2276, 2277
GALLOWAY RD
ACS
CML MUSEUM
CHILD DEV CTR
14TH ARMY BAND RD
GOLF COURSE CLUBHOUSE
BALTZELL GATE RD
39TH AG BN
GAME MGMT OFFICE OUTDOOR REC CHECK OUT CTR
USA MEDDAC MOBILE ARMY HOSP
TENNIS CRTS
BAKER GATE
OFFICERS CLUB
ALCOHOL & DRUG PREV
DEH
DOL
TRANS
CLOTHING SALES
RED CROSS
VEC 269 ED CENTER
WATTS AVE
TSC
DVO 300
DVO 900
BUCKNER CIRCLE
HOUSING
POST HQ
SILVER CHAPEL
CID SJA PMO FINANCE
PAO
TMP TRNG/STU PRO CTR
SAFETY OFFICE
AVERY DR
ELEMENTARY SCHOOL
DRCA DPTMSEC EEO/EO IG DCP
DRM
DRENNEN DR
MILLER SPTS A
POST THEATER
PX SER STA
BANK
BEV STORE
GO CARTS
COMMISSARY
TRADE WINDS
BAKER RD
17TH ST
14TH AVE
YOUTH SERVICES
LITTLEBRANDT DR
WELCOME CTR
TRACK
FAM FITNESS CTR
GORDON FLD
POST EXCHANGE
USA DENTAC
CREDIT UNION
ONE STOP JOB INFO
NCO CLUB
BOWLING CTR
BURGER KING
POST OFFICE
TENNIS CTS
SUMMERALL
HQ BN
FT McCLELLAN LODGE
USA MP SCHOOL
795TH MP BN
40TH MP BN
MACARTHUR AVE
TURNER RD
COOPER RD
BRAY RD
GURLION FIELD
MP MUSEUM
701ST
DOD POLYGRAPH
CARWASH AUTO CRAFT SHOP
ALLEN GYM
HAYNES GYM
787TH MP BN
SUMMERALL TERRACE
23RD ST
25TH ST
26TH ST
27TH ST
3133, 3134, 3136, 3137
SKEET & TRAP RANGE
OUTDOOR POOL
HQ TNG BDE
IRON MOUNTAIN ROAD
TO LAKE YAUOU
SUMMERALL GATE ROAD
ROCKY HOLLOW ROAD
SUMMERALL GATE
TO ANNISTON
ALABAMA HWY 21
N

NAME	MAP LOC.	BLDG NUMBER	TELEPHONE NUMBER
39TH AG BN	K-13	500	4829
40TH MP BN	R-14	1802	3002
82ND CHEM BN	J-9	2262	3917
84TH CHEM BN	H-10	1060	4712
701ST MP BN	R-10	3160	3927
787TH MP BN	T-16	1601	4468
795TH MP BN	R-14	1801	3511
HQ TNG BDE	T-17	1602	4107
HQ BN	R-7	3161	5200
USACMLS	I-11	1081	5327
USAMPS	R-11	3181	3028
ABRAMS LIBRARY	O-11	2102	3715
ACS	K-9	2203	4525
ALCOHOL & DRUG ABUSE PREV CTR	M-13	283	6163
ALLEN GYM	S-15	1701	4160
ARCHERY RANGE	I-14		INFO 5663
AUTO CRAFTS SHOP	R-12	1800	5146
BOWLING CENTER	Q-13	1928	5149
BURGER KING	Q-13	1967	820-9648
CAMP GROUNDS			
REILLY LAKE	B-15		INFO 5663
YAHOU LAKE	U-7		INFO 5663
CAR WASH	R-12	1800	5146
CHEM MUSEUM	K-10	2299	3355
CHILD DEV CTR	L-11	2213	4857
CID	O-10	63	5141
CLASS VI STORE	P-13	2042	820-9280
CLOTHING SALES	N-12	229	4193
COMMISSARY	P-14	2041	3130
CREDIT UNION	Q-15	1122	820-1500
DCP	O-10	143B	3115
DEH	M-12	215	3215
DENTAC/STOUT DENTAL CLINIC	Q-14	1929	3911
DOD POLYGRAPH INSTITUTE	S-11	3165	5915
DOL	N-12	241	5427
DPCA	O-10	143B	4425
DPTMSEC	O-10	143A	3588
DRM	P-9	65	5233
EDUCATION CTR	N-14	328	5263
EEO	O-10	143A	3227
ELEM SCHOOL	O-3	3681	820-2420
EO	O-10	143B	5322
FAMILY FIT CTR	P-11	128	5249
FAMILY HOUSING	N-9	T-60	4125
FT MCCLELLAN LODGE	Q-11	3127	4916
FINANCE	O-10	142	4653
GAME MGMT OFF	L-15	698	5663
GO KART TRACK	P-12	T-2098	5357
GOLF COURSE	L-8	2250	820-7299
GORDON FIELD	Q-10		
GUILLION FIELD	R-9		
HAYNES GYM	S-16	1702	4681
HAYNES OUTDOOR POOL	T-15		3391
HOUSING DIV	N-9	T-60	4125
IG	O-10	143A	5392
LAKE YAHOU	U-7		INFO 5663
MARSHALL FIELD	H-10		
MEDDAC	K-13	292	2200
MILLER GYM	P-11	130	4802
MPD/MILPO	O-11	162	5192
MP MUSEUM	R-11	3182	3522
NCO CLUB	Q-8	3212	5294
NOBLE ARMY HOSPITAL	K-13	292	2200
OUTDOOR REC CHECKOUT CTR	L-15	699	5205
OFFICERS' CLUB	M-9	51	5406
ONE STOP JOB INFO CENTER	R-8	3213	3289
PAO	O-10	144	5377
PMO	O-10	63	5178
PX (MAIN PX)	P-14	1965	820-9400
POST OFFICE	Q-13	1966	820-6595
POST THEATRE	P-11	2101	3861
PX SERVICE STATION	P-11	2109	820-9250
RED CROSS (EMERGENCY AFTER DUTY HOURS)	N-13	272	3169 820-9110
REILLY LAKE	B-15		INFO 5663
RUNNING TRACK	Q-10		
RV DUMP STATION	D-16		INFO 5663
SAFETY OFFICE	O-14	2090	5603
SILVER CHAPEL	O-10	67	5351
SJA	O-10	63	5435
SKEET & TRAP RANGE	T-7		INFO 5663
SOUTHTRUST BANK	P-12	2105	820-2500
STOUT DENTAL CLINIC	Q-14	1929	3911
TENNIS COURTS	M-13 &R-7		INFO 3091
TMP	O-12	O-12	4724
TRADEWINDS	P-15	1120	820-9530
TRANSPORTATION	M-11	241	4625
TRAINEE/ STUDENT PROC CENTER	O-13	2051	5582
TRUMAN GYM	J-11	1012	4656
TRUMAN OUTDOOR POOL	J-12		3102
TSC	N-14	267	4503
UTILITY CLEAR-ING HOUSE	O-9	T-60	820-9019
WAC MUSEUM	G-11	1077	3512
WELCOME CENTER	Q-9	3295	4338/3546
YOUTH SERVICES	Q-3	3600	3607

AV CODE 865-XXXX (OP ASST 865-1110)
DIRECT DIAL: AREA CODE 205-848-EXT
*ON POST MILITARY PHONE DIAL 5-XXXX
POST DUTY OFFICER (B-3295) EXT 3821
POST OPERATOR 205-848-4611

POST BILLETING FACILITIES

FACILITY	MAP LOC.	BLDG NUMBER
BILLETING OFFICE WELCOME CENTER 205-848-4338/3546	Q-9	3295
DVQ BLDG	M-8	57
	N-15	300
	N-16	900
	I-9	1026
VOQ BLDG	J-10	2235
		2236
		2237
		2238
		2239
		2240
		2275
		2276
		2277
	R-12	3133
		3134
		3136
		3137
VEQ BLDG	N-14	269
	O-16	937
		938
		940
		941
		943
		944
		945
		946

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Data From Survey Maps Created By Allied Technology Group for the Final Status Surveys of Building 3192:

FMR-047	Hot Cell Roof Outside
FMR-048	Hot Cell Outside North Wall
FMR-049	Hot Cell Outside West Wall
FMR-061	Hot Cell Inside Ceiling
FMR-062	Hot Cell Inside Ledge
FMR-067	Hot Cell Entrance
FMR-069	Hot Cell Inside South Wall
FMR-070	Hot Cell Inside North Wall
FMR-071	Hot Cell Inside East Wall
FMR-072	Hot Cell Inside West Wall
FMR-075	Manipulator Arm Holes
FMR-084	Hot Cell Tube Sheet

	Fort McClellan Hot Cell (Interior)								
SPECIAL FEATURES	LOCATION CODE	MONITORING			WIPE TEST				WIPE NO.
		Alpha	Beta	Gamma	Alpha		Beta		
	(Units =>)	dpm/100 cm2	dpm/100 cm2	uR/hr	dpm/100 cm2 +/- 2 sigma				
	(Bkgd =>)	1	157	12.0	0.0		0.0		
	(MDA =>)	36	417	-	2.0		5		
FMR-62 Ledge	3-8-A	15	447	-2	0.6	+/- 1.5	-0.3	+/- 2.5	M001
"	4-10-A	0	68	-1	-0.2	+/- 0.2	1.9	+/- 3.3	M002
"	7-10-B	5	3066	-1	0.6	+/- 1.5	0.8	+/- 2.9	M003
"	8-8-C	-4	555	-1	-0.2	+/- 0.2	0.8	+/- 2.9	M004
"	4-8-A	5	257	-1	-0.2	+/- 0.2	-0.3	+/- 2.5	M005
FMR-70 N-Wall	8-D-A	0	20	-1	0.6	+/- 1.5	0.8	+/- 2.9	M006
"	7-A-B	15	-14	3	-0.2	+/- 0.2	0.3	+/- 2.7	M007
"	7-C-B	0	-95	-1	0.6	+/- 1.5	4.1	+/- 3.9	M008
"	5-B-A	10	-47	0	-0.2	+/- 0.2	20.5	+/- 7.0	M009
"	5-D-A	-4	271	-2	-0.2	+/- 0.2	-0.8	+/- 2.2	M010
"	4-A-C	5	244	1	-0.2	+/- 0.2	-0.8	+/- 2.2	M011
"	4-C-C	0	149	-2	-0.2	+/- 0.2	4.1	+/- 3.9	M012
FMR-71 E-Wall	8-B-A	10	-115	-1	1.4	+/- 2.2	4.6	+/- 4.0	M013
"	8-D-A	-4	237	-2	-0.2	+/- 0.2	0.8	+/- 2.9	M014
"	9-A-B	0	81	0	-0.2	+/- 0.2	0.3	+/- 2.7	M015
FMR-69 S-Wall	3-A-B	-4	41	0	-0.2	+/- 0.2	-0.3	+/- 2.5	M016
"	3-C-B	10	-223	-1	-0.2	+/- 0.2	2.5	+/- 3.4	M017
"	3-D-A	-4	68	-1	-0.2	+/- 0.2	3.0	+/- 3.6	M018
"	5-B-A	10	-81	1	0.6	+/- 1.5	0.8	+/- 2.9	M019
"	6-A-C	5	-190	2	-0.2	+/- 0.2	0.3	+/- 2.7	M020
"	6-C-C	10	-291	-2	-0.2	+/- 0.2	-1.4	+/- 1.9	M021
"	6-D-A	-4	-298	-2	-0.2	+/- 0.2	-2.5	+/- 1.2	M022
FMR-072 W-Wall	10-D-A	5	305	-1	-0.2	+/- 0.2	1.4	+/- 3.1	M023
"	9-C-A	5	-102	-2	-0.2	+/- 0.2	0.3	+/- 2.7	M024
"	8-B-B	-4	-338	-1	-0.2	+/- 0.2	-0.8	+/- 2.2	M025
FMR-061 Ceiling	4-8-B	10	-27	-2	0.6	+/- 1.5	-0.8	+/- 2.2	M026
"	5-9-C	0	27	-3	2.2	+/- 2.6	3.6	+/- 3.8	M027
"	5-10-A	0	102	-2	0.6	+/- 1.5	-0.3	+/- 2.5	M028
"	7-8-A	0	68	-1	0.6	+/- 1.5	1.9	+/- 3.3	M029
"	8-9-B	24	122	0	-0.2	+/- 0.2	0.3	+/- 2.7	M030
"	8-10-A	5	257	-2	-0.2	+/- 0.2	0.8	+/- 2.9	M031
FMR-084 Tube Sheet	Tube Face	5	1110	12	-0.2	+/- 0.2	0.3	+/- 2.7	M032
"	9-4-A	15	1543	1	-0.2	+/- 0.2	-1.4	+/- 1.9	M033
"	8-3-A	5	1293	0	-0.2	+/- 0.2	0.8	+/- 2.9	M034
FMR-075 Manip.Arm	2-1-*	0	318	-1	0.6	+/- 1.5	-1.9	+/- 1.6	M035
"	3-1-*	-4	-237	-4	-0.2	+/- 0.2	1.4	+/- 3.1	M036
"	4-4-*	19	-494	-4	-0.2	+/- 0.2	4.1	+/- 3.9	M037
"	BOTTOM-1	-4	-460	-1	-0.2	+/- 0.2	-1.4	+/- 1.9	M038
Shield Window Hole	RIGHT-3	10	-582	-2	1.4	+/- 2.2	-0.8	+/- 2.2	M039
FMR-067 Entrence	9-C-A	15	3966	2	-0.2	+/- 0.2	-1.9	+/- 1.6	M040
"	6-C-A	5	1442	2	-0.2	+/- 0.2	1.4	+/- 3.1	M041
"	7-A-B	5	-27	3	-0.2	+/- 0.2	-1.4	+/- 1.9	M042
"	7-A-C	0	-81	5	-0.2	+/- 0.2	-0.8	+/- 2.2	M043

	5-A-A	0	792	4	-0.2	+/- 0.2	3.0	+/- 3.6	M044
	5-B-C	0	129	3	-0.2	+/- 0.2	3.0	+/- 3.6	M045
	6-C-B	0	183	5	1.4	+/- 2.2	0.8	+/- 2.9	M046
"	5-A-B	5	-142	2	0.9	+/- 1.6	2.6	+/- 2.8	M047
"	5-C-A	0	-81	0	-0.3	+/- 0.2	-0.3	+/- 1.7	M048
"	6-C-A	10	-142	1	-0.3	+/- 0.2	3.0	+/- 2.9	M049
"	6-C-A	0	68	2	0.3	+/- 1.1	2.6	+/- 2.8	M050
"	6-A-C	-4	1036	6	-0.3	+/- 0.2	0.1	+/- 1.9	M051
"	4-C-A	-4	271	2	-0.3	+/- 0.2	-0.7	+/- 1.5	M052
"	6-C-C	-4	-142	0	-0.3	+/- 0.2	1.4	+/- 2.4	M053
FMR-047 Roof	2-C-A	5	494	4	0.9	+/- 1.6	3.9	+/- 3.1	M054
"	4-B-C	-4	210	1	-0.3	+/- 0.2	1.4	+/- 2.4	M055
"	4-A-B	5	345	1	0.9	+/- 1.6	2.6	+/- 2.8	M056
"	5-C-A	5	-47	2	-0.3	+/- 0.2	0.1	+/- 1.9	M057
"	7-A-C	5	14	2	-0.3	+/- 0.2	0.1	+/- 1.9	M058
"	8-C-B	0	379	3	-0.3	+/- 0.2	3.5	+/- 3.0	M059
"	8-B-A	-4	68	1	0.3	+/- 1.1	2.6	+/- 2.8	M060
FMR-049 W-Wall	7-D-A	-4	305	8	-0.3	+/- 0.2	3.0	+/- 2.9	M061
"	8-B-C	5	230	9	0.3	+/- 1.1	1.8	+/- 2.5	M062
"	8-A-A	5	162	8	0.3	+/- 1.1	2.2	+/- 2.6	M063
"	9-C-B	0	399	8	-0.3	+/- 0.2	0.1	+/- 1.9	M064
"	10-D-A	0	277	6	0.9	+/- 1.6	0.9	+/- 2.2	M065
"	10-A-C	0	27	4	0.3	+/- 1.1	-0.3	+/- 1.7	M066
FMR-050 E-Wall	10-D-A	0	406	7	-0.3	+/- 0.2	2.2	+/- 2.6	M067
"	9-B-C	10	95	9	-0.3	+/- 0.2	6.4	+/- 3.7	M068
"	9-A-A	19	122	7	-0.3	+/- 0.2	0.5	+/- 2.1	M069
"	8-C-B	5	345	9	-0.3	+/- 0.2	2.2	+/- 2.6	M070
"	7-D-A	-4	420	8	0.3	+/- 1.1	0.9	+/- 2.2	M071
"	7-A-C	10	14	7	-0.3	+/- 0.2	0.9	+/- 2.2	M072
FMR-048 N-Wall	2-D-A	15	487	7	-0.3	+/- 0.2	0.5	+/- 2.1	M073
"	2-A-C	0	-74	7	-0.3	+/- 0.2	0.9	+/- 2.2	M074
"	4-C-C	5	210	2	0.3	+/- 1.1	3.0	+/- 2.9	M075
"	4-B-B	10	115	3	-0.3	+/- 0.2	-0.7	+/- 1.5	M076
"	5-D-A	15	156	3	0.9	+/- 1.6	-0.3	+/- 1.7	M077
"	8-D-B	19	169	7	0.3	+/- 1.1	2.6	+/- 2.8	M078
"	8-C-A	0	0	7	-0.3	+/- 0.2	1.4	+/- 2.4	M079
"	8-A-A	15	20	4	-0.3	+/- 0.2	0.5	+/- 2.1	M080
0									

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Data From Survey Maps Created By Allied Technology Group for the Final Status Surveys of:

FMR-025 Building 3192 Foyer East Wall
FMR-028 Building 3192 Office Walls
FMR-029 Building 3192 Air Conditioning Room Inner South Wall
FMR-030 Building 3192 Foyer Upper and Lower Beams
FMR-031 Building 3192 Foyer Truss number 5 and 6
FMR-032 Building 3192 Foyer Ceiling
FMR-034 Building 3192 Foyer North Wall
FMR-038 Building 3192 Air Conditioning Room Outside West Wall
FMR-039 Building 3192 Outside Shower Room West Wall
FMR-040 Building 3192 Outside Shower Room South Wall
FMR-041 Building 3192 Inside Shower Room North Wall
FMR-042 Building 3192 Inside Shower Room South Wall
FMR-043 Building 3192 Inside Shower Room West Wall
FMR-055 East Exterior Hot Cell Floor
FMR-056 Air Conditioning Floor
FMR-057 Building 3192 Foyer South Wall
FMR-058 Building 3192 Office North Floor
FMR-059 Building 3192 Southwest Foyer Floor
FMR-060 Building 3192 Office Northwest Floor
FMR-064 Building 3192 Shower Room Floor
FMR-068 Building 3192 Trench Door Area Smears

	Fort McClellan Hot Cell (FOYER)								
SPECIAL FEATURES	LOCATION CODE	MONITORING			WIPE TEST				WIPE NO.
		Alpha	Beta	Gamma	Alpha		Beta		
	(Units =>)	dpm/100 cm2	dpm/100 cm2	uR/hr	dpm/100 cm2 +/- 2 sigma				
	(Bkgd =>)	1	157	12.0	0.0		0.0		
	(MDA =>)	36	417	-	2.0		5		
FMR-034 North Wall	9-E-A	5	1306	12	-0.3	+/- 0.2	0.1	+/- 1.9	M081
"	8-D-B	10	1530	10	-0.3	+/- 0.2	2.2	+/- 2.6	M082
"	8-B-B	-4	535	11	-0.3	+/- 0.2	1.8	+/- 2.5	M083
"	6-E-A	-4	1076	9	0.5	+/- 1.1	2.3	+/- 2.8	M084
"	6-C-A	10	1266	10	-0.1	+/- 0.1	4.0	+/- 3.2	M085
"	6-A-A	15	2105	12	0.5	+/- 1.1	2.3	+/- 2.8	M086
"	5-D-C	5	487	6	1.6	+/- 2.0	1.9	+/- 2.6	M087
"	5-B-C	0	-102	6	1.0	+/- 1.6	-0.2	+/- 1.9	M088
"	4-D-C	0	629	7	0.5	+/- 1.1	2.3	+/- 2.8	M089
"	4-C-A	10	948	6	-0.1	+/- 0.1	7.4	+/- 4.0	M090
"	3-E-B	24	1151	8	-0.1	+/- 0.1	2.7	+/- 2.9	M091
"	2-B-C	10	778	7	-0.1	+/- 0.1	-0.2	+/- 1.9	M092
"	2-A-A	0	914	6	-0.1	+/- 0.1	0.2	+/- 2.1	M093
"	1-C-B	19	1367	13	-0.1	+/- 0.1	1.5	+/- 2.5	M094
FMR-025 East Wall	2-D-2	5	2552	13	-0.1	+/- 0.1	2.7	+/- 2.9	M095
"	2-C-2	5	481	12	-0.1	+/- 0.1	2.3	+/- 2.8	M096
"	4-B-1	24	2660	14	-0.1	+/- 0.1	-1.0	+/- 1.5	M097
"	4-A-3	0	2030	16	0.5	+/- 1.1	1.5	+/- 2.5	M098
"	5-E-3	15	1002	10	0.5	+/- 1.1	1.5	+/- 2.5	M099
"	5-C-3	-4	2274	15	-0.1	+/- 0.1	-1.0	+/- 1.5	M100
"	5-A-3	5	1692	14	0.5	+/- 1.1	-0.6	+/- 1.7	M101
"	7-D-2	24	1902	11	1.0	+/- 1.6	0.2	+/- 2.1	M102
"	7-A-3	0	2701	8	-0.1	+/- 0.1	2.7	+/- 2.9	M103
"	8-B-2	10	1773	11	0.5	+/- 1.1	0.6	+/- 2.2	M104
"	9-E-1	15	941	9	0.5	+/- 1.1	2.7	+/- 2.9	M105
"	9-C-1	-4	1929	12	0.5	+/- 1.1	-0.6	+/- 1.7	M106
"	10-D-3	-4	1726	13	-0.1	+/- 0.1	0.6	+/- 2.2	M107
FMR-057 South Wall	1-E-A	15	772	12	-0.1	+/- 0.1	0.2	+/- 2.1	M108
"	1-B-C	24	765	10	1.0	+/- 1.6	-0.2	+/- 1.9	M109
"	2-D-B	19	981	8	-0.1	+/- 0.1	2.7	+/- 2.9	M110
"	9-E-A	19	927	8	0.5	+/- 1.1	-1.4	+/- 1.2	M111
"	10-E-1	10	1008	8	0.5	+/- 1.1	2.3	+/- 2.8	M112
"	10-C-1	0	1739	10	-0.1	+/- 0.1	1.9	+/- 2.6	M113
"	10-A-1	-4	1760	8	-0.1	+/- 0.1	0.6	+/- 2.2	M114
"	9-D-3	15	1591	10	-0.1	+/- 0.1	-0.2	+/- 1.9	M115
"	9-B-3	10	1679	10	-0.1	+/- 0.1	-1.0	+/- 1.5	M116
"	7-E-2	5	846	7	-0.1	+/- 0.1	2.3	+/- 2.8	M117
"	7-C-2	-4	1482	10	0.5	+/- 1.1	-0.2	+/- 1.9	M118
"	7-A-2	5	1787	7	-0.1	+/- 0.1	-0.6	+/- 1.7	M119
"	5-D-1	5	2132	9	0.5	+/- 1.1	1.9	+/- 2.6	M120
"	5-B-1	15	2166	11	0.5	+/- 1.1	2.3	+/- 2.8	M121
"	4-E-3	5	738	9	0.5	+/- 1.1	1.5	+/- 2.5	M122
"	4-C-3	5	2274	14	0.5	+/- 1.1	0.6	+/- 2.2	M123

"	4-A-3	15	2321	12	-0.1	+/- 0.1	-0.2	+/- 1.9	M124
"	2-D-2	19	2024	12	-0.1	+/- 0.1	2.3	+/- 2.8	M125
"	2-B-2	10	2247	14	-0.1	+/- 0.1	0.6	+/- 2.2	M126
FMR-038 AC/RM Exterior	1-C-A	-4	1029	6	5.1	+/- 3.4	4.4	+/- 3.3	M127
"	2-A-C	0	223	4	-0.1	+/- 0.1	0.2	+/- 2.1	M128
"	3-B-B	0	305	6	-0.1	+/- 0.1	2.7	+/- 2.9	M129
"	4-C-A	10	1516	7	-0.1	+/- 0.1	-0.2	+/- 1.9	M130
FMR-039AC wall Exterior	4-A-B	24	1151	9	0.5	+/- 1.1	1.1	+/- 2.4	M131
"	5-C-A	0	792	7	-0.1	+/- 0.1	1.1	+/- 2.4	M132
"	1-C-A	0	1624	10	-0.1	+/- 0.1	14.5	+/- 5.2	M133
FMR-040shower Exterior	1-B-C	5	948	9	0.5	+/- 1.1	0.6	+/- 2.2	M134
"	3-B-B	19	1733	9	-0.1	+/- 0.1	1.1	+/- 2.4	M135
"	4-C-A	5	1124	10	-0.1	+/- 0.1	1.9	+/- 2.6	M136
"	3-A-C	0	1124	5	-0.1	+/- 0.1	4.8	+/- 3.4	M137
"	2-B-B	15	541	5	-0.1	+/- 0.1	7.8	+/- 4.0	M138
"	1-C-A	15	907	10	1.0	+/- 1.6	2.7	+/- 2.9	M139
#REF!	2-C-A	-4	1435	12	1.0	+/- 1.6	0.2	+/- 2.1	M140
FMR-029 AC Inter. S-Wall	2-B-B	-4	1225	9	2.2	+/- 2.3	2.7	+/- 2.9	M141
"	2-A-C	0	501	8	-0.1	+/- 0.1	-0.2	+/- 1.9	M142
FMR-041Shower N-Wall	1-C-A	-4	1056	12	-0.1	+/- 0.1	-1.9	+/- 0.9	M143
"	2-B-A	0	799	15	-0.1	+/- 0.1	0.6	+/- 2.2	M144
FMR-042 Shower S-Wall	1-C-B	15	1212	17	1.0	+/- 1.6	0.6	+/- 2.2	M145
"	2-B-A	-4	778	13	-0.1	+/- 0.1	-1.0	+/- 1.5	M146
"	2-A-C	5	1225	11	-0.1	+/- 0.1	-0.2	+/- 1.9	M147
FMR-043 Shower W-Wall	4-B-B	10	1049	12	-0.1	+/- 0.1	-0.6	+/- 1.7	M148
FMR-028 Office E-Wall Int.	3-C-1	15	406	9	-0.1	+/- 0.1	1.5	+/- 2.5	M149
"	4-B-1	5	2078	10	-0.1	+/- 0.1	2.7	+/- 2.9	M150
FMR-028 Office E-Wall Ext	4-C-2	10	1340	8	-0.1	+/- 0.1	3.2	+/- 3.0	M151
"	4-B-3	15	1117	7	0.5	+/- 1.1	-1.0	+/- 1.5	M152
FMR-028 Office S-Wall Int.	7-C-1	10	1800	9	-0.1	+/- 0.1	0.2	+/- 2.1	M153
"	7-B-2	24	1340	10	-0.1	+/- 0.1	0.2	+/- 2.1	M154
FMR-028 Office S-Wall Ext	8-C-1	10	1015	10	-0.1	+/- 0.1	-1.4	+/- 1.2	M155
"	8-B-3	0	379	8	-0.1	+/- 0.1	0.6	+/- 2.2	M156
FMR-028	8-A-3	-4	758	8	-0.1	+/- 0.1	1.9	+/- 2.6	M157
FMR-034 N-WALL PEAK	9-E-A	0	108	4	-0.1	+/- 0.1	0.6	+/- 2.2	M158
"	6-E-A	-4	115	6	0.5	+/- 1.1	2.3	+/- 2.8	M159
"	5-F-C	-4	291	5	-0.1	+/- 0.1	-1.0	+/- 1.5	M160
"	4-F-B	-4	142	4	-0.1	+/- 0.1	-0.6	+/- 1.7	M161
FMR-032 CELING	1-4-A	0	440	3	-0.1	+/- 0.1	-1.0	+/- 1.5	M162
"	5-2-C	5	176	5	-0.1	+/- 0.1	0.2	+/- 2.1	M163
"	6-2-C	0	210	5	-0.1	+/- 0.1	-0.2	+/- 1.9	M164
"	9-3-B	-4	352	3	-0.1	+/- 0.1	0.6	+/- 2.2	M165
"	8-4-C	5	440	3	-0.1	+/- 0.1	0.2	+/- 2.1	M166
"	8-5-A	-4	264	3	-0.1	+/- 0.1	0.2	+/- 2.1	M167
"	9-6-B	-4	237	2	0.5	+/- 1.1	3.2	+/- 3.0	M168
FMR-032 CELING	8-7-C	0	325	3	-0.1	+/- 0.1	-1.4	+/- 1.2	M169
"	8-8-A	-4	352	5	-0.1	+/- 0.1	-0.6	+/- 1.7	M170
"	7-9-B	-4	217	6	-0.1	+/- 0.1	1.1	+/- 2.4	M171
FMR-031 Truss#6	1	-4	162	4	0.5	+/- 1.1	0.6	+/- 2.2	M172

FMR-031 Truss#5	4	5	934	2	-0.1	+/- 0.1	17.8	+/- 5.7	M173
FMR-030 Ceiling Beam	13	-4	162	6	-0.1	+/- 0.1	-0.2	+/- 1.9	M174
FMR-030 Ceiling Beam	22	0	122	5	-0.1	+/- 0.1	12.0	+/- 4.8	M175
FMR-058 Office Floor	9-1-C	0	812	17	0.5	+/- 1.1	3.2	+/- 3.0	M176
"	9-2-C	-4	745	15	0.5	+/- 1.1	0.2	+/- 2.1	M177
"	8-3-C	-4	521	12	-0.1	+/- 0.1	0.2	+/- 2.1	M178
"	8-4-B	10	697	13	-0.2	+/- 0.2	2.7	+/- 3.4	M179
FMR-060 Entrence Floor	5-1-A	5	420	6	0.6	+/- 1.5	2.2	+/- 3.3	M180
"	4-2-A	15	643	6	-0.2	+/- 0.2	0.0	+/- 2.5	M181
"	4-4-A	0	2044	7	-0.2	+/- 0.2	0.0	+/- 2.5	M182
FMR-056 AC/RM Floor	3-3-A	0	832	9	1.4	+/- 2.2	3.3	+/- 3.6	M183
"	1-1-C	10	1577	13	-0.2	+/- 0.2	3.3	+/- 3.6	M184
FMR-060 SW-Area Floor	9-4-B	10	562	10	-0.2	+/- 0.2	2.7	+/- 3.4	M185
"	9-5-A	-4	663	8	-0.2	+/- 0.2	2.2	+/- 3.3	M186
"	8-6-C	15	765	6	-0.2	+/- 0.2	0.0	+/- 2.5	M187
"	8-7-B	-4	1090	3	-0.2	+/- 0.2	-1.1	+/- 1.9	M188
FMR-059 SW-Floor	9-10-A	-4	569	4	-0.2	+/- 0.2	3.3	+/- 3.6	M189
FMR-068 Door Trench	3-6-B	0	589	6	-0.2	+/- 0.2	4.9	+/- 4.0	M190
"	3-7-C	5	778	5	-0.2	+/- 0.2	1.6	+/- 3.1	M191
FMR-064	2-4-B	0	1008	10	-0.2	+/- 0.2	0.5	+/- 2.7	M192
"	1-5-A	0	1983	15	-0.2	+/- 0.2	0.5	+/- 2.7	M193
FMR-055	2-7-B	0	657	7	0.6	+/- 1.5	2.2	+/- 3.3	M194
"	1-8-A	0	758	6	-0.2	+/- 0.2	4.9	+/- 4.0	M195
"	1-10-C	5	670	12	-0.2	+/- 0.2	1.6	+/- 3.1	M196

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Data From Survey Maps Created By Allied Technology Group for the Final Status Surveys of:

FMR-001 Classroom East Wall
FMR-002 Classroom West Wall
FMR-003 Classroom South Wall
FMR-004 Classroom Floor
FMR-005 Classroom North Wall
FMR-006 Classroom Ceiling

	Fort McClellan Hot Cell (CLASSROOM)							
SPECIAL FEATURES	LOCATION CODE	MONITORING			WIPE TEST			WIPE NO.
		Alpha	Beta	Gamma	Alpha	Beta		
	(Units =>)	pm/100 cm2	dpm/100 cm2	uR/hr	dpm/100 cm2 +/- 2 sigma			
	(Bkgd =>)	1	157	12.0	0.0	0.0		
	(MDA =>)	36	417	-	2.0	5		
R-005 North W	9-A-A	10	47	4	-0.2	2.7	+/- 3.4	M197
"	8-C-C	0	-190	4	-0.2	2.2	+/- 3.3	M198
"	8-D-A	0	-61	2	-0.2	0.0	+/- 2.5	M199
"	7-B-B	-4	-311	2	-0.2	-1.7	+/- 1.6	M200
"	6-A-A	-4	-108	2	-0.2	2.7	+/- 3.4	M201
"	5-A-B	15	-74	2	-0.2	1.1	+/- 2.9	M202
"	5-C-B	0	-122	3	-0.2	0.0	+/- 2.5	M203
"	3-B-A	0	-54	3	-0.2	-0.6	+/- 2.2	M204
"	3-D-A	-4	-54	3	-0.2	-0.6	+/- 2.2	M205
"	2-A-C	0	-14	2	-0.2	2.7	+/- 3.4	M206
"	2-C-C	5	129	3	-0.2	1.6	+/- 3.1	M207
R-001 East W	1-A-A	15	2051	10	-0.2	-0.6	+/- 2.2	M208
"	1-C-B	-4	2024	13	-0.2	2.7	+/- 3.4	M209
"	1-E-B	5	1002	9	0.6	-1.7	+/- 1.6	M210
"	3-B-A	5	1645	11	-0.2	1.1	+/- 2.9	M211
"	3-D-A	5	562	8	2.2	4.3	+/- 3.9	M212
"	4-A-A	-4	1597	11	-0.2	1.1	+/- 2.9	M213
"	4-C-C	19	1746	11	-0.2	2.2	+/- 3.3	M214
"	4-E-C	0	812	7	-0.2	1.1	+/- 2.9	M215
"	6-B-B	-4	1787	16	-0.2	-0.6	+/- 2.2	M216
"	6-D-B	-4	629	10	-0.2	1.6	+/- 3.1	M217
"	7-A-B	-4	2091	20	-0.2	0.5	+/- 2.7	M218
"	8-C-A	5	1942	14	-0.2	2.7	+/- 3.4	M219
"	8-E-A	15	1008	10	-0.2	1.6	+/- 3.1	M220
"	9-B-C	5	2294	16	-0.2	0.0	+/- 2.5	M221
"	9-D-C	0	41	12	1.4	-0.6	+/- 2.2	M222
"	10-A-C	0	3181	20	-0.2	0.5	+/- 2.7	M223
"	11-B-C	5	1997	12	-0.2	0.0	+/- 2.5	M224
"	11-E-B	0	1015	8	-0.2	3.8	+/- 3.7	M225
"	13-B-A	5	1983	19	-0.2	1.6	+/- 3.1	M226
"	13-D-A	-4	447	12	-0.2	-0.6	+/- 2.2	M227
"	14-C-C	0	1983	19	-0.2	1.1	+/- 2.9	M228
"	14-E-C	5	1063	12	-0.2	0.0	+/- 2.5	M229
-003 SOUTH W	1-B-A	0	2755	21	-0.2	-0.6	+/- 2.2	M230
"	1-E-A	5	1184	13	-0.2	0.0	+/- 2.5	M231
"	2-C-B	5	1983	14	-0.2	-0.6	+/- 2.2	M232
"	2-E-D	0	1124	14	0.6	-0.6	+/- 2.2	M233
"	3-F-B	0	230	7	-0.2	2.2	+/- 3.3	M234
"	4-B-A	0	2166	19	-0.2	0.5	+/- 2.7	M235
"	4-D-A	15	1909	11	0.6	1.6	+/- 3.1	M236

"	4-E-B	0	1259	10	1.4	2.7	+/- 3.4	M237
"	5-C-C	0	433	11	0.6	1.6	+/- 3.1	M238
"	5-E-D	0	995	9	0.6	5.4	+/- 4.2	M239
"	5-G-C	0	176	6	0.6	-1.1	+/- 1.9	M240
"	6-C-C	5	1956	13	-0.2	-0.6	+/- 2.2	M241
"	6-D-A	0	1597	12	-0.2	-0.6	+/- 2.2	M242
"	6-F-B	5	325	6	-0.2	2.7	+/- 3.4	M243
"	7-B-B	10	2261	20	0.6	0.5	+/- 2.7	M244
"	7-E-C	0	1002	15	0.6	10.9	+/- 5.4	M245
"	9-D-B	-4	2003	14	-0.2	-1.7	+/- 1.6	M246
-002 WEST W	9-E-A	5	1293	12	-0.2	4.3	+/- 3.9	M247
"	14-C-C	5	2085	22	-0.2	0.0	+/- 2.5	M248
"	14-E-C	10	1266	13	-0.2	1.6	+/- 3.1	M249
"	13-B-A	5	1888	20	-0.2	0.5	+/- 2.7	M250
"	13-D-A	5	657	14	0.6	1.6	+/- 3.1	M251
"	11-C-B	0	2146	13	-0.2	0.5	+/- 2.7	M252
"	11-E-B	5	975	9	-0.2	-1.7	+/- 1.6	M253
"	10-A-C	-4	1814	18	-0.2	-0.6	+/- 2.2	M254
"	9-B-C	0	2206	17	-0.2	1.6	+/- 3.1	M255
"	9-D-C	-4	805	11	-0.2	-1.1	+/- 1.9	M256
"	8-C-A	-4	2281	13	-0.2	-0.6	+/- 2.2	M257
"	8-E-A	0	1056	11	0.6	1.1	+/- 2.9	M258
"	7-A-B	10	2010	15	-0.2	-1.1	+/- 1.9	M259
"	6-B-B	5	1875	13	0.6	1.1	+/- 2.9	M260
"	6-D-B	5	758	10	-0.2	2.7	+/- 3.4	M261
"	4-A-A	10	1530	7	-0.2	0.0	+/- 2.5	M262
"	4-C-C	10	880	7	-0.2	-2.2	+/- 1.2	M263
"	4-E-C	15	853	7	-0.2	-1.7	+/- 1.6	M264
"	3-B-A	-4	650	6	-0.2	1.6	+/- 3.1	M265
"	3-D-A	-4	684	6	0.6	1.6	+/- 3.1	M266
"	1-A-A	5	-54	5	0.6	-1.7	+/- 1.6	M267
"	1-C-B	5	1347	6	0.6	0.0	+/- 2.5	M268
"	1-E-B	0	887	6	-0.2	1.1	+/- 2.9	M269
MR-004 FLOOR	1-9-A	-4	372	4	-0.2	-1.1	+/- 1.9	M270
"	1-6-A	0	176	2	1.0	1.9	+/- 2.6	M271
"	1-3-A	5	345	4	0.5	0.6	+/- 2.2	M272
"	2-9-C	0	393	3	0.5	3.2	+/- 3.0	M273
"	2-5-A	-4	332	4	1.6	1.9	+/- 2.6	M274
"	2-2-B	-4	413	7	-0.1	2.3	+/- 2.8	M275
"	3-8-C	0	372	5	1.0	0.2	+/- 2.1	M276
"	3-4-A	5	345	6	-0.1	1.1	+/- 2.4	M277
"	3-1-B	-4	758	12	-0.1	1.1	+/- 2.4	M278
"	4-7-C	15	277	6	0.5	1.9	+/- 2.6	M279
"	4-3-A	0	609	8	-0.1	5.7	+/- 3.6	M280
"	5-9-B	0	460	10	0.5	1.9	+/- 2.6	M281
"	5-6-C	-4	365	9	0.5	2.7	+/- 2.9	M282

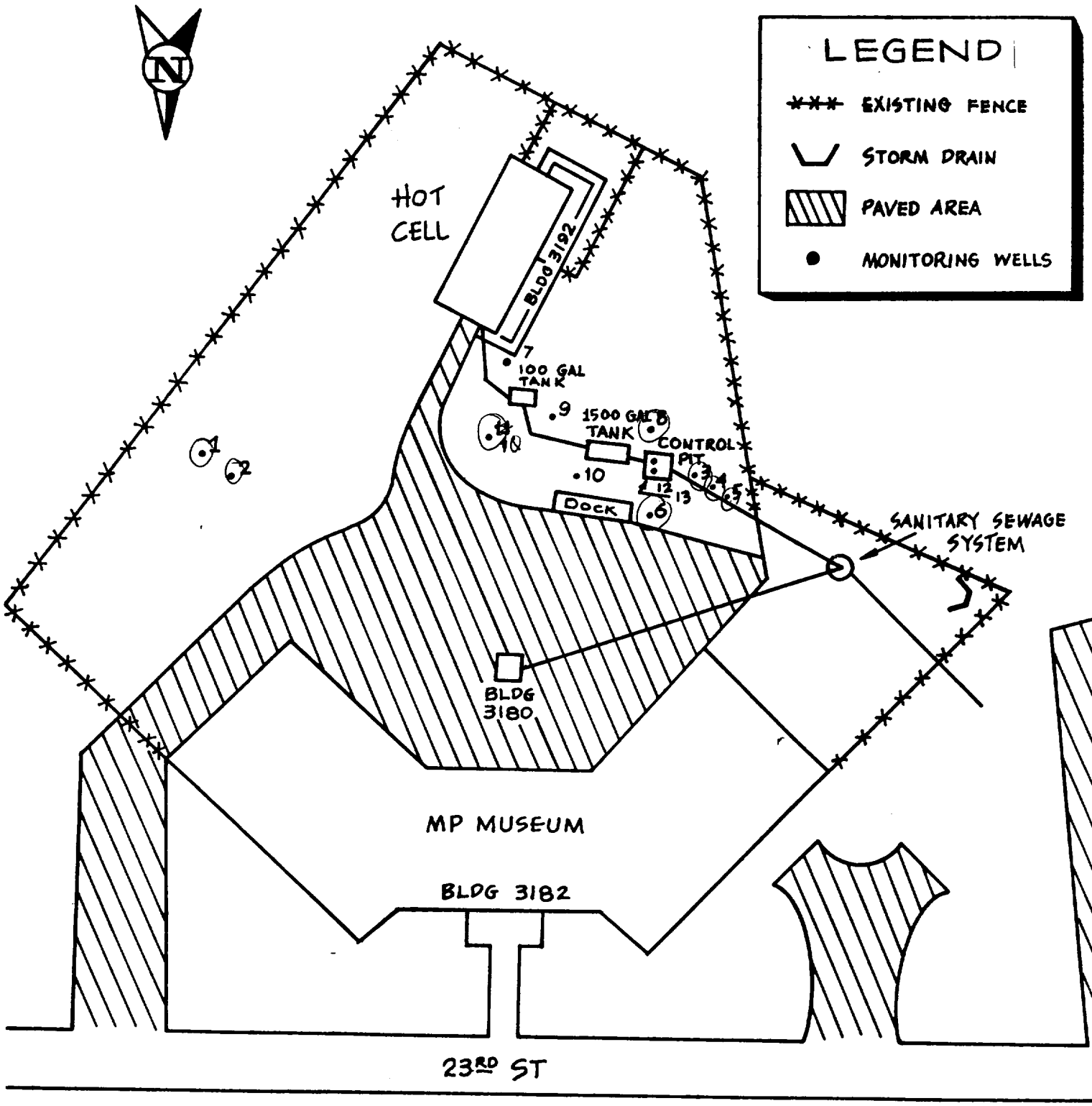
"	5-2-A	15	819	14	1.0	7.8	+/- 4.0	M283
"	6-8-B	-4	1367	12	-0.1	2.3	+/- 2.8	M284
"	6-5-C	0	1692	11	-0.1	-0.6	+/- 1.7	M285
"	6-1-A	0	1753	19	2.8	7.8	+/- 4.0	M286
"	7-7-B	-4	1902	14	0.5	1.9	+/- 2.6	M287
"	7-4-C	0	1726	13	2.8	2.7	+/- 2.9	M288
"	8-9-A	-4	1029	18	0.5	-0.6	+/- 1.7	M289
"	8-6-B	0	1469	13	-0.1	3.2	+/- 3.0	M290
"	8-3-A	5	1191	16	1.0	5.7	+/- 3.6	M291
"	9-8-A	5	1340	16	1.0	-0.2	+/- 1.9	M292
"	9-5-B	5	954	14	0.5	2.7	+/- 2.9	M293
"	9-2-C	5	1090	18	0.5	0.6	+/- 2.2	M294
"	10-7-A	0	1591	15	0.5	3.6	+/- 3.1	M295
"	10-4-B	-4	1760	16	0.5	1.5	+/- 2.5	M296
"	10-2-B	0	1543	19	-0.1	4.0	+/- 3.2	M297
"	11-8-C	10	1124	15	1.6	1.1	+/- 2.4	M298
"	11-4-A	0	1069	15	0.5	-1.0	+/- 1.5	M299
"	11-1-B	0	1205	19	0.5	2.7	+/- 2.9	M300
"	12-7-C	10	1706	15	0.5	7.4	+/- 4.0	M301
"	12-3-A	0	1340	15	-0.1	2.7	+/- 2.9	M302
"	13-9-B	15	995	16	-0.1	2.7	+/- 2.9	M303
"	13-6-C	-4	1340	15	-0.1	1.5	+/- 2.5	M304
"	13-2-A	0	1212	15	1.0	1.9	+/- 2.6	M305
"	14-8-B	10	1184	18	1.6	1.1	+/- 2.4	M306
"	14-5-C	-4	954	13	1.0	2.7	+/- 2.9	M307
"	14-1-A	0	1597	19	1.6	3.2	+/- 3.0	M308
"	15-7-B	10	1618	22	0.5	1.9	+/- 2.6	M309
"	15-4-B	-4	1550	16	0.5	2.7	+/- 2.9	M310
"	15-1-C	0	1719	21	0.5	2.3	+/- 2.8	M311
-006 Celing V	3-8-B	-4	149	5	1.0	0.6	+/- 2.2	M312
"	East Bottom	-4	27	3	-0.1	3.2	+/- 3.0	M313
"	1-6	5	135	4	2.8	5.3	+/- 3.5	M314
"	6-7-A	0	535	6	0.5	1.5	+/- 2.5	M315
TRUSS # 3	Point # 4	0	135	5	0.5	2.7	+/- 2.9	M316
"	9-9-A	-4	467	9	-0.1	-0.2	+/- 1.9	M317
"	12-6-B	0	467	7	0.5	-1.0	+/- 1.5	M318
"	15-9-C	5	413	12	-0.1	0.2	+/- 2.1	M319
"	15-5-A	0	305	3	0.5	1.9	+/- 2.6	M320
"	15-2-A	-4	176	6	-0.1	-0.2	+/- 1.9	M321
TRUSS # 1	Point # 8	-4	129	6	0.5	2.7	+/- 2.9	M322
FMR-006	11-3-B	-4	386	9	-0.1	0.6	+/- 2.2	M323
"	7-1-C	-4	623	10	-0.1	0.2	+/- 2.1	M324
"	1-1	0	345	5	-0.1	-0.2	+/- 1.9	M325
BEAM	Grid 1 - 2	0	237	4	-0.1	3.6	+/- 3.1	M326
FMR-006	Grid 3 - 2	-4	277	6	0.5	-0.6	+/- 1.7	M327
"	Grid 3 - 5	0	217	4	-0.1	1.0	+/- 2.8	M328

BEAM	Grid 15 - 9	-4	95	6	-0.1	1.0	+/- 2.8	M329

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Data From Survey Maps Created By Allied Technology Group for the Final Status Surveys of:

FMR-62 Hot Cell Inside Ledge
FMR-053 Museum Floor


N
LEGEND
EXISTING FENCE
STORM DRAIN
PAVED AREA
MONITORING WELLS
HOT CELL
BLDG 3192
7
100 GAL TANK
9
1500 GAL TANK
CONTROL PIT
10
DOCK
6
SANITARY SEWAGE SYSTEM
BLDG 3180
MP MUSEUM
BLDG 3182
23RD ST

	Fort McClellan Hot Cell (MUSEUM)								
SPECIAL FEATURES	LOCATION CODE	MONITORING			WIPE TEST				WIPE NO.
		Alpha	Beta	Gamma	Alpha		Beta		
	(Units =>)	dpm/100 cm2	dpm/100 cm2	uR/hr	dpm/100 cm2 +/- 2 sigma				
	(Bkgd =>)	1	157	12.0	0.0		0.0		
	(MDA =>)	36	417	-	2.0		5		
FMR-62	ATG # 10	5	1787	25	-0.1	+/- 0.1	2.5	+/- 3.2	M330
"	ATG # 20	10	2376	22	-0.1	+/- 0.1	-0.5	+/- 2.2	M331
"	ATG # 30	10	1631	22	-0.1	+/- 0.1	0.0	+/- 2.4	M332
R-053 SOUTH WA	ATG # 1	24	1584	21	0.5	+/- 1.3	0.0	+/- 2.4	M333
FMR-053 FLOOR	ATG # 1	5	2247	20	-0.1	+/- 0.1	0.5	+/- 2.6	M334
"	ATG # 10	15	2321	17	-0.1	+/- 0.1	0.0	+/- 2.4	M335
"	ATG # 31	33	3777	27	-0.1	+/- 0.1	-0.5	+/- 2.2	M336
"	ATG # 41	33	2376	19	0.5	+/- 1.3	2.5	+/- 3.2	M337
"	ATG # 50	19	2186	23	-0.1	+/- 0.1	-1.0	+/- 2.0	M338

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

APPENDIX D

LABORATORY QUALITY ASSURANCE

DURING OPERATION AT FORT MCCLELLAN

DEPARTMENT OF THE AIR FORCE
ARMSTRONG LABORATORY (AFMC)
BROOKS AIR FORCE BASE, TEXAS

21 October 1997

MEMORANDUM FOR MCHB-DC-LRC

FROM: AL/OEBA
2402 E Drive
Brooks AFB, TX 78235-5114

SUBJECT: Quality Assurance Letter for Ft. McCclellan Project

1. Samples analyzed for gamma emitting radionuclides are measured using 40 percent relative efficiency high-purity germanium (HpGe) solid state detectors. Quantification and identification of specific radionuclides is accomplished by comparing the observed, discrete photon energies demonstrated in the spectrum to established photon energies and intensities contained in the nuclide library. A key line (or specific photon energy) is defined as the primary (or one of a series of principal) photon emissions associated with a specific isotope. All samples with gamma spectroscopy results demonstrated the presence of all key energy lines for the isotopes of interest. Unless otherwise specified in the analytical report, no isotope is reported without demonstrating the presence of the principal photon energies in the measured energy spectrum.

2. Samples measured for gross alpha and beta particle emissions are measured using thin-windowed, gas-flow proportional counters. Efficiency calibration(s) for this method are performed using ^{241}Am and ^{90}Sr sources for alpha and beta emissions respectively. For samples with variable amounts of mass from sample to sample, a weight verses efficiency calibration is performed to account for self-absorption of the charged particles within the sample. A "cross-over" calibration is also performed to estimate the number of partially absorbed alpha particles that are incorrectly identified as beta emissions. For swipe (also known as wipe) samples, only a single point efficiency calibration is performed and no adjustment is made for partially absorbed alpha particles that are incorrectly identified as beta emissions

3. Samples submitted for liquid scintillation analysis are processed using one of the three Packard LSC counters located in the Radioanalytical Branch. These systems are calibrated using commercially prepared quenched and unquenched C-14 and H-3 standards.

4. The Radioanalytical Branch has developed an aggressive Quality Assurance Program that ensures ours customers receive the highest quality analytical results. Please refer to the Radioanalytical Branch Quality Assurance Manual for a full description of the Quality Assurance/Quality Control procedures. During the period in which the attached results were processed, the Instrument and Quality Control Samples were all within the Radioanalytical Branch control limits. The Radioanalytical Branch maintains all Quality Assurance/Quality Control and Sample records at Brooks AFB, Texas. These records are available for your review should the need arise.

5. If you have any questions concerning the information provided above or the attached results please contact me at DSN 240-5817 or commercial (210) 536-5817.

DARRIN P. LAWRENCE, SSgt,USAF
NCOIC, Radioanalytical Quality Assurance

D-2

Analytical Excellence Through Aggressive, Comprehensive Quality Management

APPENDIX E

RELEASE GUIDELINES

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Limits for Removable Surface Contamination

Nuclide[a]	Removable[b] [c] (dpm/100 cm^2)	Average (dpm/100 cm^2)	Maximum (dpm/100 cm^2)
U-nat, U-235, U238, and associated decay products	1000	5000	15000
Transurancies, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, and I-129	20	100	300
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, and I-133	200	1000	3000
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above	1000	5000	15000

[a] Where surface contamination by both alpha- and beta-gamma emitting nuclide exists, the limits established for alpha- and beta-gamma emitting nuclide should apply independently.

[b] As used in this table, disintegrations per minute (dpm) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c] The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally. The entire surface should be wiped.

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Reference: Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use of Termination of Licenses for Byproducts, Source, or Special Nuclear Material, U.S. Nuclear Regulatory Commission, Nov 1976.

NRC CLEAN RELEASE CRITERIA

Matrix	Contaminant	Clean Release Above Background
Soil	^{60} Cobalt	8 pCi/gm
Soil	^{137} Cesium	15 pCi/gm

Reference: Evaluation of Acceptability of Proposed Decommissioning Activities for Fort McClellan, Alabama. U.S. Nuclear Regulatory Commission, May 6 1987.

The level of gamma radiation measured at one meter shall not exceed background.

2x background

NUREG 5849

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

APPENDIX F

INSTRUMENTATION USED AT FORT MCCLELLAN

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Instrumentation used at Fort McClellan
Verification Survey

	Alpha		Beta
Readout Make	LUDLUM	Readout Make	LUDLUM
Readout Model	LM-2224	Readout Model	LM-2224
Serial Number	119778	Serial Number	119778
Cal. Due Date	20-June-98	Cal. Due Date	20-June-98
Cal. Eff. to a Th-230	0.2839	Cal. Eff. to a Tc-99	0.1970
Probe Make	LUDLUM	Probe Make	LUDLUM
Probe Model	43-1-1	Probe Model	43-1-1

	Gamma
Make	Ludlum
Model	LM-2350
Serial Number	105630
Cal. Date	2-October-98
Cal. to a Cs-137 Source	Correction Factor is 1

All instrumentation was supplied by USACHPPM and the calibration is traceable to the National Institute of Standards and Technology.

APPENDIX G

EQUIPMENT DAILY OPERABILITY CHECKS

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Beta Detector

Section 1 Instrument/Source Information

Model:	LM-2224	S/N:	119778	Cal Due:	20-Jan-98
Detector:	43-1-1	S/N:	PR 133820	Area:	75 cm
Isotope:	Tc-99	S/N:	1825-94	Cal Date:	20-May-94

-3s	-2s	Mean	+2s	+3s
2136	2185	2285	2384	2434

Source DPM:	11600	Inst. Efficiency:	0.1970

Section 2 Instrument Source/Background Data

QC	Check	AM			MID			PM			Notes
CHECK	Date	Bkgd	Source	Net	Bkgd	Source	Net	Bkgd	Source	Net	
1	20Aug97	152	2466	2314	165	2532	2367	153	2487	2334	N/A
2	21Aug97	138	2501	2363	169	2430	2261	170	2530	2360	N/A
3	22Aug97	157	2467	2310	149	2418	2269	162	2351	2189	N/A
4	23Aug97	153	2487	2334	163	2414	2251	155	2372	2217	N/A
finished	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
finished	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
finished	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
finished	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
finished	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Alpha Detector

Section 1 Instrument/Source Information

Model:	LM-2224	S/N: 119778		Cal Due: 20-Jan-98
Detector:	43-1-1	S/N: PR 133820		Area: 75 cm2
Isotope:	Th-230	S/N: 1827-92		Cal Date: 20-May-94
-3s	-2s	Mean	+2s	+3s
2340	2395	2504	2614	2669
Source DPM:	8820		Inst. Efficiency:	0.2839

Section 2 Instrument Source/Background Data

QC	Check	AM			MID			PM			Notes
CHECK	Date	Bkgd	Source	Net	Bkgd	Source	Net	Bkgd	Source	Net	
1	20Aug96	2	2565	2563	1	2520	2519	1	2495	2494	N/A
2	21Aug96	0	2507	2507	1	2555	2554	1	2455	2454	N/A
3	22Aug96	1	2510	2509	0	2439	2439	0	2487	2487	N/A
4	23Aug96	2	2589	2587	1	2535	2534	1	2462	2461	N/A

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Gamma Detector

Section 1 Instrument/Source Information

Model:	LM-2350			S/N:	105630		Cal Due:	2/10/98	
Detetector:	44-2			S/N:	10049		Area:	1x1 in2	
Isotope:	Cs-137			S/N:	1830-94		Cal Date:	5/20/94	
-3s		-2s		Mean (net uR/hr)		+2s		+3s	
419		428		447		465		474	

Section 2 Instrument Source/Background Data

Julian	Check	AM			MID			PM			Notes
Date	Date	Bkgd	Source	Net	Bkgd	Source	Net	Bkgd	Source	Net	
230	19Aug97	10.6	467.0	456	11.2	472	461	11.5	477	466	1
231	20Aug97	11.7	471	459	11.4	456	445	12.1	461	449	N/A
232	21Aug97	8.2	448.0	440	11	467	456	11	460	449	1
233	22Aug97	10.8	455.0	444	12	463	451	10	459	449	2
234	23Aug97	0.0	0.0	0	0	0	0	0	0	0	3

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

APPENDIX H

BACKGROUND STUDY

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

FORT MCCLELLAN BACKGROUND STUDY
NATURAL GAMMA EXPOSURE

1. The background exposure rate on Fort McClellan is 10.7 microRoentgens per hour.

2. Five locations were used to establish an average background for Fort McClellan. At each of the five locations, an average background reading was determined for gamma exposure. Readings are provided in the following table:

North side of Sumerall Gate @Sign	10.9
Baker Gate behind guard shack	11.6
Balizell Gate 30M inside on right side	11.7
Galloway Gate intersection Rice	10.7
Cemetery Front of Floral Reg. Sign	8.5

* Readings are in µR/hr

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

APPENDIX I

ENVIRONMENTAL RESULTS

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Table 1. Alpha/Beta soil analysis for soil screen, and representative Gamma exposure readings for each sample point.

	BUILDINGS 3182, 3192 (YARD)									
	FORT MCCLELLAN									
	ENVIRONMENTAL SOIL SAMPLES									
GRID	LOCATION CODE	Gamma	SOIL ANALYSIS GROSS ALPHA			GROSS BETA			SAMPLE
	(Units =>)	uR/hr	pCi per gram						
LOCATION	(Bkgd =>)	10.7	AVG=.93 (+/-) .30			AVG=9.5 (+/-) .896			
	(MDA =>)	-	.5 pCi/g			.5 pCi/g			
SEE MAP	North side of Sumerall Gate @ sign	10.9	1.07	+/-	0.32	10.3	+/-	0.93	BKG-1
SEE MAP	Baker Gate behind guard shack	11.6	0.85	+/-	0.29	9.84	+/-	0.91	BKG-2
SEE MAP	Balizell Gate 30M inside on right side	11.7	0.9	+/-	0.3	9.53	+/-	0.9	BKG-3
SEE MAP	Galloway Gate intersection Rice	10.70	1.09	+/-	0.33	9.38	+/-	0.89	BKG-4
SEE MAP	Cemetery Front of Floral Reg. Sign	8.5	0.73	+/-	0.27	8.25	+/-	0.85	BKG-5
A-1	SEE SURVEY MAP	2.8	1.09	+/-	0.33	14.80	+/-	1.09	S-01
F-3	SEE SURVEY MAP	3.8	0.73	+/-	0.27	15.27	+/-	1.10	S-02
H-10	SEE SURVEY MAP	2.5	0.56	+/-	0.24	11.65	+/-	0.98	S-03
I-10	SEE SURVEY MAP	1.7	0.78	+/-	0.28	10.98	+/-	0.95	S-04
K-12	SEE SURVEY MAP	0.4	0.56	+/-	0.24	5.87	+/-	0.74	S-05
D-18	SEE SURVEY MAP	2.2	0.87	+/-	0.30	12.53	+/-	1.01	S-06
B-20	SEE SURVEY MAP	1.8	0.73	+/-	0.27	12.86	+/-	1.02	S-07
F-24	SEE SURVEY MAP	6.5	0.92	+/-	0.30	9.29	+/-	0.89	S-08
K-26	SEE SURVEY MAP	2.0	0.95	+/-	0.31	10.87	+/-	0.95	S-09
M-28	SEE SURVEY MAP	-0.3	0.76	+/-	0.28	8.81	+/-	0.87	S-10
P-20	SEE SURVEY MAP	2.4	0.90	+/-	0.30	23.27	+/-	1.33	S-11
U-20	SEE SURVEY MAP	2.7	1.55	+/-	0.39	24.96	+/-	1.38	S-12
Z-18	SEE SURVEY MAP	8.5	1.09	+/-	0.33	12.00	+/-	0.99	S-13
T-8	SEE SURVEY MAP	2.8	2.27	+/-	0.46	31.73	+/-	1.54	S-14
R-12	SEE SURVEY MAP	-1.0	0.83	+/-	0.29	8.14	+/-	0.84	S-15
O-12	SEE SURVEY MAP	-2.0	1.00	+/-	0.32	12.29	+/-	1.00	S-16
P-15	SEE SURVEY MAP	3.2	0.80	+/-	0.28	13.45	+/-	1.04	S-17
U-18	SEE SURVEY MAP	5.6	1.23	+/-	0.35	18.90	+/-	1.21	S-18
GRID 2-4	SEE SURVEY MAP	11.6	1.67	+/-	0.40	22.22	+/-	1.31	S-19
GRID 5-9	SEE SURVEY MAP	7.2	2.17	+/-	0.45	22.46	+/-	1.31	S-20
GRID 6-4	SEE SURVEY MAP	5.1	0.80	+/-	0.28	10.27	+/-	0.93	S-21
GRID 8-2	SEE SURVEY MAP	9.5	0.64	+/-	0.26	9.95	+/-	0.91	S-22

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Table 2. Gamma Isotopic analysis of environmental samples.

U.S. Army Center for Health Promotion and Preventive Medicine

Director of Laboratory Science
ATTN: MCHB-DC-LCR
Aberdeen Proving Ground, MD 21010-5422

Installation: Fort McClellan
Project Officer: James Mullikin
Project Number: 27-MH-0987-97

Project Identifier	Base Sample Number	Isotope	Result		Uncertainty	Units	MDA
FTMC	BKG-1	Alpha	1.07	(+/-)	0.72	PCI/G	0.35
		Beta	10.28	(+/-)	2.06	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.1
		K-40	6.53	(+/-)	2.7	PCI/G	1.1
		Th-232	1.13	(+/-)	0.6	PCI/G	0.4
		U-238	1.22	(+/-)	1.5	PCI/G	1.5
FTMC	BKG-2	Alpha	0.85	(+/-)	0.65	PCI/G	0.35
		Beta	9.84	(+/-)	2.02	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		K-40	2.12	(+/-)	2.8	PCI/G	2.2
		Th-232	0.00	(+/-)	0	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	3.1
FTMC	BKG-3	Alpha	0.90	(+/-)	0.67	PCI/G	0.35
		Beta	9.53	(+/-)	2	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		K-40	5.32	(+/-)	4	PCI/G	2.5
		Th-232	1.40	(+/-)	0.8	PCI/G	0.7
		U-238	0.00	(+/-)	0	PCI/G	3.7
FTMC	BKG-4	Alpha	1.09	(+/-)	0.73	PCI/G	0.35
		Beta	9.38	(+/-)	1.98	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.2
		CS-137	0.36	(+/-)	0.3	PCI/G	0.3
		K-40	3.83	(+/-)	2.9	PCI/G	2.4

		Th-232	0.00	(+/-)	0	PCI/G	1.3
		U-238	0.00	(+/-)	0	PCI/G	3.5
FTMC	BKG-5	Alpha	0.73	(+/-)	0.61	PCI/G	0.35
		Beta	8.25	(+/-)	1.88	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.68	(+/-)	0.4	PCI/G	0.3
		K-40	3.42	(+/-)	3	PCI/G	2.1
		Th-232	0.00	(+/-)	0	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	3.4
FTMC	BLDG#3192	Alpha	1.72	(+/-)	0.9	PCI/G	0.35
		Beta	19.69	(+/-)	2.74	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.2
		EU-155	0.18	(+/-)	0.3	PCI/G	0.2
		K-40	7.93	(+/-)	3.2	PCI/G	1.6
		Th-232	2.07	(+/-)	0.9	PCI/G	0.5
		U-238	3.42	(+/-)	2.6	PCI/G	2.1
FTMC	S-01	Alpha	1.09	(+/-)	0.73	PCI/G	0.35
		Beta	14.80	(+/-)	2.41	PCI/G	0.95
		CO-60	0.18	(+/-)	0.2	PCI/G	0.2
		CS-137	0.90	(+/-)	0.4	PCI/G	0.2
		K-40	9.14	(+/-)	3.8	PCI/G	2.4
		Th-232	0.72	(+/-)	0.8	PCI/G	0.7
		U-238	0.00	(+/-)	0	PCI/G	3.3
FTMC	S-02	Alpha	0.73	(+/-)	0.61	PCI/G	0.35
		Beta	15.27	(+/-)	2.45	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.90	(+/-)	0.4	PCI/G	0.5
		K-40	9.19	(+/-)	3.6	PCI/G	2.5
		Th-232	0.00	(+/-)	0	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	3.1
FTMC	S-03	Alpha	0.56	(+/-)	0.54	PCI/G	0.35
		Beta	11.65	(+/-)	2.17	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.4
		CS-137	0.86	(+/-)	0.4	PCI/G	0.2
		K-40	6.76	(+/-)	3.6	PCI/G	2.1
		Th-232	0.00	(+/-)	0	PCI/G	1.3
		U-238	1.49	(+/-)	3	PCI/G	3
FTMC	S-04	Alpha	0.78	(+/-)	0.63	PCI/G	0.35
		Beta	10.98	(+/-)	2.12	PCI/G	0.95

		CO-60	0.00	(+/-)	0	PCI/G	0.4
		CS-137	0.86	(+/-)	0.4	PCI/G	0.2
		K-40	5.45	(+/-)	3	PCI/G	2.2
		Th-232	0.00	(+/-)	0	PCI/G	1.3
		U-238	0.00	(+/-)	0	PCI/G	3.5
FTMC	S-05	Alpha	0.56	(+/-)	0.54	PCI/G	0.35
		Beta	5.87	(+/-)	1.65	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		K-40	4.86	(+/-)	3.8	PCI/G	2.1
		Th-232	0.86	(+/-)	0.8	PCI/G	0.8
		U-238	0.00	(+/-)	0	PCI/G	3.4
FTMC	S-06	Alpha	0.87	(+/-)	0.66	PCI/G	0.35
		Beta	12.53	(+/-)	2.24	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.99	(+/-)	0.4	PCI/G	0.2
		K-40	7.21	(+/-)	3.7	PCI/G	1.6
		Th-232	0.00	(+/-)	0	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	3.3
FTMC	S-07	Alpha	0.73	(+/-)	0.61	PCI/G	0.35
		Beta	12.86	(+/-)	2.27	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.86	(+/-)	0.4	PCI/G	0.3
		K-40	8.56	(+/-)	3.8	PCI/G	1.6
		Th-232	0.00	(+/-)	0	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	3.3
FTMC	S-08	Alpha	0.92	(+/-)	0.67	PCI/G	0.35
		Beta	9.29	(+/-)	1.97	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.41	(+/-)	0.4	PCI/G	0.2
		K-40	3.60	(+/-)	2.8	PCI/G	1.9
		Th-232	0.81	(+/-)	0.6	PCI/G	0.8
		U-238	0.00	(+/-)	0	PCI/G	3.3
FTMC	S-09	Alpha	0.95	(+/-)	0.68	PCI/G	0.35
		Beta	10.87	(+/-)	2.11	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.36	(+/-)	0.3	PCI/G	0.3
		K-40	6.58	(+/-)	4.3	PCI/G	3
		Th-232	0.99	(+/-)	0.9	PCI/G	0.9
		U-238	0.00	(+/-)	0	PCI/G	5.3

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

FTMC	S-10	Alpha	0.76	(+/-)	0.62	PCI/G	0.35
		Beta	8.81	(+/-)	1.93	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.4
		CS-137	0.95	(+/-)	0.4	PCI/G	0.3
		K-40	3.11	(+/-)	3.6	PCI/G	2.7
		Th-232	0.90	(+/-)	0.9	PCI/G	0.9
		U-238	0.00	(+/-)	0	PCI/G	5.7
FTMC	S-11	Alpha	0.90	(+/-)	0.67	PCI/G	0.35
		Beta	23.27	(+/-)	2.96	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.45	(+/-)	0.5	PCI/G	0.3
		K-40	15.90	(+/-)	6.7	PCI/G	3.1
		Th-232	1.40	(+/-)	1.3	PCI/G	1.2
		U-238	0.00	(+/-)	0	PCI/G	5.6
FTMC	S-12	Alpha	1.55	(+/-)	0.86	PCI/G	0.35
		Beta	24.96	(+/-)	3.06	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.4
		CS-137	0.50	(+/-)	0.5	PCI/G	0.3
		K-40	17.97	(+/-)	6.7	PCI/G	3.1
		Th-232	1.35	(+/-)	1.2	PCI/G	1.1
		U-238	0.00	(+/-)	0	PCI/G	5.8
FTMC	S-13	Alpha	1.09	(+/-)	0.73	PCI/G	0.35
		Beta	12.00	(+/-)	2.2	PCI/G	0.95
		CO-60	0.23	(+/-)	0.3	PCI/G	0.3
		CS-137	1.22	(+/-)	0.5	PCI/G	0.3
		K-40	5.41	(+/-)	3.9	PCI/G	2.3
		Th-232	1.17	(+/-)	1	PCI/G	1
		U-238	0.00	(+/-)	0	PCI/G	5.1
FTMC	S-14	Alpha	2.27	(+/-)	1.03	PCI/G	0.35
		Beta	31.73	(+/-)	3.42	PCI/G	0.95
		CO-60	1.04	(+/-)	0.5	PCI/G	0.2
		CS-137	4.64	(+/-)	1.3	PCI/G	0.3
		K-40	14.77	(+/-)	5.7	PCI/G	2.1
		Th-232	1.17	(+/-)	1	PCI/G	0.9
		U-238	0.00	(+/-)	0	PCI/G	3.8
FTMC	S-15	Alpha	0.83	(+/-)	0.64	PCI/G	0.35
		Beta	8.14	(+/-)	1.87	PCI/G	0.95

		CO-60	0.00	(+/-)	0	PCI/G	0.4
		CS-137	0.50	(+/-)	0.4	PCI/G	0.3
		K-40	5.27	(+/-)	3.8	PCI/G	2.4
		Th-232	0.00	(+/-)	0	PCI/G	1.4
		U-238	0.00	(+/-)	0	PCI/G	5.4
FTMC	S-16	Alpha	1.00	(+/-)	0.7	PCI/G	0.35
		Beta	12.29	(+/-)	2.22	PCI/G	0.95
		CO-60	0.00	(+/-)	0	PCI/G	0.3
		CS-137	0.36	(+/-)	0.4	PCI/G	0.3
		K-40	4.64	(+/-)	4.9	PCI/G	2.8
		Th-232	0.68	(+/-)	0.8	PCI/G	1.1
		U-238	0.00	(+/-)	0	PCI/G	5.7
FTMC	S-17	Alpha	0.80	(+/-)	0.63	PCI/G	0.35
		Beta	13.45	(+/-)	2.31	PCI/G	0.95
		CO-60	4.82	(+/-)	1.3	PCI/G	0.3
		CS-137	2.70	(+/-)	0.8	PCI/G	0.2
		K-40	2.75	(+/-)	1.8	PCI/G	1
		Th-232	0.41	(+/-)	0.6	PCI/G	0.7
		U-238	0.54	(+/-)	1.3	PCI/G	1.2
FTMC	S-18	Alpha	1.23	(+/-)	0.77	PCI/G	0.35
		Beta	18.90	(+/-)	2.69	PCI/G	0.95
		CO-60	0.50	(+/-)	0.2	PCI/G	0.1
		CS-137	0.45	(+/-)	0.2	PCI/G	0.1
		K-40	14.82	(+/-)	4.1	PCI/G	1.2
		Th-232	0.99	(+/-)	0.6	PCI/G	0.4
		U-238	1.31	(+/-)	1.5	PCI/G	1.4
FTMC	S-19	Alpha	1.67	(+/-)	0.89	PCI/G	0.35
		Beta	22.22	(+/-)	2.9	PCI/G	0.95
		CO-60	0.23	(+/-)	0.2	PCI/G	0.1
		K-40	14.68	(+/-)	4	PCI/G	0.9
		Th-232	1.08	(+/-)	0.5	PCI/G	0.4
		U-238	1.17	(+/-)	1.5	PCI/G	1.2
FTMC	S-20	Alpha	2.17	(+/-)	1.01	PCI/G	0.35
		Beta	22.46	(+/-)	2.91	PCI/G	0.95
		CO-60	2.07	(+/-)	0.5	PCI/G	0.1
		CS-137	0.18	(+/-)	0.1	PCI/G	0.1
		K-40	12.57	(+/-)	3.6	PCI/G	0.9
		Th-232	0.99	(+/-)	0.7	PCI/G	0.5

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

		U-238	0.90	(+/-)	1.3	PCI/G	1.2
FTMC	S-21	Alpha	0.80	(+/-)	0.63	PCI/G	0.35
		Beta	10.27	(+/-)	2.06	PCI/G	0.95
		CO-60	0.36	(+/-)	0.2	PCI/G	0.1
		CS-137	0.09	(+/-)	0.1	PCI/G	0.1
		K-40	6.26	(+/-)	2.4	PCI/G	1
		Th-232	0.86	(+/-)	0.5	PCI/G	0.4
		U-238	0.00	(+/-)	0	PCI/G	1.3
FTMC	S-22	Alpha	0.64	(+/-)	0.57	PCI/G	0.35
		Beta	9.95	(+/-)	2.03	PCI/G	0.95
		CO-60	0.36	(+/-)	0.2	PCI/G	0.1
		CS-137	0.14	(+/-)	0.2	PCI/G	0.1
		K-40	6.71	(+/-)	2.5	PCI/G	1.1
		Th-232	0.68	(+/-)	0.5	PCI/G	0.4
		U-238	0.77	(+/-)	1.5	PCI/G	1.3

APPENDIX I

BACKGROUND STUDY

U.S. ARMY CENTER FOR HEALTH PROMOTION AND PREVENTIVE MEDICINE ABERDEEN PROVING GROUND, MD 21010-5422

USACHPPM

TO: Jamal May

OFFICE: HP OFFICE

FACILITY: Fort McClellan

PHONE: _____ FAX: DSN-865-4615

CLASSIFICATION: _____ PAGES: HDR + 3 PAGES

DATE: 13 Feb 98 TIME: 11:30 EST

REMARKS:

Mr. May — Here is the info. You requested on 12 Feb 98. If you have any questions please call me and I will do what I can — Jim Mulliken

FROM: Jim Mulliken

INDUSTRIAL HEALTH PHYSICS PROGRAM
Directorate of Occupational Health Sciences
Phone: (410) 671-3502/3526 or DSN 584-3502/3526
FAX: (410) 671-8261 or DSN 584-8261

radionuclide are limited, such that the sum of the radiation doses from all sources does not, over time, exceed the established acceptable dose.

This Manual assumes the following conditions for application of guideline values to decommissioning.

Surface Activity

Average surface activity levels (total of fixed and removable activity) are at or below guideline values established as acceptable by NRC.

- Reasonable efforts have been made to identify, evaluate, and remove, if necessary, areas of residual activity exceeding the guideline values. Small areas of residual activity exceeding the guideline value, known as elevated areas, may be acceptable to the NRC. This Manual assumes that activity levels of elevated areas, less than three times the guideline values when averaged over a surface region of 100 cm^2, are acceptable, provided the average level within a 1 m^2 area containing the elevated area is within the guideline value.

ELEVATED ACTIVITY ≤ 3 TIMES THE GUIDELINE VALUE FOR 100 cm^2 AND AVG. FOR 1 m^2 AREA IS ≤ GUIDELINE VALUE

- Reasonable efforts have been made to clean up removable activity and removable activity in any 100 cm^2 area does not exceed 20% of the average surface activity guideline values.

NO REMOVABLE ACTIVITY >20% of GUIDELINE VALUE

Soil Activity

- Average radionuclide concentrations are at or below guideline values, established as acceptable by the NRC. For your land areas, averaging is based on a 100 m^2 (10 m x 10 m) grid area.

- Reasonable efforts have been made to identify, evaluate, and remove, if necessary, areas of residual activity exceeding the guideline values. This Manual assumes that areas of residual activity exceeding the guideline value, known as elevated areas, are acceptable, provided they do not exceed the guideline value by greater than a factor of $(100/A)^{1/2}$, where A is the area of residual activity in m^2, and provided the activity level at any location does not exceed three times the guideline value.

MAX ACTIVITY AT ANY LOCATION IS ≤ 3 x GUIDELINE AND $A = \leq 3.33\ m^2 = 1.82\ m \times 1.82\ m$

Exposure Rate

- Exposure rates do not exceed background levels by greater than the exposure rate limit, at 1 m from the surface. In occupiable building locations, exposure rates are measured at 1 m from floor/lower wall surfaces and may be averaged over floor areas, not to exceed the size of a small office (i.e., about 10 m^2.) For open land areas, exposure rates are measured at 1 m above the surface and may be averaged over 100 m^2 grid areas. This Manual assumes that maximum exposure rates over any discrete area may not exceed two times the limit, above background.

APPROX 3 m x 3

NOT TO EXCEED 2 x THE LIMIT

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

(4) For each survey area randomly selected by USACHPPM, the original grid pattern developed by Allied Technical Group for the final status survey was used. A minimum of 10% of Allied Technical Group designated sample points were selected. However, the USACHPPM collected additional bias samples where survey readings above background were detected during the verification surveys.

(5) Flag values, or action levels, for alpha and beta-gamma survey measurements were determined for each type of survey instrument. Flag values were determined by taking 75% of the guideline values found in Appendix E.

(6) In addition, bias samples were collected, and measurements were taken in areas where residual radioactivity most likely would have been found; these areas include cracks in walls and floors, seams where walls met floors, holes in the walls, drains and vents.

c. Survey Results.

(1) Background Radiation Results.

(a) The background measurements for inside of the buildings were taken inside building 3169 which was of similar construction and age; the building had no documented history of radioactive material use. Background measurements were taken for alpha, beta-gamma and gamma radiations. The average indoor background values were established at a 95% confidence level.

(b) Background soil samples and instrument readings were taken in five outdoor locations. Locations included, Sumeral Gate, Baker Gate, Balizell Gate, Galloway Gate and the Cemetery in front of the Floral Sign. Instrumentation measurements were taken at each site with a pressurized ionization chamber. The readings were averaged to determine the gamma background at each location. The results for the background study may be found in Appendix H.

(c) The background measurements for buildings interiors were taken from buildings of similar construction and age; the building had no documented history of radioactive material use.

Indust Radn Surv No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, 17-22 Aug 97

Reference: Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use of Termination of Licenses for Byproducts, Source, or Special Nuclear Material, U.S. Nuclear Regulatory Commission, Nov 1976.

NRC CLEAN RELEASE CRITERIA

Matrix	Contaminant	Clean Release Above Background
Soil	^{60} Cobalt	8 pCi/gm
Soil	^{137} Cesium	15 pCi/gm

Reference: Evaluation of Acceptability of Proposed Decommissioning Activities for Fort McClellan, Alabama. U.S. Nuclear Regulatory Commission, May 6 1987.

The level of gamma radiation measured at one meter shall not exceed 2X background.