

**APPENDIX J**

**SUMMARY OF AVAILABLE ASBESTOS  
SURVEY INFORMATION  
FORT McCLELLAN, ALABAMA**

- J.1 EXCERPT FROM ASBESTOS SURVEY OF 94 MISCELLANEOUS BUILDINGS**
- J.2 EXCERPT FROM ASBESTOS CONTAINING MATERIAL SURVEY, MISCELLANEOUS BUILDINGS**
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- J.4 MISCELLANEOUS ASBESTOS SURVEY RESULTS**

**APPENDIX J.1**

**EXCERPT FROM:  
ASBESTOS SURVEY OF 94  
MISCELLANEOUS BUILDINGS  
FORT McCLELLAN, ALABAMA**

**June 1987**

**Prepared by**

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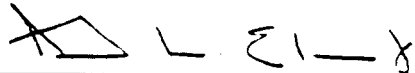
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ATC Project No. 203-03

ASBESTOS SURVEY OF 94  
MISCELLANEOUS BUILDINGS  
FORT MCCLELLAN, ALABAMA  
(CONTRACT NO. DACA01-87-D-0004)  
(DELIVERY ORDER NO. 0004)

Prepared For

U.S. ARMY ENGINEER DISTRICT, MOBILE  
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APPROVED FOR TRANSMITTAL  
JUNE 1987

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## EXECUTIVE SUMMARY

### I. GENERAL

ATC, Inc. was retained by the U.S. Army Corps Of Engineers/Mobile District to conduct an asbestos survey of ninety-four (94) buildings at Fort McClellan, Alabama. The objectives of this survey were to identify and analyze friable materials suspected of containing asbestos and develop cost estimates and recommendations for asbestos abatement.

### II. ASBESTOS-MATERIALS QUANTITIES AND DESCRIPTIONS

ATC's investigation revealed that friable asbestos-containing materials (ACM) were used in fifty-three (53) of the ninety-four (94) buildings surveyed in a variety of forms including (i) insulation on pipes, fittings, boilers, tanks, and air handling ducts, (ii) expansion joints on air handling ducts; (iii) mastic materials on air handling duct tapes.

The materials may be separated into the two (2) general categories of friable and non-friable ACM. The survey revealed that thirty-six (36) of the buildings surveyed contain non-friable suspect asbestos materials, and fifty-three (53) of the buildings surveyed contain both friable and non-friable asbestos materials. Table 1 displays this information in a facility-by-facility format.

### III. CATEGORIES OF PRESENT BUILDING OCCUPANTS

The survey documented the type category of present facility occupants as the adult, school age, infants, and/or toddlers. All of the buildings surveyed were determined to be occupied by adults only.

TABLE 1  
 BUILDING-BY-BUILDING LISTING  
 FRIABLE AND NON-FRIABLE ASBESTOS  
 FORT MCCLELLAN, ALABAMA

BUILDING NUMBER	BUILDING NAME	TYPE PRESENT
51	Officers Club	F, NF
69	Fire Station	F, NF
128	Skating Rink	NF
130	Post Field House	F, NF
142	Finance & Accounting	F, NF
143	Inspector General	F, WF
144	Public Affairs	F, NF
236	Supply Repair	NF
240	Driver Testing	F, NF
246	Grocery Warehouse	F, NF
251	Tele-Communications	F, NF
252	Communications Center	F, NF
267	TASC	F, NF
272	Red Cross	F, NF
276	Top 4 Club	NF
295	Dormitory	F, NF
324	Office	NF
326	Office	NF
328	Education Building	NF
407	RAD	NF
478	DPTMEL Tran Testing Branch	NF
421	Game Management Office	NF
798	Director of Reserve Comp.	F
808	Washroom	F
809	Classroom No. 1	NF
810	Classroom No. 2	NF
811	Classroom No. 3	NF
812	Classroom No. 4	NF
813	Canteen	F, NF
814	Classroom	F, NF
817	Storage	F, NF
822	Storage 822	F, NF
829	Barracks	F, NF

TABLE 1 (CONTINUED)

BUILDING-BY-BUILDING LISTING  
 FRIABLE AND NON-FRIABLE ASBESTOS  
 FORT MCCLELLAN, ALABAMA

BUILDING NUMBER	BUILDING NAME	TYPE PRESENT
830	Barracks	F, NF
831	Barracks	F, NF
832	Barracks	F, NF
833	Barracks	F, NF
834	Barracks	F, NF
835	Barracks	F, NF
836	Barracks	F, NF
837	Barracks	F, NF
838	Barracks	F, NF
839	Barracks	F, NF
840	Barracks	F, NF
841	Barracks	F, NF
842	Barracks	F, NF
843	Barracks	F, NF
844	Barracks	F, NF
852	Office	NF
853	Office	NF
854	Office	NF
855	Office	NF
856	Office	NF
857	Canteen	NF
859	Office	NF
861	Office Supply	NF
870	Office	NF
871	Office	NF
872	Office	NF
873	Office	NF
874	Wood Shop	NF
877	Office	NF
916	CTC Barracks	F, NF
917	CTC Barracks	F, NF
918	CTC Barracks	F, NF
925	CTC Barracks	F, NF
926	CTC Barracks	F, NF
927	CTC Barracks	F, NF
1012	Gymnasium	NF
1177	WAC Mos.	NF
1109	Barracks	NF
1110	Barracks	NF
1742	Religious Education	F, NF
1762	HQ Basic Training Comm. Group	F, NF

TABLE 1 (CONTINUED)

BUILDING-BY-BUILDING LISTING  
 FRIABLE AND NON-FRIABLE ASBESTOS  
 FORT MCCLELLAN, ALABAMA

BUILDING NUMBER	BUILDING NAME	TYPE PRESENT
1997	Weapons Storage	F, NF
2090	TV Rental Portrait Studio	NF
2091	Ceramic Building	NF
2101	Theater	F, NF
2102	Library	NF
2213	Recreation Center	F, NF
2275	Medical Barracks	F, NF
2276	Officers Quarters	F, NF
2291	Post Exchange	NF
2293	Chapel	F, NF
3133	MP Barracks	F, NF
3134	MP Barracks	F, NF
3135	MP Barracks	F, NF
3160	Battalion HQ	F, NF
3161	Supply Services	F, NF
3170	Police School Publication Branch	F, NF

IV. COST OF REMOVING HAZARDS POSED BY ASBESTOS

The survey revealed that friable asbestos is present in fifty-three (53) of the buildings. The total cost of removing the asbestos from these areas is \$1,754,100. These costs are presented in a facility-by-facility format in Table 2.

ATC, Inc. has determined the number of buildings surveyed which were found to contain current hazards from asbestos and the number found to contain potential hazards from asbestos. This information is presented in the paragraphs which follow.

Current Hazards

The survey revealed that fifty-three (53) of the buildings inspected contain current hazards posed by the presence of friable asbestos-containing materials. The total cost of abatement of these hazards is estimated to be \$1,754,100.



## Potential Hazards

The survey revealed that eight-eight (88) of the buildings surveyed contain potential hazards presented by non-friable suspect material. These buildings are listed in Table 4.

### V. INTERIM MEASURES: OPERATIONS AND MAINTENANCE PLANNING

Since one-time, immediate removal may not be a feasible solution to the problems presented by asbestos, it is apparent that some asbestos will remain in-place for some as yet undetermined period of time. Therefore, an Asbestos Management Program should be initiated in order to manage asbestos-containing materials pending their ultimate removal.

TABLE 2  
BUILDING-BY-BUILDING COST ESTIMATES FOR REMOVAL  
OF ASBESTOS AT FORT MCCLELLAN

BUILDING NUMBER	BUILDING NAME	REMOVAL COST (\$)
51	Officers Club	17,100
69	Fire Station	32,600
130	Post Field House	8,000
142	Finance & Accounting	85,600
143	Inspector General	231,900
144	Public Affairs	51,600
240	Driver Testing	14,300
246	Grocery Warehouse	29,400
251	Tele-Comm	18,400
252	Comm Center	25,700
272	Red Cross	5,800
295	Dormitory	154,300
798	Dir. of Rascroe Comp.	5,400
808	Washroom	12,300
813	Canteen	6,000
814	Classroom	8,100
817	Storage	13,600
822	Storage 822	23,200
829	Barracks	15,200
830	Barracks	15,200
831	Barracks	15,200
832	Barracks	15,200
833	Barracks	15,200
834	Barracks	15,200
835	Barracks	15,200
836	Barracks	15,200
837	Barracks	15,200

TABLE 2 (CONTINUED)

BUILDING-BY-BUILDING COST ESTIMATES FOR REMOVAL  
OF ASBESTOS AT FORT MCCLELLAN

BUILDING NUMBER	BUILDING NAME	REMOVAL COST (\$)
838	Barracks	15,200
839	Barracks	15,200
840	Barracks	15,200
841	Barracks	15,200
842	Barracks	15,200
843	Barracks	15,200
844	Barracks	15,200
916	CTC Barracks	22,000
917	CTC Barracks	25,800
918	CTC Barracks	17,500
925	CTC Barracks	20,900
926	CTC Barracks	15,200
927	CTC Barracks	22,700
1742	Religious Education	8,000
1762	HQ Basic Training Comm. Group	6,700
1997	Weapons Storage	6,800
2101	Theater	8,000
2213	Recreation Center	139,700
2275	Medical Barracks	251,900
2276	Officers Quarters	59,700
2293	Chapel	6,500
3133	MP Barracks	31,600
3134	MP Barracks	23,200
3135	MP Barracks	84,800
3160	Battalion HQ	6,900
3161	Supply Services	9,100

TABLE 3  
 BUILDING-BY-BUILDING LISTING  
 OF POTENTIAL HAZARDS  
 FORT MCCLELLAN

BUILDING NUMBER	BUILDING NAME
51	Officer's Club
69	Fire Station
120	Skating Rink
130	Post Field House
142	Finance & Accounting
143	Inspector General
144	Public Affairs
236	Supply Repair
240	Drive Testing
251	Tele-Comm
252	Comm Central
267	TASC
272	Red Cross
276	Top 4 Club
295	Dormitory
324	Office
325	Office
326	Office
328	Educational Building
407	RAD
408	DPTMEL Trance Testing Branch
421	Game Management Office
809	Classroom No. 1
810	Classroom No. 2
811	Classroom No. 3
812	Classroom No. 4
813	Canteen
814	Classroom
817	Storage
822	Storage 822
829	Barracks
830	Barracks
931	Barracks
932	Barracks
833	Barracks
834	Barracks
835	Barracks
836	Barracks



TABLE 3 (CONTINUED)

BUILDING-BY-BUILDING LISTING  
OF POTENTIAL HAZARDS  
FORT MCCLELLAN

BUILDING NUMBER	BUILDING NAME
837	Barracks
838	Barracks
839	Barracks
840	Barracks
841	Barracks
842	Barracks
843	Barracks
844	Barracks
852	Office
853	Office
854	Office
855	Office
856	Office
857	Canteen
859	Office
861	Office Supply
870	Office
871	Office
872	Office
873	Office
874	Wood Shop
877	Office
916	CTC Barracks
917	CTC Barracks
918	CTC Barracks
925	CTC Barracks
926	CTC Barracks
927	CTC Barracks
1012	Gymnasium
1077	WAC Mos.
1109	Barracks
1110	Barracks
1742	Religious Education
1762	HQ Basic Training Comm. Group
1997	Weapons Storage
2090	TV Rental Portrait Studio
2091	Ceramic Building
2101	Theater
2102	Library
2213	Recreation Center

TABLE 3 (CONTINUED)

BUILDING-BY-BUILDING LISTING  
OF POTENTIAL HAZARDS  
FORT MCCLELLAN

BUILDING NUMBER	BUILDING NAME
2275	Medical Barracks
2276	Officers Quarters
2291	Post Exchange
2293	Chapel
3133	MP Barracks
3134	MP Barracks
3135	MP Barracks
3160	Battalion HQ
3161	Supply Services
3170	Police School Publication Branch

Crucial to the successful implementation of the Asbestos Management Program is the formulation and adoption of standard guidelines in the form Maintenance (O & M) Plan. An O&M Plan should be implemented on a base-wide basis in an effort to control asbestos exposures to building occupants and other personnel. The elements of such a document are discussed in Section 98 of this report.



**APPENDIX J.2**

**EXCERPT FROM:  
ASBESTOS CONTAINING MATERIAL  
SURVEY, MISCELLANEOUS BUILDINGS  
FORT McCLELLAN, ALABAMA**

**March 1987**

**Prepared by**

**Environmental Management, Inc.  
Atlanta, GA**

**(as received)**

# **ASBESTOS CONTAINING MATERIAL SURVEY**

## **MISCELLANEOUS BUILDINGS**

### **FT. McCLELLAN, ALABAMA**

**PREPARED BY  
ENVIRONMENTAL MANAGEMENT INC  
ATLANTA, GEORGIA**

**MARCH, 1987**

**PROJECT NO. FE600496J  
EMI PROJECT NO. 3643211**

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## APPENDICES

- A. Discussion of Results of Sampling and Analysis, Sample Identification Numbers, Locations and Sample Descriptions, Building Number, Surveyors, Bulk Sampling Date, Area Surveyed (in Square Feet), Corrective Cost (including quantity of friable asbestos materials to be removed), FIM Assessment Numbers, Architectural Sketches Showing Sample Locations, Arrows Indicating Direction of Photograph, and Photograph of Sample Location
- B. Sample FIM Form with Detailed Instructions and Explanation of TRADOC Asbestos FIM Evaluation
- C. Potential Toxicological Effects of Asbestos Exposure
- D. Method for Bulk Sample Determination
- E. Detailed Laboratory Analysis Report

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## EXECUTIVE SUMMARY

This report presents and discusses the results of an asbestos-containing materials survey conducted at Ft. McClellan, Alabama. The survey was conducted on fifty-six (56) buildings (269, 3221, 3227, 3233, 3275, 300, 3222, 3228, 3234, 3276, 614, 3223, 3229, 3270, 3277, 3183, 3224, 3230, 3271, 3280, 3212, 3225, 3231, 3272, 3281, 3220, 3226, 3232, 3274, 1020, 2220, 2224, 1021, 2221, 2225, 1022, 2223, 2227, 245, 964, 3131, 928, 1757, 3212, 933, 2203, 3290, 283, 1892, 3278, 1001, 2202, 3279, 1755, 3273, and 3182) selected by the Directorate of Engineering and Housing. Recommendations for management action(s) are provided with budgetary cost estimates for removal of asbestos-containing friable materials and replacement with non-asbestos materials.

Asbestos-containing materials are present in the majority of buildings surveyed primarily in mechanical piping, pipe fitting and mechanical equipment insulation, spray-applied acoustical treatment on ceilings, floor tile and transite-type exterior siding and interior panels.

The majority of the asbestos-containing materials were generally in good condition on the day of the survey and should pose little exposure potential to airborne asbestos fibers during normal building activity unless the materials are damaged or disturbed. Areas of damage and/or deterioration to the asbestos-containing materials are detailed in the discussion sections in Appendix A on a building-by-building basis. Areas with damaged asbestos-containing insulation material should be repaired immediately and subjected to follow-up evaluations as specified by the Operations and Maintenance (O&M) Plan outline (Section 4). A priority assessment for asbestos removal has been provided in Table 2.1 using the Training and Doctrine Command (TRADOC) FIM assessments (Appendix C).

Implementation of an O&M Plan is recommended for all buildings which have asbestos-containing materials. These O&M procedures are designed to minimize the risk of exposing employees, contractors and other building occupants to asbestos fibers released from asbestos-containing materials during normal building activity, maintenance, demolition and renovation. Asbestos-containing materials affected by renovation, demolition or other physical disturbances should be removed and replaced, as necessary, with non-asbestos-containing materials. The O&M Plan should remain in effect on an area-by-area basis until removal of all asbestos-containing materials is complete.

## 1. INTRODUCTION

The Directorate of Engineering and Housing, Fort McClellan, retained Environmental Management Inc (EMI) to conduct an asbestos-containing material survey at Fort McClellan, Alabama. The survey was undertaken to locate, identify, evaluate and document asbestos-containing materials in buildings 259, 3221, 3227, 3233, 3275, 300, 3222, 3228, 3234, 3276, 614, 3223, 3229, 3270, 3277, 3183, 3224, 3230, 3271, 3280, 3212, 3225, 3231, 3272, 3281, 3220, 3226, 3232, 3274, 1020, 2220, 2224, 1021, 2221, 2225, 1022, 2223, 2227, 245, 964, 3131, 928, 1757, 3212, 933, 2203, 3290, 283, 1892, 3278, 1001, 2202, 3279, 1755, 3273, and 3182 .

The survey was conducted during the months of November, December 1986, and January 1987 by Doug DeFazio, Brent Bailey, Barbara Whiteside and Dan Hutto of EMI. The survey consisted of individual building inspection, bulk material sampling, building sketches indicating sample locations, quantification of suspect friable materials and photographic documentation. Collected bulk samples were analyzed using polarized light microscopy (PLM) coupled with dispersion staining techniques by Geo-Environmental Services, Inc. Geo-Environmental Services, Inc. participates successfully in the EPA round robin quality assurance program and is accredited by the American Industrial Hygiene Association.

Discussed in this report are the results of the building surveys, conclusions and recommendations, O&M Plan outline, budgetary cost estimates for recommended corrective action, asbestos management administration and design factors, and a glossary of terms. Appendix A contains (1) a discussion of the results of sampling and analysis, sample identification numbers, sample location and descriptions, area surveyed in square feet, corrective cost (including quantity of friable asbestos materials to be removed) and FIM assessment numbers, architectural sketches showing sample locations, arrows indicating direction of photograph, photographs of sample locations. Appendix B provides a sample FIM form with detailed instructions and explanation of TRADOC asbestos FIM evaluation. Appendix C provides a discussion of potential toxicological effects associated with exposure to asbestos fibers, Appendix D provides a description of the method for bulk sample determination and Appendix E provides detailed laboratory analysis report.

## 2. DISCUSSION OF ASBESTOS-CONTAINING MATERIAL SURVEY AND ASBESTOS MANAGEMENT ALTERNATIVES

The following buildings (269, 3221, 3227, 3233, 3275, 300, 3222, 3228, 3234, 3276, 614, 3223, 3229, 3270, 3277, 3183, 3224, 3230, 3271, 3280, 3212, 3225, 3231, 3272, 3281, 3220, 3226, 3232, 3274, 1020, 2220, 2224, 1021, 2221, 2225, 1022, 2223, 2227, 245, 964, 3131, 928, 1757, 3212, 933, 2203, 3290, 283, 1892, 3278, 1001, 2202, 3279, 1755, 3273, and 3182) were surveyed during the months of November and December 1986 and January 1987, to locate, identify, and document the condition of existing asbestos-containing materials. Recommendations for corrective action are based on current building use, accessibility to the asbestos-containing material, proximity to air plenums, future renovation or demolition, and physical condition of asbestos-containing materials. Roofing materials were not sampled during this project because sampling may cause significant roof leakage.

Roofing materials do not typically present a significant airborne asbestos fiber exposure potential unless mechanically or physically altered or damaged. Prior to renovation or demolition involving roofing materials, bulk samples should be collected to determine if asbestos is present. If sampling results indicate the presence of asbestos-containing materials, then all maintenance, demolition and renovation activities affecting the roofing material should be done in accordance with acceptable asbestos abatement work procedures.

No samples of plaster materials were collected during this survey. Asbestos use in plaster material was rare and generally presents a significant airborne asbestos fiber exposure potential only during maintenance, renovation or demolition. Since the majority of plaster materials are non-homogenous, confirmation that asbestos is not present would require two to three samples from each wall or ceiling. This sampling strategy would be very costly both for bulk sample analysis and for patching of the sampled walls and ceilings. Therefore, bulk sampling of the plaster should be conducted in areas where plaster materials are involved in maintenance, renovation or demolition activities.

The potential for contaminated soil exists in all crawl space areas exposed to asbestos materials. Accordingly, specific work procedures should be employed when entering crawl spaces in which asbestos-containing soil is suspected.

A majority of the surveyed buildings had asbestos-containing materials present in mechanical piping, pipe fitting and equipment insulation, spray-applied acoustical ceilings, floor tile and transite-type exterior siding and interior panels. The majority of these materials were in generally good condition on the day of the survey, however there were areas of damage and deterioration observed in certain areas of the surveyed buildings. A more detailed discussion of each surveyed building is presented in the building summaries in Appendix A.

## 2.1 TRADOC ASBESTOS FRIABLE INSULATION MATERIAL (FIM) EVALUATION

Asbestos fibers can be released spontaneously from existing asbestos-containing materials in the normal process of aging and deterioration. Deterioration may be increased by external forces such as physical damage and building vibration.

Increased short term airborne asbestos fiber exposure levels may be obtained when the asbestos-containing material is physically disturbed. The fibers which may be released can remain suspended in the building's air supply for a considerable period of time and thereby increase the potential for airborne asbestos fiber exposure to building occupants. These fibers once released can be recirculated throughout the building via the HVAC System. Normal housekeeping procedures do not effectively remove asbestos fibers and may in fact distribute them more readily throughout the building.

Buildings with asbestos-containing materials were evaluated using the TRADOC ASBESTOS FIM EVALUATION FORM (Appendix B). The FIM asbestos hazard index numbers are designed to rate the potential for exposure to airborne asbestos fibers. The asbestos hazard index number for a given situation combines observations and professional judgments of several factors which include: material friability, percent asbestos, occupant accessibility material condition, level of activity, and duration of occupancy. The individual factors are evaluated on the asbestos FIM evaluation form and provide the numerical basis for the overall FIM hazard index number assigned for each subject building area.

As the asbestos hazard index number increases, the potential for airborne asbestos fiber exposure to building occupants increases. It should be noted that the TRADOC asbestos friable insulation form (FIM) was originally designed to evaluate friable insulation materials only. In this survey, both friable and non-friable materials were evaluated and the FIM hazard index number was used to prioritize areas in which corrective action should be implemented first. The greater the FIM hazard index number, the greater the priority for corrective action. (See Appendix B for detailed explanation of TRADOC Asbestos FIM Evaluation.)

Asbestos-containing materials were identified in 47 of the 56 buildings surveyed at Fort McClellan, Alabama. It should be noted that the greatest numerical hazard index number associated with each particular building was selected for use in its prioritization. This allows for identifying a building's greatest potential asbestos hazard for a relative comparison to other buildings within this survey. Table 2.1 presents the FIM hazard assessment for buildings surveyed at Fort McClellan in the following categories:

- (1) >1000
- (2) 100-1000

(3) <100

(4) No asbestos detected

It should be noted that a value of 1000 does not necessarily constitute a severe health hazard, and a value of 100 does not represent no hazard. The numbers are used to provide a comparison for potential for building occupant exposure to airborne asbestos fibers among the buildings included in this survey. The higher the hazard index number, the greater the need for corrective action.

TABLE 2.1 - SUMMARY OF FIM HAZARD ASSESSMENTS

(1) Buildings with Hazard Index Numbers greater than 1000 (greatest potential for exposure)

245	964	3131
928	1757	3212
933	2203	3290

(2) Buildings with Hazard Index Numbers between 100 and 1000

1020	2220	2224
1021	2221	2225
1022	2223	2227

(3) Buildings with Hazard Index Numbers less than 100

269	3221	3227	3233	3275
300	3222	3228	3234	3276
514	3223	3229	3270	3277
3183	3224	3230	3271	3280
3212	3225	3231	3272	3281
3220	3226	3232	3274	

(4) Buildings without asbestos-containing materials (no potential exposure)

283	1892	3273
1001	2202	3278
1755	3182	3279

**APPENDIX J.3**

**EXCERPT FROM:  
ASBESTOS CONTAINING MATERIAL  
SURVEY, MISCELLANEOUS BUILDINGS  
FORT McCLELLAN, ALABAMA**

**September 24, 1986**

**Prepared by**

**Environmental Management, Inc.  
Atlanta, GA**

**(as received)**

**ASBESTOS CONTAINING  
MATERIAL SURVEY**

**MISCELLANEOUS BUILDINGS**

**FT. McCLELLAN, ALABAMA**

**PREPARED BY  
ENVIRONMENTAL MANAGEMENT INC  
ATLANTA, GEORGIA**

**FINAL**

**SEPTEMBER 24, 1986**

**PROJECT NO. FE600496J  
EMI JOB NO. 384320**

FORT McCLELLAN  
ASBESTOS CONTAINING MATERIAL SURVEY  
MISCELLANEOUS BUILDINGS  
Fort McClellan, Alabama

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July 24, 1986

Project No. RE600496J

EMI No. 364520

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  - Architectural Sketches Showing Sample Locations and Direction of Photograph
  - Laboratory Results
- B. Potential Toxicological Effects of Exposure to Asbestos Fibers
- C. Method for Bulk Sample Determination
- D. Sample Asbestos FIM Evaluation Form and Instructions

51, 61, 63, 65, 66, 102, 1081, 2051, 102  
163, 215, 241, 247, 292, 1023, 1060  
2292, 2299, 3130, 3181, 3111

## 1. EXECUTIVE SUMMARY

### 1.1 Introduction

The Directorate of Engineering and Housing of Fort McClellan retained Environmental Management Inc (EMI), to conduct an asbestos materials survey and recommend asbestos management procedures at Fort McClellan, Alabama. The survey was undertaken to locate, identify and document asbestos-containing materials in buildings [REDACTED]

[REDACTED] to prioritize the potential risk of asbestos fiber contamination which these materials may present within the subject buildings.

The asbestos containing material survey was conducted during July 1980 by Messrs. Dan Hutto and Doug DeFazio of EMI. The asbestos containing material survey consisted of individual building inspection, bulk material sampling and analysis and photographic documentation, building sketches indicating sample locations, development of a hazard index, and the removal and replacement cost associated with an asbestos abatement project. Collected samples were shipped to and analyzed using polarized light microscopy by Geo-Environmental Services Inc's laboratory, Atlanta, Georgia.

This report presents and discusses the results of the building survey and analysis of bulk material samples. Recommendations for implementing Asbestos Management Procedures are made with rationale and preliminary cost estimates. Appendix A contains (1) the detailed results of sampling and analysis, listing sample identification numbers, sample descriptions and results of polarized light microscopy analysis; (2) photographs of sample locations (3) related architectural sketches showing sample and photograph locations. Appendix B provides a discussion regarding the possible toxicological effects of exposure to asbestos fibers and Appendix C provides a description of the method and materials used for the analysis of samples. Appendix D contains a description of the method used to determine the asbestos hazard index number for each area surveyed.

It should be noted that roof felts were not sampled as part of this survey since they pose a potential hazard for exposure only during roof renovation or demolition. Bulk samples should be taken prior to roof maintenance, renovation or demolition to determine the presence or absence of asbestos. If bulk sample analysis indicate the presence of asbestos containing materials, then the roof felt should be removed under standard asbestos removal conditions.

### 1.2 Results

Asbestos-containing materials were found in all of the subject buildings surveyed at Fort McClellan, Alabama.

Asbestos containing materials were found to be present on pipe insulation, pipe fitting insulation, mechanical room equipment insulation and sprayed on acoustical insulation in certain of the buildings. There is a low percentage of asbestos in floor tiles and bitumen in certain of the buildings surveyed.

The asbestos-containing material on piping, pipe fittings and mechanical room equipment in addition to floor tile materials were in generally good condition on the day of the survey; however, there were some areas of damage and/or deterioration observed in some of the buildings surveyed.

### 1.3 Recommendations

The recommendation is made to remove the asbestos containing insulation in buildings 51, 241, 247, 1023, 2281, 2290, 2299, 3130, 3191 and the acoustical ceiling material in building 162. These buildings were identified as the highest priority according to the hazard assessment. Of secondary concern are the mechanical rooms in buildings 63, 65, 163, 292, 1060 and 3181. These buildings require an immediate application of the Operations and Maintenance Plan.

Asbestos containing materials in the remaining buildings should be removed prior to maintenance renovation or demolition and replaced, as necessary, with non asbestos-containing material. These buildings should follow an Operations and Maintenance Plan until actual renovation or demolition are performed.

## 2. OPERATIONS AND MAINTENANCE PLAN

An Operations and Maintenance Plan is designed to establish guidelines for building managers/engineers in controlling airborne asbestos fiber exposure for occupants, employees, and contractor personnel who work or otherwise enter a building with in place asbestos-containing materials. Procedures outlined in this plan are designed to reduce the potential for airborne asbestos fiber contamination of building air during normal, emergency, and maintenance conditions.

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## 2.1 Applicability

These special work practice procedures are required at all times when normal maintenance, renovation or asbestos abatement activities are undertaken and disturbance of asbestos-containing materials may occur. They also apply when entry is required into areas which may be contaminated with airborne asbestos fibers. They apply equally to employees of Fort McClellan, Alabama and those of outside contractors.

The building manager must be contacted for his direction regarding applicability of necessary precautions before undertaking any of the following listed projects or tasks:

1. Electrical, telephone and computer wiring and repairs involving penetration of existing ceilings.
2. Adjustment, repairs or modifications to heating, ventilating and air conditioning (HVAC) equipment involving penetration of existing ceilings.
3. Non-routine cleaning of accumulated dust and debris, especially from areas with exposed fireproofing and/or insulating materials.
4. Office renovations.
5. Plumbing and steam fitting which involves penetration of existing ceilings and/or work on insulated lines or fixtures.
6. All other situations where physical or mechanical alterations to asbestos-containing materials is likely to occur.

The following is an annotated outline of the specific requirements for work on or near asbestos-containing materials.

## 2.2 Government Regulations

OSHA standard, 29 CFR Subpart Z Paragraph 1910.1001 (as revised OSHA standard 1910.1001 "Asbestos, Tremolite, Anthophyllite and Actinolite" added by 51 FR 22756, June 20, 1986).

## 2.3 Work Practice

The following procedures shall apply regardless of the fiber concentrations in the surrounding air.

### 2.3.1 Wet Cleaning Method and HEPA Vacuum

Contractors and maintenance workers shall use work practices, in all areas where asbestos may be encountered, which are least likely to release asbestos fibers in the surrounding air. Depending on the circumstances of each task, this may require wetting of surfaces with surfactant amended water, use of encapsulant (on amosite product) as a fiber release suppressant, use of glove bags, isolation of asbestos-containing materials, and frequent cleaning, including vacuuming with high efficiency particulate absolute (HEPA) equipped vacuum cleaners.

Under no circumstances shall work be done when affected areas are occupied by unprotected personnel, or anyone not directly involved in the work.

### 2.3.2 Physical Isolation of Work Areas

When the possibility exists for release of asbestos fibers into the ambient air around a work place, the affected area must be physically isolated from the remainder of the building. This may be accomplished by using existing barriers (walls, doors, etc.), but may require construction of temporary wood and plastic barriers.

### 2.3.3 Ventilation System Shutdown

For all work which may release asbestos fibers, particularly work above ceiling, the flow of supply and return ventilation air must be positively stopped throughout the affected ventilation zones. After shutting down or otherwise sealing-off ventilation air, checks should be made using ventilation smoke tubes to verify the absence of air movement (except for air movement created by HEPA equipped air handlers) both inside the work area and through enclosing barriers.

### 2.3.4 Negative Pressure

The asbestos work area shall remain under a minimum negative pressure differential of 0.02 inches of water with respect to the occupied portions of the building. This negative pressure differential is not required during glovebag removal procedures.

### 2.3.5 Food and Drink Prohibition

There shall be no consumption of food or drink in work areas where the possibility of airborne asbestos fiber contamination exists. Additionally, no smoking or chewing of gum and/or tobacco shall be allowed in areas where potential airborne asbestos fiber contamination exists.

## 2.4 Warning Signs

For all work areas where airborne asbestos fiber contamination may

- exist, warning signs must be posted outside enclosing barriers to preclude entry into contaminated areas by unprotected personnel. OSHA regulations state that these signs must read as follows:

\*DANGER Asbestos  
\*Cancer and Lung Disease Hazard  
\*Authorized Personnel Only  
\*Respirators and Protective Clothing  
Are Required in This Area

## 2.5 Personal Protective Equipment

All personnel working in or occupying areas contaminated with airborne asbestos fibers shall wear adequate protective clothing and shall be provided with an enclosed area to remove protective work clothing, shower, and change into street clothing. Protective clothing should consist of full-body disposable fabric coveralls, complete with hoods and shoe covering.

All personnel working in or occupying areas contaminated with airborne asbestos fibers shall wear respirators which carry National Institute for Occupation Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA) approval for protection against asbestos fiber exposure. At a minimum, all respirators shall be half-face dual cartridge air purifying design. Filter cartridge shall carry high efficiency rating. Approved respirators and protective clothing must be worn at all times when inside asbestos fiber contaminated work area(s). Respirators may not be removed for talking, eating, smoking, drinking, or any other purpose. Use of respirators is subject to OSHA respiratory protection program requirements.

## 2.6 Housekeeping

All surfaces, such as ceiling tiles, ceiling grids, ledges, floors, walls, windows, furniture, carpeting, drapes, etc., which at any time may have been contaminated with asbestos fibers must be thoroughly cleaned by vacuuming or other effective methods before affected building areas are occupied by unprotected personnel. All vacuum cleaners used for asbestos fiber cleanup shall be fitted with HEPA filters.

## 2.7 Waste Disposal

Construction debris, including sweepings, vacuumings, slurries, etc., shall be sealed while wet, inside impermeable containers, properly labelled and properly disposed of at landfills which fully comply with all applicable U.S. EPA, State of Alabama Department of Health Services, and local asbestos regulations.

## 2.8 Responsibilities

In the event contractor(s) are engaged to perform work which may cause

- asbestos fiber release, the contractor(s) shall be responsible for complying with procedures and providing proper work practices and protective equipment as required by OSHA regulations and this Operations and Maintenance Plan. Fort McClellan shall provide respirators and protective clothing to all Fort McClellan employees who need to enter asbestos fiber-contaminated work areas. Contractor(s) shall be responsible for providing protective equipment for his/her own employees, subcontractors, suppliers and job site inspectors. Contractor(s) shall be responsible for proper disposal of all used protective clothing and respirator filters.

### 2.9 Industrial Hygiene Surveillance

Fort McClellan shall provide for industrial hygiene surveillance of each and every work area(s) subject to this Operations and Maintenance Plan. These surveys shall fulfill OSHA requirements for personal airborne fiber exposure monitoring and provide documentation of airborne fiber concentrations during and immediately following specific projects.

### 2.10 Recordkeeping

Complete records must be kept of dates, times, type of work, names of contractors, methods of waste disposal, and any obvious non-compliance with this or applicable OSHA procedures. These records should be part of the permanent project file for the work, and must be accessible for at least 40 years from the date of final completion of work.

### 2.11 Physical Examinations

All personnel, including building maintenance workers and contractor employees who, by this Operations and Maintenance Plan, are required to wear respirators, must receive a physical examination to determine the limits of their ability to wear such equipment. The examining physician must provide a certificate which states that respirators may be worn. All personnel who are exposed to airborne asbestos fibers while performing their jobs must receive an annual physical examination designed to identify any adverse effects caused by this exposure. At a minimum, these annual physical examinations shall include a chest roentgenogram (posterior/anterior 14 x 11 inches) pulmonary function testing to include force vital capacity (FVC) and forced expiratory volume at one second (FEV1.0) and a history to elicit symptomatology of respiratory disease.

### 3. ASBESTOS HAZARD INDEX

An asbestos hazard index numerical value was developed using the Army Asbestos Friable Insulation Material (FIM) Evaluation Form. The asbestos hazard index value for the buildings is used to determine the most acceptable control method such as the implementation of an Operations and Maintenance Plan or the complete removal of the asbestos-containing material.

- Additionally, the asbestos hazard index numerical value is also used to rank the buildings involved in this survey in order of priority for removing asbestos or deferring action. Accordingly, the higher the asbestos hazard index number the greater the potential for asbestos contamination. Recommendations for asbestos removal or the complementation of an Operations and Maintenance Plan were based on the results of this Asbestos Hazard Index number. It should be noted that the hazard index numbers are based on existing conditions of the material during the day of the survey. Therefore, a low priority area could increase if damage occurs to the asbestos-containing material.

The asbestos hazard index numbers for each building are listed in Table 1 on the following page.

TABLE 1  
 ASBESTOS HAZARD INDEX NUMBER  
 FOR BUILDINGS SURVEYED

<u>Building</u>	<u>Asbestos Hazard Index Number</u>
51	2250-Storage area 138 Mechanical room
61	0.002
63	0.05
65	420
66	N/A
162	6,600
163	0.0014
215	0.009
241	210
247	1,000
292	0.1
1023	265
1060	0.01
1081	0.000015
2051	0.006
2281	0.0023
2290	0.000523
2299	0.000525
3130	530
3181	0.002
3191	0.005

#### 4. COST OF CORRECTIVE ACTION

The cost data used for estimating purposes for the DEH at Fort McClellan, Alabama were obtained through local asbestos abatement contractors, architects, historical data files and Means. The costs summarized are for the removal of asbestos materials and replacement with comparable non-asbestos materials. The costs listed in Table 2 are for the removal of all asbestos-containing materials from the subject buildings. Removal costs are broken down into high priority and low priority areas in Appendix A.

TABLE 2

<u>Building 1</u>	<u>Cost</u>
51	\$ 2,600
61	*
63	1,000
65	10,400
66	*
162	14,400
163	1,300
215	*
241	36,200
247/292	6,500
1023	2,400
1060	9,000
1081	15,600
2051	*
2281	8,200
2290	53,500
2299	1,300
3130	46,800
3181	2,400
3191	7,800

\* Contains asbestos in floor tile only.

**APPENDIX J.4**  
**MISCELLANEOUS ASBESTOS SURVEY RESULTS**  
**(as received)**

In addition to the 3  
 pul. sand / asbestos surveys

(%  
 Fibers)

# Misc Asbestos Survey Results

Bldg/Location sampled - Sample #	Results	Sample Date
3681 - Steam line insulation - B-033-84	3% chrysotile fibers	17 Dec 84
3681 - " " " - B-034-84	No asbestos present	" " "
3681 - " " " - B-035-84	10% Chrysotile fibers	" " "
3681 - " " " - B-036-84	No asbestos present	" " "
T-282 - Hot water Storage tank - B-001-85 insulation	10% Chrysotile 35% Amosite	6 Feb 85
T-282 - Insulating Heating tape - B-002-85	40% chrysotile	" " "
T-282 - Insulating sheet B-003-85	40% chrysotile	" " "
T-282 - Outside Bldg siding B-004-85	40% chrysotile	" " "
T-273 - Water line insulation B-005-85	50% " " "	" " "
T-273 - " " " B-006-85	10% chrysotile 40% Amosite	" " "
T-696 - Insulating seal tape B-007-85	60% chrysotile	" " "
748 - Water pipe insulation B-008-85	50% " " "	" " "
<del>948 - outside Bldg siding B-009-85</del>	<del>40% " " "</del>	<del>" " "</del>
761 - Water pipe insulation B-010-85	25% " " "	" " "
761 - " " " B-011-85	50% " " "	" " "
T-60 - Steam pipe insulation E-012-85	15% " " "	" " "
142 - Pipe elbow B-013-85	20% " " "	" " "
142 - Pipe run B-014-85	20% " " "	" " "
142 - Pipe elbow B-015-85	20% " " "	" " "
142 - Straight pipe run B-016-85	15% chrysotile 25% Amosite	" " "
T-933-2 Steamline insulation B-024-85	25% chrysotile	4 April 85
T-948-2 " " " B-025-85	25% chrysotile	" " "
T-964-2 " " " B-026-85	25% " " "	" " "
T-933 " " " B-027-85	15% chrysotile	" " "
T-964 " " " B-028-85	40% " " "	" " "
T-928 Duct dampening material B-029-85	75% " " "	" " "
T-928 Steamline insulation B-030-85	40% " " "	" " "
933 " " " B-031-85	No asbestos present	" " "

<u>Bldg / location Sampled</u>	<u>Sample #</u>	<u>Results</u> <sup>%</sup> (Fibers)	<u>Sample date</u>
2213 - Air cond. insulation line	B-032-85	No asbestos present	4 April 85
2213 - Steam pipe bleed line	B-033-85	10% chrysotile 35% Amosite	" " "
2213 - Boiler room ceiling line insulation	B-034-85	No asbestos present	" " "
213 - Steamline insulation	B-035-85	" " "	" " "
2213 - Hot water tank insulation	B-036-85	15% chrysotile	" " "
338A - Tape joint on flue vent	B-040-85	40% chrysotile 30% cellulose fibers	27 June 85
338A - Furnace duct insulation	B-041-85	30% chrysotile 40% cellulose fibers	" " "
338A - Pipe joint insulation	B-042-85	20% chrysotile	" " "
769 - Basement steam pipe insulation	B-044-85	45% chrysotile 10% crocidolite	8 Aug 85
823 - flue insul. material	B-045-85	60% chrysotile	16 Aug 85
823 - Boiler Rm. wall insul. Board	B-046-85	35% "	" " "
823 - Hot water Heater insul. material	B-047-85	40% chrysotile 2% Amosite	" " "
116 - Wall board	B-048-85	45% chrysotile	" " "
116 - Ceiling material	B-049-85	No asbestos present	" " "
11742 - Basement steam pipe elbow	B-050-85	1% chrysotile 5% Amosite	" " "
11742 - " " " insulation	B-051-85	6% chrysotile	" " "
No. 87 - Drennen Drive (gtris) <sup>insulation</sup> board	B-052-85	80% chrysotile	16 Oct 85
121 - Insulation tape on htr duct	B-053-85	75% "	22 Oct 85
1124 - " " " " " "	B-054-85	70% "	" " "
115 - wall material	B-058-85	45% "	16 Dec 85
215 - " " "	B-059-85	45% "	" " "
41 - Insul. material found on fiber	B-060-85	60% "	31 Dec 85
141 - dust in storage Rm	B-061-85	21% chrysotile 50% cellulose fibers	" " "
141 - Insul. material in ceiling	B-001-86	65% chrysotile	8 Jan 86
141 - dust from Vacuum - <sup>storage</sup> room	B-002-86	30% "	" " "
141 - dust sample from chair	B-003-86	None detected	" " "
41 - Insulation material	B-004-86	60% chrysotile	14 Jan 86
141 - " " "	B-005-86	25% chrysotile 15% Amosite	" " "
41 - " " "	B-006-86	60% chrysotile	" " "
141 - Steamline insul. material	B-007-86	80% "	" " "

Bldg / Location Sampled	Sample #	Results (fibers)	date Sampled
3176 - Steam pipe elbow insulation	B-010-86	45% Chrysotile	18 Feb 86
3176 - " " insulation	B-011-86	35% chrysotile, 5% Crocidolite + 15% Amosite	" " "
" S. Army Res. Ctr - <sup>Cadiden, AL</sup> Ceiling insul. material	B-012-86	1% Chrysotile	20 Feb 86
3176 - Boiler tank insul. material	B-013-86	55% chrysotile 10% fiberglass	26 Feb 86
3176 - Tank " "	B-014-86	50% Chrysotile 20% Fiberglass	" " "
3176 - <sup>Blowdown</sup> tank " "	B-015-86	50% Chrysotile 20% Fiberglass	" " "
41 - steam pipe	B-016-86	55% Chrysotile	6 Mar 86
141 - Supply room	B-017-86	60% "	" " "
63 - Boiler insulation	B-018-86	15% chrysotile 30% Amosite	11 Mar 86
900 - Steam pipe insulation	B-019-86	35% Chrysotile 35% Cellulose fibers	" " "
205 - Electrical Insulation	B-020-86	45% Chrysotile 10% fiberglass	17 Mar 86
215 - " "	B-021-86	45% Chrysotile 45% unid. synth. fibers	" " "
224 - Steam line insulation	B-022-86	35% chrysotile 15% Amosite	2 Apr 86
224 - Boiler insulation	B-023-86	No Asbestos present	" " "
<del>2281 - Steam line insulation material</del>	<del>B-048-86</del>	<del>" " "</del>	<del>15 Apr 86</del>
182 - Insulation material	B-067-86	45% Chrysotile 45% Fiberglass	28 Apr 86
3192 - Steam line insulation	B-068-86	25% Chrysotile 25% Amosite	6 May 86
192 - " " "	B-069-86	35% Chrysotile 10% Amosite	" " "
65 - " " "	B-070-86	50% Chrysotile	15 May 86
338A - Water pipe elbow insulation	B-102-86	<1% Chrysotile, 5% cellulose + 50% fiberglass fibers	21 May 86
338A - " " "	B-103-86	25% Chrysotile 60% Cellulosic fibers	" " "
338A - Insulation Board	B-104-86	50% chrysotile 25% Cellulosic fibers	" " "
Battery Room, OMS-9 Greenwood, MS - Insulation board	B-111-86	80% Chrysotile	12 June 86
T-60 - Pipe insulation material	B-113-86	55% Chrysotile 15% Crocidolite	18 June 86
53 - Roof shingles - top layer	B-120-86	No asbestos present	5 Aug 86
53 - " " - 2nd "	B-121-86	" " "	" " "
53 - Hot water pipe insul. material	B-122-86	1% chrysotile, 40% Amosite + 10% Crocidolite	" " "
55 - Exterior wall siding	B-123-86	40% chrysotile	" " "
55 - Roof shingle - top layer	B-124-86	No asbestos present	" " "
55 - " " - 2nd layer	B-125-86	" " "	" " "

Bldg / Location Sampled	Sample #	(Fibers) Results	Date Sampled
55 - floor tile - Brown	B-126-86	No asbestos detected	5 Aug 86
55 - " " - "	B-127-86	" " "	" " "
55 - Interior wall sample	B-128-86	" " "	" " "
55 - Wall Insul. material	B-129-86	" " "	" " "
55 - floor tile - Green	B-130-86	" " "	" " "
55 - Basement wall insul. board	B-131-86	" " "	" " "
55 - Steamline end insulation	B-132-86	" " "	" " "
53 - Floor tile - Tan	B-133-86	" " "	" " "
98 - Hard ceiling material Armed Forces Reserve Center	B-134-86	70% Chrysotile	8 Aug 86
Gadsden, AL - Interior office wall	B-135-86	65% "	13 Aug 86
" " - " "	B-136-86	35% "	" " "
1320 - Boiler insul. material	B-137-86	40% "	16 Sept 86
324 - " " "	B-138-86	60% Chrysotile 5% Amosite	" " "
141 - fireproof safe insulation material	B-140-86	No Asbestos present	30 Sept 86
<del>143 - Safe insul. material</del>	<del>B-141-86</del>	<del>" " "</del>	<del>29 Oct 86</del>
61 - Theater wall acoustical material	B-142-86	<1% Chrysotile	30 Oct 86
161 - Floor tile - gray	B-143-86	No Asbestos present	" " "
61 - Wall material	B-144-86	" " "	" " "
161 - Theater ceiling material	B-172-86	" " "	" " "
73 - Insul. material between inter. + exter. walls	B-147-86	<1% chrysotile	" " "
773 - 1st layer of shingles	B-148-86	" "	" "
772 - 2nd " " "	B-149-86	" "	" "
1126 - 1st layer " "	B-150-86	No asbestos present	" " "
1126 - 2nd " " "	B-151-86	" " "	" " "
126 - soft insulation material on wood beams	B-153-86	60% Chrysotile	" " "
1126 - hard insulation material on wood beam	B-154-86	30% "	" " "
126 - Wall material	B-155-86	<1% "	" " "
1126 - Ceiling insul. material	B-156-86	No Asbestos present	" " "
1126 - Hot water heater exhaust pipe insulation tape	B-157-86	80% chrysotile	" " "
773 - floor tile - brown	B-158-86	<1% Chrysotile	" " "

Bldg / Location Sampled	Sample #	% (Fibers) Results	Date Sampled
273 - floor tile - brown	B-159-86	25% Chrysotile	30 Oct 86
273 - Inter. wall material	B-160-86	No asbestos present	" " "
273 - floor tile - Green	B-161-86	<1% Chrysotile	" " "
273 - floor tile - "	B-162-86	" "	" " "
273 - Ceiling material	B-163-86	No Asbestos present	" " "
273 - Acoustic wall tiles	B-164-86	" " "	" " "
273 - Hot water pipe insulation material	B-165-86	2% Crocidolite 30% Amosite	" " "
273 - Ceiling material - upstairs	B-166-86	30% Chrysotile	" " "
273 - Blown in attic insul. material	B-167-86	No Asbestos present	" " "
273 - Boiler Room wall insulation	B-168-86	35% Chrysotile	" " "
273 - " " " "	B-169-86	45% "	" " "
273 - " " Ceiling/wall "	B-170-86	No asbestos present	" " "
273 - Hot water pipe insul. material	B-171-86	10% Chrysotile 35% Amosite	" " "
292 - Rm 1175 - door insul. material	B-174-86	2% Amosite	17 Nov 86
<del>251 - Ceiling material</del>	<del>B-175-86</del>	<del>10% Chrysotile</del>	<del>3 Dec 86</del>
241A - Steam pipe insulation	B-001-87	85% "	5 Mar 87
241A - steam line "	B-002-87	85% "	" " "
241A - debris above <sup>suspended</sup> ceiling tile	B-003-87	No asbestos present	" " "
241A - " " " " "	B-004-87	55% Amosite	" " "
241A - " " " " "	B-005-87	No Asbestos present	" " "
141 (Union Office) Kitchen Insul. Wall Board	B-006-87	70% Chrysotile	" " "
JMS-3, Louisville, MS - Ceiling material	B-007-87	30% Chrysotile 10% Amosite	24 MAR 87
'801 - 2nd Floor Latrine ceiling tile	B-008-87	25% Chrysotile	26 Mar 87
2181 - location unknown - <sup>sampled from</sup> removed material at landfill	B-009-87	40% Chrysotile, 10% Amosite + 10% Crocidolite	6 Apr 87
2381 - Ceiling panel in Mezzanine area -	B-013-87	35% Chrysotile	28 Apr 87
3181 - Steamline insul. in basement -	B-014-87	40% Chrysotile, 20% Amosite + 10% Crocidolite	30 Apr 87
2181 - " " " " "	B-015-87	20% Chrysotile, 20% Amosite, + 10% Crocidolite	" " "
3181 - Boiler insulation material	B-016-87	No asbestos present	" " "
241C - Debris on floor of entrance area	B-017-87	" " "	1 May 87
241C - " " " of chief DOC	B-018-87	" " "	" " "

<u>Site / location sampled</u>	<u>Sample #</u>	<u>Results</u> (Fibers)	<u>Date</u> <u>Sampled</u>
U.S. Army Reserve Ctr, Birmingham, AL-Rm115 - Steam line insulation	B-021-87	15% Chrysotile	24 June 8
" " " Room 115 - " " elbow	B-022-87	15% "	" " "
" " " Orderly Rm A Co. - Steam line	B-023-87	10% "	" " "
" " " " " " " - " "	B-024-87	45% "	" " "
" " " Gym Area - Steam line elbow	B-025-87	20% chrysotile 30% Amosite	" " "
" " " Acoustic wall board - old firing range	B-026-87	No asbestos present	" " "
" " " hall floor tile	B-027-87	1% chrysotile	" " "
" " " Boiler Rm water tank insulation	B-028-87	25% "	" " "
" " " Boiler Rm steam line elbow	B-029-87	1% Chrysotile	" " "
" " " Boiler Rm " " "	B-030-87	20% chrysotile 10% Amosite	" " "
" " " Boiler Rm steam line	B-031-87	25% chrysotile, 35% Amosite <1% crocidolite	24 June
" " " Boiler Rm " " "	B-032-87	30% Chrysotile, 30% Amosite +1% Crocidolite	" "
" " " Exhaust Plenum insulation	B-033-87	55% Chrysotile	" "
" " " Replacement pipe - not in use	B-034-87	No asbestos present	" "
" " " Bag of insul. material	B-035-87	1% chrysotile + 57% Amosite	" "
2227 - Door insulation	B-036-87	30% Chrysotile	22 June 8
3205 - Steamline insul. material - Stor. Rm	B-039-87	40% " "	30 July 8
3205 - Kitch insul. board - Thermal	B-040-87	40% " "	" "
3205 - Kitchen steamline insul. material	B-041-87	No Asbestos present	" " "
57 - Mech. Rm - Tank insulation	B-048-87	1% Amosite <1% Chrysotile	5 Aug 8
57 - " " <sup>return</sup> Water line insulation	B-049-87	4% Amosite, 1% chrysotile	" " "
57 - " " Hot water tank exhaust duct insulation	B-050-87	55% Chrysotile	" " "
57 - " " water line insulation	B-051-87	<1% chrysotile 2% Amosite	" " "
57 - " " wall board	B-052-87	No asbestos present	" " "
201 - Mech. Rm - Overhead water line insulation	B-053-87	35% Chrysotile	27 Aug 87
3201 - " " Hot water tank insul. material	B-054-87	No Asbestos present	" " "
201 - " " Overhead Hot water line insulation	B-055-87	" " "	" " "
3201 - " " " " " " " " " " " "	B-056-87	" " "	" " "
201 - Stor. Rm - " " " " " " " " " "	B-058-87	60% Chrysotile	" " "
2301 - Kitchen - Thermal Insul. Board over <sup>ovens</sup>	B-057-87	30% Chrysotile	" " "

<u>Bldg / location sampled</u>	<u>Sample #</u>	<u>Results</u> (Fibers)	<u>Date Sample</u>
3201 - Store Rm - overhead steamline insulation	B-059-87	60% Chrysotile	27 Aug 87
3201 - Kitchen - overhead <sup>hot</sup> water line insulation	B-060-87	<1% " "	" " "
3203 - Mech. Rm - Hotwater tank insulation	B-061-87	No asbestos present	" " "
3203 - " " - Overhead hotwater line insul.	B-062-87	" " " "	" " "
3203 - " " - " " " " " "	B-063-87	30% Chrysotile	" " "
3203 - Kitchen - <sup>steam table</sup> Hotwater line insulation	B-064-87	60% " "	" " "
3203 - Store Rm - Steam line insul. material	B-065-87	60% " "	" " "
3208 - Mech. Rm - Hotwater tank insulation	B-066-87	No asbestos present	" " "
3208 - " " - overhead hotwater line insul.	B-067-87	30% Chrysotile	" " "
3208 - Store Rm - " Steamline insul.	B-068-87	60% " "	" " "
3208 - " " - " hot water line insul.	B-069-87	30% " "	" " "
3208 - Kitchen - hot water line insulation	B-070-87	30% " "	" " "
3208 - " - Thermal Insul. board	B-071-87	40% " "	" " "
3204 - Mech. Rm - hot water line insulation	B-072-87	60% " "	" " "
<del>3204 - " " - " " " " " "</del>	<del>B-073-87</del>	<del>20% " "</del>	<del>" " "</del>
3204 - " " - hot water tank " "	B-074-87	No asbestos present	" " "
3204 - dining Rm - overhead steamline " "	B-075-87	" " " "	" " "
3204 - " " - " " " " " "	B-076-87	" " " "	" " "
3204 - Kitchen - Thermal Insul. Board	B-077-87	40% Chrysotile	" " "
3204 - " - Overhead hotwater line insul.	B-078-87	30% " "	" " "
3204 - Store Rm - " Steamline " "	B-079-87	50% " "	" " "
3210 - Mech Rm - " hotwater line " "	B-080-87	30% " "	" " "
3210 - " " - " " " " " "	B-081-87	60% " "	" " "
3210 - " " - Hotwater stor. tank insul. -	B-082-87	No asbestos present -	" " "
3210 - Dining Rm - overhead steamline insul. -	B-083-87	" " " -	" " "
3210 - Kitchen - overhead hotwater line " -	B-084-87	30% Chrysotile -	" " "
3210 - Store Rm - " " Steamline " -	B-085-87	60% " -	" " "
3210 - " " - " " hotwater line " -	B-086-87	25% " -	" " "
3210 - " " - " " " " " " " -	B-087-87	45% " -	" " "
3205 - Mech Rm - hot water tank insul. -	B-088-87	No asbestos present -	" " "



Bldg / location sampled	Sample #	% Results (fibers)	Date Sampled
2299 - Crawl space - water pipe insul.	B-088-88	30% Chrysotile 20% Amosite	10 Aug 88
1277 - Boiler Rm - tank insulation	B-091-88	60% Chrysotile	9 Sept 88
2277 - " " - Steamline insulation	B-092-88	50% Chrysotile 2% Amosite	" " "
2277 - " " - Hot water line	B-093-88	3% Chrysotile	" " "
2277 - " " - " " "	B-094-88	55% Chrysotile	" " "
143 - Sleeping Bay No. 1 - hot water line insul.	B-007-89	25% Chrysotile	2 Dec 88
43 - " " " " - " " " "	B-008-89	60%	" " " "
143 - " " " 2 - " " " "	B-009-89	60%	" " " "
143 - " " " 2 - " " " "	B-010-89	3%	" " " "
143 - Supply Rm - " " " "	B-011-89	35%	" " " "
143 - " " - " " " "	B-012-89	30%	" " " "
143 - " " - " " " "	B-013-89	30%	" " " "
143 - Recr. Rm - " " " "	B-014-89	30%	" " " "
143 - " " - " " " "	B-015-89	25%	" " " "
<del>57 Rm. No. 1 - Floor tile</del>	<del>B-016-89</del>	<del>Tile → 5% chrysotile Adhesive → 6% chrysotile</del>	<del>30 Jan 89</del>
57 - Rm. No 14 - " "	B-017-89	Tile → NO asbestos Adhesive → 4% chrysotile	" " "
129 - Boiler Rm - stoker Insul.	B-018-89	55% chrysotile	8 Mar 89
401 - " " - Hot water line insul.	B-019-89	3% Amosite	" " "
143 - Hot water line insulation	B-020-89	No asbestos	" " "
162 - Boiler Rm - Hot water line insul.	B-021-89	20% Chrysotile 35% Amosite	" " "
3213 - " " - " " " "	B-022-89	No asbestos	" " "
503 - Floor tile - Ballroom area	B-023-89	Tile → 1% chrysotile Adhesive → 2%	9 Mar 89
372 - Boiler insulation	B-025-89	30% chrysotile 2% Amosite	28 Mar 89
1271 - Thermal Insul. wall board	B-026-89	40% Chrysotile	" " "
271 - Boiler insulation	B-027-89	25% " "	" " "
163 - Boiler Rm - Hot water line insul.	B-028-89	1% Chrysotile	18 Apr 89
163 - Floor tile	B-029-89	No asbestos	" " "
3130 - laundry Rm - Cold H <sub>2</sub> O line insul.	B-030-89	25% Chrysotile	19 May 89
3130 - " " - " " " "	B-031-89	25% " "	" " "
3130 - " " - " " " "	B-032-89	10% " "	" " "

Bldg / location sampled	Sample #	% fibers (Results)	Date Sampled
804-Boiler Rm - ceiling material	B-034-89	<1% tremolite	5 June 89
Mrs 26A - <sup>Bedroom</sup> Floor tile - Tile no asbestos	B-035-89	Adhesive: 2% chrysotile	28 June 89
Mrs 25A - " " - " " "	B-036-89	2% " " " " "	" " "
314-E.wall-Thermal Insul. Board	B-037-89	50% " " " " "	" " "
814-W. " - " " "	B-038-89	40% " " " " "	" " "
813-Insul. behind storage Rm	B-039-89	25% " " " " "	29 June 89
813- " in " "	B-040-89	75% " " " " "	" " "
292-Rm 2126-Floor tile	B-042-89	Tile → 1% chrysotile Adhesive → 5% " " "	20 July 89
292-Rm 2118 - " "	B-043-89	" → 1% " " "	" " "
292-Rm 3017 - " "	B-044-89	" → 2% " " "	" " "
817-Outdoor siding	B-001-90	20% chrysotile	26 Oct 89
817-Mech Rm-Tank insulation	B-002-90	10% chrysotile 5% Amosite	" " "
817- " " - wall insul. board	B-003-90	No asbestos	" " "
817- " " - paper wrap insul-exhaust pipe	B-004-90	90% chrysotile	" " "
<del>817- " " - ceiling insul board</del>	<del>B-005-90</del>	<del>80% " " "</del>	<del>" " "</del>
817- roof vent pipe insul.	B-006-90	30% " " "	" " "
817-Insul. wall board	B-007-90	80% " " "	" " "
817-Flue pipe insul.	B-008-90	70% " " "	" " "
818-Outdoor siding	B-009-90	20% " " "	" " "
818-Thermal Insul. board-E.wall	B-010-90	25% " " "	" " "
818-Flue pipe insul.	B-011-90	80% " " "	" " "
818-ceiling material	B-012-90	50% " " "	" " "
818-Flue pipe insul.	B-013-90	60% " " "	" " "
818- " " "	B-014-90	60% " " "	" " "
818-Thermal Insul. board around Flue pipe	B-015-90	60% " " "	" " "
818-Mech Rm-Flue pipe insul.	B-016-90	60% " " "	" " "
818- " " - Tank insul.	B-017-90	60% " " "	" " "
818- " " - Thermal insul. Board	B-018-90	25% " " "	" " "
819- " " - Thermal Insul Tank	B-019-90	2% Amosite 2% chrysotile	" " "
819-Boiler Rm-Thermal Insul. Board	B-020-90	25% chrysotile	" " "

<u>Bldg / Location sampled</u>	<u>Sample #</u>	<u>% fibers (Results)</u>	<u>Date Sampled</u>
819 - Mech Rm - Flue insul.	B-021-90	45% Chrysotile	26 Oct 89
819 - Insul. material	B-022-90	70% " " - " " "	" " "
819 - Flue pipe <sup>PAPER</sup> wrap insul.	B-023-90	70% " " - " " "	" " "
819 - ceiling insul around flue	B-024-90	40% " " - " " "	" " "
819 - outdoor siding	B-025-90	35% " " - " " "	" " "
820 - " " "	B-026-90	25% " " - " " "	" " "
820 - insul. material - N. wall	B-027-90	45% " " - " " "	" " "
820 - Therm. Insul. board.	B-028-90	65% " " - " " "	" " "
820 - " " around flue	B-029-90	20% " " - " " "	" " "
820 - " " board - S. wall	B-030-90	45% " " - " " "	" " "
956 - outdoor siding	B-031-90	20% " " - " " "	" " "
956 - Therm. insul. board	B-032-90	No asbestos - " " "	" " "
2264 - " " "	B-033-90	80% chrysotile - " " "	" " "
2266 - " " "	B-034-90	20% " " - " " "	" " "
807 - " " "	B-035-90	30% " " - " " "	" " "
807 - " " "	B-036-90	30% " " - " " "	27 Oct 89
807 - Insul. joint Tape	B-037-90	75% " " - " " "	" " "
807 - outdoor siding	B-038-90	25% " " - " " "	" " "
806 - Thermal Insul. board	B-039-90	30% " " - " " "	" " "
806 - " " "	B-040-90	35% " " - " " "	" " "
806 - Insul. joint tape	B-041-90	80% " " - " " "	" " "
806 - Outdoor siding	B-042-90	15% " " - " " "	" " "
1121 - floor tile (green)	B-043-90	Tile → 5.8% Chrysotile Asbestos → 3.0% " " "	" " "
1121 - Bsment Furnace Rm - wall mat.	B-044-90	No asbestos - " " "	" " "

Results pending for the following Bldg's  
 1124, 221, 1123, 956, 1026, 292, 4401, 2277, 2275