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ASBESTOS CONTAINING MATERIAL RE-INSPECTION BUILDING 76 VOLUME 11 CNC  
CHARLESTON SC  
2/15/2000  
BAT ASSOCIATES, INC.

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**Volume 11**

**Asbestos-Containing Material Re-inspection  
For Building 76  
Charleston Naval Shipyard  
Charleston, South Carolina**

**Contract No. N2467-96-D-0998  
Delivery Order No. 0013**

*Prepared for:*

**Department of the Navy  
Southern Division  
NAVFACENGCOM  
2305 Eagle Drive  
North Charleston, SC 29419**

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*Prepared by:*

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**February 15, 2000**

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## 1.0 EXECUTIVE SUMMARY

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 Building 76 located at the Charleston Naval Shipyard (CNS) in Charleston, South Carolina.

A list of ACM identified in Building 76 is summarized in Table 1.0.

**Table 1.0**  
**Summary of Identified ACM**

| HA No. | Material Description  | Sample Analysis Results  | Approx. Quantity of ACM | NESHAP Category         |
|--------|---|--|-------------------------|-------------------------|
| 1      | Floor Tile, 9' x 9" brown w/ black mastic                           | Tile = 5% chrysotile,<br>Mastic = 10% chrysotile   | 9,200 SF                | Category I, non-friable |
| 2      | Floor Tile, 9" x 9" black w/ black mastic                           | Tile = NAD,<br>Mastic = 10% chrysotile   | 24,970 SF               | Category I, non-friable |
| 4      | Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic | Tile = 2% chrysotile,<br>Mastic = 10% chrysotile   | 1,630 SF                | Category I, non-friable |
| 18     | Pipe Insulation, 3" cardboard on domestic hot and cold water        | Layer 1 = 30% chrysotile,<br>5% amosite;<br>Layer 2 = NAD,<br>Layer 3 = 70% chrysotile,<br>Layer 4 = NAD | 300 LF                  | Regulated, friable      |
| 21     | Mastic on Sink, black   | 5% chrysotile  | 2 EA                    | Category I, non-friable |
| 24     | Sheet Flooring, brownish-gray w/ black mastic                       | Layer 1 = NAD,<br>Layer 2 = 50% chrysotile   | 35 SF                   | Category I, non-friable |
| 25     | Roof Flashing   | Silver paint = 5% chrysotile,<br>Layer 1 = NAD,<br>Layer 2 = NAD   | 2,220 SF                | Category I, non-friable |
| 26     | Roofing Tar, on parapet wall  | Silver paint = 5% chrysotile,<br>Layer 1 = NAD,<br>Layer 2 = 20% chrysotile                              | 12,650 SF               | Category I, non-friable |

**NOTES:** HA = Homogeneous Area SF = Square Feet LF = Linear Feet  
 EA = Each

1. One percent or less asbestos content is considered a non-asbestos-containing material by EPA and the State of South Carolina.
2. Federal and state regulations require a minimum of three non-asbestos-containing analysis results per homogeneous area (material) to classify that material as being a non-asbestos-containing material. However, one "positive" asbestos-containing analysis result would classify that material as being an asbestos-containing material.
3. No Quality Control discrepancies were noted.

BAT recommends the following management actions for the identified ACM in Building 76 in Table 2.0.

**Table 2.0**  
**Recommended Response Actions**

| <b>HA No.</b> | <b>Material Description</b>   | <b>Recommended Response Action</b>        |
|---------------|---|---|
| 1             | Floor Tile, 9' x 9" brown w/ black mastic                           | Removal Prior to Renovation or Demolition |
| 2             | Floor Tile, 9" x 9" black w/ black mastic                           | Removal Prior to Renovation or Demolition |
| 4             | Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic | Removal Prior to Renovation or Demolition |
| 18            | Pipe Insulation, 3" cardboard on domestic hot and cold water        | Removal Prior to Renovation or Demolition |
| 21            | Mastic on Sink, black   | Removal Prior to Renovation or Demolition |
| 24            | Sheet Flooring, brownish-gray w/ black mastic                       | Removal Prior to Renovation or Demolition |
| 25            | Roof Flashing   | Removal Prior to Renovation or Demolition |
| 26            | Roofing Tar, on parapet wall  | Removal 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 76 is approximately \$183,100. 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:** Human Resource  
**Building Number:** 76  
**Facility:** Charleston Naval Shipyard  
**Building Area (square footage):** 39,776  
**Year Built:** 1942  
**Building Type:** Offices  
**No. of Floors in Building:** Three  
**Purpose of ACM Survey:** Re-Inspection  
**Facility Unit Identification Code (UIC):** N/A

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**Building Contact:** Mr. Matthew Humphrey  
**Contact's Telephone No.:** (843) 743-9985  
**Building Survey Date(s):** January 29, 2000

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

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### 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 76.

This re-inspection survey was performed by Mr. Foshie Bell, under the direct supervision of Mr. Douglas J. Milton, CIH, on November 6, 1999. 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 763.86, 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 763.87 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 76.

**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" brown w/ black mastic                            | First floor, rooms 100, 108, 112, 115, 118, 119, 127, 128, 129, 130, 133, 138, 139, 140, 141, 142, 143, 145, and mechanical rooms; second floor rooms 201, 202, 203, 204, 205, 206, and 207            | Misc.                      |
| 2      | Floor Tile, 9" x 9" black w/ black mastic                            | First floor, rooms 100, 108, 112, 115, 118, 119, 127, 128, 129, 130, 133, 138, 139, 140, 141, 142, 143, 145, and mechanical rooms; second floor majority of rooms (below other floor tiles and carpet) | Misc.                      |
| 3      | Floor Tile, 9" x 9" green with white streaks w/ black mastic         | First floor, room 129  | N/A                        |
| 4      | Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic  | First floor, rooms 102, 104, 105, 106, 107, 123, and stairwell   | Misc.                      |
| 5      | Floor Tile, 12" x 12" dark brown with brown splashes w/ black mastic | First floor, closet of room 113  | N/A                        |
| 6      | Floor Tile, 12" x 12" beige with brown specks w/ black mastic        | First floor, center stairwell  | N/A                        |
| 7      | Drywall, on walls  | Majority of interior walls of the building   | N/A                        |
| 8      | Plaster Finish, on concrete walls                                    | Interior walls of main lobby and in restrooms  | N/A                        |
| 9      | Wall Tile, 1' x 1' with grooves and fissures                         | First floor, room 144  | N/A                        |
| 10     | Wall Tile, 1' x 1' cratered  | First floor, room 122  | N/A                        |
| 11     | Mastic, black under carpet   | First floor, corridor 146, rooms 134, 135, and 137   | N/A                        |
| 12     | Ceiling Tile, 2' x 2' groove and pinhole (old)                       | Majority of the first floor  | N/A                        |
| 13     | Ceiling Tile, 2' x 2' groove and pinhole (new)                       | Majority of the first floor  | N/A                        |
| 14     | Ceiling Tile, 1' x 1' peghole  | Majority of the first and second floors  | N/A                        |
| 15     | Felt, black below HA # 14  | Majority of the first and second floors  | N/A                        |
| 16     | Ceiling Tile, 1' x 1' random peghole                                 | Second floor, room near center of the building   | N/A                        |
| 17     | Ceiling Tile, 2' x 4' groove and pinhole (new)                       | Third floor, center room   | N/A                        |

| HA No. | Description of Suspect ACM                                   | Location of Suspect ACM   | AHERA Category of Material |
|--------|--|---|----------------------------|
| 18     | Pipe Insulation, 3" cardboard on domestic hot and cold water | First floor and second floors, pipe chases between restrooms    | TSI                        |
| 19     | Pipe Fitting Insulation, hard on domestic hot and cold water | First floor and second floors, pipe chases between restrooms    | N/A                        |
| 20     | Window Glazing   | Interior of all windows   | N/A                        |
| 21     | Mastic on Sink, black  | First floor, room 106; second floor, room be northwest stairway | Misc.                      |
| 22     | Plaster Finish, on concrete ceiling                          | Stairwells and restrooms  | N/A                        |
| 23     | Mastic, black patch on floor tile                            | First floor, mechanical room                                    | N/A                        |
| 24     | Sheet Flooring, brownish/gray w/ black mastic                | First floor, restroom 116                                       | Misc.                      |
| 25     | Roof Flashing  | Roof  | Misc.                      |
| 26     | Roofing Tar, on parapet wall                                 | Roof  | Misc.                      |
| 27     | Roofing Tar, built-up  | Roof  | N/A                        |

**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 763.85). 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 asbestos-containing.

**Table 4.0**  
**Summary of Sample Analysis Results**

| HA No. | Sample ID No.             | Suspect Material Description                                 | Asbestos Content                                 | Friability |
|--------|---------------------------|--|--|------------|
| 1      | 76-1-1                    | Floor Tile, 9" x 9" brown w/ black mastic                    | Tile = 5% chrysotile,<br>Mastic = 10% chrysotile | Non        |
| 2      | 76-2-1, 76-2-2,<br>76-2-3 | Floor Tile, 9" x 9" black w/ black mastic                    | Tile = NAD,<br>Mastic = 10% chrysotile           | Non        |
| 3      | 76-3-1, 76-3-2,<br>76-3-3 | Floor Tile, 9" x 9" green with white streaks w/ black mastic | NAD  | N/A        |

| HA No. | Sample ID No.                | Suspect Material Description   | Asbestos Content   | Friability |
|--------|------------------------------|--|--|------------|
| 4      | 76-4-1                       | Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic  | Tile = 2% chrysotile,<br>Mastic = 10% chrysotile   | Non        |
| 5      | 76-5-1, 76-5-2,<br>76-5-3    | Floor Tile, 12" x 12" dark brown with brown splashes w/ black mastic | NAD  | N/A        |
| 6      | 76-6-1, 76-6-2,<br>76-6-3    | Floor Tile, 12" x 12" beige with brown specks w/ black mastic        | NAD  | N/A        |
| 7      | 76-7-1, 76-7-2,<br>76-7-3    | Drywall, on walls  | NAD  | N/A        |
| 8      | 76-8-1, 76-8-2,<br>76-8-3    | Plaster Finish, on concrete walls                                    | NAD  | N/A        |
| 9      | 76-9-1, 76-9-2,<br>76-9-3    | Wall Tile, 1' x 1' with grooves and fissures                         | NAD  | N/A        |
| 10     | 76-10-1, 76-10-2,<br>76-10-3 | Wall Tile, 1' x 1' cratered  | NAD  | N/A        |
| 11     | 76-11-1, 76-11-2,<br>76-11-3 | Mastic, black under carpet   | NAD  | N/A        |
| 12     | 76-12-1, 76-12-2,<br>76-12-3 | Ceiling Tile, 2' x 2' groove and pinhole (old)                       | NAD  | N/A        |
| 13     | 76-13-1, 76-13-2,<br>76-13-3 | Ceiling Tile, 2' x 2' groove and pinhole (new)                       | NAD  | N/A        |
| 14     | 76-14-1, 76-14-2,<br>76-14-3 | Ceiling Tile, 1' x 1' peghole  | NAD  | N/A        |
| 15     | 76-15-1, 76-15-2,<br>76-15-3 | Felt, black below HA # 14  | NAD  | N/A        |
| 16     | 76-16-1, 76-16-2,<br>76-16-3 | Ceiling Tile, 1' x 1' random peghole                                 | NAD  | N/A        |
| 17     | 76-17-1, 76-17-2,<br>76-17-3 | Ceiling Tile, 2' x 4' groove and pinhole (new)                       | NAD  | N/A        |
| 18     | 76-18-1                      | Pipe Insulation, 3" cardboard on domestic hot and cold water         | Layer 1 = 30% chrysotile,<br>5% amosite;<br>Layer 2 = NAD,<br>Layer 3 = 70% chrysotile,<br>Layer 4 = NAD | Friable    |
| 19     | 76-19-1, 76-19-2,<br>76-19-3 | Pipe Fitting Insulation, hard on domestic hot and cold water         | NAD  | N/A        |
| 20     | 76-20-1, 76-20-2,<br>76-20-3 | Window Glazing   | NAD  | N/A        |
| 21     | 76-21-1                      | Mastic on Sink, black  | 5% chrysotile  | Non        |
| 22     | 76-22-1, 76-22-2,<br>76-22-3 | Plaster Finish, on concrete ceiling                                  | NAD  | N/A        |
| 23     | 76-23-1, 76-23-2,<br>76-23-3 | Mastic, black patch on floor tile                                    | NAD  | N/A        |
| 24     | 76-24-1                      | Sheet Flooring, brownish/gray w/ black mastic                        | Layer 1 = NAD,<br>Layer 2 = 50% chrysotile   | Non        |
| 25     | 76-25-1, 76-25-2,<br>76-25-3 | Roof Flashing  | Silver paint = 5% chrysotile,<br>Layer 1 = NAD,<br>Layer 2 = NAD   | Non        |

| HA No. | Sample ID No.                | Suspect Material Description | Asbestos Content  | Friability |
|--------|------------------------------|------------------------------|---|------------|
| 26     | 76-26-1                      | Roofing Tar, on parapet wall | Silver paint = 5% chrysotile,<br>Layer 1 = NAD,<br>Layer 2 = 20% chrysotile | Non        |
| 27     | 76-27-1, 76-27-2,<br>76-27-3 | Roofing Tar, built-up        | NAD   | N/A        |

**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                  |
|-----------------|--|---|
| 76-1-1QC        | Tile = 5% chrysotile,<br>Mastic = 10% chrysotile | Tile = 5% chrysotile,<br>Mastic = 8% chrysotile |
| 76-4-1QC        | Tile = 2% chrysotile,<br>Mastic = 10% chrysotile | Tile = 3% chrysotile,<br>Mastic = 5% chrysotile |
| 76-8-1QC        | NAD  | NAD   |
| 76-9-1QC        | NAD  | NAD   |
| 76-12-1QC       | NAD  | NAD   |
| 76-15-1QC       | NAD  | NAD   |
| 76-16-1QC       | NAD  | NAD   |
| 76-21-1QC       | 5% chrysotile                                    | 3% chrysotile                                   |
| 76-23-1QC       | 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 763.85.

### 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 76

**SAMPLE NUMBER(S):** 76-2-1, 76-2-2, and 76-2-3

**HOMOGENEOUS AREA No.:** 2

**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): 24,970 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 76

**SAMPLE NUMBER(S):** 76-18-1

**HOMOGENEOUS AREA No.:** 18

**TYPE OF MATERIAL:** Surfacing  TSI  Other

**Description:** Pipe Insulation, 3" cardboard on domestic hot and cold water

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 300 LF

**CONDITION:**

**Percent Damage:** >25 % 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 exposed and friable by the restrooms on the first floor.

**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 76

**SAMPLE NUMBER(S):** 76-24-1

**HOMOGENEOUS AREA No.:** 24

**TYPE OF MATERIAL:** Surfacing TSI  Other

Description: Sheet Flooring, brownish-gray w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 35 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 76

**SAMPLE NUMBER(S):** 76-26-1

**HOMOGENEOUS AREA No.:** 26

**TYPE OF MATERIAL:** Surfacing TSI  Other

Description: Roofing Tar, on parapet wall

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 12,650 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 on the roof.

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.

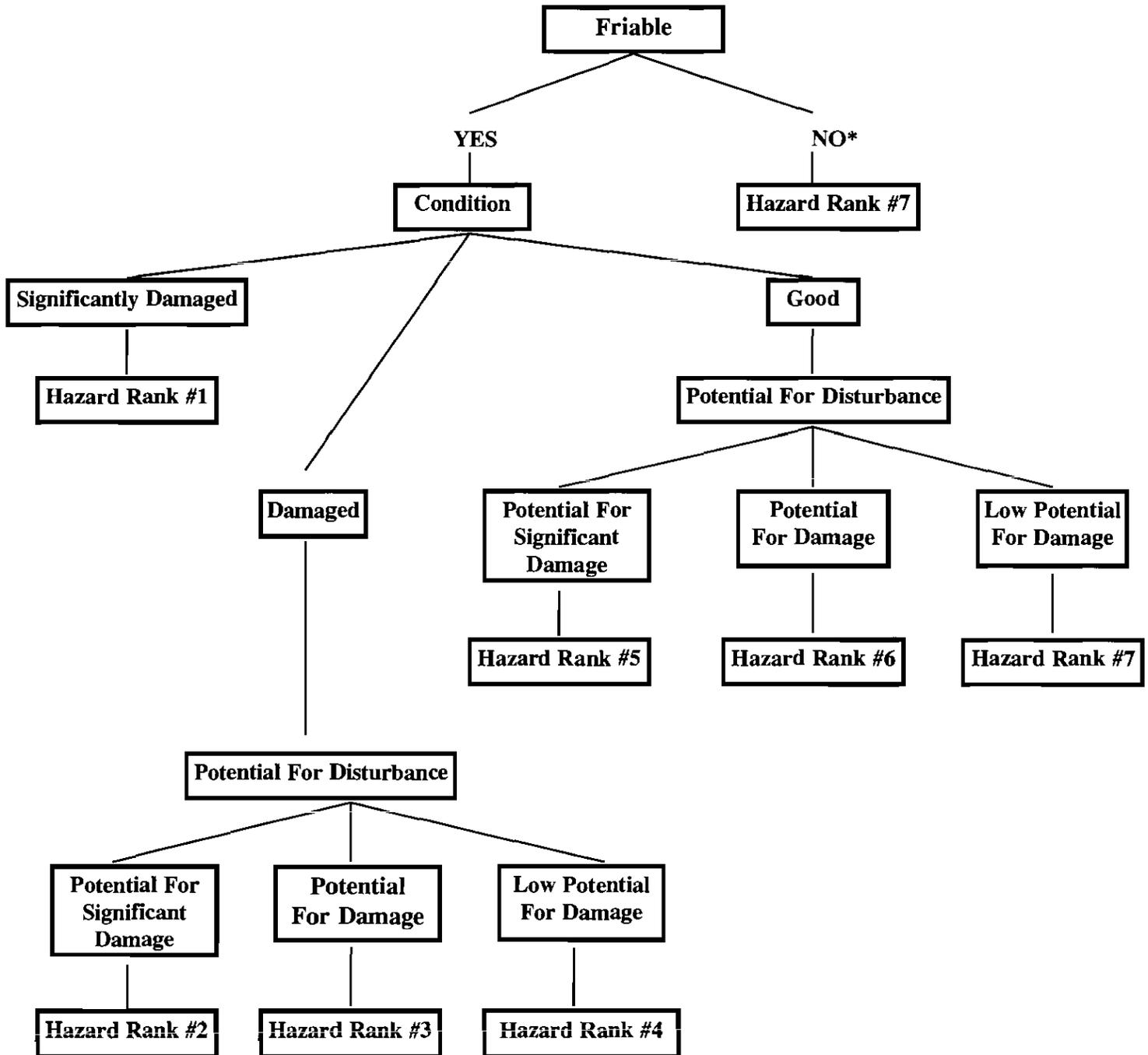
BAT adopted for this re-inspection one of the four general classes of hazard assessment models considered during the AHERA rule-making process. This method for hazard assessment is a modified decision tree as detailed in the USEPA, *Guidance for Assessing and Managing Exposure to Asbestos in Buildings*, 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 76

**SAMPLE NUMBER(S):** 76-1-1

**HOMOGENEOUS AREA No.:** 1

**TYPE OF MATERIAL:** Surfacing TSI  Other

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

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 9,200 SF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-2-1, 76-2-2, and 76-2-3

**HOMOGENEOUS AREA No.:** 2

**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):** 24,970 SF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** For removal purposes, floor tile is to be considered asbestos-contaminated.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-4-1

**HOMOGENEOUS AREA No.:** 4

**TYPE OF MATERIAL:** Surfacing TSI  Other

Description: Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 1,630 SF

Approximate Recommended Response Action Cost:

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |                                     |  |
|--|-------------------------------------|--|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> | (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 |                                     | (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:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-18-1

**HOMOGENEOUS AREA No.:** 18

**TYPE OF MATERIAL:** Surfacing  TSI Other

**Description:** Pipe Insulation, cardboard on domestic hot and cold water

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 300 LF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> (1) Significantly damaged  | <input checked="" type="checkbox"/> (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 | (5) Operations and Maintenance Program          |
| (6) ACM (good condition) with potential for damage             |   |
| (7) Any remaining friable ACM or friable suspect ACM           |   |
| (8) Non-friable ACM  |   |

**COMMENTS:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-21-1

**HOMOGENEOUS AREA No.:** 21

**TYPE OF MATERIAL:** Surfacing TSI  Other

**Description:** Mastic on Sink, black

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 2 EA

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-24-1

**HOMOGENEOUS AREA No.:** 24

**TYPE OF MATERIAL:** Surfacing TSI  Other

Description: Sheet Flooring, brownish-gray w/ black mastic

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 35 SF

Approximate Recommended Response Action Cost:

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-25-1, 76-25-2, and 76-25-3

**HOMOGENEOUS AREA No.:** 25

**TYPE OF MATERIAL:** Surfacing TSI  Other

Description: Roof Flashing

Approximate Amount of Asbestos-Containing Material (Linear or Square Foot): 2,220 SF

Approximate Recommended Response Action Cost:

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** None.

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

**BUILDING:** Charleston Naval Shipyard, Building Number 76

**SAMPLE NUMBER(S):** 76-26-1

**HOMOGENEOUS AREA No.:** 26

**TYPE OF MATERIAL:** Surfacing TSI  Other

**Description:** Roofing Tar, on parapet wall

**Approximate Amount of Asbestos-Containing Material (Linear or Square Foot):** 12,650 SF

**Approximate Recommended Response Action Cost:**

**HAZARD ASSESSMENT**

**RESPONSE ACTION RECOMMENDATION**

- |  |   |
|--|---|
| (1) Significantly damaged                                      | <input checked="" type="checkbox"/> (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 | (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:** None.

### 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 76. 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<br>Cost (\$) | Quantity      | Total<br>Abatement<br>Cost (\$) |
|---|-------------------|---------------|---------------------------------|
| Floor Tile and Sheet Flooring with Mastic                                   | 1.78              | 35,800 SF     | 63,724                          |
| Pipe Insulation, on domestic water (including demo of walls to gain access) | 32.87             | 300 LF        | 9,861                           |
| Mastic on Sink  | 140               | 2 EA          | 280                             |
| Roofing Materials   | 2.61              | 14,870 SF     | 38,811                          |
| Handling Cost   | 25.00             | 320 EA        | 8,000                           |
| Mobilization  | 300.00            | 3 EA          | 900                             |
| Waste Disposal Cost   | <u>50.00</u>      | <u>320 CY</u> | <u>16,000</u>                   |
| <b>Removal Subtotal</b>   |                   |               | <b>137,576</b>                  |
| <b>IH Supervision and Monitoring</b>  |                   |               | <b><u>15,000</u></b>            |
| <b>Project Subtotal</b>   |                   |               | <b>152,576</b>                  |
| <b>Contingency (20%)</b>  |                   |               | <b>30,515</b>                   |
| <b>Project Total</b>  |                   |               | <b>183,091</b>                  |

SF = Square Feet    LF = Linear Feet    EA = Each    CY = Cubic Yard

## 11.0 CONCLUSIONS

Inspection of Building 76 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" brown w/ black mastic                           | 9,200 SF        | Category I, non-friable |
| Floor Tile, 9" x 9" black w/ black mastic                           | 24,970 SF       | Category I, non-friable |
| Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic | 1,630 SF        | Category I, non-friable |
| Pipe Insulation, 3" cardboard on domestic hot and cold water        | 300 LF          | Regulated, friable      |
| Mastic on Sink, black   | 2 EA            | Category I, non-friable |
| Sheet Flooring, brownish-gray w/ black mastic                       | 35 SF           | Category I, non-friable |
| Roof Flashing   | 2,220 SF        | Category I, non-friable |
| Roofing Tar, on parapet wall  | 12,650 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.

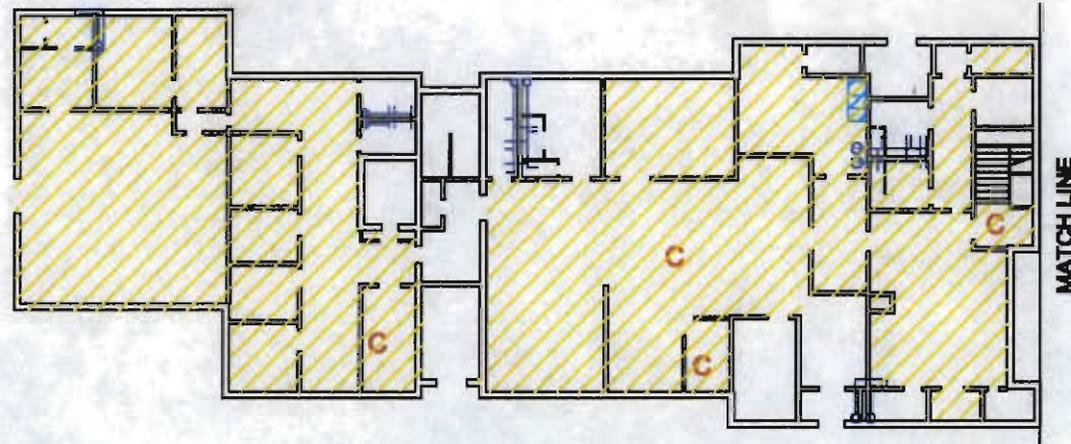
Other suspect ACM not identified could be present in areas of the building inaccessible to the asbestos-building inspectors. For example, material could exist in walls and other locations where access could only be gained by demolition of the building. Also, other materials currently not recognized as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

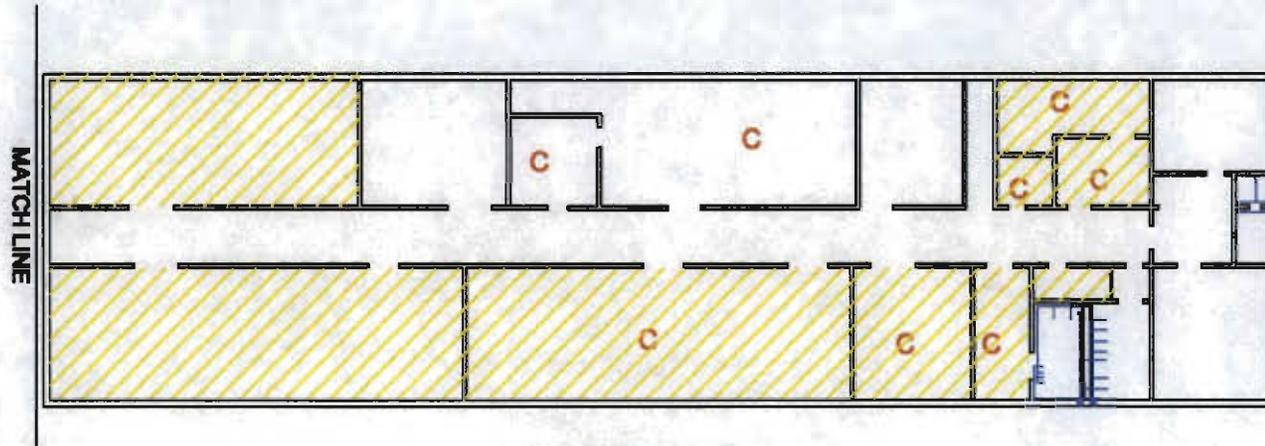
EPA rules governing the application, removal and disposal of ACM were promulgated under NESHAP [40 CFR 61 Part M]. NESHAP requires the building owner or asbestos removal contractor to notify EPA when a building containing ACM is to be renovated, ACM is to be removed, or the building is to be demolished. 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**



Partial First Floor Plan



### Building 76

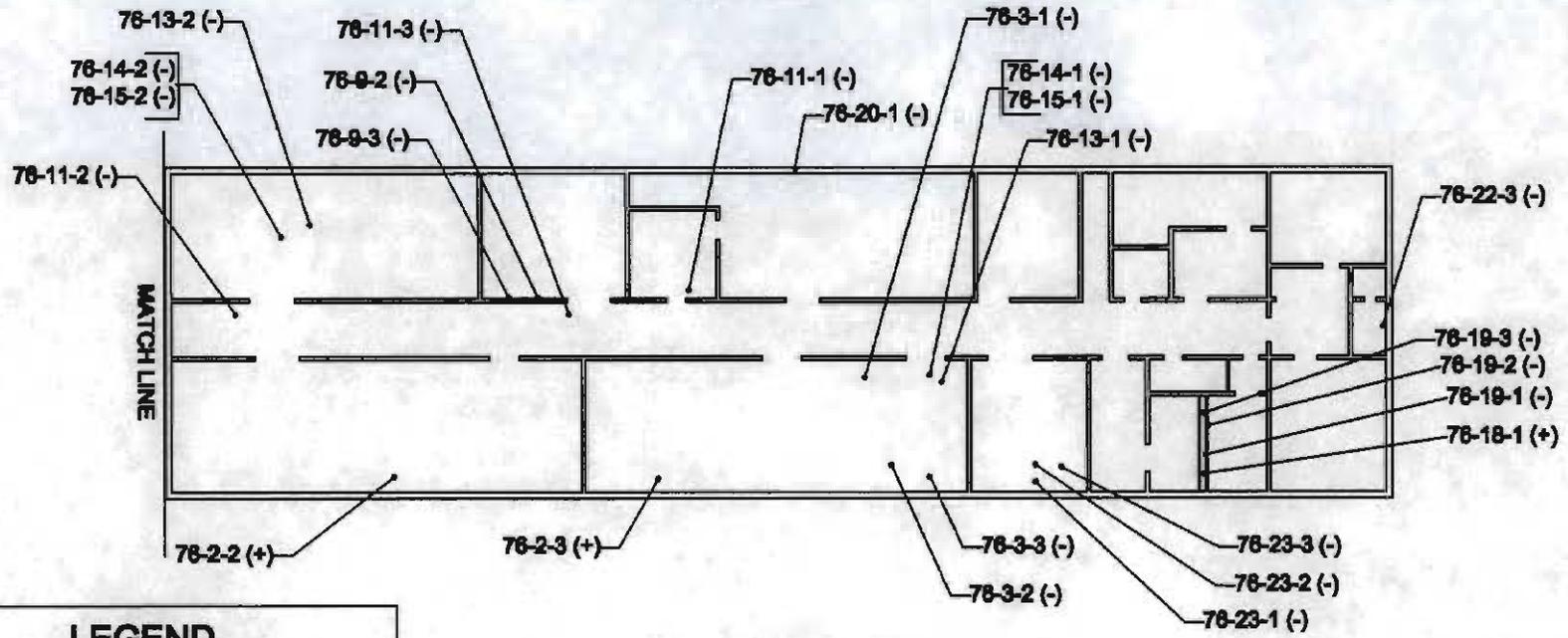
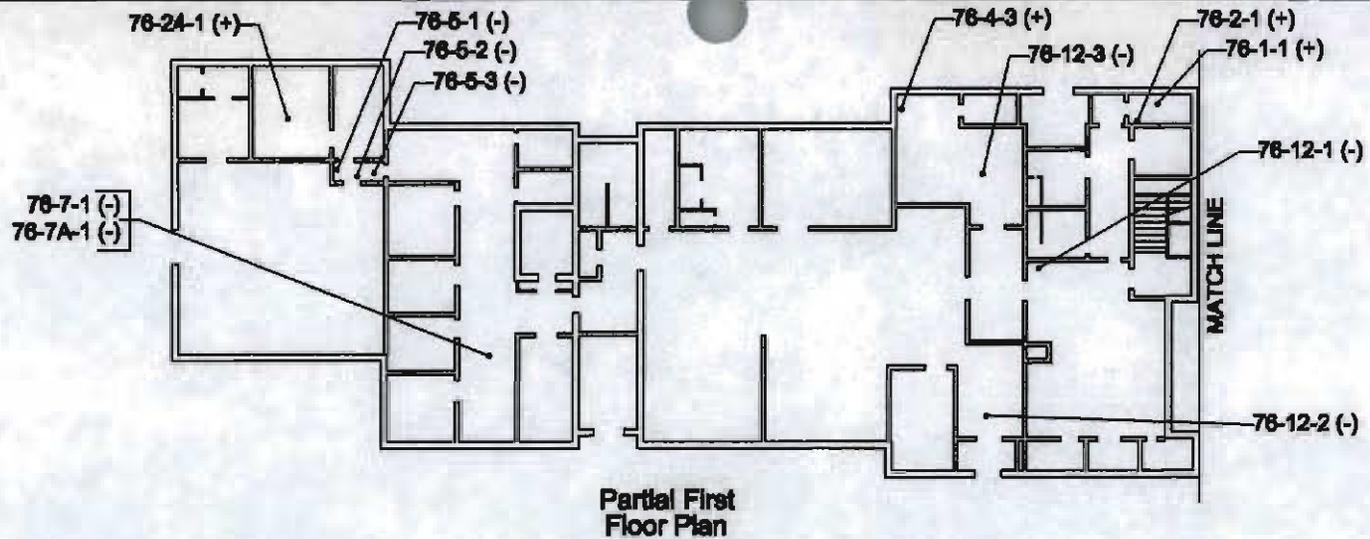
Partial First Floor Plan  
Asbestos-Containing Materials Locations

#### LEGEND

-  - Asbestos-Containing Floor Tile and Mastic
-  - Under Carpet
-  - Asbestos-Containing Black Mastic on Three Sinks

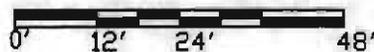


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ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
5151 BROOK HOLLOW PARKWAY, SUITE 280  
NORCROSS, GA 30071



**LEGEND**

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

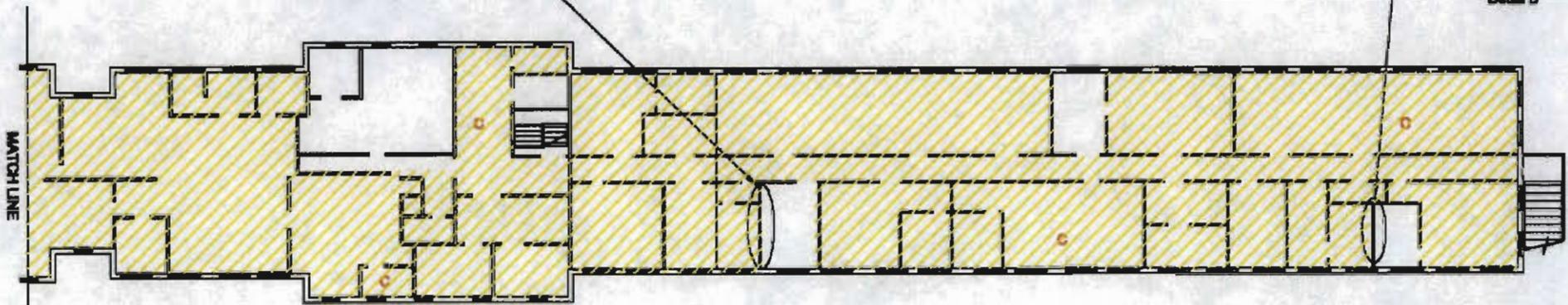
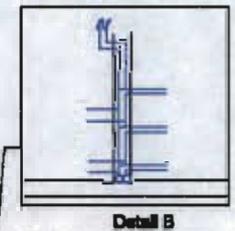
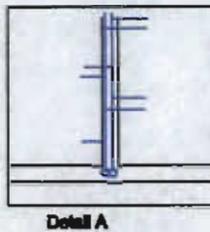
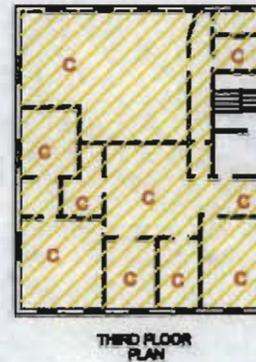


**Building 76**

Partial First Floor Plan  
Sample Locations

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ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
5151 BROOK HOLLOW PARKWAY, SUITE 250  
NORCROSS, GA 30071

**NOTE: Roof Flashing and Roofing Tar on Parapet Wall Are Asbestos-Containing.**



| LEGEND |  |
|--------|--|
|        | - Asbestos-Containing Floor Tile and Mastic                          |
|        | - Under Carpet   |
|        | - Asbestos-Containing Mastic on Double Sink                          |
|        | - Asbestos-Containing Pipe Insulation on Domestic Hot and Cold Water |

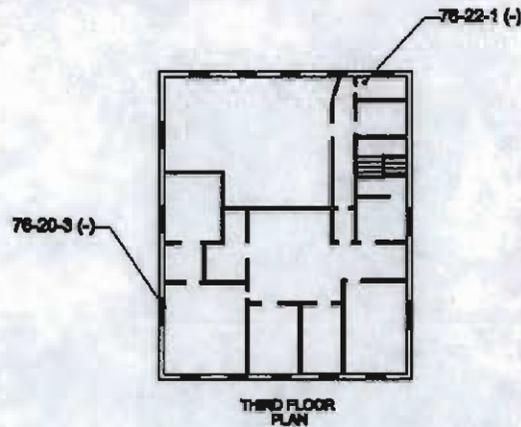
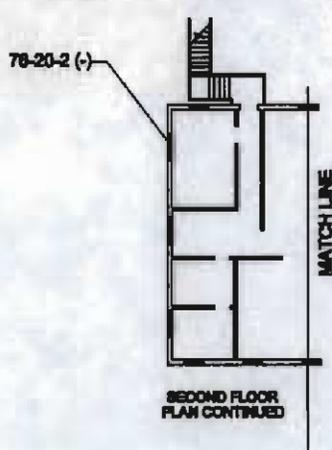
**Building 76**

**SECOND FLOOR PLAN**

**Asbestos-Containing Material Locations**



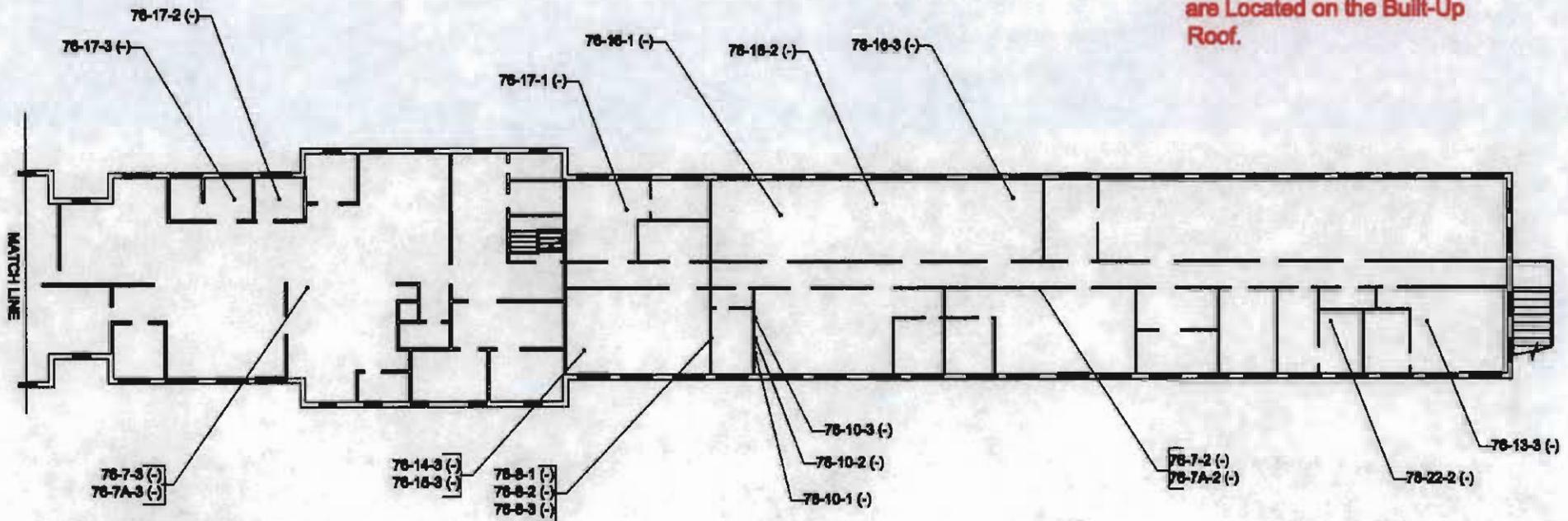
**BAT Associates, Inc.**  
 ENVIRONMENTAL, HEALTH & SAFETY SERVICES  
 8181 BROOK HOLLOW PARKWAY, SUITE 200  
 NORCROSS, GA 30071



**NOTE:** Samples 76-25-1 (+), 76-25-2 (+), and 76-25-3 (+) are Located on the Flashing on the Roof.

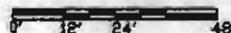
**NOTE:** Sample 76-26-1 (+) is Located on the Tar on the Roof Parapet Wall.

**NOTE:** Samples 76-27-1 (-), 76-27-2 (-), and 76-27-3 (-) are Located on the Built-Up Roof.



| LEGEND |   |
|--------|---|
| ●      | - Sample Location                         |
| (-)    | - Non-Asbestos-Containing Sample Location |
| (+)    | - Asbestos-Containing Sample Location     |

**Building 76**  
SECOND FLOOR PLAN  
Sample Locations



**APPENDIX B**  
**PHOTOGRAPHIC DOCUMENTATION**  
**OF IDENTIFIED ACM**

**Floor Tile, 9" x 9" brown w/ black mastic, HA # 1**

**Floor Tile, 9" x 9" black w/ black mastic, HA # 2**

**Floor Tile, 12" x 12" off-white with brown splashes w/ black mastic, HA # 4**

**Pipe Insulation, cardboard on domestic hot and cold water, HA # 18**

**Mastic on Sink, black, HA # 21**

**Sheet Flooring, brownish-gray w/ black mastic, HA # 24**

**Roof Flashing, HA # 24**

**Roofing Tar, on parapet wall, HA # 26**

**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/AHERA/ASHARA (TSCA Title II) Approved Reccreditation  
and NESHAP Regulations Training*

*Asbestos in Buildings: Inspector & Management  
Planner Refresher*

December 15, 1999

Course Date

6398

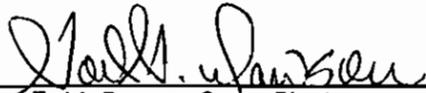
Certificate Number

December 15, 1999

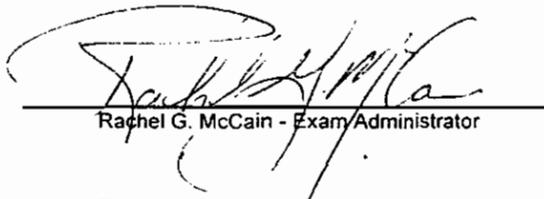
Examination Date

December 14, 2000

Expiration Date



Tod A. Dawson - Course Director

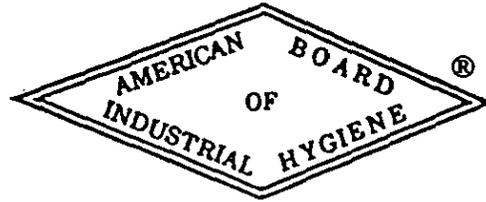


Rachel G. McCain - Exam Administrator



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 Conner

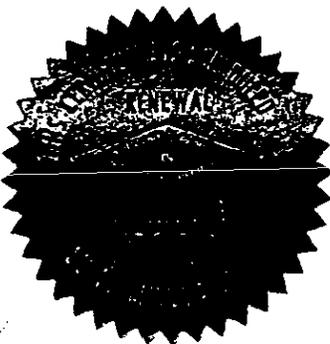
Chair ABIH

CP 7612

certificate  
number

Ray T. Conner

Secretary ABIH





ASBESTOS ABATEMENT LICENSE

No. 22860

This certifies that

*Douglas J Milton*

266-AR-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*

ORIGINAL

07/28/99 14:31



Richard D. Sharpe, Director  
Air Compliance Management Division  
Bureau of Air Quality  
South Carolina Department of Health & Environmental Control  
CR-001126



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*

ORIGINAL

07/28/99 14:28



Richard D. Sharpe, Director  
Air Compliance Management Division  
Bureau of Air Quality  
South Carolina Department of Health & Environmental Control  
CR-001126

United States Department of Commerce  
National Institute of Standards and Technology

NVLAP<sup>®</sup>

ISO/IEC GUIDE 25:1990  
ISO 9002:1987

Certificate of Accreditation



CAPE ENVIRONMENTAL MANAGEMENT, INC.  
ATLANTA, GA

*is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:*

**BULK ASBESTOS FIBER ANALYSIS**

June 30, 2000

Effective through

A handwritten signature in black ink, appearing to read "James L. Galt".

For the National Institute of Standards and Technology

NVLAP Lab Code: 102111-0

United States Department of Commerce  
National Institute of Standards and Technology

**NVLAP**®



ISO/IEC GUIDE 25:1990  
ISO 9002:1987

**Certificate of Accreditation**

**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
ATLANTA, GA

*is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:*

**BULK ASBESTOS FIBER ANALYSIS**

September 30, 2000

*Effective through*

A handwritten signature in black ink, appearing to read "James L. Galt".

*For the National Institute of Standards and Technology*

**NVLAP Lab Code: 102033-0**

**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 123 of 203 Total Samples  
 Thursday, February 10, 2000



**BULK SAMPLE ANALYSIS**

Client Name: B A T Associates, Inc.  
 Project Name: Charleston Naval Shipyard Project Number: 971001  
 Client Sample ID: 76-1-1 AES Lab ID: 3215  
 Location: Not Given

Sample Description: Brown hard compact partly granular to fibrous with 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:           | 10 |
| Styrofoam:            |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 70 |

COMMENTS: Floor tile contains 5% chrysotile. Bitumen contains 10% chrysotile.

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 126 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: 76-2-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3218

Sample Description: Black hard compact partly granular to fibrous with 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:          | 20 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 65 |

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.



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

AES Job Number: **B203**  
 Page 127 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: 3219  
 Client Sample ID: 76-2-2  
 Location: Not Given

Sample Description: Black hard compact partly granular to fibrous with 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:          | 20 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 65 |

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.



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

AES Job Number: **B203**  
 Page 128 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: 76-2-3  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3220

Sample Description: Black hard compact partly granular to fibrous with 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:          | 20 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 65 |

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.



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

AES Job Number: **B203**  
 Page 129 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: 3221  
 Client Sample ID: 76-3-1  
 Location: Not Given

Sample Description: Green hard compact partly granular to fibrous with bitumen 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:           | 30 |
| Styrofoam:            |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               | 3  |
| Binders:            | 60 |

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.



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

AES Job Number: **B203**  
 Page 130 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: 3222  
 Client Sample ID: 76-3-2  
 Location: Not Given

Sample Description: Green hard compact partly granular to fibrous with bitumen 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:           | 30 |
| Styrofoam:            |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 3  |
| Resilient Material: |    |
| Glue:               | 2  |
| Binders:            | 63 |

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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 3125 Marjan Drive  
 Atlanta, GA 30340  
 Tel: (770) 457-8177  
 Fax: (770) 457-8188

AES Job Number: B203  
 Page 131 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: 3223  
 Client Sample ID: 76-3-3  
 Location: Not Given

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

**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:          | 2 |
| Animal Hair:        |   |
| Antigorite:         |   |

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

| OTHERS              |     |
|---------------------|-----|
| Aluminum:           |     |
| Bitumen:            | 2   |
| Resilient Material: |     |
| Glue:               | 1   |
| Binders:            | 653 |

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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AES Job Number: B203  
 Page 132 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: 3224  
 Client Sample ID: 76-4-1  
 Location: Not Given

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

**All percentages given below are visually estimated by volume**

| ASBESTOS FIBERS |   |
|-----------------|---|
| Chrysotile:     | 2 |
| 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:            | 2  |
| Resilient Material: |    |
| Glue:               | 5  |
| Binders:            | 52 |

COMMENTS: Bitumen contains 10% chrysotile. Floor tile contains 2% 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  
 Client Sample ID: 76-5-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3227

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

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               | 5  |
| Binders:            | 53 |

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  
 Client Sample ID: 76-5-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3228

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

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               | 5  |
| Binders:            | 54 |

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: 3229  
 Client Sample ID: 76-5-3  
 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:          | 2 | Glue:                 | 3  |
| Animal Hair:        |   | Binders:              | 55 |
| Antigorite:         |   |                       |    |

COMMENTS:

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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: 3230  
 Client Sample ID: 76-6-1  
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard resilient to partly granular; 2) Beige 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:

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Microanalyst: *Andrew Pittman*  
 Andrew Pittman

QCAlyst: *S. Arkhipov*  
 Svetiana 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: 76-6-2 AES Lab ID: 3231  
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard resilient to partly granular; 2) Beige 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:               | 5  |
| Binders:            | 54 |

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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3232  
 Client Sample ID: 76-6-3  
 Location: Not Given

Sample Description: Layered: 1) Black semi-hard resilient to partly granular; 2) Beige 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:**

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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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3233  
 Client Sample ID: 76-7-1  
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous; 2) Gray semi-hard silty 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:          | 10 |
| Animal Hair:        |    |
| Antigorite:         |    |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 90 |

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: 76-7-2 AES Lab ID: 3234  
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous; 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:          | 5 | Glue:                 |    |
| Animal Hair:        |   | Binders:              | 95 |
| 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 Number | 971001 |
| Project Name:     | Charleston Naval Shipyard | AES Lab ID:    | 3235   |
| Client Sample ID: | 76-7-3                    |                |        |
| Location:         | Not Given                 |                |        |

Sample Description: Gray semi-hard silty to 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:          | 10 | Glue:                 |    |
| Animal Hair:        |    | Binders:              | 90 |
| 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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3236  
 Client Sample ID: 76-8-1  
 Location: Not Given

Sample Description: Gray semi-hard silty to granular 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:           | 3 |
| Styrofoam:            |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 95 |

COMMENTS: Paint included as binder.

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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: 3237  
 Client Sample ID: 76-8-2  
 Location: Not Given

Sample Description: Gray semi-hard silty to granular 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:           | 5 |
| Styrofoam:            |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 93 |

COMMENTS: Paint included as binder.

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Microanalyst: *Andrew Pittman*

QCAAnalyst: *S. Arkhipov*

Andrew Pittman

Svetlana Arkhipov

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**ANALYTICAL ENVIRONMENTAL SERVICES, INC.**  
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 Tel: (770) 457-8177  
 Fax: (770) 457-8188

AES Job Number: **B203**  
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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: 3238  
 Client Sample ID: 76-8-3  
 Location: Not Given

Sample Description: Gray semi-hard silty to granular 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:           | 5 |
| Styrofoam:            |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 93 |

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: 3239  
 Client Sample ID: 76-9-1  
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous; 2) Gray soft fibrous to silty.

**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:       | 75 |
| Fiberglass:         |    |
| Cellulose:          | 5  |
| Animal Hair:        |    |
| Antigorite:         |    |

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

**COMMENTS:**

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Microanalyst:

*Andrew Pittman*

Andrew Pittman

QCAlyst:

*S. Arkhipov*

Svetlana Arkhipov

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AES Job Number: **B203**  
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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: 3240  
 Client Sample ID: 76-9-2  
 Location: Not Given

Sample Description: Gray soft fibrous to silty 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.

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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 Number: | 971001 |
| Project Name:     | Charleston Naval Shipyard | AES Lab ID:     | 3241   |
| Client Sample ID: | 76-9-3                    |                 |        |
| Location:         | Not Given                 |                 |        |

Sample Description: Gray soft fibrous to silty 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:       | 80 |
| Fiberglass:         |    |
| Cellulose:          |    |
| Animal Hair:        |    |
| Antigorite:         |    |

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

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

COMMENTS: Paint included as binder.

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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: **76-10-1** AES Lab ID: **3242**  
 Location: **Not Given**

Sample Description: **Gray soft fibrous to silty with paint and glue.**

**All percentages given below are visually estimated by volume**

| <b>ASBESTOS FIBERS</b> |  |
|------------------------|--|
| Chrysotile:            |  |
| Amosite:               |  |
| Crocidolite:           |  |
| Anthophyllite:         |  |
| Tremolite:             |  |
| Actinolite:            |  |

| <b>NON-FIBROUS MATERIALS</b> |  |
|------------------------------|--|
| Vermiculite:                 |  |
| Biotite:                     |  |
| Mica:                        |  |
| Perlite:                     |  |
| Aggregates:                  |  |
| Styrofoam:                   |  |

| <b>NON-ASBESTOS FIBERS</b> |    |
|----------------------------|----|
| Synthetics:                |    |
| Mineral Wool:              | 80 |
| Fiberglass:                |    |
| Cellulose:                 |    |
| Animal Hair:               |    |
| Antigorite:                |    |

| <b>OTHERS</b>       |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               | 2  |
| Binders:            | 18 |

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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3243  
 Client Sample ID: 76-10-2  
 Location: Not Given

Sample Description: Gray soft fibrous to silty with paint and glue.

**All percentages given below are visually estimated by volume**

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

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

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               | 10 |
| 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

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: 3244  
 Client Sample ID: 76-10-3  
 Location: Not Given

Sample Description: Gray soft fibrous to silty with paint 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:       | 80 |
| Fiberglass:         |    |
| Cellulose:          |    |
| Animal Hair:        |    |
| Antigorite:         |    |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               | 2  |
| Binders:            | 18 |

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: 3245  
 Client Sample ID: 76-11-1  
 Location: Not Given

Sample Description: Black semi-hard bitumenous to fibrous with aggregates.

**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:          | 10 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 85 |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            |    |

COMMENTS:

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Microanalyst: *Andrew Pittman*  
 Andrew Pittman

QCAAnalyst: *S. Arkhipov*  
 Svetlana Arkhipov

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AES Job Number: **B203**  
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**BULK SAMPLE ANALYSIS**

Client Name: B A T Associates, Inc.  
 Project Name: Charleston Naval Shipyard  
 Client Sample ID: 76-11-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3246

Sample Description: Yellow gummy with fibers, bitumen and aggregates.

**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:          | 5 |
| Animal Hair:        |   |
| Antigorite:         |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 30 |
| Resilient Material: |    |
| Glue:               | 45 |
| Binders:            | 10 |

COMMENTS:

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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** Project Number: **971001**  
 Client Sample ID: **76-11-3** AES Lab ID: **3247**  
 Location: **Not Given**

Sample Description: **Yellow gummy with fibers, bitumen and aggregates.**

**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:          | 5 |
| Animal Hair:        |   |
| Antigorite:         |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 40 |
| Resilient Material: |    |
| Glue:               | 40 |
| Binders:            | 10 |

**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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3248  
 Client Sample ID: 76-12-1  
 Location: Not Given

Sample Description: Tan 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:              | 20 |
| Aggregates:           |    |
| Styrofoam:            |    |

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         |    |
| Mineral Wool:       | 30 |
| Fiberglass:         |    |
| Cellulose:          | 30 |
| 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

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:    | 3249   |
| Client Sample ID: | 76-12-2                   |                |        |
| Location:         | Not Given                 |                |        |

Sample Description: Tan soft fibrous to perlitic 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:       | 30 |
| Fiberglass:         |    |
| Cellulose:          | 30 |
| Animal Hair:        |    |
| Antigorite:         |    |

| NON-FIBROUS MATERIALS |    |
|-----------------------|----|
| Vermiculite:          |    |
| Biotite:              |    |
| Mica:                 |    |
| Perlite:              | 20 |
| Aggregates:           |    |
| Styrofoam:            |    |
| OTHERS                |    |
| Aluminum:             |    |
| Bitumen:              |    |
| Resilient Material:   |    |
| Glue:                 |    |
| Binders:              | 20 |

COMMENTS: Paint included as binder.

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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:    | 3250   |
| Client Sample ID: | 76-12-3                   |                |        |
| Location:         | Not Given                 |                |        |

Sample Description: Tan soft fibrous to perlitic 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:       | 30 |
| Fiberglass:         |    |
| Cellulose:          | 30 |
| Animal Hair:        |    |
| Antigorite:         |    |

| NON-FIBROUS MATERIALS |    |
|-----------------------|----|
| Vermiculite:          |    |
| Biotite:              |    |
| Mica:                 |    |
| Perlite:              | 20 |
| Aggregates:           |    |
| Styrofoam:            |    |

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

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  
 Client Sample ID: 76-13-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3251

Sample Description: Layered: 1) Gray soft fibrous with paint; 2) Brown soft fibrous.

**All percentages given below are visually estimated by volume**

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

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         |    |
| Mineral Wool:       | 80 |
| Fiberglass:         |    |
| Cellulose:          | 2  |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 18 |

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  
 Client Sample ID: 76-13-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3252

Sample Description: Layered: 1) Gray soft fibrous with paint; 2) Brown soft fibrous.

**All percentages given below are visually estimated by volume**

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

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         |    |
| Mineral Wool:       | 80 |
| Fiberglass:         |    |
| Cellulose:          | 2  |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 18 |

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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3253  
 Client Sample ID: 76-13-3  
 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.

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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: 3254  
 Client Sample ID: 76-14-1  
 Location: Not Given

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:          | 95 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

COMMENTS: Paint included as binder.

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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: 3255  
 Client Sample ID: 76-14-2  
 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:          | 97 | Glue:                 |   |
| Animal Hair:        |    | Binders:              | 3 |
| 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  
 Client Sample ID: 76-14-3  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3256

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:          | 90 | Glue:                 |    |
| Animal Hair:        |    | Binders:              | 10 |
| Antigorite:         |    |                       |    |

COMMENTS: Paint included as binder.

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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: 3257  
 Client Sample ID: 76-15-1  
 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:              | 50 |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 50 | 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  
 Client Sample ID: 76-15-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3258

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:              | 50 |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 50 | 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  
 Client Sample ID: 76-15-3  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3259

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:              | 50 |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 50 | Glue:                 |    |
| Animal Hair:        |    | Binders:              |    |
| Antigorite:         |    |                       |    |

COMMENTS:

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Microanalyst:

*Andrew Pittman*

Andrew Pittman

QCAlyst:

*S. Arkhipov*

Svetlana Arkhipov

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AES Job Number: **B203**  
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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: 3260  
 Client Sample ID: 76-16-1  
 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:          | 95 | Glue:                 |   |
| Animal Hair:        |    | Binders:              | 5 |
| 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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3261  
 Client Sample ID: 76-16-2  
 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:          | 95 | Glue:                 |   |
| Animal Hair:        |    | Binders:              | 5 |
| 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: 3262  
 Client Sample ID: 76-16-3  
 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:          | 90 | 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

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: 3263  
 Client Sample ID: 76-17-1  
 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:              | 20 |
| Tremolite:          |    | Aggregates:           |    |
| Actinolite:         |    | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |    | OTHERS                |    |
| Synthetics:         |    | Aluminum:             |    |
| Mineral Wool:       | 30 | Bitumen:              |    |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 30 | 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 Name: Charleston Naval Shipyard  
 Client Sample ID: 76-17-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3264

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:              | 20 |
| Tremolite:          |    | Aggregates:           |    |
| Actinolite:         |    | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |    | OTHERS                |    |
| Synthetics:         |    | Aluminum:             |    |
| Mineral Wool:       | 30 | Bitumen:              |    |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 30 | Glue:                 |    |
| Animal Hair:        |    | Binders:              | 20 |
| Antigorite:         |    |                       |    |

COMMENTS: Paint included as binder.

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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: 3265  
 Client Sample ID: 76-17-3  
 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:              | 20 |
| Tremolite:          |    | Aggregates:           |    |
| Actinolite:         |    | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |    | OTHERS                |    |
| Synthetics:         |    | Aluminum:             |    |
| Mineral Wool:       | 30 | Bitumen:              |    |
| Fiberglass:         |    | Resilient Material:   |    |
| Cellulose:          | 30 | 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*

Svellana Arkhipov

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**BULK SAMPLE ANALYSIS**

Client Name: B A T Associates, Inc.  
 Project Name: Charleston Naval Shipyard  
 Client Sample ID: 76-18-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3266

Sample Description: Layered: 1) White soft powdery to fibrous; 2) Tan semi-hard woven; 3) Gray soft fibrous to silty; 4) Brown soft fibrous.

**All percentages given below are visually estimated by volume**

| ASBESTOS FIBERS |    |
|-----------------|----|
| Chrysotile:     | 10 |
| Amosite:        | <1 |
| Crocidolite:    |    |
| Anthophyllite:  |    |
| Tremolite:      |    |
| Actinolite:     |    |

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

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

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

COMMENTS: Layer #1 contains 30% chrysotile and 5% amosite. Layer #3 contains 70% chrysotile. Layers #2, 4 do not contain asbestos.

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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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3269  
 Client Sample ID: 76-19-1  
 Location: Not Given

Sample Description: 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:

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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: 76-19-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3270

Sample Description: 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:          | 10 | Glue:                 |    |
| Animal Hair:        |    | Binders:              | 90 |
| 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 Number: 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3271  
 Client Sample ID: 76-19-3  
 Location: Not Given

Sample Description: 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:**

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: 3272  
 Client Sample ID: 76-20-1  
 Location: Not Given

Sample Description: Tan semi-hard silty to 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:          | 2 | Glue:                 |    |
| Animal Hair:        |   | Binders:              | 98 |
| Antigorite:         |   |                       |    |

COMMENTS: Paint included as binder.

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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: 3273  
 Client Sample ID: 76-20-2  
 Location: Not Given

Sample Description: 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:           |    |
| 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*  
 Andrew Pittman

QCA analyst: *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:    | 3274   |
| Client Sample ID: | 76-20-3                   |                |        |
| Location:         | Not Given                 |                |        |

Sample Description: 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:           |    |
| 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*

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: 3275  
 Client Sample ID: 76-21-1  
 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:         | 5 | Vermiculite:          |    |
| Amosite:            |   | Biotite:              |    |
| Crocidolite:        |   | Mica:                 |    |
| Anthophyllite:      |   | Perlite:              |    |
| Tremolite:          |   | Aggregates:           |    |
| Actinolite:         |   | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |   | OTHERS                |    |
| Synthetics:         |   | Aluminum:             |    |
| Mineral Wool:       |   | Bitumen:              | 90 |
| Fiberglass:         |   | Resilient Material:   |    |
| Cellulose:          | 2 | Glue:                 |    |
| Animal Hair:        |   | Binders:              | 3  |
| Antigorite:         |   |                       |    |

COMMENTS:

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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: 76-22-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3278

Sample Description: 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*  
 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: 76-22-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3279

Sample Description: 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-ASBESTOS FIBERS |   |
|---------------------|---|
| Synthetics:         |   |
| Mineral Wool:       |   |
| Fiberglass:         |   |
| Cellulose:          | 2 |
| Animal Hair:        |   |
| Antigorite:         |   |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 98 |

COMMENTS: Paint included as binder.

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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: 3280  
 Client Sample ID: 76-22-3  
 Location: Not Given

Sample Description: 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*

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: 76-23-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3281

Sample Description: Blue hard compact partly granular with fibers.

**All percentages given below are visually estimated by volume**

| ASBESTOS FIBERS     |   | NON-FIBROUS MATERIALS |    |
|---------------------|---|-----------------------|----|
| Chrysotile:         |   | Vermiculite:          |    |
| Amosite:            |   | Biotite:              |    |
| Crocidolite:        |   | Mica:                 |    |
| Anthophyllite:      |   | Perlite:              |    |
| Tremolite:          |   | Aggregates:           | 50 |
| Actinolite:         |   | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |   | OTHERS                |    |
| Synthetics:         |   | Aluminum:             |    |
| Mineral Wool:       |   | Bitumen:              |    |
| Fiberglass:         |   | Resilient Material:   |    |
| Cellulose:          | 1 | Glue:                 |    |
| Animal Hair:        |   | Binders:              | 49 |
| 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: 76-23-2  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3282

Sample Description: Blue hard compact partly granular with fibers.

**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:          | 1 |
| Animal Hair:        |   |
| Antigorite:         |   |

| NON-FIBROUS MATERIALS |    |
|-----------------------|----|
| Vermiculite:          |    |
| Biotite:              |    |
| Mica:                 |    |
| Perlite:              |    |
| Aggregates:           | 50 |
| Styrofoam:            |    |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 49 |

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: 76-23-3  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3283

Sample Description: Blue hard compact partly granular with fibers.

**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:          | 1 |
| Animal Hair:        |   |
| Antigorite:         |   |

| NON-FIBROUS MATERIALS |    |
|-----------------------|----|
| Vermiculite:          |    |
| Biotite:              |    |
| Mica:                 |    |
| Perlite:              |    |
| Aggregates:           | 50 |
| Styrofoam:            |    |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 49 |

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: 76-24-1  
 Location: Not Given  
 Project Number: 971001  
 AES Lab ID: 3284

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

**All percentages given below are visually estimated by volume**

| ASBESTOS FIBERS |    |
|-----------------|----|
| Chrysotile:     | 25 |
| 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:           |  |
| Styrofoam:            |  |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            |    |
| Resilient Material: | 50 |
| Glue:               | 2  |
| Binders:            | 23 |

COMMENTS: Layer #2 contains 50% chrysotile. Layer #1 and glue do not contain asbestos.

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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: 76-25-1 AES Lab ID: 3287  
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard gummy to woven with silver paint; 2) Black semi-hard bitumenous to fibrous.

**All percentages given below are visually estimated by volume**

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

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         | <1 |
| Mineral Wool:       |    |
| Fiberglass:         | 40 |
| Cellulose:          |    |
| Animal Hair:        |    |
| Antigorite:         |    |

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

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

COMMENTS: Silver paint contains 5% chrysotile. Layers #1,2 do 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 Number 971001  
 Project Name: Charleston Naval Shipyard AES Lab ID: 3288  
 Client Sample ID: 76-25-2  
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard gummy to woven with silver paint; 2) Black semi-hard bitumenous to fibrous.

**All percentages given below are visually estimated by volume**

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

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         | <1 |
| Mineral Wool:       |    |
| Fiberglass:         | 15 |
| Cellulose:          | 15 |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 65 |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 5  |

COMMENTS: Silver paint contains 5% chrysotile. Layers #1,2 do 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

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.



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

AES Job Number: **B203**  
 Page 197 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: 3289  
 Client Sample ID: 76-25-3  
 Location: Not Given

Sample Description: Layered: 1) Gray semi-hard gummy to woven with bitumen and silver paint; 2) Brown soft fibrous to perlitic.

**All percentages given below are visually estimated by volume**

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

| NON-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         | <1 |
| Mineral Wool:       |    |
| Fiberglass:         | 5  |
| Cellulose:          | 60 |
| Animal Hair:        |    |
| Antigorite:         |    |

| NON-FIBROUS MATERIALS |    |
|-----------------------|----|
| Vermiculite:          |    |
| Biotite:              |    |
| Mica:                 |    |
| Perlite:              | 20 |
| Aggregates:           |    |
| Styrofoam:            |    |

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 5  |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 10 |

COMMENTS: Silver paint contains 5% chrysotile. Silver paint include as binder. Layers #1,2 do 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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AES Job Number: **B203**  
 Page 198 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: 3290  
 Client Sample ID: 76-26-1  
 Location: Not Given

Sample Description: Layered: 1) Pink semi-hard gummy to woven with silver paint; 2) Black semi-hard bitumenous to fibrous.

**All percentages given below are visually estimated by volume**

| ASBESTOS FIBERS |    |
|-----------------|----|
| Chrysotile:     | 15 |
| Amosite:        |    |
| Crocidolite:    |    |
| Anthophyllite:  |    |
| Tremolite:      |    |
| Actinolite:     |    |

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

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 55 |
| Resilient Material: |    |
| Glue:               |    |
| Binders:            | 20 |

COMMENTS: Silver paint included as binder. Silver paint contains 5% chrysotile. Layer #2 contains 20% 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

QCAAnalyst:

*S. Arkhipov*

Svetlana Arkhipov

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AES Job Number: **B203**  
 Page 201 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: 3293  
 Client Sample ID: 76-27-1  
 Location: Not Given

Sample Description: Layered: 1) Brown soft fibrous to perlitic; 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-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         |    |
| Mineral Wool:       |    |
| Fiberglass:         | 30 |
| Cellulose:          | 5  |
| Animal Hair:        |    |
| Antigorite:         |    |

| NON-FIBROUS MATERIALS |   |
|-----------------------|---|
| Vermiculite:          |   |
| Biotite:              |   |
| Mica:                 |   |
| Perlite:              | 2 |
| Aggregates:           |   |
| Styrofoam:            |   |

| 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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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: 3294  
 Client Sample ID: 76-27-2  
 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-ASBESTOS FIBERS |    |
|---------------------|----|
| Synthetics:         |    |
| Mineral Wool:       |    |
| Fiberglass:         | 40 |
| Cellulose:          |    |
| Animal Hair:        |    |
| Antigorite:         |    |

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

| OTHERS              |    |
|---------------------|----|
| Aluminum:           |    |
| Bitumen:            | 60 |
| 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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AES Job Number: **B203**  
 Page 203 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: 3295  
 Client Sample ID: 76-27-3  
 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:              | <1 |
| Tremolite:          |    | Aggregates:           | <1 |
| Actinolite:         |    | Styrofoam:            |    |
| NON-ASBESTOS FIBERS |    | OTHERS                |    |
| Synthetics:         |    | Aluminum:             |    |
| Mineral Wool:       |    | Bitumen:              | 60 |
| Fiberglass:         | 40 | Resilient Material:   |    |
| Cellulose:          | <1 | 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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# 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   |                   | BAT JOB NO.                    | TASK NO.             |
| Charleston Naval Shipyard  |                   | 971001                         | 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. 76-1-1  |                   | 16. 76-6-1                     |                      |
| 2. 76-1-2  |                   | 17. 76-6-2                     |                      |
| 3. 76-1-3  |                   | 18. 76-6-3                     |                      |
| 4. 76-2-1  |                   | 19. 76-7-1                     |                      |
| 5. 76-2-2  |                   | 20. 76-7-2                     |                      |
| 6. 76-2-3  |                   | 21. 76-7-3                     |                      |
| 7. 76-3-1  |                   | 22. 76-8-1                     |                      |
| 8. 76-3-2  |                   | 23. 76-8-2                     |                      |
| 9. 76-3-3  |                   | 24. 76-8-3                     |                      |
| 10. 76-4-1   |                   | 25. 76-9-1                     |                      |
| 11. 76-4-2   |                   | 26. 76-9-2                     |                      |
| 12. 76-4-3   |                   | 27. 76-9-3                     |                      |
| 13. 76-5-1   |                   | 28. 76-10-1                    |                      |
| 14. 76-5-2   |                   | 29. 76-10-2                    |                      |
| 15. 76-5-3   |                   | 30. 76-10-3                    |                      |
| SPECIAL INSTRUCTIONS: <i>Analyze To Positive</i>   |                   |                                |                      |
| Relinquished by: <i>Foskie Bell</i>  |                   | Received by: <i>John B. J.</i> |                      |
| Date: 1/31/00  | Time: <i>1:34</i> | Date: 1-31-00                  | Time: <i>1:40 PM</i> |

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Fax: (770) 242-3912

## CHAIN OF CUSTODY FORM

|  |                   |   |                     |
|--|-------------------|---|---------------------|
| BAT PROJECT CONTACT  |                   | DOUGLAS J. MILTON                       |                     |
| BAT JOB NAME   |                   | BAT JOB NO.                             | TASK NO.            |
| Charleston Naval Shipyard  |                   | 971001                                  | 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. 76-11-1   |                   | 16. 76-16-1                             |                     |
| 2. 76-11-2   |                   | 17. 76-16-2                             |                     |
| 3. 76-11-3   |                   | 18. 76-16-3                             |                     |
| 4. 76-12-1   |                   | 19. 76-17-1                             |                     |
| 5. 76-12-2   |                   | 20. 76-17-2                             |                     |
| 6. 76-12-3   |                   | 21. 76-17-3                             |                     |
| 7. 76-13-1   |                   | 22. 76-18-1                             |                     |
| 8. 76-13-2   |                   | 23. 76-18-2                             |                     |
| 9. 76-13-3   |                   | 24. 76-18-3                             |                     |
| 10. 76-14-1  |                   | 25. 76-19-1                             |                     |
| 11. 76-14-2  |                   | 26. 76-19-2                             |                     |
| 12. 76-14-3  |                   | 27. 76-19-3                             |                     |
| 13. 76-15-1  |                   | 28. 76-20-1                             |                     |
| 14. 76-15-2  |                   | 29. 76-20-2                             |                     |
| 15. 76-15-3  |                   | 30. 76-20-3                             |                     |
| SPECIAL INSTRUCTIONS: <i>Analyze to Positive.</i>  |                   |   |                     |
| Relinquished by: <i>Foshie Bell</i>  |                   | Received by: <i>John R. [Signature]</i> |                     |
| Date: 1/31/00  | Time: <i>1342</i> | Date: 1-31-00                           | Time: <i>1:42pm</i> |

# BAT

## CHAIN OF CUSTODY FORM

|   |   |
|---|---|
| BAT PROJECT CONTACT <b>DOUGLAS J. MILTON</b>  |   |
| BAT JOB NAME <b>Charleston Naval Shipyard</b>   | BAT JOB NO. <b>971001</b> TASK NO. <b>13.03</b> |
| 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<br><input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN)      AS SOON AS POSSIBLE<br><input type="checkbox"/> RUSH - FAX (HANDWRITTEN)      AS SOON AS POSSIBLE |   |
| <b>SAMPLE ID</b>  | <b>SAMPLE ID</b>                                |
| 1. 76-21-1  | 16. 76-26-1                                     |
| 2. 76-21-2  | 17. 76-26-2                                     |
| 3. 76-21-3  | 18. 76-26-3                                     |
| 4. 76-22-1  | 19. 76-27-1                                     |
| 5. 76-22-2  | 20. 76-27-2                                     |
| 6. 76-22-3  | 21. 76-27-3                                     |
| 7. 76-23-1  | 22.   |
| 8. 76-23-2  | 23.   |
| 9. 76-23-3  | 24.   |
| 10. 76-24-1   | 25.   |
| 11. 76-24-2   | 26.   |
| 12. 76-24-3   | 27.   |
| 13. 76-25-1   | 28.   |
| 14. 76-25-2   | 29.   |
| 15. 76-25-3   | 30.   |
| SPECIAL INSTRUCTIONS: <i>Analyze to Positive</i>  |   |
| Relinquished by:  | Received by: <i>[Signature]</i>                 |
| Date: 1/31/00      Time: <i>1:42</i>  | Date: <i>1-31-00</i> Time: <i>1:42pm</i>        |

**ENVIRONMENTAL  
MANAGEMENT  
INC**

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

Page 1 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)  |
|---------------|-----------------|--------------|--|------------------------|--|
| 1 1017        | 76-1-1QC        |              | BROWN HARD RESILIENT TO GRANULAR WITH FIBERS AND BLACK MASTIC        |                        | 5%CHR (8% CHRYSOTILE IN BLACK MASTIC)  |
| 2 1018        | 76-4-1QC        |              | LT GRAY HARD RESILIENT TO GRANULAR WITH BLACK MASTIC AND YELLOW GLUE |                        | 3%CHR (5% CHRYSOTILE IN BLACK MASTIC<br>NO ASBESTOS DETECTED IN YELLOW GLUE) |
| 3 1019        | 76-8-1QC        |              | WHITE POWDERY TO GRANULAR  |                        | -  |
| 4 1020        | 76-9-1QC        |              | WHITE SOFT FIBROUS WITH PAINT  |                        | -  |
| 5 1021        | 76-12-1QC       |              | GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT                  |                        | -  |
| 6 1022        | 76-15-1QC       |              | BLACK SOFT BITUMINOUS TO FIBROUS                                     |                        | -  |
| 7 1023        | 76-15-1QC       |              | BROWN SOFT FIBROUS WITH PAINT  |                        | -  |
| 8 1024        | 76-21-1QC       |              | BLACK BITUMINOUS TO POWDERY WITH FIBERS                              |                        | 3%CHR  |
| 9 1025        | 76-23-1QC       |              | BLUE HARD SILTY TO GRANULAR WITH MIXTURE OF MASTICS                  |                        | -  |
| 10 1028-1     | 31-5-1QC        | 1 (of 2)     | GREEN HARD RESILIENT TO GRANULAR                                     |                        | -  |
| 11 1028-2     | 31-5-1QC        | 2 (of 2)     | BLACK MASTIC WITH FIBERS   |                        | 3%CHR  |
| 12 1027       | 31-10-1QC       |              | GRAY SOFT FIBROUS TO GRANULAR TO POWDERY WITH PAINT                  |                        | -  |
| 13 1028       | 32-2-1QC        |              | GREEN HARD RESILIENT TO GRANULAR WITH WHITE MASTIC                   |                        | -  |
| 14 1029       | 32-3-1QC        |              | TAN HARD RESILIENT TO GRANULAR WITH BLACK MASTIC                     |                        | -  |
| 15 1030       | 33-5-1QC        |              | DARK GRAY HARD RESILIENT TO GRANULAR WITH FIBERS AND BLACK MASTIC    |                        | 5%CHR (3% CHRYSOTILE IN BLACK MASTIC)  |
| 16 1031       | 34-3-1QC        |              | TAN HARD RESILIENT TO GRANULAR WITH 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

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

CAPE ENVIRO.

007

# BAT

**BAT Associates, Inc.**  
ENVIRONMENTAL, HEALTH & SAFETY SERVICES

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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<br><input checked="" type="checkbox"/> ROUTINE - FAX (HANDWRITTEN) AS SOON AS POSSIBLE<br><input type="checkbox"/> RUSH - FAX (HANDWRITTEN) AS SOON AS POSSIBLE |                           |                                 |                |
| SAMPLE ID   |                           | SAMPLE ID                       |                |
| 1. 76-1-1QC   |                           | 16. 34-4-1QC                    |                |
| 2. 76-4-1QC   |                           | 17. 34-6-1QC                    |                |
| 3. 76-8-1QC   |                           | 18. 34-5-1QC                    |                |
| 4. 76-9-1QC   |                           | 19. 36-4-1QC                    |                |
| 5. 76-12-1QC  |                           | 20. BAT199-2-1QC                |                |
| 6. 76-15-1QC  |                           | 21. BAT199-1-1QC                |                |
| 7. 76-16-1QC  |                           | 22. BAT199-4-1QC                |                |
| 8. 76-21-1QC  |                           | 23. BAT199-5-1QC                |                |
| 9. 76-23-1QC  |                           | 24. BAT199-7-1QC                |                |
| 10. 31-5-1QC  |                           | 25. BAT199-10-1QC               |                |
| 11. 31-10-1QC   |                           | 26. BAT199-17-1QC               |                |
| 12. 32-2-1QC  |                           | 27.                             |                |
| 13. 32-3-1QC  |                           | 28.                             |                |
| 14. 33-5-1QC  |                           | 29.                             |                |
| 15. 34-3-1QC  |                           | 30.                             |                |
| SPECIAL INSTRUCTIONS: <del>Analysis of the Project on 2/1/00</del>  |                           |                                 |                |
| Relinquished by: <i>Joshie Bell</i>   |                           | Received by: <i>[Signature]</i> |                |
| Date: 12/29/99  | Time:                     | Date: 2/1/00                    | Time: 2:30     |

43100 (CB)  
2/1/00