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ASBESTOS CONTAINING MATERIAL RE-INSPECTION BUILDING 86 VOLUME 12 CNC
CHARLESTON SC
2/15/2000
BAT ASSOCIATES, INC.

Volume 12

**Asbestos-Containing Material Re-inspection
For Building 86
Charleston Naval Shipyard
Charleston, South Carolina**

Contract No. N2467-96-D-0998
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Prepared for:

Department of the Navy
Southern Division
NAVFACENGCOM
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BAT recommends the following management actions for the identified ACM in Building 86 in Table 2.0.

**Table 2.0
 Recommended Response Actions**

HA No.	Material Description	Recommended Response Action
1	Floor Tile, 9" x 9" green with white streaks w/ black mastic	Remove prior to renovation or demolition
3	Floor Tile, 9" x 9" black w/ black mastic	Remove prior to renovation or demolition
4	Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic	Remove prior to renovation or demolition
5	Floor Tile, 12" x 12" off-white with crater pattern w/ black mastic	Remove prior to renovation or demolition
7	Floor Tile, 12" x 12" tan with brown swirl pattern w/ black mastic	Remove prior to renovation or demolition
9	Floor Tile, 12" x 12" beige with gray streaks w/ black mastic	Remove prior to renovation or demolition
11	Floor Tile, 12" x 12" black with white specks and red streaks w/ black mastic	Remove prior to renovation or demolition
25	Floor Tile, 9" x 9" gray w/ black mastic	Remove prior to renovation or demolition
28	Window Glazing, on exterior	Remove prior to renovation or demolition
31	Tar, black on concrete	Remove prior to renovation or demolition

Other suspect ACM not identified could be present in areas of the building inaccessible to the asbestos building inspectors. For example, materials could exist in walls and other locations where access could only be gained by demolition of the building. Also, other materials currently not recognized by the asbestos building inspection industry could exist.

The total estimated cost for the removal of the identified and/or assumed ACM in Building 86 is approximately \$15,600. See Section 10.0 for a break down of the preliminary cost estimate for the removal of the identified or assumed ACM.

2.0 BUILDING INSPECTION INFORMATION FORM

Building Name: Cooper River Center
Building Number: 86
Facility: Charleston Naval Shipyard
Building Area (square footage): 22,149
Year Built: 1942
Building Type: Entertainment
No. of Floors in Building: One
Purpose of ACM Survey: Re-Inspection
Facility Unit Identification Code (UIC): N/A

Building Contact: Mr. Matthew Humphrey
Contact's Telephone No.: (843) 743-9985
Building Survey Date(s): January 28, 2000

Asbestos Inspector's Name: Mr. Foshie Bell
Asbestos Inspector's Accreditation No: GA2900
Inspection Company: BAT Associates, Inc.
Company Telephone No. (770) 242-3908

3.0 INTRODUCTION

BAT Associates, Inc. (BAT) was retained by the U.S. Department of the Navy, Southern Division (SouthDiv), Naval Facilities Engineering Command (NAVFACENGCOM) to perform an asbestos-containing material (ACM) re-inspection of all buildings located at the Charleston Naval Shipyard in Charleston, South Carolina. The purpose of this re-inspection was to:

1. Perform a comprehensive ACM re-inspection of 34 buildings in accordance with Federal and U.S. Navy requirements;
2. Assess the condition of previously identified friable and non-friable ACM; and
3. Provide a preliminary cost estimate for the removal of identified ACM.

The re-inspection was performed in accordance with the Navy's Asbestos Facility Inventory/Assessment Protocol (NEESA 70.2-010) and the U.S. Environmental Protection Agency's (USEPA) Asbestos Hazard Emergency Response Act (AHERA) and the Asbestos School Hazard Abatement Reauthorization Act (ASHARA).

The results of the re-inspection survey are presented in 24 separate volume reports. This report describes the results for Building 86.

This re-inspection survey was performed by Mr. Foshie Bell, under the direct supervision of Mr. Douglas J. Milton, CIH, on January 28, 2000. Mr. Bell is an accredited asbestos building inspector and management planner. Mr. Milton, a Certified Industrial Hygienist, is an accredited asbestos inspector, management planner, and project designer.

This report discusses the sampling methodology used during the re-inspection and assessment (Section 4.0); a list of all identified suspect materials (Section 5.0); a summary of the bulk sample analysis results (Section 6.0); results of quality control sampling; (Section 7.0); physical assessments of the identified ACM (Section 8.0); a hazard assessment of the identified ACM (Section 9.0); preliminary cost estimates for removal (Section 10.0); and conclusions (Section 11.0). Appendix A contains drawings identifying the location of collected bulk samples and the locations of identified ACM. Appendix B contains photographic documentation of identified ACM. Appendix C contains personnel and laboratory accreditations. Appendix D contains laboratory analysis results.

The assessment protocol for ACM involved three distinct steps:

1. Performed preliminary walk-through of the building to identify suspect ACM and to determine the amount of suspect ACM, to define the number of samples to be collected, to identify access problems (e.g., collection of samples in a limited access pipe chase below the building), and to determine the degree of personal protection necessary for the bulk sample collection.

2. Visually inspected the building for ACM to identify the location of the suspect ACM and to determine if the material was friable or non-friable. Suspect materials were then categorized according to the EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) for asbestos as: Category I non-friable materials, Category II non-friable materials, and Regulated (friable) Asbestos-Containing Materials (RACM).
3. Collected bulk samples for the analysis for asbestos content (see Section 4.0, *Sampling Methodology*, for details).

4.0 SAMPLE METHODOLOGY

Representative, randomly selected bulk samples were collected in accordance with the Navy's and AHERA sampling protocol, as described in 40 CFR 863.86, and in accordance with BAT's contract requirements. Bulk samples were collected from homogenous areas (materials) in a manner that minimized any release of airborne asbestos fibers. A homogeneous area (material) is defined as a material uniform in size, color and texture.

The minimum number of samples collected from each homogeneous area was as follows:

1. *Friable Spray-Applied or Trowel-Applied Material* (including plaster)
 - a. Less than or equal to 1,000 Square Feet (S.F.) = 3 samples
 - b. Greater than 1,000 S.F and less than or equal to 5,000 S.F. = 5 samples
 - c. Greater than 5,000 = 7 samples

2. *Pipe and Duct Insulation*

- a. Three samples per homogeneous area of insulation.

3. *Elbows, Valves, Fittings, and Connection Mud*

Three representative samples from each type of insulated elbow, valve, fitting, and connection mud.

4. *Boiler, Tanks, and Furnaces*

A minimum of 3 samples per unit.

5. *Patchwork*

Patchwork is defined as a patch or repair to existing material based on the following quantities:

- a. Surfacing material patches are limited to a maximum of 6 S.F.
- b. Pipe and duct insulation patches are limited to a maximum of 6 Linear Feet (L.F.) or 6 S.F.
- c. Boiler, tank, and furnace patches are limited to 6 S.F.

If the patchwork exceeded the limits prescribed above, it was sampled according to the homogeneous area protocol in items 1 to 4 above. If a material qualifies as patchwork, a single sample was collected per patch.

6. *Ceiling or Acoustical Tile*

3 samples

7. *Miscellaneous Friable Material*

3 samples

8. *Non-Friable Material*

Non-friable materials for purpose of this survey included Transite-type panels, floor tiles, floor tile mastic, and other miscellaneous materials.

Minimum of 3 samples.

The procedures followed for collection of each bulk sample is outlined briefly below:

1. The accredited inspector collecting the sample was equipped with the appropriate personal protective equipment. This included a half-mask air-purifying respirator, protective gloves and protective eyewear.
2. The surface of the material being sampled was wetted with amended water (containing a surfactant to aid penetration) mist to lessen the risk of fiber release during sampling.
3. Each sample was extracted using the appropriate equipment, (e.g., a sample container, knife, core borer). Care was taken to insure that all layers of the suspect materials, down to the substrate, were included in the sample.
4. Each sample was placed in an individual container, which was then sealed and labeled with a unique identification number which was also recorded on the sample data log-in sheet.
5. After each sample was collected, the area immediately surrounding the sampling location was inspected for debris and wet-cleaned as necessary to lessen the risk of an airborne fiber release.

6. All necessary data were recorded on the BAT Suspect Material Inventory Form including sample number, sample location, type of suspect material, name of inspector collecting the sample and other relevant information.
7. Samples were then transported to Cape Environmental Management Inc. (CAPE) Asbestos Laboratories in Atlanta, Georgia, for Polarized Light Microscopy (PLM) analysis. The CAPE Asbestos Laboratory participates in the National Voluntary Laboratory Assurance Program (NVLAP) for the analysis of asbestos content in suspect materials. CAPE's NVLAP Laboratory Code is 102111-0.
8. BAT collected duplicate samples during the collection of primary bulk sampling for quality control (QC) purposes. QC samples were collected at ten percent of the bulk sample locations. They were assigned unrelated sample identification numbers and analyzed by Analytical Environmental Services, Inc. (AES). AES participates in the National Voluntary Laboratory Assurance Program (NVLAP) for the analysis of asbestos content in suspect materials. AES's NVLAP Laboratory Code is 102033-0.
9. Upon receipt by the laboratory, the samples were logged in and assigned a unique laboratory identification number. The laboratory analyzed the samples in accordance with 40 CFR 863.87 subpart F. Copies of the laboratory accreditations for both laboratories may be found in Appendix C.

5.0 ASBESTOS INVENTORY AND ASSESSMENT

Table 3.0 describes the suspect ACM identified in and around Building 86.

**Table 3.0
 Summary of Identified Suspect ACM**

HA No.	Description of Suspect ACM	Location of Suspect ACM	AHERA Category of Material
1	Floor Tile, 9" x 9" green with white streaks w/ black mastic	Two kitchen offices and bunk room	Misc.
2	Floor Tile, 9" x 9" black w/ black mastic	Two kitchen offices and bunk room (under HA # 1)	N/A
3	Floor Tile, 9" x 9" red w/ black mastic	Kitchen storage closet	Misc.
4	Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic	Stage of recreation porch	Misc.
5	Floor Tile, 12" x 12" off-white with crater pattern w/ black mastic	Officer's coat room (under carpet)	Misc.
6	Floor Tile, 12" x 12" brown with light and dark pattern w/ black mastic	Behind bar of refreshment room	N/A
7	Floor Tile, 12" x 12" tan with brown swirl pattern w/ black mastic	Behind bar of refreshment room	Misc.
8	Floor Tile, 12" x 12" green with white streaks w/ black mastic	Stairwell to bunk room	N/A
9	Floor Tile, 12" x 12" beige with gray streaks w/ black mastic	Kitchen shelving room	Misc.
10	Floor Tile, 12" x 12" red with light and dark pattern w/ brown mastic	Kitchen dry storage	N/A
11	Floor Tile, 12" x 12" black with white specks and red streaks w/ black mastic	Room east of recreation porch	Misc.
12	Floor Tile, 12" x 12" aqua and teal green w/ brown mastic	Center of recreation porch	N/A
13	Mastic, black under carpet	Officer's mess hall and main lobby	N/A
14	Leveling Compound, white below carpet	Beverage storage	N/A
15	Drywall, on walls	Majority of interior walls	N/A
16	Joint Sealer Compound, on drywall	Majority of interior walls	N/A
17	Plaster Finish, on concrete	Non drywall walls	N/A
18	Ceiling Tile, 2' x 2' groove and pinhole rough	Officer's mess hall, dance floor and kitchen offices	N/A
19	Ceiling Tile, 2' x 2' groove and pinhole smooth	Officer's mess hall, dance floor and kitchen offices	N/A
20	Ceiling Tile, 1' x 1' fissured	Lounge and main lobby	N/A
21	Ceiling Tile, 2' x 2' groove and fissured	Recreation porch	N/A
22	Ceiling Tile, 2' x 4' white drywall	Coat rooms and kitchen corridors	N/A
23	Spray Applied Acoustical Finish, on ceiling	Dance floor stage and refreshment room	N/A

HA No.	Description of Suspect ACM	Location of Suspect ACM	AHERA Category of Material
24	Ceiling Tile, 1' x 1' gray peghole	Dance floor	N/A
25	Floor Tile, 9" x 9" gray w/ black mastic	Officer's coat room (under carpet and HA # 5)	Misc.
26	Roofing Tar	Roof	N/A
27	Roof Flashing	Roof	N/A
28	Window Glazing, exterior windows	Exterior windows	Misc.
29	Vapor Barrier	Exterior walls	N/A
30	Flexible Duct Connector, black	Attic	N/A
31	Tar on Concrete, black	Exterior above ice cream storage	Misc.

Notes: Misc. = Miscellaneous Material N/A = Not Applicable

6.0 SUMMARY OF SAMPLE ANALYSIS RESULTS

Table 4.0 contains a summary of the bulk sample analysis results for suspect ACM identified in this building.

All thermal system insulation (TSI), if present, was classified as friable material. As long as the outer covering remains intact and is in good condition the TSI can be considered non-friable (29 CFR 863.85). Ceiling tile, if asbestos is present was considered a friable material. However, if non-friable materials are drilled, sawed, ground or otherwise physically or mechanically disturbed, they may release asbestos fibers to the environment and therefore would be considered a friable material.

According to AHERA protocol, all samples within a homogeneous area must have an asbestos content of one percent or less by weight using Polarized Light Microscopy (PLM) analysis before the material can be categorized as non-asbestos-containing. If one sample is determined as asbestos-containing using PLM analysis, the entire homogeneous area must be classified as asbestos-containing.

Table 4.0
Summary of Sample Analysis Results

HA No.	Sample ID No.	Suspect Material Description	Asbestos Content	Friability
1	86-1-1	Floor Tile, 9" x 9" green with white streaks w/ black mastic	Tile = 10% chrysotile, Mastic = NAD	Non
2	86-2-1, 86-2-2, 86-2-3	Floor Tile, 9" x 9" black w/ black mastic	NAD	N/A
3	86-3-1	Floor Tile, 9" x 9" red w/ black mastic	Tile = 10% chrysotile, Mastic = NAD	Non
4	86-4-1	Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic	Tile = 2% chrysotile, Mastic = NAD	Non
5	86-5-1	Floor Tile, 12" x 12" off-white with crater pattern w/ black mastic	Tile = 5% chrysotile, Mastic = 5% chrysotile	Non

HA No.	Sample ID No.	Suspect Material Description	Asbestos Content	Friability
6	86-6-1, 86-6-2, 86-6-3	Floor Tile, 12" x 12" brown with light and dark pattern w/ black mastic	NAD	N/A
7	86-7-1	Floor Tile, 12" x 12" tan with brown swirl pattern w/ black mastic	Tile = NAD, Mastic = 10% chrysotile	Non
8	86-8-1, 86-8-2, 86-8-3	Floor Tile, 12" x 12" green with white streaks w/ black mastic	Tile = <1% chrysotile, Mastic = NAD	N/A
9	86-9-1, 86-9-2, 86-9-3	Floor Tile, 12" x 12" beige with gray streaks w/ black mastic	Tile = NAD, Mastic = 10% chrysotile	Non
10	86-10-1, 86-10-2, 86-10-3	Floor Tile, 12" x 12" red with light and dark pattern w/ brown mastic	NAD	N/A
11	86-11-1, 86-11-2, 86-11-3	Floor Tile, 12" x 12" black with white specks and red streaks w/ black mastic	Tile = NAD, Mastic = 10% chrysotile	Non
12	86-12-1, 86-12-2, 86-12-3	Floor Tile, 12" x 12" aqua and teal green w/ brown mastic	NAD	N/A
13	86-13-1, 86-13-2, 86-13-3	Mastic, black under carpet	NAD	N/A
14	86-14-1, 86-14-2, 86-14-3	Leveling Compound, white below carpet	NAD	N/A
15	86-15-1, 86-15-2, 86-15-3	Drywall, on walls	NAD	N/A
16	86-16-1, 86-16-2, 86-16-3	Joint Sealer Compound, on drywall	Layer 1 = <1% chrysotile, Layer 2 = NAD	N/A
17	86-17-1, 86-17-2, 86-17-3	Plaster Finish, on concrete	NAD	N/A
18	86-18-1, 86-18-2, 86-18-3	Ceiling Tile, 2' x 2' groove and pinhole rough	NAD	N/A
19	86-19-1, 86-19-2, 86-19-3	Ceiling Tile, 2' x 2' groove and pinhole smooth	NAD	N/A
20	86-20-1, 86-20-2, 86-20-3	Ceiling Tile, 1' x 1' fissured	NAD	N/A
21	86-21-1, 86-21-2, 86-21-3	Ceiling Tile, 2' x 2' groove and fissured	NAD	N/A
22	86-22-1, 86-22-2, 86-22-3	Ceiling Tile, 2' x 4' white drywall	NAD	N/A
23	86-23-1, 86-23-2, 86-23-3	Spray Applied Acoustical Finish, on ceiling	NAD	N/A
24	86-24-1, 86-24-2, 86-24-3	Ceiling Tile, 1' x 1' gray peghole	NAD	N/A
25	86-25-1, 86-25-2, 86-25-3	Floor Tile, 9" x 9" gray w/ black mastic	Tile = NAD, Mastic = 10% chrysotile	Non
26	86-26-1, 86-26-2, 86-26-3	Roofing Tar	NAD	N/A
27	86-27-1, 86-27-2, 86-27-3	Roof Flashing	NAD	N/A
28	86-28-1	Window Glazing, exterior windows	10% chrysotile	Non

HA No.	Sample ID No.	Suspect Material Description	Asbestos Content	Friability
29	86-29-1, 86-29-2, 86-29-3	Vapor Barrier	NAD	N/A
30	86-30-1, 86-30-2, 86-30-3	Flexible Duct Connector, black	NAD	N/A
31	86-31-1	Tar on Concrete, black	Layer 1 = 30% chrysotile, Layer 2 = NAD	Non

Notes: NAD = No Asbestos Detected N/A = Not Applicable

7.0 RESULTS OF QUALITY CONTROL SAMPLING

The purpose of quality control (QC) sampling was to ensure reproducibility of the primary laboratory analysis results. Duplicate samples were collected for ten percent of the total building samples for QC purposes.

Table 5.0
Validation of Quality Control Sampling

Sample I.D. No.	Primary Laboratory Analysis Results	QC Laboratory Analysis Results
86-1-QC1	Tile = 10% chrysotile, Mastic = NAD	Tile = 6% chrysotile, Mastic = NAD
86-2-QC2	NAD	NAD
86-3-1QC	Tile = 10% chrysotile, Mastic = NAD	Tile = 7% chrysotile, Mastic = < 1% chrysotile
86-4-1QC	Tile = 2% chrysotile, Mastic = NAD	Tile = 3% chrysotile, Mastic = NAD
86-9-1QC	Tile = NAD, Mastic = 10% chrysotile	Tile = NAD, Mastic = 3% chrysotile
86-15-1QC	NAD	NAD
86-22-1QC	NAD	NAD
86-24-1QC	NAD	NAD

Notes: QC = Quality Control NAD = No Asbestos Detected

No discrepancies between primary laboratory and quality control laboratory bulk sample analysis were noted.

8.0 PHYSICAL ASSESSMENT OF IDENTIFIED ACM

The following sections contain a summary of the methodology BAT specialists used to conduct the physical assessment for this building. This methodology was developed in accordance with USEPA AHERA re-inspection requirements contained in 40 CFR Part 863.85.

1. Physical Assessment for Friable ACM.

A. **Condition.** Friable ACM were assigned to one of the following categories based on a visual inspection and touch test:

1) **Significantly Damaged Condition.** Material which met one or both of the following characteristics:

- a. Ten percent (10%) or more of the material in the functional space is crumbled, blistered, or is hanging from the surface, deteriorated, showing adhesive failure, water stained, gouged or marred, and the damage is evenly distributed.
- b. Twenty-five percent (25%) or more of the material in the functional space is crumbled, blistered, or is hanging from the surface, deteriorated, showing adhesive failure, water stained, gouged or marred, and the damage is localized.

2) **Damaged Condition.** Material which met one or both of the following characteristics:

- a. The surface is crumbling, blistered, water stained, gouged or marred, or otherwise damaged on less than ten percent (10%) of the material in the functional space (but material is too damaged to be characterized as good condition) and the damage is evenly distributed.
- a. The surface is crumbling, blistered, water stained, gouged or marred, or otherwise damaged on twenty-five percent (25%) or more of the material in the functional space (but material is too damaged to be characterized as good condition) and the damage is localized.

3) **Good Condition.** Material with very limited, or no visible damage or deterioration.

B. **Potential for Disturbance.** Friable ACM were assigned to one of the following categories based on a visual inspection and assessment of surroundings:

- 1) **Potential for Significant Damage.** Material which met one or more of the following conditions:
 - a. High potential for Contact. Service workers are in the vicinity of the material more than once each week or the material is in a public area and is accessible to building occupants.
 - b. High Potential for Vibration. Loud motors or engines present in the vicinity of the material or there are intrusive noises or easily sensed vibrations from surrounding area, such as nearby highways or airports.
 - c. High Potential for Air Erosion. High velocity air moving across or against material.

- 2) **Potential for Damage.** Material which met one or more of the following conditions for potential for significant damage:
 - a. Moderate Potential for Contact. Service workers are in the vicinity of the material at least once each month, but less than once each week or the material is in a room or office and is accessible to the occupants.
 - b. Moderate Potential for Vibration. Motors or engines present but not obtrusive or occasional loud noise in the vicinity of the material.
 - c. Moderate potential for Air Erosion. Noticeable movement of air across or against material, but not high in velocity.

- 3) **Low Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage or potential for damage:
 - a. Low Potential for Contact. Service workers are in the vicinity of the material less than once each month or the material is visible but not accessible to the building occupants in the course of normal activity.
 - b. Low Potential for Vibration. None of the conditions for high or moderate potential for vibration are met.
 - c. Low Potential for Air Erosion. None of the conditions for high or moderate potential for air erosion are met.

2. Physical Assessment for Thermal ACM.

A. **Condition.** Thermal ACMs were assigned to one of the following categories based on a visual inspection:

1) **Significantly Damaged Condition.** Material which met one or both of the following characteristics:

- a. Missing jackets, crushed, heavily gouged, or punctured insulation on equal to or greater than ten percent (10%) of the material in the functional space, and the damage is evenly distributed.
- b. Missing jackets, crushed, heavily gouged, or punctured insulation on equal to or greater than twenty-five percent (25%) of the material in the functional space, and the damage is localized.

2) **Damaged Condition.** Material which met one or both of the following characteristics:

- a. Missing jackets, crushed, heavily gouged, or punctured insulation on less than ten percent (10%) of the material in the functional space, and the damage is evenly distributed.
- b. Missing jackets, crushed, heavily gouged, or punctured insulation on greater than twenty-five percent (25%) of the material in the functional space, and the damage is localized.

3) **Good Condition.** Material with very limited, or no visible damage or deterioration.

B. **Potential for Disturbance.** Thermal ACMs were assigned to one of the following categories based on a visual inspection and assessment of surroundings:

1) **Potential for Significant Damage.** Material which met one or more of the following conditions:

- a. **High Potential for Contact.** Service workers are in the vicinity of the material more than once each week or the material is in a public area and is accessible to building occupants.
- b. **High Potential for Vibration.** Loud motors or engines present in the vicinity of the material or there are intrusive noises or easily sensed vibrations from surrounding area, such as a nearby highway or airport.

- c. **High Potential for Air Erosion.** High velocity air moving across or against the material.
- 2) **Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage.
- a. **Moderate Potential for Contact.** Service workers are in the vicinity of the material at least once each month but less than once each week or the material is in a room or office and is accessible to the occupants.
 - b. **Moderate Potential for Vibration.** Motors or engines present but not obtrusive or occasional loud noise in the vicinity of the material.
 - c. **Moderate Potential for Air Erosion.** Noticeable movement of air across or against material, but not high in velocity.
- 3) **Low Potential for Damage.** Material which met one or more of the following conditions and met none of the conditions for potential for significant damage or potential for damage:
- a. **Low Potential for Contact.** Service workers are in the vicinity of the material less than once per month or the material is visible but not accessible to the building occupants in the course of normal activity.
 - b. **Low Potential for Vibration.** None of the conditions for high or moderate potential for vibration are met.
 - c. **Low Potential for Air Erosion.** None of the conditions for high or moderate potential for air erosion are met.

PHYSICAL ASSESSMENT DATA FOR IDENTIFIED ACM

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-1-1

HOMOGENEOUS AREA No.: 1

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" green with white streaks w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 800 SF

CONDITION:

Percent Damage: <1 % Damage Localized Distributed

Type of Damage: Deterioration Water Physical

DESCRIPTION:

Overall Rating: Good Fair Poor

POTENTIAL FOR DISTURBANCE:

Frequency of Potential Contact: High Moderate Low

Description: Material is located in high traffic areas.

Influence of Vibration: High Moderate Low

Description: None identified.

Potential for Air Erosion: High Moderate Low

Description: None identified.

OVERALL RATING: Potential for Significant Damage Potential for Damage Low Potential for Damage

COMMENTS: Material should be removed prior to renovation or demolition.

PHYSICAL ASSESSMENT DATA FOR IDENTIFIED ACM

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-4-1

HOMOGENEOUS AREA No.: 4

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 150 SF

CONDITION:

Percent Damage: <1 % Damage Localized Distributed

Type of Damage: Deterioration Water Physical

DESCRIPTION:

Overall Rating: Good Fair Poor

POTENTIAL FOR DISTURBANCE:

Frequency of Potential Contact: High Moderate Low

Description: Material is located in high traffic areas.

Influence of Vibration: High Moderate Low

Description: None identified.

Potential for Air Erosion: High Moderate Low

Description: None identified.

OVERALL RATING: Potential for Significant Damage Potential for Damage Low Potential for Damage

COMMENTS: Material should be removed prior to renovation or demolition.

PHYSICAL ASSESSMENT DATA FOR IDENTIFIED ACM

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-25-1, 86-25-2, and 86-25-3

HOMOGENEOUS AREA No.: 25

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" gray w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 185 SF

CONDITION:

Percent Damage: <1 % Damage Localized Distributed

Type of Damage: Deterioration Water Physical

DESCRIPTION:

Overall Rating: Good Fair Poor

POTENTIAL FOR DISTURBANCE:

Frequency of Potential Contact: High Moderate Low

Description: Material is located in high traffic areas.

Influence of Vibration: High Moderate Low

Description: None identified.

Potential for Air Erosion: High Moderate Low

Description: None identified.

OVERALL RATING: Potential for Significant Damage Potential for Damage Low Potential for Damage

COMMENTS: Material should be removed prior to renovation or demolition.

PHYSICAL ASSESSMENT DATA FOR IDENTIFIED ACM

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-28-1

HOMOGENEOUS AREA No.: 28

TYPE OF MATERIAL: Surfacing TSI Other

Description: Window Glazing, on exterior

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 620 LF

CONDITION:

Percent Damage: <1 % Damage Localized Distributed

Type of Damage: Deterioration Water Physical

DESCRIPTION:

Overall Rating: Good Fair Poor

POTENTIAL FOR DISTURBANCE:

Frequency of Potential Contact: High Moderate Low

Description: Material is located outside the building.

Influence of Vibration: High Moderate Low

Description: Weathering.

Potential for Air Erosion: High Moderate Low

Description: Weathering.

OVERALL RATING: Potential for Significant Damage Potential for Damage Low Potential for Damage

COMMENTS: Material should be removed prior to renovation or demolition.

9.0 HAZARD ASSESSMENT OF IDENTIFIED ACM

AHERA describes a hazard assessment as "the means of collecting and considering whatever data were necessary for the management planner to make an informed, responsible recommendation to the LEA [Local Education Agency] consistent with response action requirements". As stated in AHERA, there is no single assessment method that is required in the regulations.

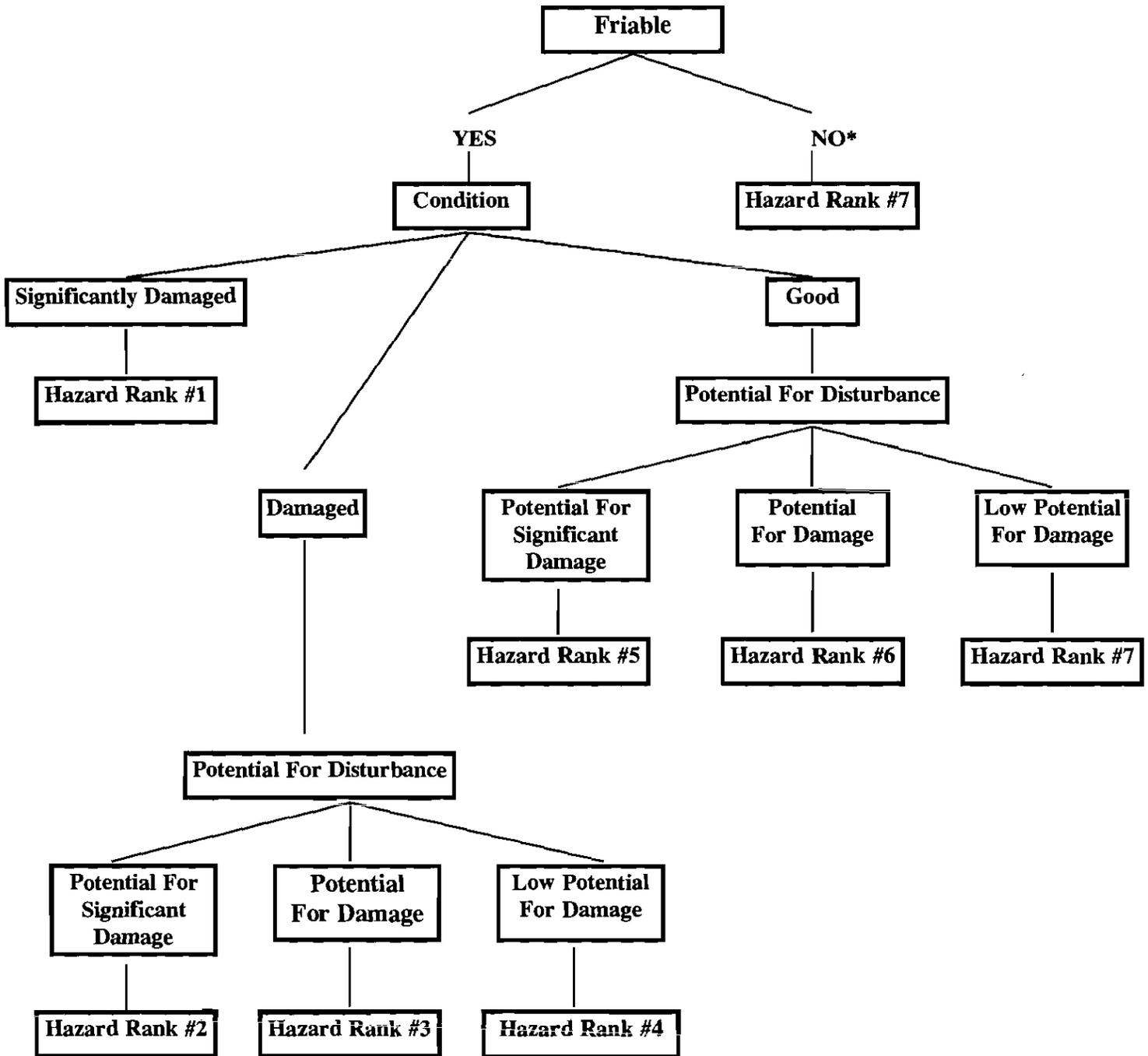
BAT adopted for this re-inspection one of the four general classes of hazard assessment models considered during the AHERA rule-making process. This method for hazard assessment is a modified decision tree as detailed in the USEPA, *Guidance for Assessing and Managing Exposure to Asbestos in Buildings*, or the *Pink Book*. Based on the physical assessment responses documented in the field, the BAT Management Planner proceeded through the decision tree process depicted in Figure 1.0 on the following page.

Only the identified and/or assumed asbestos-containing materials were assessed for hazards.

All of the identified and/or assumed asbestos-containing materials observed in this building were in good condition on the day of the survey.

Figure 1.0 Decision Tree Diagram For Hazard Assessment

Hazard rank #1 are materials of highest concern, and hazard rank #7 are the materials least likely to release asbestos fibers to the work area.



*Miscellaneous materials that are considered non-friable were placed in the Hazard Rank #8 category, which is in good condition with a low potential for damage.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-1-1

HOMOGENEOUS AREA No.: 1

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" green with white streaks w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 800 SF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-3-1

HOMOGENEOUS AREA No.: 3

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" black w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 8 SF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-4-1

HOMOGENEOUS AREA No.: 4

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 150 SF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-9-1, 86-9-1, and 86-9-3

HOMOGENEOUS AREA No.: 9

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 12" x 12" beige with gray streaks w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 150 SF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-25-1, 86-25-2, and 86-25-3

HOMOGENEOUS AREA No.: 25

TYPE OF MATERIAL: Surfacing TSI Other

Description: Floor Tile, 9" x 9" gray w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 185 SF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

**HAZARD ASSESSMENT AND RESPONSE ACTION DATA
FOR IDENTIFIED ACM**

BUILDING: Charleston Naval Shipyard, Building Number 86

SAMPLE NUMBER(S): 86-28-1

HOMOGENEOUS AREA No.: 28

TYPE OF MATERIAL: Surfacing TSI Other

Description: Window Glazing, on exterior

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 620 LF

Approximate Recommended Response Action Cost:

HAZARD ASSESSMENT

RESPONSE ACTION RECOMMENDATION

- | | |
|--|--|
| (1) Significantly damaged | (1) Removal |
| (2) Damaged plus potential for significant damage | (2) Encapsulation |
| (3) Damaged plus potential for damage | (3) Enclosure |
| (4) Damaged plus low potential for damage | (4) Repair |
| (5) ACM (good condition) with potential for significant damage | <input checked="" type="checkbox"/> (5) Operations and Maintenance Program |
| (6) ACM (good condition) with potential for damage | |
| (7) Any remaining friable ACM or friable suspect ACM | |
| <input checked="" type="checkbox"/> (8) Non-friable ACM | |

COMMENTS: Material should be removed prior to renovation or demolition.

10.0 PRELIMINARY COST ESTIMATE FOR REMOVAL OF IDENTIFIED ACM

The following is a preliminary cost estimate for the abatement (removal) of identified ACM in Building 86. This estimate is based on removing all of the materials during the same project. It does not include the cost of replacement materials. The cost estimate includes, project surveillance, air monitoring, and disposal of materials. These costs are estimates only; BAT made no attempt to obtain bids from removal contractors for this work, however, the average unit costs of three asbestos abatement contractors were used to develop the preliminary removal costs. Additionally, quantities noted are based upon engineering measurements. BAT recommends the use of architectural measurements for more accurate quantification.

Material Description	Unit Cost (\$)	Quantity	Total Abatement Cost (\$)
Floor Tile with Mastic	2.78	1,728 SF	4,804
Window Glazing, on exterior	2,.34	620 LF	1,450
Tar, black on concrete	1.78	300 SF	534
Handling Cost	25.00	15 EA	375
Mobilization	300.00	2 EA	600
Waste Disposal Cost	<u>50.00</u>	<u>3 CY</u>	<u>150</u>
Removal Subtotal			7,913
IH Supervision and Monitoring			<u>1,000</u>
Project Subtotal			8,913
Contingency (75%)			<u>6,685</u>
Project Total			15,598

SF = Square Feet EA = Each CY = Cubic Yard

11.0 CONCLUSIONS

Inspection of Building 86 and confirmatory laboratory bulk sample analysis of selected samples identified the following materials with asbestos concentrations greater than one percent.

<u>Identified ACM</u>	<u>Quantity</u>	<u>NESHAP Category</u>
Floor Tile, 9" x 9" green with white streaks w/ black mastic	800 SF	Category I, non-friable
Floor Tile, 9" x 9" black w/ black mastic	8 SF	Category I, non-friable
Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic	150 SF	Category I, non-friable
Floor Tile, 12" x 12" off-white with crater pattern w/ black mastic	185 SF	Category I, non-friable
Floor Tile, 12" x 12" tan with brown swirl pattern w/ black mastic	250 SF	Category I, non-friable
Floor Tile, 12" x 12" beige with gray streaks w/ black mastic	150 SF	Category I, non-friable
Floor Tile, 12" x 12" black with white specks and red streaks w/ black mastic	110 SF	Category I, non-friable
Floor Tile, 9" x 9" gray w/ black mastic	185 SF	Category I, non-friable
Window Glazing, on exterior	620 LF	Category I, non-friable
Tar, black on concrete	300 SF	Category I, non-friable

The following materials were not sampled in order to avoid disrupting their integrity, and they were assumed to contain asbestos:

<u>Assumed ACM</u>	<u>Quantity</u>	<u>NESHAP Category</u>
None.		

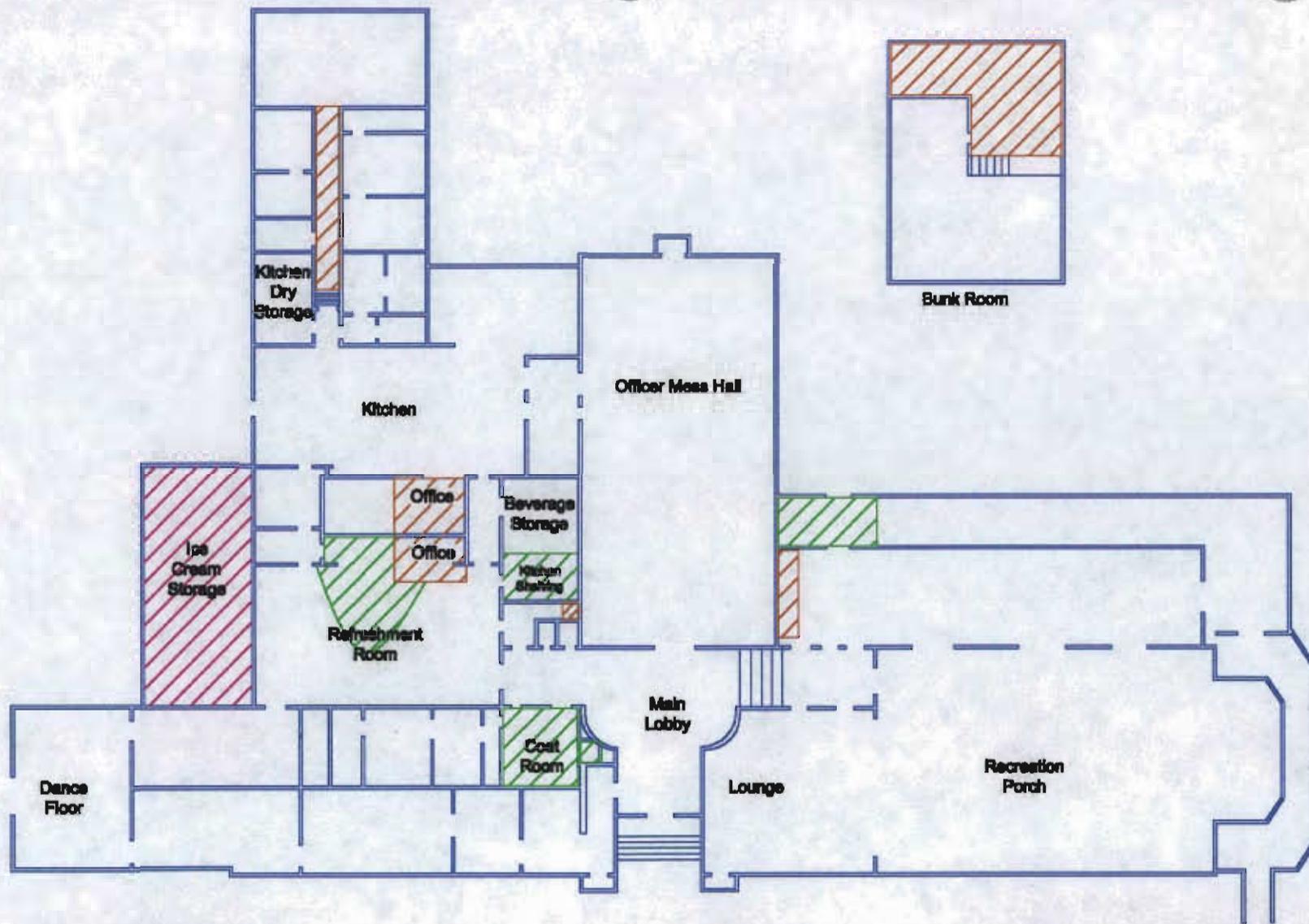
Other suspect ACM not identified could be present in areas of the building inaccessible to the asbestos-building inspectors. For example, material could exist in walls and other locations where access could only be gained by demolition of the building. Also, other materials currently not recognized as ACM by the asbestos building inspection industry could exist.

Rooms that were inaccessible to the asbestos-building inspectors have been identified on the drawings of the building in Appendix B, *Sample and ACM Location Drawings*.

EPA rules governing the application, removal and disposal of ACM were promulgated under NESHAP [40 CFR 61 Part M]. NESHAP requires the building owner or asbestos removal contractor to notify EPA when a building containing ACM is to be renovated, ACM is to be removed, or the building is to be demolished. At least 20 days notification is required "...if less than 260 linear feet of asbestos pipe covering or 160 square feet of asbestos material are removed during building renovation". Ten days notification is required when the amount is greater than 260 linear feet or 160 square feet of friable ACM.

APPENDIX A

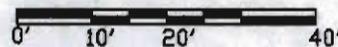
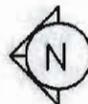
SAMPLE AND ACM LOCATION DRAWINGS



LEGEND	
	- Asbestos-Containing Floor Tile and Mastic
	- Asbestos-Containing Floor Tile
	- Asbestos-Containing Black Tar on Concrete

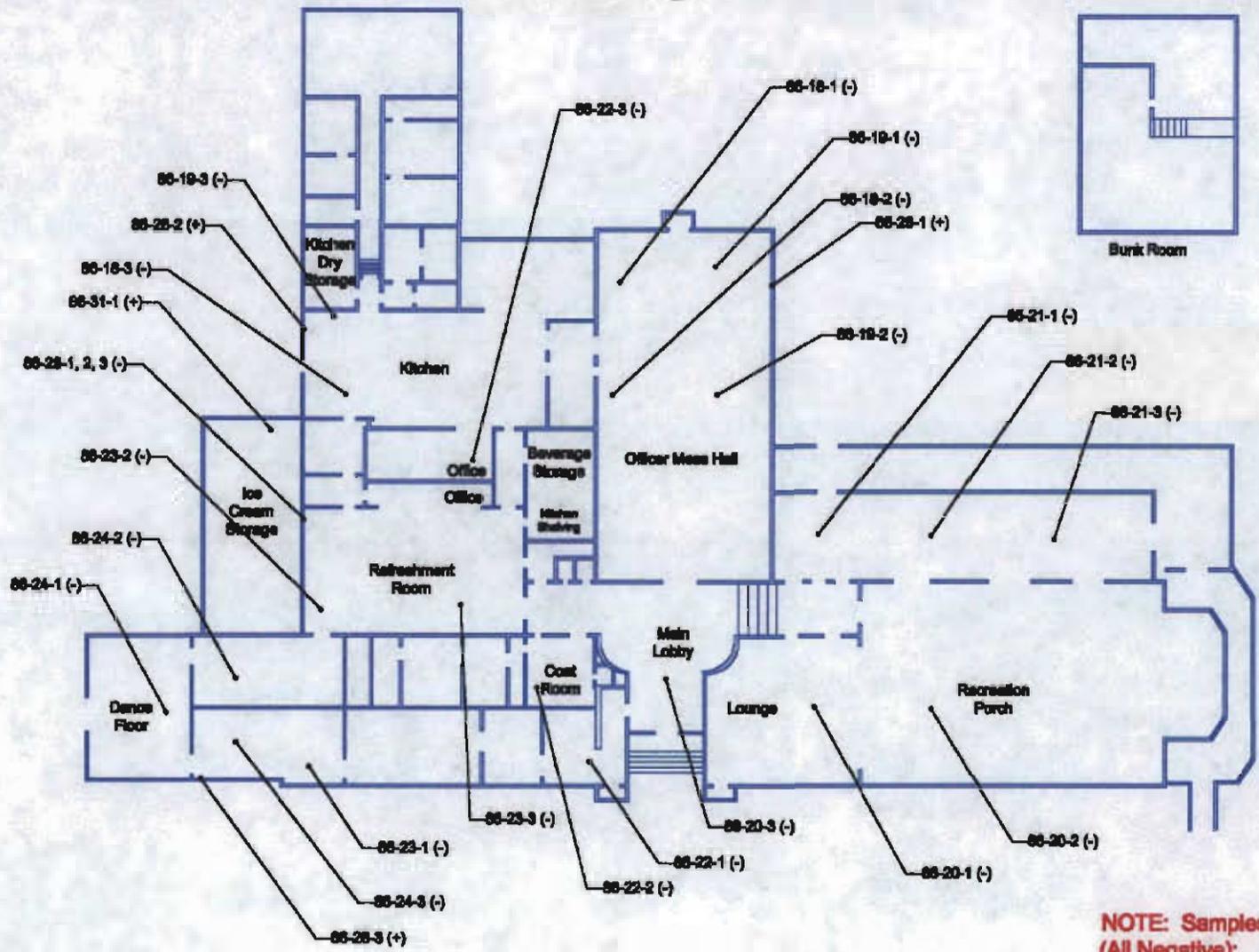
BUILDING 86 MAIN FLOOR

Asbestos-Containing Material Locations



NOTE: All Exterior Windows Have Asbestos-Containing Window Glazing.

BAT Associates, Inc.
 ENVIRONMENTAL, HEALTH & SAFETY SERVICES
 5151 BROOK HOLLOW PARKWAY, SUITE 200
 NORCROSS, GA 30071



**NOTE: Samples Collected on the Roof
(All Negative):**
 86-26-1, 86-26-2, 86-26-3
 86-27-1, 86-27-2, 86-27-3.

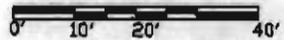
**NOTE: Samples Collected in the Attic
(All Negative):**
 86-30-1, 86-30-2, 86-30-3.

LEGEND

- - Sample Location
- (-) - Non-Asbestos-Containing Sample Location
- (+) - Asbestos-Containing Sample Location

BUILDING 86 MAIN FLOOR

Walls and Ceilings
 Sample Locations

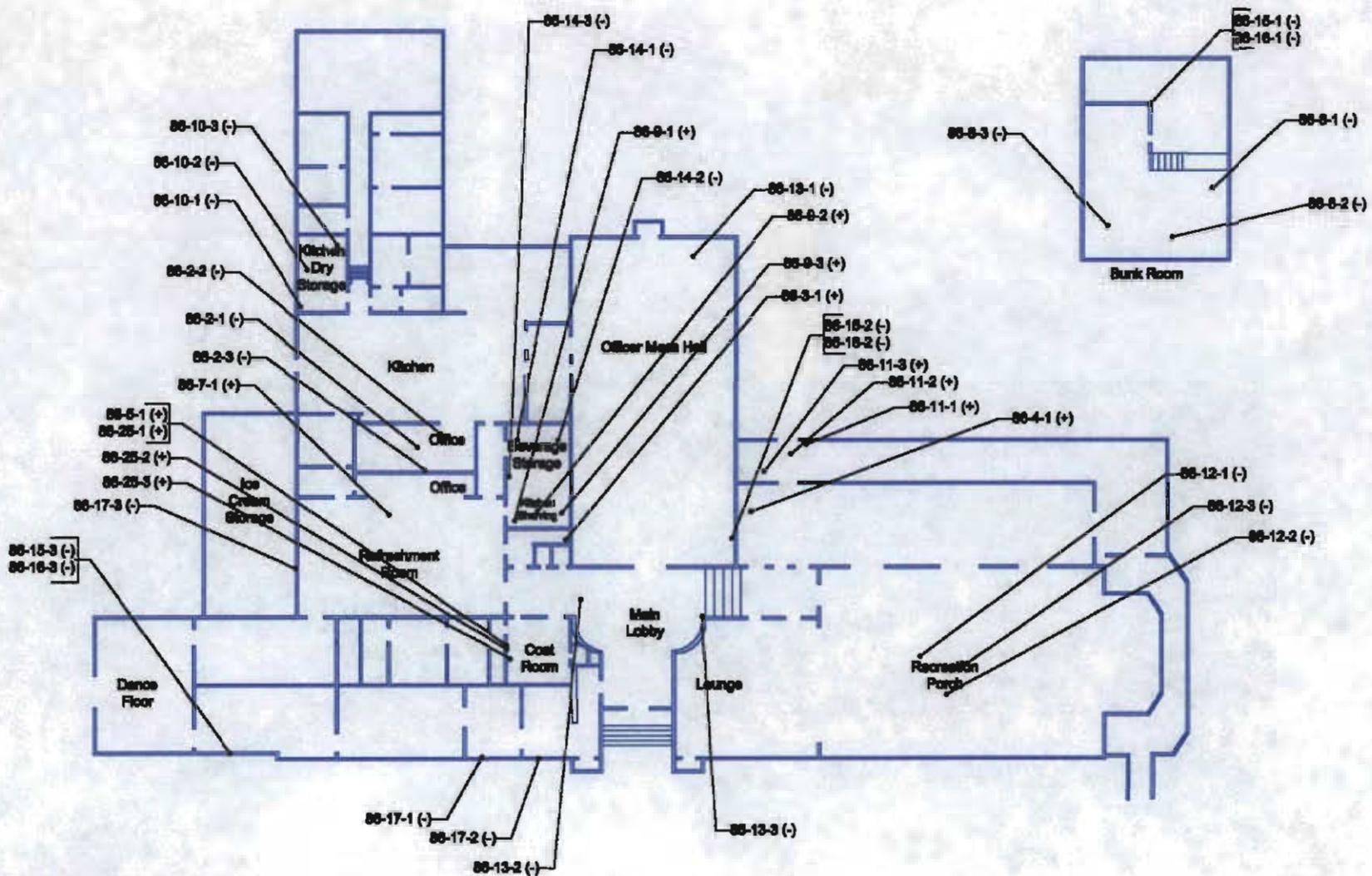
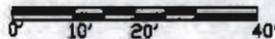


BAT Associates, Inc.
 ENVIRONMENTAL, HEALTH & SAFETY SERVICES
 5151 BROOK HOLLOW PARKWAY, SUITE 280
 NORCROSS, GA 30071

LEGEND

- - Sample Location
- (-) - Non-Asbestos-Containing Sample Location
- (+) - Asbestos-Containing Sample Location

BUILDING 86 MAIN FLOOR Floors Sample Locations



BAT Associates, Inc.
 ENVIRONMENTAL, HEALTH & SAFETY SERVICES
 5151 BROOK HOLLOW PARKWAY, SUITE 250
 NORCROSS, GA 30071

APPENDIX B

**PHOTOGRAPHIC DOCUMENTATION
OF IDENTIFIED ACM**

Floor Tile, 9" x 9" green with white streaks w/ black mastic, HA # 1

Floor Tile, 9" x 9" black w/ black mastic, HA # 3

Floor Tile, 9" x 9" brown with black crater pattern w/ black mastic, HA # 4

Floor Tile, 12" x 12" off-white with crater pattern w/ black mastic, HA # 5

Floor Tile, 12" x 12" tan with brown swirl pattern w/ black mastic, HA # 7

Floor Tile, 12" x 12" beige with gray streaks w/ black mastic, HA # 9

Floor Tile, 12" x 12" black with white specks and red streaks w/ black mastic, HA # 11

Floor Tile, 9" x 9" gray w/ black mastic, HA # 25

APPENDIX C

PERSONNEL AND LABORATORY ACCREDITATIONS



The Georgia Institute of Technology

This is to certify that

Foshie Bell

has attended an EPA-approved half-day Continuing Education Course entitled:

Inspecting Buildings for Asbestos Containing Materials (Annual Refresher Course for Building Inspectors)

*as required by the Federal EPA AHERA Model Accreditation Plan for
re-accreditation as a Building Inspector for Asbestos (TSCA Title II).*

Georgia Tech Research Institute
Electro-Optics, Environment and Materials Laboratory
Atlanta, GA 30332
Phone: (404) 894-7430; FAX: (404) 894-1267

August 26, 1998

Dates of Attendance

August 26, 1999

Expiration Date

149-64-0385

Social Security Number

Myrtle I. Turner, CET
Course Director

2900

Certificate Number

The Environmental Institute

Douglas J. Milton

Social Security Number - 266-55-7179

*Has completed coursework and satisfactorily passed
an examination that meets all criteria required for
EPA/ASHERA/ASHARA (TSCA Title II) Approved Reccreditation
and NESHAP Regulations Training
Asbestos in Buildings: Inspector & Management
Planner Refresher*

December 15, 1999

Course Date

6398

Certificate Number

December 15, 1999

Examination Date

December 14, 2000

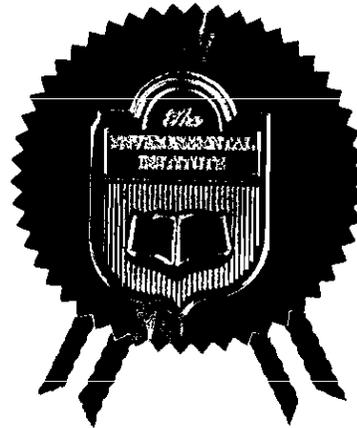
Expiration Date

Tod A. Dawson

Tod A. Dawson - Course Director

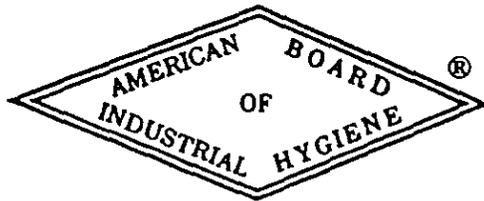
Rachel G. McCain

Rachel G. McCain - Exam Administrator



TEI - 1300 Williams Drive, Suite E - Marietta, Georgia 30066 - (770) 427-3600

The
American Board of Industrial Hygiene®
ABIH®



organized to improve the practice of Industrial Hygiene
proclaims that

Douglas J. Milton

having met all requirements through
education, experience and examination,
is hereby certified in the

**COMPREHENSIVE PRACTICE
of
INDUSTRIAL HYGIENE**

and has the right to use the designations

CERTIFIED INDUSTRIAL HYGIENIST

CIH

November 12, 1997

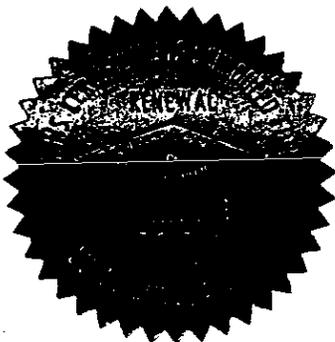
date

J. Kenneth Courie
Chair ABIH

CP 7612

certificate
number

Ray T. Conner
Secretary ABIH





ASBESTOS ABATEMENT LICENSE

No. 22860

This certifies that

Douglas J Milton

266-MS-7179

doing business as *B A T Associates, Inc*

has satisfactorily completed the training required by South Carolina Regulation No. 61-86.1 and the EPA Model Accreditation Plan, 40 CFR 763 Subpart E Appendix C, for the category of

Consultant/Management Planner

The holder of this license shall comply with all the requirements of said Regulation.

This License, License Number, or any Representation thereof, is not transferable to any other licensee or company. Use of this License is only authorized for the licensee and Company whose name appears hereon and shall expire one year from

09/24/98.

The holder of this license is qualified in accordance with requirements of the Asbestos Hazard Emergency Response Act of 1986 (AHERA) to perform as an abatement Building Inspector.

07/28/99

Richard D. Sharpe

Richard D. Sharpe, Director
Air Compliance Management Division
Bureau of Air Quality
South Carolina Department of Health & Environmental Control

CR-001126

ORIGINAL

07/28/99 14:31



ASBESTOS ABATEMENT LICENSE

No. 22859

This certifies that

Douglas J Milton

266-BQ-7179

doing business as *B A T Associates, Inc*

has satisfactorily completed the training required by South Carolina Regulation No. 61-86.1 and the EPA Model Accreditation Plan, 40 CFR 763 Subpart E Appendix C, for the category of

Consultant/Building Inspector

The holder of this license shall comply with all the requirements of said Regulation.

This License, License Number, or any Representation thereof, is not transferable to any other licensee or company. Use of this License is only authorized for the licensee and Company whose name appears hereon and shall expire one year from

09/23/98.

07/28/99

Richard D. Sharpe

Richard D. Sharpe, Director
Air Compliance Management Division
Bureau of Air Quality
South Carolina Department of Health & Environmental Control

CR-001126

ORIGINAL

07/28/99 14:28



APPENDIX D

LABORATORY ANALYSIS RESULTS



ANALYTICAL ENVIRONMENTAL SERVICES, INC.
 3125 Marjan Drive
 Atlanta, GA 30340
 Tel: (770) 457-8177
 Fax: (770) 457-8188

AES Job Number: **B203**
 Page 27 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3119
 Client Sample ID: 86-1-1
 Location: Not Given

Sample Description: Green hard compact partly granular to fibrous with fibers, bitumen and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	10	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	30
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:	<1	Aluminum:	
Mineral Wool:		Bitumen:	3
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	2
Animal Hair:		Binders:	54
Antigorite:			

COMMENTS: Floor tile contains 10 % chrysotile. Bitumen does not contain asbestos. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAnalyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.
 3125 Marjan Drive
 Atlanta, GA 30340
 Tel: (770) 457-8177
 Fax: (770) 457-8188

AES Job Number: **B203**
 Page 30 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3122
 Client Sample ID: 86-2-1
 Location: Not Given

Sample Description: Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	45
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	55
Resilient Material:	
Glue:	
Binders:	

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



ANALYTICAL ENVIRONMENTAL SERVICES, INC.
 3125 Marjan Drive
 Atlanta, GA 30340
 Tel: (770) 457-8177
 Fax: (770) 457-8188

AES Job Number: **B203**
 Page 31 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-2-2
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3123

Sample Description: Layered: 1) Tan semi-hard silty to partly granular; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	<1
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	45
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	50
Resilient Material:	
Glue:	
Binders:	5

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-2-3
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3124

Sample Description: Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	<1
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	50
Fiberglass:		Resilient Material:	
Cellulose:	45	Glue:	
Animal Hair:		Binders:	5
Antigorite:			

COMMENTS:

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Microanalyst: *Andrew Pittman* QCAAnalyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3125
 Client Sample ID: 86-3-1
 Location: Not Given

Sample Description: Red hard compact partly granular to fibrous with bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	10	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	30
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	<1
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	60
Antigorite:			

COMMENTS: Floor tile contains 10 % chrysotile. Bitumen is not enough to be analyzed.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3128
 Client Sample ID: 86-4-1
 Location: Not Given

Sample Description: Beige hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	2	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	5
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	52
Antigorite:			

COMMENTS: Floor tile contains 3 % chrysotile. Bitumen does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3131
 Client Sample ID: 86-5-1
 Location: Not Given

Sample Description: Beige hard compact partly granular to fibrous with glue and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	5
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	30
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	5
Resilient Material:	
Glue:	5
Binders:	55

COMMENTS: Floor tile contains 5 % chrysotile. Bitumen contains 5 % chrysotile. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-6-1 AES Lab ID: 3134
 Location: Not Given

Sample Description: Brown hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	2
Binders:	57

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3135
 Client Sample ID: 86-6-2
 Location: Not Given

Sample Description: Brown hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	2
Binders:	57

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-6-3 AES Lab ID: 3136
 Location: Not Given

Sample Description: Brown hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	2
Animal Hair:		Binders:	57
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3137
 Client Sample ID: 86-7-1
 Location: Not Given

Sample Description: Beige semi-hard partly granular with fibers, mastic and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	30
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	5
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	5
Animal Hair:		Binders:	59
Antigorite:			

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-7-2
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3138

Sample Description: Beige semi-hard partly granular with fibers, mastic and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	30
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	5
Resilient Material:	
Glue:	5
Binders:	59

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-7-3
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3139

Sample Description: Beige semi-hard partly granular with fibers, mastic and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	30
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	5
Resilient Material:	
Glue:	5
Binders:	59

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos. Glue does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3140
 Client Sample ID: 86-8-1
 Location: Not Given

Sample Description: Green hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	2
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	57
Antigorite:			

COMMENTS: Floor tile contains <1 % chrysotile. Bitumen does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3141
 Client Sample ID: 86-8-2
 Location: Not Given

Sample Description: Green hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	2
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	57
Antigorite:			

COMMENTS: Floor tile contains <1 % chrysotile. Bitumen does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: **B A T Associates, Inc.**
 Project Name: **Charleston Naval Shipyard** Project Number: **971001**
 Client Sample ID: **86-8-3** AES Lab ID: **3142**
 Location: **Not Given**

Sample Description: Green hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	
NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	
OTHERS	
Aluminum:	
Bitumen:	2
Resilient Material:	
Glue:	
Binders:	57

COMMENTS: Floor tile contains <1 % chrysotile. Bitumen does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-9-1 AES Lab ID: 3143
 Location: Not Given

Sample Description: Beige hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	25
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	<1
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	71
Antigorite:			

COMMENTS: Bitumen is not enough to be analyzed.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3144
 Client Sample ID: 86-9-2
 Location: Not Given

Sample Description: Beige hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	25
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	<1
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	71
Antigorite:			

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3145
 Client Sample ID: 86-9-3
 Location: Not Given

Sample Description: Beige hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	25
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	<1
Resilient Material:	
Glue:	
Binders:	71

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3146
 Client Sample ID: 86-10-1
 Location: Not Given

Sample Description: Pink hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	2
Binders:	57

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3147
 Client Sample ID: 86-10-2
 Location: Not Given

Sample Description: Pink hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	3
Binders:	56

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3148
 Client Sample ID: 86-10-3
 Location: Not Given

Sample Description: Pink hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	3
Binders:	56

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3149
 Client Sample ID: 86-11-1
 Location: Not Given

Sample Description: Dark gray hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	3
Fiberglass:		Resilient Material:	
Cellulose:	2	Glue:	
Animal Hair:		Binders:	55
Antigorite:			

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3150
 Client Sample ID: 86-11-2
 Location: Not Given

Sample Description: Dark gray hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	2
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	3
Resilient Material:	
Glue:	
Binders:	55

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-11-3 AES Lab ID: 3151
 Location: Not Given

Sample Description: Dark gray hard compact partly granular with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	3
Fiberglass:		Resilient Material:	
Cellulose:	2	Glue:	
Animal Hair:		Binders:	55
Antigorite:			

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-12-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3152

Sample Description: Light blue hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	2
Animal Hair:		Binders:	57
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAAnalyst:

S. Arkhipov

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3153
 Client Sample ID: 86-12-2
 Location: Not Given

Sample Description: Light blue hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	40
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	2
Animal Hair:		Binders:	57
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3154
 Client Sample ID: 86-12-3
 Location: Not Given

Sample Description: Light blue hard compact partly granular with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	40
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	2
Binders:	57

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAnalyst:

S. Arkhipov

Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3155
 Client Sample ID: 86-13-1
 Location: Not Given

Sample Description: Layered: 1) Gray soft woven; 2) Brown semi-hard woven with bitumen and mastic.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	85
Mineral Wool:	
Fiberglass:	
Cellulose:	5
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	3
Resilient Material:	
Glue:	2
Binders:	5

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*

QCAlyst: *S. Arkhipov*

Andrew Pittman

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3156
 Client Sample ID: 86-13-2
 Location: Not Given

Sample Description: Layered: 1) Gray soft woven; 2) Brown semi-hard woven with bitumen and mastic.

All percentages given below are visually estimated by volume.

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	85
Mineral Wool:	
Fiberglass:	
Cellulose:	5
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	1
Resilient Material:	
Glue:	3
Binders:	6

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3157
 Client Sample ID: 86-13-3
 Location: Not Given

Sample Description: Layered: 1) Gray soft woven; 2) Brown semi-hard woven with bitumen and mastic.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:	85	Aluminum:	
Mineral Wool:		Bitumen:	2
Fiberglass:		Resilient Material:	
Cellulose:	5	Glue:	2
Animal Hair:		Binders:	6
Antigorite:			

COMMENTS:

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Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-14-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3158

Sample Description: Gray semi-hard silty with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	5
Animal Hair:		Binders:	94
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name:	B A T Associates, Inc.	
Project Name:	Charleston Naval Shipyard	Project Number: 971001
Client Sample ID:	86-14-2	AES Lab ID: 3159
Location:	Not Given	

Sample Description: Gray semi-hard silty with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	5
Binders:	94

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-14-3
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3160

Sample Description: Gray semi-hard silty with fibers and glue.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	5
Animal Hair:		Binders:	94
Antigorite:			

COMMENTS:

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Microanalyst: *Andrew Pittman* QCAnalyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3161
 Client Sample ID: 86-15-1
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous with paint; 2) Gray semi-hard silty to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:	<1	Resilient Material:	
Cellulose:	40	Glue:	
Animal Hair:		Binders:	60
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3162
 Client Sample ID: 86-15-2
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous with paint; 2) Gray semi-hard silty to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	15	Glue:	
Animal Hair:		Binders:	85
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3163
 Client Sample ID: 86-15-3
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous with paint; 2) Gray semi-hard silty to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:	<1	Resilient Material:	
Cellulose:	50	Glue:	
Animal Hair:		Binders:	50
Antigorite:			

COMMENTS: Paint included as binder.

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Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number 971001
 Client Sample ID: 86-16-1 AES Lab ID: 3164
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous with paint; 2) Brown semi-hard silty with fibers and mica.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	<1
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	60
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	40

COMMENTS: Paint included as binder. Layer #2 contains <1 % chrysotile. Layer #1 does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-16-2 AES Lab ID: 3165
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous with paint; 2) Brown semi-hard silty with fibers and mica.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	80	Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder. Layer #2 contains <1 % chrysotile. Layer #1 does not contain asbestos.

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Microanalyst:

Andrew Pittman

Andrew Pittman

QCAnalyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-16-3 AES Lab ID: 3166
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard silty with fibers and paint; 2) Tan soft fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	80	Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-17-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3167

Sample Description: Layered: 1) Brown semi-hard silty to partly granular; 2) Gray semi-hard silty with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	<1
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	99
Antigorite:			

COMMENTS: Paint included as binder.

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Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number 971001
 Client Sample ID: 86-17-2 AES Lab ID: 3168
 Location: Not Given

Sample Description: Layered: 1) Brown semi-hard silty to partly granular; 2) Gray semi-hard silty with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	<1
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	2	Glue:	
Animal Hair:		Binders:	98
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*

QCAAnalyst: *S. Arkhipov*

Andrew Pittman

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-17-3 AES Lab ID: 3169
 Location: Not Given

Sample Description: Layered: 1) Brown semi-hard silty to partly granular; 2) Gray semi-hard silty with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	10
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	1
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	89

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*

QCAAnalyst: *S. Arkhipov*

Andrew Pittman

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3170
 Client Sample ID: 86-19-1
 Location: Not Given

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svellana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-19-2
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3171

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman* QCAlyst: *S. Arkhipov*
 Andrew Pittman Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3172
 Client Sample ID: 86-19-3
 Location: Not Given

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3173
 Client Sample ID: 86-20-1
 Location: Not Given

Sample Description: Gray soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	80
Fiberglass:	
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	20

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3174
 Client Sample ID: 86-20-2
 Location: Not Given

Sample Description: Gray soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCA Analyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-20-3
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3175

Sample Description: Gray soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3176
 Client Sample ID: 86-21-1
 Location: Not Given

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-21-2
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3177

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	80	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:		Glue:	
Animal Hair:		Binders:	20
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAAnalyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3178
 Client Sample ID: 86-21-3
 Location: Not Given

Sample Description: Tan soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	80
Fiberglass:	
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	20

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*

QCAAnalyst: *S. Arkhipov*

Andrew Pittman

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-22-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3179

Sample Description: Gray soft fibrous to perlitic with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	30
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	30	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	30	Glue:	
Animal Hair:		Binders:	10
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

QCAlyst:

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3180
 Client Sample ID: 86-22-2
 Location: Not Given

Sample Description: Gray soft fibrous to perlitic with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	30
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	30
Fiberglass:	
Cellulose:	30
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	10

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3181
 Client Sample ID: 86-22-3
 Location: Not Given

Sample Description: Gray soft fibrous to perlitic with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	30
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:	30	Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	30	Glue:	
Animal Hair:		Binders:	10
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3182
 Client Sample ID: 86-23-1
 Location: Not Given

Sample Description: Brown semi-hard silty to platy with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	40
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	2	Glue:	
Animal Hair:		Binders:	58
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3183
 Client Sample ID: 86-23-2
 Location: Not Given

Sample Description: Brown semi-hard silty to platy with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	40
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	2
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	58

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3184
 Client Sample ID: 86-23-3
 Location: Not Given

Sample Description: Brown semi-hard silty to platy with fibers and paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	40
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	2	Glue:	
Animal Hair:		Binders:	58
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-24-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3185

Sample Description: Brown soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	98
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	2

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-24-2
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3186

Sample Description: Brown soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	98
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	
Glue:	
Binders:	2

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3187
 Client Sample ID: 86-24-3
 Location: Not Given

Sample Description: Brown soft fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	98	Glue:	
Animal Hair:		Binders:	2
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3188
 Client Sample ID: 86-25-1
 Location: Not Given

Sample Description: Gray semi-hard resilient with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	2
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	3
Resilient Material:	90
Glue:	
Binders:	5

COMMENTS: Bitumen contains 10 % chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3189
 Client Sample ID: 86-25-2
 Location: Not Given

Sample Description: Gray semi-hard resilient with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	<1	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	3
Fiberglass:		Resilient Material:	90
Cellulose:	2	Glue:	
Animal Hair:		Binders:	5
Antigorite:			

COMMENTS: Bitumen contains 10% chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

QCAAnalyst:

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3190
 Client Sample ID: 86-25-3
 Location: Not Given

Sample Description: Gray semi-hard resilient with fibers and bitumen.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	<1
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	2
Animal Hair:	
Antigorite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

OTHERS	
Aluminum:	
Bitumen:	3
Resilient Material:	90
Glue:	
Binders:	5

COMMENTS: Bitumen contains 10% chrysotile. Floor tile does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-26-1 AES Lab ID: 3191
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	10
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	65
Fiberglass:	5	Resilient Material:	
Cellulose:	20	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

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Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-26-2 AES Lab ID: 3192
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	15
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	10
Cellulose:	5
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	70
Resilient Material:	
Glue:	
Binders:	

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-26-3 AES Lab ID: 3193
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous; 3) Brown soft fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	5
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	2
Cellulose:	30
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	60
Resilient Material:	
Glue:	
Binders:	3

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard Project Number: 971001
 Client Sample ID: 86-27-1 AES Lab ID: 3194
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous; 3) Brown soft fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	10
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	10
Cellulose:	10
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	70
Resilient Material:	
Glue:	
Binders:	

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3195
 Client Sample ID: 86-27-2
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	10
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	70
Fiberglass:	15	Resilient Material:	
Cellulose:	5	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAnalyst:

S. Arkhipov

Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3196
 Client Sample ID: 86-27-3
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard partly granular to bitumenous; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	10
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	70
Fiberglass:	15	Resilient Material:	
Cellulose:	5	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-28-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3197

Sample Description: Brown semi-hard silty to fibrous with paint.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	10	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	
Fiberglass:		Resilient Material:	
Cellulose:	1	Glue:	
Animal Hair:		Binders:	89
Antigorite:			

COMMENTS: Paint included as binder.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

All percentages given are by volume visually estimated. All analyses are performed in accordance with the EPA "Method for the Determination of Asbestos in Bulk Building Materials, EPA/600/R-93/116, July 1993." This report must not be reproduced except in full with the approval of Analytical Environmental Services, Inc. These test results apply only to the samples actually tested. The refractive index was determined by using "Rapidly and Accurately Determining Refractive Indices of Asbestos Fibers by Using Dispersion Staining Method" by Shu-Chun Su, Ph.D.



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 Tel: (770) 457-8177
 Fax: (770) 457-8188

AES Job Number: **B203**
 Page 108 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc.
 Project Name: Charleston Naval Shipyard
 Client Sample ID: 86-29-1
 Location: Not Given
 Project Number: 971001
 AES Lab ID: 3200

Sample Description: Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	80
Fiberglass:		Resilient Material:	
Cellulose:	20	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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AES Job Number: B203
 Page 109 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3201
 Client Sample ID: 86-29-2
 Location: Not Given

Sample Description: Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	
Cellulose:	20
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	80
Resilient Material:	
Glue:	
Binders:	

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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AES Job Number: **B203**
 Page 110 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3202
 Client Sample ID: 86-29-3
 Location: Not Given

Sample Description: Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:		Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	80
Fiberglass:		Resilient Material:	
Cellulose:	20	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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AES Job Number: **B203**
 Page 111 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3203
 Client Sample ID: 86-30-1
 Location: Not Given

Sample Description: Gray semi-hard woven to resilient.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	80
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	15
Glue:	
Binders:	5

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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AES Job Number: **B203**
 Page 112 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3204
 Client Sample ID: 86-30-2
 Location: Not Given

Sample Description: Gray semi-hard woven to resilient.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	70
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	20
Glue:	
Binders:	10

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAlyst: *S. Arkhipov*
 Svetlana Arkhipov

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AES Job Number: **B203**
 Page 113 of 203 Total Samples
 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3205
 Client Sample ID: 86-30-3
 Location: Not Given

Sample Description: Gray semi-hard woven to resilient.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS	
Chrysotile:	
Amosite:	
Crocidolite:	
Anthophyllite:	
Tremolite:	
Actinolite:	

NON-FIBROUS MATERIALS	
Vermiculite:	
Biotite:	
Mica:	
Perlite:	
Aggregates:	
Styrofoam:	

NON-ASBESTOS FIBERS	
Synthetics:	
Mineral Wool:	
Fiberglass:	90
Cellulose:	
Animal Hair:	
Antigorite:	

OTHERS	
Aluminum:	
Bitumen:	
Resilient Material:	5
Glue:	
Binders:	5

COMMENTS:

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst: *Andrew Pittman*
 Andrew Pittman

QCAnalyst: *S. Arkhipov*
 Svetlana Arkhipov

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AES Job Number: **B203**
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 Thursday, February 10, 2000



BULK SAMPLE ANALYSIS

Client Name: B A T Associates, Inc. Project Number: 971001
 Project Name: Charleston Naval Shipyard AES Lab ID: 3206
 Client Sample ID: 86-31-1
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard fibrous to bitumenous; 2) Black semi-hard bitumenous to fibrous.

All percentages given below are visually estimated by volume

ASBESTOS FIBERS		NON-FIBROUS MATERIALS	
Chrysotile:	30	Vermiculite:	
Amosite:		Biotite:	
Crocidolite:		Mica:	
Anthophyllite:		Perlite:	
Tremolite:		Aggregates:	
Actinolite:		Styrofoam:	
NON-ASBESTOS FIBERS		OTHERS	
Synthetics:		Aluminum:	
Mineral Wool:		Bitumen:	55
Fiberglass:		Resilient Material:	
Cellulose:	25	Glue:	
Animal Hair:		Binders:	
Antigorite:			

COMMENTS: Layer #1 contains 30% chrysotile. Layer #2 does not contain asbestos.

It is certified by the signatures below that the laboratory identified is accredited by the National Institute of Standards and Technology for Polarized Light Microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Quality Assurance Program, Laboratory 102082-0.

Microanalyst:

Andrew Pittman

Andrew Pittman

QCAlyst:

S. Arkhipov

Svetlana Arkhipov

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BAT

BAT Associates, Inc.
ENVIRONMENTAL, HEALTH & SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250
Norcross, GA 30071
Phone: (770) 242-3908
Fax: (770) 242-3912

CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT DOUGLAS J. MILTON	
BAT JOB NAME Charleston Naval Shipyard	BAT JOB NO. 971001 TASK NO. 13.03
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____	
CHECK ONE: <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE	
SAMPLE ID	SAMPLE ID
1. 86-1-1	16. 86-6-1
2. 86-1-2	17. 86-6-2
3. 86-1-3	18. 86-6-3
4. 86-2-1	19. 86-7-1
5. 86-2-2	20. 86-7-2
6. 86-2-3	21. 86-7-3
7. 86-3-1	22. 86-8-1
8. 86-3-2	23. 86-8-2
9. 86-3-3	24. 86-8-3
10. 86-4-1	25. 86-9-1
11. 86-4-2	26. 86-9-2
12. 86-4-3	27. 86-9-3
13. 86-5-1	28. 86-10-1
14. 86-5-2	29. 86-10-2
15. 86-5-3	30. 86-10-3
SPECIAL INSTRUCTIONS: <i>Analyze to Positive</i>	
Relinquished by: <i>Joshie Bell</i>	Received by: <i>Janice Bell</i>
Date: 1/31/00 Time: <i>1542</i>	Date: 1-31-00 Time: <i>11:20am</i>

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ENVIRONMENTAL, HEALTH & SAFETY SERVICES

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Fax: (770) 242-3912

CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME		Charleston Naval Shipyard	BAT JOB NO. 971001
		TASK NO. 13.03	
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE			
<input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
<input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 86-11-1		16. 86-16-1	
2. 86-11-2		17. 86-16-2	
3. 86-11-3		18. 86-16-3	
4. 86-12-1		19. 86-17-1	
5. 86-12-2		20. 86-17-2	
6. 86-12-3		21. 86-17-3	
7. 86-13-1		22.	
8. 86-13-2		23.	
9. 86-13-3		24.	
10. 86-14-1		25. 86-19-1	
11. 86-14-2		26. 86-19-2	
12. 86-14-3		27. 86-19-3	
13. 86-15-1		28. 86-20-1	
14. 86-15-2		29. 86-20-2	
15. 86-15-3		30. 86-20-3	
SPECIAL INSTRUCTIONS: ANALYZE TO POSITIVE			
Relinquished by: <i>Julie Bell</i>		Received by: <i>[Signature]</i>	
Date: 1/31/00		Date: 1-31-00	
Time: 1342		Time: 1:42 PM	

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Norcross, GA 30071
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Fax: (770) 242-3912

CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME	Charleston Naval Shipyard	BAT JOB NO. 971001	TASK NO. 13.03
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 86-21-1		16. 86-26-1	
2. 86-21-2		17. 86-26-2	
3. 86-21-3		18. 86-26-3	
4. 86-22-1		19. 86-27-1	
5. 86-22-2		20. 86-27-2	
6. 86-22-3		21. 86-27-3	
7. 86-23-1		22. 86-28-1	
8. 86-23-2		23. 86-28-2	
9. 86-23-3		24. 86-28-3	
10. 86-24-1		25. 86-29-1	
11. 86-24-2		26. 86-29-2	
12. 86-24-3		27. 86-29-3	
13. 86-25-1		28. 86-30-1	
14. 86-25-2		29. 86-30-2	
15. 86-25-3		30. 86-30-3	
SPECIAL INSTRUCTIONS: <i>Analyze to Positive</i>			
Relinquished by: <i>Josue Bell</i>		Received by: <i>[Signature]</i>	
Date: 1/31/00	Time: <i>1342</i>	Date: <i>1-31-00</i>	Time: <i>1:42pm</i>

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BAT Associates, Inc.
ENVIRONMENTAL, HEALTH & SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250
Norcross, GA 30071
Phone: (770) 242-3908
Fax: (770) 242-3912

CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME	Charleston Naval Shipyard	BAT JOB NO. 971001	TASK NO. 13.03
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE <input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE			
SAMPLE ID		SAMPLE ID	
1. 86-31-1		16.	
2. 86-31-2		17.	
3. 86-31-3		18.	
4.		19.	
5.		20.	
6.		21.	
7.		22.	
8.		23.	
9.		24.	
10.		25.	
11.		26.	
12.		27.	
13.		28.	
14.		29.	
15.		30.	
SPECIAL INSTRUCTIONS: <i>Analyze To Positive</i>			
Relinquished by: <i>Joshua Bell</i>		Received by: <i>[Signature]</i>	
Date: 1/31/00	Time: <i>1343</i>	Date: <i>1-31-00</i>	Time: <i>1:42pm</i>

**ENVIRONMENTAL
MANAGEMENT
INC**

TEL: (770) 908-7200 FAX: (770) 908-7219

PLM ANALYSIS ASBESTOS SUMMARY *

CLIENT NAME: **BAT ASSOCIATES** PROJECT NO: **00003.000.000**
 PROJECT NAME: **CHARLESTON NSY / 971001-13.03** LAB JOB NO: **B0018** DATE RCVD: **2/1/00**

SAMPLE LAB ID	SAMPLE FIELD ID	LAYER NUMBER	APPEARANCE	LOCATION / DESCRIPTION	% ASBESTOS (COMMENTS)
32 1044	1385-4-1QC		BLACK SOFT BITUMINOUS TO FIBROUS		-
33 1045	BAT180-11-1QC		GRAY HARD CEMENTITIOUS TO GRANULAR		-
34 1046	BAT180-3-1QC		GRAY HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		-
35 1047	BAT180-33-1QC		BLACK SOFT RESILIENT WITH AGGREGATES AND PAINT		-
36 1048	BAT180-35-1QC		BLACK SOFT BITUMINOUS TO FIBROUS		-
37 1049	BAT180-30-1QC		BLACK SOFT RESILIENT		-
38 1050	BAT180-15-1QC		YELLOW SOFT FIBROUS WITH PAINT-MUD		-
39 1051	BAT180-26-1QC		GRAY HARD RESILIENT TO GRANULAR WITH MASTIC		-
40 1052	BAT180-4-1QC		BROWN SEMI-HARD RESILIENT		-
41 1053	BAT180-8-1QC		BLACK SEMI-HARD RESILIENT WITH WHITE MASTIC		-
42 1054	BAT180-9-1QC		GRAY HARD RESILIENT TO GRANULAR WITH YELLOW MASTIC		-
43 1055	BAT180-24-1QC		YELLOW SOFT FIBROUS WITH PAINT		-
44 1056	BAT8-14-1QC		BROWN HARD SILTY MASTIC		-
45 1057	BAT199-14-1QC		DUPLICATE COC ENTRY. SEE LAB REPORT #1042		(NOT ANALYZED)
46 1058	BAT6-1-1QC		GRAY POWDERY TO GRANULAR		-
47 1059	33-4-1QC		BLUE HARD RESILIENT TO GRANULAR WITH GLUE		-
48 1060	86-1-1QC		GREEN HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		6%CHR (NO ASBESTOS DETECTED IN BLACK MASTIC)

* If box "QC" is not checked, these results are provided before full QC is completed and therefore could be changed.

QC

* - NO ASBESTOS DETECTED

**ENVIRONMENTAL
MANAGEMENT
INC**

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Page 4 of 4

PLM ANALYSIS ASBESTOS SUMMARY *

CLIENT NAME: **BAT ASSOCIATES** PROJECT NO: **00003.000.000**
 PROJECT NAME: **CHARLESTON NSY / 971001-13.03** LAB JOB NO: **B0018** DATE RCVD: **2/1/00**

SAMPLE LAB ID	SAMPLE FIELD ID	LAYER NUMBER	APPEARANCE	LOCATION / DESCRIPTION	% ASBESTOS (COMMENTS)
49 1061	86-2-1QC		BLACK SOFT BITUMINOUS TO FIBROUS		-
50 1062	86-3-1QC		RED HARD RESILIENT TO GRANULAR WITH BLACK MASTIC		7%CHR (<1% CHRYSOTILE IN BLACK MASTIC)
51 1063	86-4-1QC		GRAY HARD RESILIENT TO GRANULAR WITH FIBERS AND BLACK MASTIC		3%CHR (NO ASBESTOS DETECTED IN BLACK MASTIC)
52 1064-1	86-9-1QC	1 (of 2)	GRAY HARD RESILIENT TO GRANULAR		-
53 1064-2	86-9-1QC	2 (of 2)	BLACK MASTIC WITH FIBERS		3%CHR
54 1065	86-15-1QC	1+2 (of 2)	1. GRAY SOFT FIBROUS WITH PAINT; 2. LIGHT GRAY HARD SILTY WITH FIBERS		-
55 1066	86-22-1QC		GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT		-
56 1067	86-24-1QC		WHITE SOFT FIBROUS		-

* If box "QC" is not checked, these results are provided before full QC is completed and therefore could be changed.

QC

**- NO ASBESTOS DETECTED

02/14/00 MON 11:59 FAX 770 908 7200

CAPE ENVIRO.

010

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BAT Associates, Inc.
ENVIRONMENTAL, HEALTH & SAFETY SERVICES

5151 Brook Hollow Pkwy., Suite 250
Norcross, GA 30071
Phone: (770) 242-3908
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CHAIN OF CUSTODY FORM

BAT PROJECT CONTACT		DOUGLAS J. MILTON	
BAT JOB NAME	Charleston Naval Shipyard	BAT JOB NO. 971001	TASK NO. 13.03
ANALYSIS REQUESTED <input checked="" type="checkbox"/> PLM <input type="checkbox"/> PCM <input type="checkbox"/> AAS For Lead Content <input type="checkbox"/> OTHER _____			
CHECK ONE: <input type="checkbox"/> ROUTINE			
<input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN)		AS SOON AS POSSIBLE	
<input type="checkbox"/> RUSH - FAX (HANDWRITTEN)		AS SOON AS POSSIBLE	
SAMPLE ID		SAMPLE ID	
1. 1777-1-1QC		16. BAT6-1QC	
2. 1385-4-QC		17. 33-4-1QC	
3. BAT180-11-1QC		18. 86-1-1QC	
4. BAT180-3-1QC		19. 86-2-1QC	
5. BAT180-33-1QC		20. 86-3-1QC	
6. BAT180-35-1QC		21. 86-4-1QC	
7. BAT180-30-1QC		22. 86-9-1QC	
8. BAT180-15-1QC		23. 86-15-1QC	
9. BAT180-26-1QC		24. 86-22-1QC	
10. BAT180-4-1QC		25. 86-24-1QC	
11. BAT180-8-1QC		26.	
12. BAT180-29-1QC		27.	
13. BAT180-24-1QC		28.	
14. BAT8-14-1QC		29.	
15. BAT199-17-1QC		30.	
SPECIAL INSTRUCTIONS:			
Relinquished by: <i>John Bell</i>		Received by: <i>[Signature]</i>	
Date: <i>12/29/99</i>		Date: <i>2/1/00</i>	
Time: <i>2:11:00</i>		Time: <i>2:30</i>	