ASBESTOS SURVEY
ALASKA ARMY NATIONAL GUARD
FORT RICHARDSON AVIATION COMPLEX
ANCHORAGE, ALASKA
APRIL 1996

Prepared for:

State of Alaska
Department of Military and Veteran Affairs
Army National Guard
Environmental Office
Box 5-549
Fort Richardson, Alaska 99505

Prepared by:

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DEPARTMENT OF THE ARMY
HEADQUARTERS, STATE AREA COMMAND
Alaska Army National Guard
P.O. Box 5800
Fort Richardson, Alaska, 99505-5800

AKNG-ARE

October 22, 1996

MEMORANDUM FOR ARMORY/ACTIVITY COMMANDER

SUBJECT: ASBESTOS SURVEY REPORT

1. Attached is a copy of an asbestos survey report for your facility; collocate it with your facility spill plan. This is an inspectable, permanent document and should be safeguarded. The report must be available for review by anyone who will work or train there.

2. Carefully review this report and share the information with soldiers assigned to the unit. The tabbed section of the report is the most important; it graphically depicts which areas of your facility have Asbestos Containing Materials (ACM), and which areas do not have ACM.

3. If the report indicates that your facility has ACM, you can rest assured that you are in little danger of becoming ill from it, unless you inhale dust from cutting, drilling, or scrapping it. Only properly trained personnel wearing appropriate personal protective equipment are authorized to conduct such tasks.

4. If your copy becomes lost or damaged, please contact this office for replacement. If you have any questions or comments concerning this report, please feel free to contact the project manager; MAJ Larry Beck, at (907) 428-6765/FAX 6767.

Steve C. Hatzis
STEVE C. HATZIS
LTC, EN, AK ARNG
Facilities Management Officer

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LIST OF ACRONYMS AND ABBREVIATIONS

ACM	Asbestos-Containing Materials
AES	Analytical Environmental Services, Inc.
AHERA	Asbestos Hazard Emergency Response Act
AKARNG	Alaska Army National Guard
AR	Army Regulations
ASHARA	Asbestos School Hazard Abatement Reauthorization
CFR	Code of Federal Regulations
EMSL	Electron Microscopy Services Laboratories, Inc.
EPA	Environmental Protection Agency
HA	Homogeneous Area
LoA	List of Acronyms
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
NGB	National Guard Bureau
NVLAP	National Voluntary Laboratory Accreditation Program
OSHA	Occupational Safety and Health Administration
PFI	Pipe Fitting Insulation
PLM	Polarized Light Microscopy
QC	Quality Control
SOW	Statement of Work
TEM	Transmission Electron Microscopy

1.0 INTRODUCTION

Under the provisions of the national contract (NGB) DAHA90-94-D-0005, the State of Alaska, Department of Military & Veterans Affairs, Army National Guard (AKARNG) contracted Ogden Environmental and Energy Services Company, Inc., (Ogden) to conduct asbestos inspections of AKARNG administrative and support facilities located throughout the State of Alaska. The facilities were specified in requisition number 5117-0200 (Form DA 3953), the Statement of Work (SOW) (AKARNG Purchase Order Number 0035) received from AKARNG on May 12, 1995, and subsequent SOW Change Agreements. The purpose of the inspections was to identify suspected asbestos-containing materials (ACM) present in the operational and support buildings located at the specified AKARNG sites. The inspections were performed in accordance with the Environmental Protection Agency (EPA) Title 40 Code of Federal Regulations (CFR), Part 763 - *Asbestos-Containing Materials in Schools*; Final Rule and Notice, commonly referred to as the Asbestos Hazard Emergency Response Act (AHERA), Asbestos School Hazard Abatement Reauthorization Act (ASHARA), National Emissions Standards for Hazardous Air Pollutants (NESHAPS), the Occupational Safety and Health Administration (OSHA) and all other applicable Federal laws, and state and local environmental regulations. All work complies with Army Regulations AR 200-1, Environmental Protection and Enhancement. Ogden has also complied with State Department of Labor, Division of Labor Standards and Safety, Occupational Safety and Health Standards Construction Code (Asbestos). All asbestos sampling, analysis and reporting provisions have followed guidelines under ASHARA and NESHAPS.

The asbestos inspections were conducted between September 22 and September 25, 1995. During these inspections, the Ogden EPA accredited inspectors performed an initial building walk-through to identify all suspect ACM. Photographs were taken of the buildings and selected building materials (Appendix A). The locations and quantities of each material were noted and their physical condition assessed. The required number of material bulk samples were collected with the following exceptions: 1) samples were not collected where the integrity or usability of the material would be damaged, 2) samples were not collected in locations which could not be safely accessed, 3) samples were not collected in other inaccessible areas. All applicable federal

safety and health regulations were adhered to during the collection of suspect ACM samples. The samples collected were forwarded to Electron Microscopy Services Laboratories, Inc. (EMSL) in Westmont, New Jersey for analysis. EMSL is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP), Accreditation Number 1250. Quality Control (QC) samples were forwarded to Analytical Environmental Services, Inc., (AES) in Atlanta, Georgia for analysis. AES is also accredited under the NVLAP; Accreditation Number 2033. Laboratory accreditation certificates are located in Appendix D.

1.1 SAMPLING PROTOCOL

Accredited inspectors surveyed all specified existing, standing, and safe-to-enter structures located at the AKARNG sites. Buildings were assessed for the potential presence of ACM. An inspection of the exterior of the structures was conducted for presence of debris, damaged suspect ACM material, and adjacent structures. Building materials in each contiguous area (floor, wing, etc.) to be sampled for asbestos analysis was divided into homogeneous areas to address each different type of materials. As defined by the EPA, a homogeneous area of suspect ACM is an area of surfacing, thermal system, or miscellaneous material that is uniform in color and texture. The number of samples collected from each homogeneous area was dictated by the category of material; each was sampled in accordance with 40 CFR 763. A review of each category is presented below:

1.1.1 Surfacing Material (sprayed-on or trowled-on material)

The number of samples collected was determined by the square feet of homogeneous material present:

- Three samples for 1,000 square feet or less.
- Five samples for over 1,000 square feet, but less than or equal to 5,000 square feet.
- Seven samples for over 5,000 square feet.

Specific sample locations were determined by dividing each homogeneous area into nine equal areas and applying the EPA random sampling scheme numbering system to the grids.

1.1.2 Thermal System Insulation

Three samples for each homogeneous area of thermal system insulation were collected. At least one sample was collected for each patched (less than six square or linear feet) material or joint compound.

1.1.3 Miscellaneous Materials

A representative number of samples per homogeneous area were collected to determine the presence or absence of asbestos.

Materials such as fiberglass ceiling tiles and fiberglass or rubber thermal system insulation were generally noted to be non-ACM. As such, the materials were not typically assigned homogeneous area numbers nor were they sampled. This procedure is in accordance with the applicable AHERA regulations. However, if the inspectors had reservations as to the possibility of the material containing asbestos, samples were collected and submitted for laboratory analysis.

Fire doors were observed at this site. Because the fire doors would need to be damaged in order to sample the inner fireproofing material, sampling was not generally done. The inner fireproofing material should be considered ACM until proven otherwise by bulk sample analysis.

1.2 SAMPLE ANALYSIS

As required in 40 CFR Part 763, bulk samples were analyzed by polarized light microscopy (PLM), the EPA-approved method for analyzing material bulk samples for asbestos. As defined in the AHERA regulation, an asbestos-containing material means any material or product which contains more than one percent asbestos by area. Material with bulk sample analytical results of less than one percent (<1%) asbestos are reported as a non-ACM. However, according to 40 CFR Part 61 Subpart M, National Emission Standard for Hazardous Air Pollutants (NESHAPS) - Asbestos; prior to conducting a building renovation or demolition which involves the disturbance

of any material previously identified as containing <10% asbestos, must be re-analyzed by the PLM Point Counting Method prior to disturbance.

The limit of detection for asbestos analysis by PLM is approximately one percent (1%) by area. Some materials, such as floor tile, cement products, and hard rubber materials, may contain asbestos fibers in sizes that are below the resolution limit for the PLM method. Prior to the disturbance of these type materials, it is recommended that negative PLM analytical results (EPA Modified Level 2) be confirmed using the transmission electron microscopy (TEM) method for asbestos analysis.

For quality control purposes, and as recommended by the EPA, every twentieth bulk sample was split, yielding a duplicate or QC sample. The duplicate samples were assigned sample identification numbers and submitted to a second laboratory for analysis. This quality control procedure served as a check on the variability between laboratories. The comparison of percentage results estimated by the analytical laboratories provided essential information on the reliability of the analysis. Although there may be discrepancies in estimating the exact percentage of asbestos in duplicate samples, these discrepancies are not as serious as the presence or absence determination since any material sample which contains more than 1% asbestos is considered an ACM. Furthermore, some variability in the actual asbestos content in an ACM would be expected from one sample to another. Generally, the percent asbestos content for the QC sample as compared to the corresponding primary sample should not exceed ten percent.

1.3 PRESENTATION OF INSPECTION DATA

The following criteria for reporting the data were used:

Quantity - The estimated quantity of the ACM in square feet for surfaces or linear feet for piping was noted.

Friability - The inspectors determined whether an identified ACM was friable by using the AHERA definition of a friable ACM. Friable, when referring to an identified ACM, means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand

pressure, and includes previously non-friable material that becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

Percent Asbestos - The total percentage of all asbestos identified from the bulk sampling is provided. In addition, the identified type (chrysotile, amosite, tremolite, anthophyllite, crocidolite, and actinolite) is provided.

Material Condition - Accredited inspectors utilized the following criteria in assessing building conditions:

- Good: ACM is not damaged, deteriorated, or delaminated.
- Damaged: ACM is deteriorated or has sustained physical injury such that the material lacks adequate cohesion and/or adhesion qualities. Damage to ACM could include delamination, flaking, blistering, or crumbling.
- Significantly Damaged: ACM is damaged and such damage is extensive and severe.

2.0 SITE AND PROJECT DESCRIPTION

The Fort Richardson Aviation Complex is located on Bryant Airfield at Fort Richardson Army Base. Fort Richardson Army Base is located in northeast Anchorage. This site consists of two buildings. The White Hangar is located just southwest of Randall Road with the Ground Support Building adjacent to the northeast. The White Hangar is currently occupied by 32 National Guard personnel in charge of maintenance, and, operations of National Guard aircraft. The Ground Support Building is presently used by two people for ground support activities ie. ground vehicle maintenance and storage, POL storage, and, fueling of aircraft.

The White Hangar was constructed in the year 1976. The White Hangar is a one story concrete block and metal structure with a hot mop roof. The interior finish materials include concrete, vinyl, and ceramic floors; concrete block, metal and Gypsum walls; and concrete, gypsum board, and acoustical tile ceilings. The interior totals approximately 42,000 square feet of usable space. Along with the hangar bays the ground floor of the White Hangar (Figure 2) also contains workshops for welding, painting, electronics, munitions, avionics, hydraulics, engine and tool storage, as well as office space for administrative tasks.

The Ground Support Building was also constructed in the year 1976. The Ground Support Building is a one story concrete block structure with a hot mop and rubber membrane roof (new addition). The interior finish materials include concrete floors; concrete block and gypsum board walls; gypsum board and metal ceilings. The interior totals approximately 4,150 square feet of usable space. The Ground Support Building includes eight vehicle bays, and a POL storage.

The Fort Richardson Aviation Complex was inspected by an AHERA certified inspector, Roberto Chavarria. A total of 29 building material samples of suspect ACM were collected from 13 homogeneous areas identified in the White Hangar on September 22, 1995. A total of 12 building material samples of suspect ACM were collected from four homogeneous areas identified in the Ground Support Building on September 25, 1995. Copies of AHERA Certificates are presented in Appendix C.

Samples were obtained using hand tools such as a knife, pliers, and scrapers. If needed, repairs were made to the sampled materials using roofing patch, dry wall Spackle, and duct tape. Samples were placed into individual resealable plastic bags. Material easily identified as

asbestos containing such as, and fire doors, were assumed to be ACM and, therefore not sampled.

3.0 BUILDING EVALUATION

3.1 WHITE HANGAR

3.1.1 Building Interior Evaluation

The interior of the White Hangar (Building 1) was visually inspected on September 22, 1995. The interior finish materials include concrete, vinyl, and ceramic floors; concrete block, metal and Gypsum walls; and concrete, gypsum board, and acoustical tile ceilings. Most of these materials are visible in the photographs included in Appendix A.

The heating system is located throughout the building in mechanical rooms 125, 133, 136, and 201. Insulated water piping is visible running from the mechanical rooms to other parts of the building.

3.1.2 Ceilings

Five types of ceilings were visible in the White Hangar; 2' x 4', ceiling tile, both pinhole and fissured, 1' x 1' textured ceiling tile, gypsum board, and concrete. The 2' x 4' ceiling tile is suspended by a metal framework from the ceiling. Approximately 1300 square feet of pinhole type ceiling tile is located in the avionics shop (rm. 104), the electronics shop (rm. 105) and the hydraulics shop (rm. 112). Samples FRA-WH-5-01 through 5-03 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is shown in Appendix A, Photo No 5). Approximately 400 square feet of fissured type ceiling tile is located in the electronics shop (rm. 105). Samples FRA-WH-6-01 and 6-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is shown in Appendix A, Photo No. 6). Approximately 250 square feet of 1' x 1' textured ceiling tile is located in an office and administrative area (rms. 128 and 129). Samples FRA-WH-2-01 and 2-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is shown in Appendix A, Photo No. 2). Approximately 9000 square feet of gypsum board is located throughout the White Hangar, specifically rooms 106, 109-111, 117-119, 127-132, 135, and 137. Samples FRA-WH-1-01 through 1-03 were collected from this

homogeneous area (sample locations are shown in Figure 1 and a picture of the material is shown in Appendix A, Photo No 1). A concrete ceiling was present in all other parts of the building.

3.1.3 Floors

Five types of flooring were present when the inspection was performed; 12" x 12" floor tile, white, tan, and black; 9" x 9" tan floor tile and, concrete. Approximately 1900 square feet of 12" x 12" white floor tile was located in the large break room (rm. 119) and an office adjacent to this break room (rm. 127). Samples FRA-WH-3-01 through 3-03 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No. 3). Approximately 200 square feet of 12" x 12" tan floor tile is located in an office (rm. 137). Samples FRA-WH-4-01 through 4-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No. 4). Approximately 250 square feet of 12" x 12" black floor tile was located in the arms shop (rm. 115). Samples FRA-WH-11-01 through 11-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No. 11). Approximately 200 square feet of 9" x 9" tan floor tile was located in a storage area (rms. 126 and 134). Samples FRA-WH-7-01 through 7-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is shown in Appendix A, Photo No. 7). Concrete flooring was present in all other parts of the building.

3.1.4 Interior Walls

The interior walls were either; gypsum board, concrete block, or metal. Approximately 14,500 square feet of gypsum board is located throughout the White Hangar, specifically rooms 104, 106, 111, 119, 125-129, and 131-135. Samples FRA-WH-1-01 through 1-03 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No 1). Concrete block and metal were present in all other parts of the building.

3.1.5 Pipe Insulation

One type of suspect pipe fitting insulation was visible in the hangar. Five fittings were visible. Samples FRA-WH-9-01 through 9-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No 9).

3.1.6 Boiler Room

From the boiler room (rm. 136), only tank insulation for heating hot water was found. Approximately 125 feet of tank insulation was present on the day of inspection. Samples FRA-WH-10-01 and 10-02 were collected from this homogeneous area (sample locations are shown in Figure 1 and a picture of the material is in Appendix A, Photo No 10).

3.1.7 Roofing Materials

The roof of the White Hangar is hot tar mopped with roofing flash around the edges. Approximately 42,000 square feet of hot tar mop and 2,150 square feet of roofing flash were present on the date of inspection. Samples FRA-WH-12-01 through 12-03 and FRA-WH-13-01 through 13-03 were collected from these two homogeneous areas respectively (sample locations are shown in Figure 3 and pictures of these materials are shown in Appendix A, Photo Nos. 12 and 13).

3.1.8 Exterior Shell

The exterior shell of the White Hangar is constructed of either metal or concrete.

3.19 Fire Doors

Thirty fire doors were located at entrances and exits to shop areas and to the hangar bay. Fire door locations are shown in Figure 2 and a picture is in Appendix A, Photo No. 8).

3.2 GROUND SUPPORT BUILDING

3.2.1 Building Interior Evaluation

The interior of the Ground Support Building (Building 2) was visually inspected on September 25, 1995. The interior finish materials include concrete floors; concrete block and gypsum board walls; gypsum board and metal ceilings. Most of these materials are visible in the photographs included in Appendix A.

An addition was made to the Ground Support Building after the original construction in 1976. Two new larger bays were added adjoining the original building to the north. Because of differing dates of construction, identical (in appearance) material from the two sections will be treated as separate homogeneous areas.

The heating system is located on a raised concrete platform (rm. 106) in room 101.

3.2.2 Ceilings

Three types of ceiling are present; metal, gypsum board I, and gypsum board II. Approximately 150 square feet of gypsum board I is located in the two POL storage areas of the original structure (rms. 102 and 104). Samples FRA-GSB-1-01 through 1-03 were collected from the homogeneous areas (sample locations are shown in Figure 5 and a picture of the material is shown in Appendix A, Photo No 14). Approximately 125 square feet of gypsum board II is located in the new addition above the heating system (rm 106) in room 101. Samples FRA-GSB-2-01 through 2-03 were collected from this homogeneous area (sample locations are shown in Figure 5 and a picture of the material is shown in Appendix A, Photo No 15).

3.2.3 Floors

The floors throughout the Ground Support Building were concrete slab.

3.2.4 Interior Walls

Walls were either gypsum board I, gypsum board II, and concrete block. Approximately 2,500 square feet of gypsum board I is located throughout the original structure. Samples FRA-GSB-1-01 through 1-03 were collected from this homogeneous area (sample locations are shown in Figure 5 and a picture of the material is shown in Appendix A, Photo No 14). Approximately 1,525 square feet of gypsum board II is located throughout the new addition. Samples FRA-GSB-2-01 through 2-03 were collected from this homogeneous area (sample locations are shown in Figure 5 and a picture of the material is shown in Appendix A, Photo No 15). Concrete block was present in all other parts of the building.

3.2.5 Pipe Insulation

No suspect insulation was sampled during the inspection

3.2.6 Boiler Room

No suspect material/insulation was sampled during the inspection

3.2.7 Roofing Materials

The roof of the original structure is hot tar mopped with roofing flash around the edges. Approximately 2,700 square feet hot tar mop and 500 square feet of roofing flash were present on the date of inspection. Samples FRA-GSB-3-01 through 3-03 and FRA-GSB-4-01 through 4-03 were collected from these two homogeneous areas respectively (sample locations are shown in Figures 7 and pictures of these materials are shown in Appendix A, Photo Nos. 16 and 17). The new addition is covered by paving stones over a rubber membrane over a vapor barrier. This material was not suspect.

3.2.8 Exterior Shell

The exterior shell of the Ground Support Building is concrete.

4.0 LABORATORY ANALYSIS

A total of 41 bulk materials samples from the Fort Richardson Aviation Complex were submitted for analyses for asbestos. The bulk samples were analyzed by polarized light microscopy (PLM) and dispersion staining, the method of analysis recommended by the U.S. Environmental Protection Agency (EPA) to determine the composition of suspected asbestos containing materials. PLM is a method wherein a microscope equipped with two polarizing filters are used to observe specific optical characteristics of samples. Quantitative analysis involves the use of point counting, a standard technique for determining the relative areas occupied by separate minerals in a sample. Only materials containing more than 1% total asbestos (all types) were classified as "asbestos containing" bases upon EPA criteria.

The laboratory selected, EMSL, is certified under the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Science and Technology, an Institute of the U.S. Department of Commerce. This certification is required by the EPA for bulk asbestos analysis. A copy of the laboratory certification is attached in Appendix D. The sample locations and descriptions are summarized in Tables 2-1, 2-2, and 2-3. The individual detailed laboratory reports are included in Appendix B. Chain of custody procedures were followed in handling of these samples on this project.

5.0 DISCUSSION OF ASBESTOS ANALYTICAL RESULTS

Sample locations and descriptions are summarized and presented in Tables 2-1, 2-2, and 2-3. Locations for these samples are shown in Figures 1, 3, 5, and 7. Locations of asbestos containing materials are shown in Figures 2, 4, 6, and 8.

In the White Hangar, 29 samples were collected from thirteen homogeneous areas (HA) identified during the inspection. One HA was assumed to contain asbestos, and, as indicated by the materials bulk sample analysis results, One of the sampled materials was assumed to contain asbestos:

Ceilings:
- No asbestos containing material was observed or identified during the field inspection.

Flooring:
- No asbestos containing material was observed or identified during the field inspection.

Interior walls:
- No asbestos containing material was observed or identified during the field inspection.

Pipe insulation:
- No asbestos containing material was observed or identified during the field inspection.

Boiler Room:
- No asbestos containing material was observed or identified during the field inspection.

Roofing:
- Hot mop roofing was found to contain asbestos. Approximately 42,000 square feet of hot tar mopped roofing over a vapor barrier covered with gravel was present over the entire structure A picture of this material is in Appendix A Photo Nos. 12.

Exterior Shell:
- No asbestos containing material was observed or identified during the field inspection.

Fire Doors:
- Approximately 30 fire doors were located at entrances and exits to shop areas and to the hangar bay. A picture of this material is in Appendix A Photo Nos. 8.

In the Ground Support Building, 12 samples were collected from four homogeneous areas (HA) identified during the inspection. No HAs were assumed to contain asbestos, and, as indicated by the materials bulk sample analysis results, one of the sampled materials was found to contain asbestos:

Ceilings:
- No asbestos containing material was observed or identified during the field inspection.

Flooring:
- No asbestos containing material was observed or identified during the field inspection.

Interior walls:
- No asbestos containing material was observed or identified during the field inspection.

Pipe insulation:
- No asbestos containing material was observed or identified during the field inspection.

Boiler Room:
- No asbestos containing material was observed or identified during the field inspection.

Roofing:
- The roofing flash, edging the hot mop roof, was found to contain asbestos. Approximately 500 square feet of 1/4" thick, sheet asphalt, roofing flash is used around the roof edges of the original structure. A picture of this material is in Appendix A Photo Nos. 17.

Exterior Shell:
- No asbestos containing material was observed or identified during the field inspection.

6.0 RECOMMENDATIONS

Building 1: The White Hangar

Based on the lab's analysis, the pre-mobilization investigations and the field inspections (specifically the condition of the HAs), Ogden has prepared the following two recommendations for the White Hangar at Fort Richardson Aviation Complex:

1. The fire doors located throughout the hangar area of the building (HA No. 8) were noted to be in good condition on the day of the inspection. As such, they do not require immediate action. However, it is recommended that they be documented by the on-site maintenance personnel and managed in place. It should be noted that, if the fire doors become damaged, the potential for exposing building occupants to airborne asbestos fibers increases. In such a circumstance, the fire doors should either be repaired or removed.

2. The hot mop roofing materials (HA No. 12) were noted to be in good condition on the day of the inspection. As such, they do not require immediate action. However, it is recommended that they be documented by the on-site maintenance personnel and managed in place. It should be noted that, if the hot mop roofing materials become damaged, the potential for exposing building occupants to airborne asbestos fibers increases. In such a circumstance, the hot mop roofing materials should either be repaired or removed.

Building 2: The Ground Support Building

Based on the lab's analysis, the pre-mobilization investigations and the field inspections (specifically the conditions of the HAs), Ogden makes the following recommendation concerning the Ground Support Building at Fort Richardson Aviation Complex:

1. The roof flashing materials (HA No. 3) over the original structure was noted to be in good condition on the day of the inspection. As such, they do not require immediate

action. However, it is recommended that they be documented by the on-site maintenance personnel and managed in place. It should be noted that, if the roof flashing materials become damaged, the potential for exposing building occupants to airborne asbestos fibers increases. In such a circumstance, the roof flashing materials should either be repaired or removed.

7.0 COST ESTIMATES

This section provides cost estimates for ACM removal/replacement and for the development and management of an O&M Program. The estimates provided for ACM removal/replacement are based on the local average unit rate costs for asbestos abatement. Local contractors were contacted and requested to provide approximate abatement costs for specific materials (e.g., floor tile, ceiling tile, and pipe insulation). In remote areas, travel costs are included in the contractors estimate. The estimates for an O & M Plan include costs for personnel training and for the labor and materials required for the on-going management of the O & M Plan. However, this cost does not include the preparation and the O & M Plan. The actual costs will vary due to unforeseen factors such as building/area accessibility, project size and project scheduling. No cost estimate appears if no ACM was detected or identified.

8.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of the client and their representatives for evaluating the site as it relates to the environmental aspects discussed herein. The findings and conclusions contained in this report assume that the conditions observed are representative of the conditions throughout the site. If conditions different from those described in the report are known, observed or encountered, we should be advised at once so that we can review these conditions and reconsider our conclusions.

Ogden Environmental and Energy Services Company, Inc. has prepared the attachments in Appendix F "Important Information about Your Environmental Site Evaluation/Assessment" to assist you and others in understanding the use and limitations of our report. We appreciate this opportunity to be of service.

Table 7 - 1 Cost Estimates for ACM

Building No., Name: 1 , White Hangar, #47427
Location: Fort Richardson Aviation Complex
Area (SF): 42000
Date of Inspection: 22-Sep-95

HA	ACM	Description	Location	Quantity	Friabile	Response Actions	*Repair	O&M	Remove	Replace
8	Yes	Fire Doors	Throughout hangar area	30 EA	YES	O&M Program	**N/A	$60	$2,250	$21,000
12	Yes	Hot Mop Roofing	Roof	42000 SF	NO	O&M Program	$1,903	$190	$119,700	$70,560
						Totals	**$1,903**	**$250**	**$121,950**	**$91,560**

* Repair costs are calculated from percent damage, removal rate, and replacement rate.

** Fire Doors cannot be repaired. Repair cost for Fire Doors would reflect total removal and total replacement.

Table 3 - 1 **Inspection Inventory Summary**

Fort Richardson Aviation Complex

White Hangar, #47427

Building No 1

Homogeneous Area Number	Description of Material	Asbestos Containing	Quantity	
1	Gypsum Board	No	23500	SF
2	1' x 1', Ceiling Tile, Textured	No	250	SF
3	12" x 12", Floor Tile, White	No	1900	SF
4	12" x 12", Floor Tile, Tan	No	200	SF
5	2' x 4', Ceiling Tile, Pinhole	No	1300	SF
6	2' x 4', Ceiling Tile, Fissured	No	400	SF
7	9" x 9", Floor Tile, Tan	No	200	SF
8	Fire Doors	Yes	30	EA
9	PFI	No	5	EA
10	TI, Heating Hot Water	No	125	SF
11	12" x 12", Floor Tile, Black	No	250	SF
12	Hot Mop Roofing	Yes	42000	SF
13	Roofing Flash	No	2150	SF

Year Built and Square Footage:	1976 42000 SF
Building Number:	1
Building Description:	White Hangar, #47427
Asbestos Program Manager:	Dave Bufo
Phone:	(907) 563-6436
Address:	Ogden 4040 B Street Anchorage, AK 99503
Inspector Name:	Roberto Chavarria
EPA Accreditation No:	5PSI 47403

Table 5 - 1 **Asbestos Homogeneous Area Summary**

Fort Richardson Aviation Complex

White Hangar, #47427 22-Sep-95

Building No 1 **Inspected**

Homogeneous Area : **No. 8** **Fire Doors**

Approximate Quantity: 30 EA **No. of Occupants:** 32

Type of Material: ☐ TSI ☐ Surfacing Material ☑ Miscellaneous

Friable: ☑ Yes ☐ No

Accessible: ☐ Yes ☑ No

Located in a Plenum: ☐ Yes ☑ No

Material Location: Throughout hangar area

Condition

Percent Damage: 8 % ☐ Localized ☑ Distibuted

Type of Damage: ☐ Deterioration ☐ Water ☑ Physical

Overall Rating: ☐ Good ☑ Damaged ☐ Significantly Damage

Potential for Disturbance

	High 1	2	3	4	Low 5
Vibration:	☑	☐	☐	☐	☐
Contact:	☐	☐	☐	☐	☑
Air Erosion:	☐	☐	☐	☐	☑

Analytical Results

Sample Designation	Percent Asbestos:	Type of Asbestos
** This material was assumed to contain asbestos.		

Comments: This material was assumed to contain asbestos.

Recomended Response Action: O&M Program

Table 5 - 1 **Asbestos Homogeneous Area Summary**

Fort Richardson Aviation Complex

White Hangar, #47427 22-Sep-95

Building No 1 **Inspected**

Homogeneous Area : **No. 12** **Hot Mop Roofing**

Approximate Quantity: 42000 SF **No. of Occupants:** 32

Type of Material: ☐ TSI ☐ Surfacing Material ☑ Miscellaneous

Friable: ☐ Yes ☑ No

Accessible: ☑ Yes ☐ No

Located in a Plenum: ☐ Yes ☑ No

Material Location: Roof

Condition

Percent Damage: < 1 % ☐ Localized ☐ Distibuted

Type of Damage: ☐ Deterioration ☐ Water ☐ Physical

Overall Rating: ☑ Good ☐ Damaged ☐ Significantly Damage

Potential for Disturbance

	High 1	2	3	4	Low 5
Vibration:	☐	☐	☐	☐	☑
Contact:	☐	☐	☐	☐	☑
Air Erosion:	☐	☐	☐	☐	☑

Analytical Results

Sample Designation	Percent Asbestos:	Type of Asbestos
FRA-WH-12-01	20	Chrysotile
FRA-WH-12-02	20	Chrysotile
FRA-WH-12-03	20	Chrysotile

Comments:

Recomended Response Action: O&M Program

Table 2 - 1 Sample Locations and Description

White Hangar, #47427, Building No 1

Sample Number Prefix	Sample Number Suffix	Inspected	Description	Material Location	Quantity
FRA-WH-	1-01	9/22/95	Gypsum Board	Throughout hangar area	23500 SF
FRA-WH-	1-02	9/22/95	Gypsum Board	Throughout hangar area	23500 SF
FRA-WH-	1-03	9/22/95	Gypsum Board	Throughout hangar area	23500 SF
FRA-WH-	10-01	9/22/95	TI, Heating Hot Water	Room 136	125 SF
FRA-WH-	10-02	9/22/95	TI, Heating Hot Water	Room 136	125 SF
FRA-WH-	11-01	9/22/95	12" x 12", Floor Tile, Black	Room 115	250 SF
FRA-WH-	11-02	9/22/95	12" x 12", Floor Tile, Black	Room 115	250 SF
FRA-WH-	12-01	9/22/95	Hot Mop Roofing	Roof	42000 SF
FRA-WH-	12-02	9/22/95	Hot Mop Roofing	Roof	42000 SF
FRA-WH-	12-03	9/22/95	Hot Mop Roofing	Roof	42000 SF
FRA-WH-	13-01	9/22/95	Roofing Flash	Roof	2150 SF
FRA-WH-	13-02	9/22/95	Roofing Flash	Roof	2150 SF
FRA-WH-	13-03	9/22/95	Roofing Flash	Roof	2150 SF
FRA-WH-	2-01	9/22/95	1' x 1', Ceiling Tile, Textured	Rooms 128 and 129	250 SF
FRA-WH-	2-02	9/22/95	1' x 1', Ceiling Tile, Textured	Rooms 128 and 129	250 SF
FRA-WH-	3-01	9/22/95	12" x 12", Floor Tile, White	Rooms 119 and 127	1900 SF
FRA-WH-	3-02	9/22/95	12" x 12", Floor Tile, White	Rooms 119 and 127	1900 SF
FRA-WH-	3-03	9/22/95	12" x 12", Floor Tile, White	Rooms 119 and 127	1900 SF
FRA-WH-	4-01	9/22/95	12" x 12", Floor Tile, Tan	Room 137	200 SF
FRA-WH-	4-02	9/22/95	12" x 12", Floor Tile, Tan	Room 137	200 SF
FRA-WH-	5-01	9/22/95	2' x 4', Ceiling Tile, Pinhole	Rooms 104,105, and 112	1300 SF
FRA-WH-	5-02	9/22/95	2' x 4', Ceiling Tile, Pinhole	Rooms 104,105, and 112	1300 SF
FRA-WH-	5-03	9/22/95	2' x 4', Ceiling Tile, Pinhole	Rooms 104,105, and 112	1300 SF
FRA-WH-	6-01	9/22/95	2' x 4', Ceiling Tile, Fissured	Room 105	400 SF

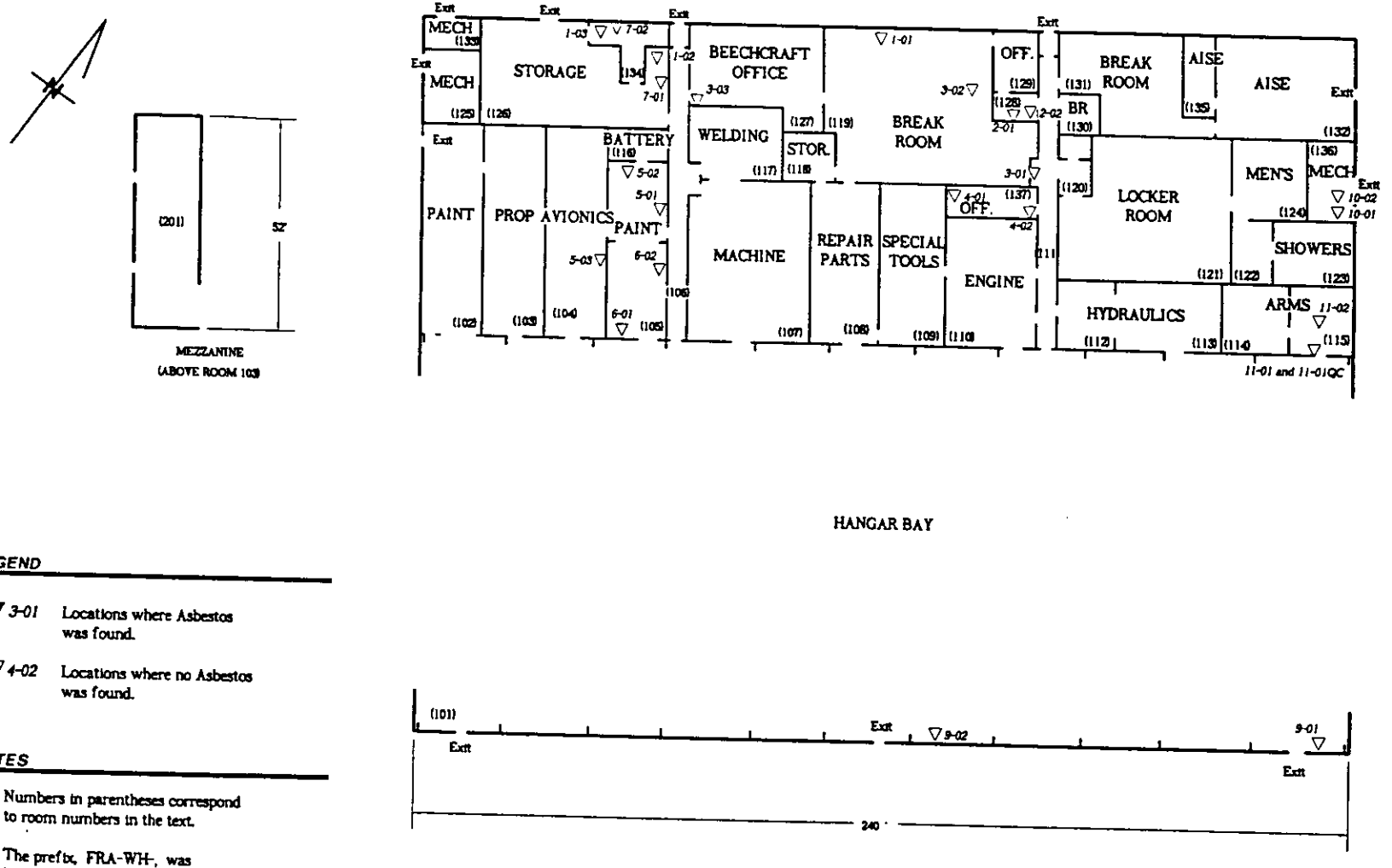
Note. Shaded sample numbers indicate asbestos containing material.

Table 2 - 1 Sample Locations and Description

White Hangar, #47427, Building No 1

Sample Number Prefix	Sample Number Suffix	Inspected	Description	Material Location	Quantity
FRA-WH-	6-02	9/22/95	2' x 4', Ceiling Tile, Fissured	Room 105	400 SF
FRA-WH-	7-01	9/22/95	9" x 9", Floor Tile, Tan	Rooms 126 and 134	200 SF
FRA-WH-	7-02	9/22/95	9" x 9", Floor Tile, Tan	Rooms 126 and 134	200 SF
FRA-WH-	9-01	9/22/95	PFI	Thoughout hangar area	5 EA
FRA-WH-	9-02	9/22/95	PFI	Thoughout hangar area	5 EA

Note. Shaded sample numbers indicate asbestos containing material.



LEGEND

▼ *3-01* Locations where Asbestos was found.

▽ *4-02* Locations where no Asbestos was found.

NOTES

1. Numbers in parentheses correspond to room numbers in the text.
2. The prefix, FRA-WH-, was left off for readability.

FIRST FLOOR

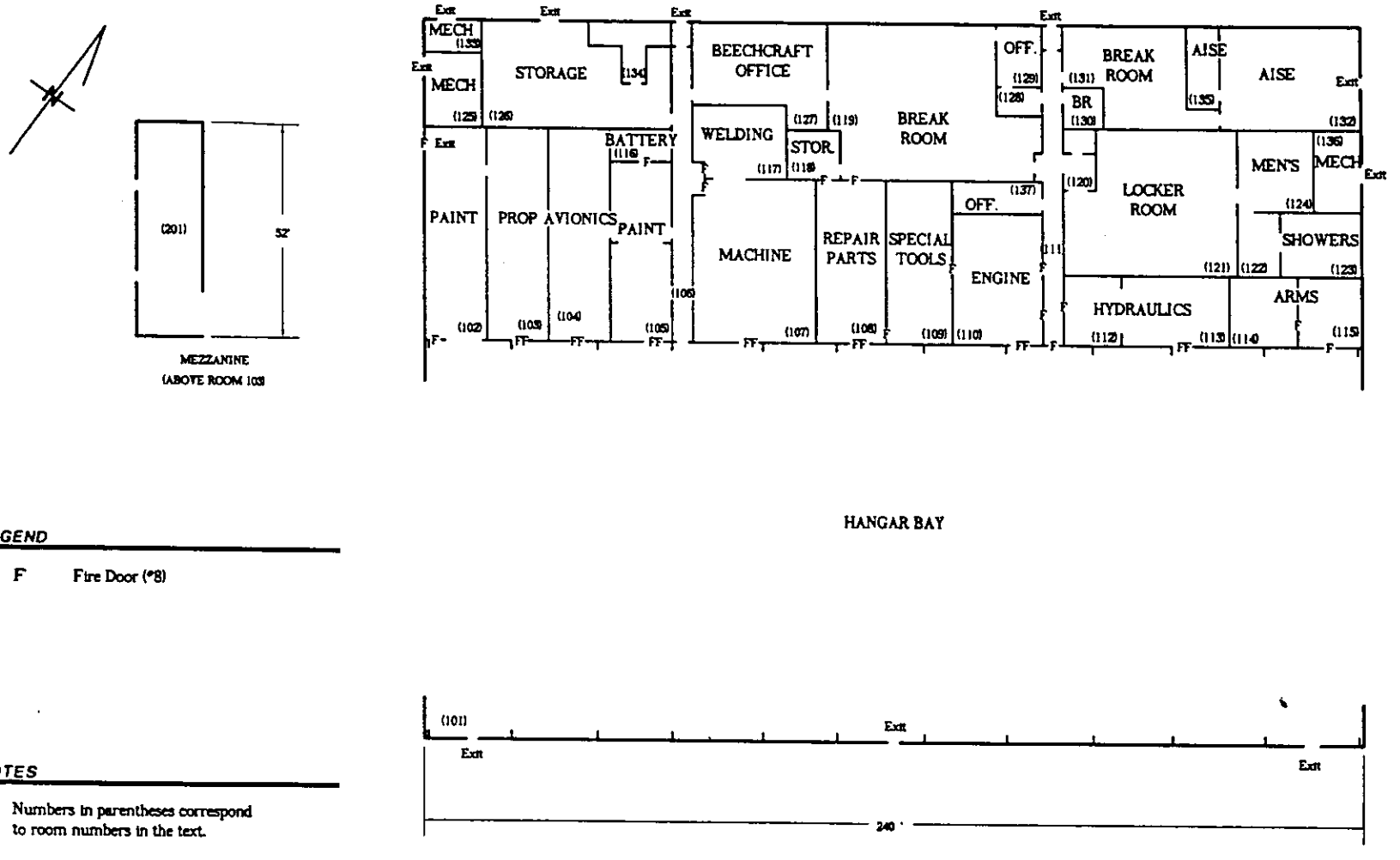
FIGURE 1

Anchorage, AK
Fort Richardson Aviation Complex
White Hangar #6, #47427 (#1)

Sampling Locations

0 40

Scale: 1" = 40'



LEGEND

F Fire Door (*8)

NOTES

1. Numbers in parentheses correspond to room numbers in the text.

FIRST FLOOR

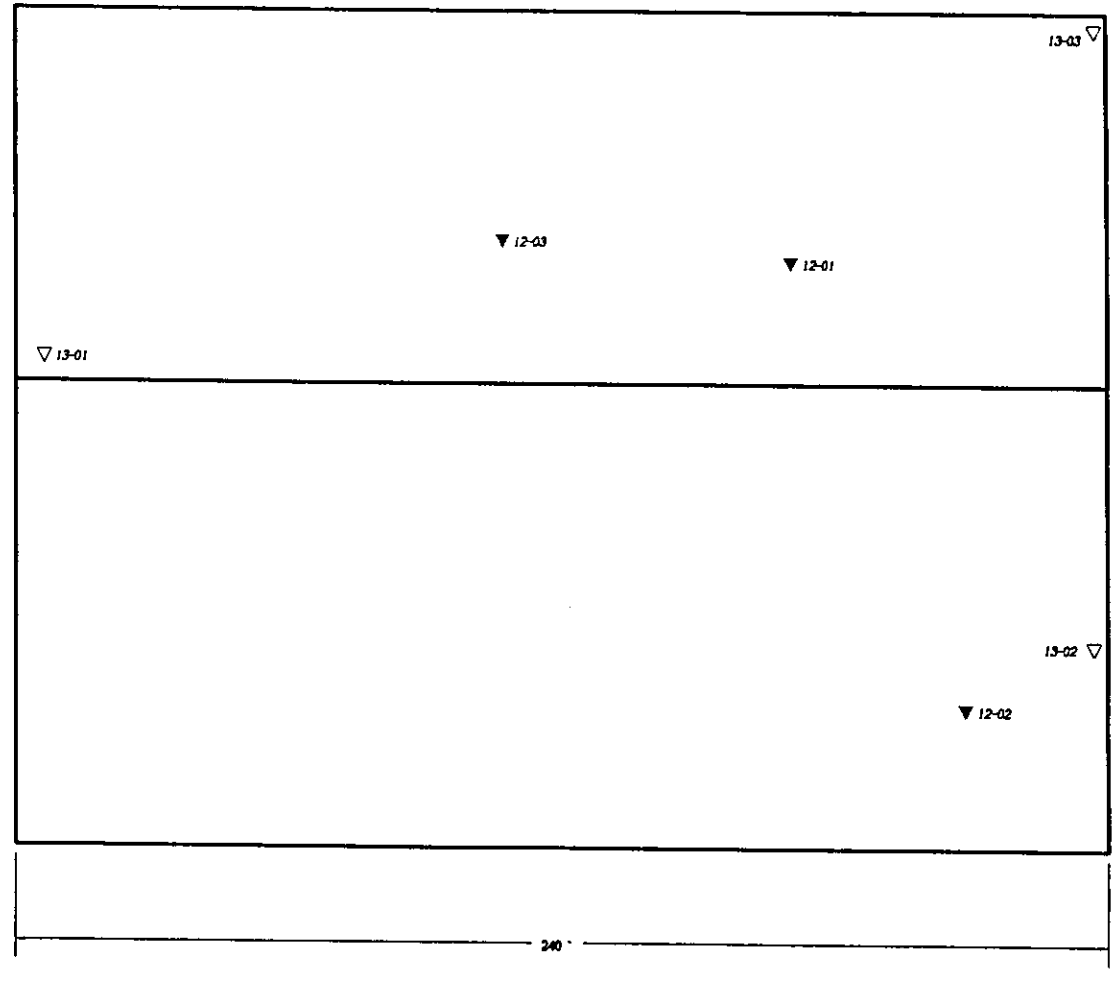
FIGURE 2

Anchorage, AK
Fort Richardson Aviation Complex
White Hangar *6, *47427 (*1)

Asbestos Containing Material

0 40

Scale: 1" = 40'



LEGEND

▼ *3-01* Locations where Asbestos was found.

▽ *4-02* Locations where no Asbestos was found.

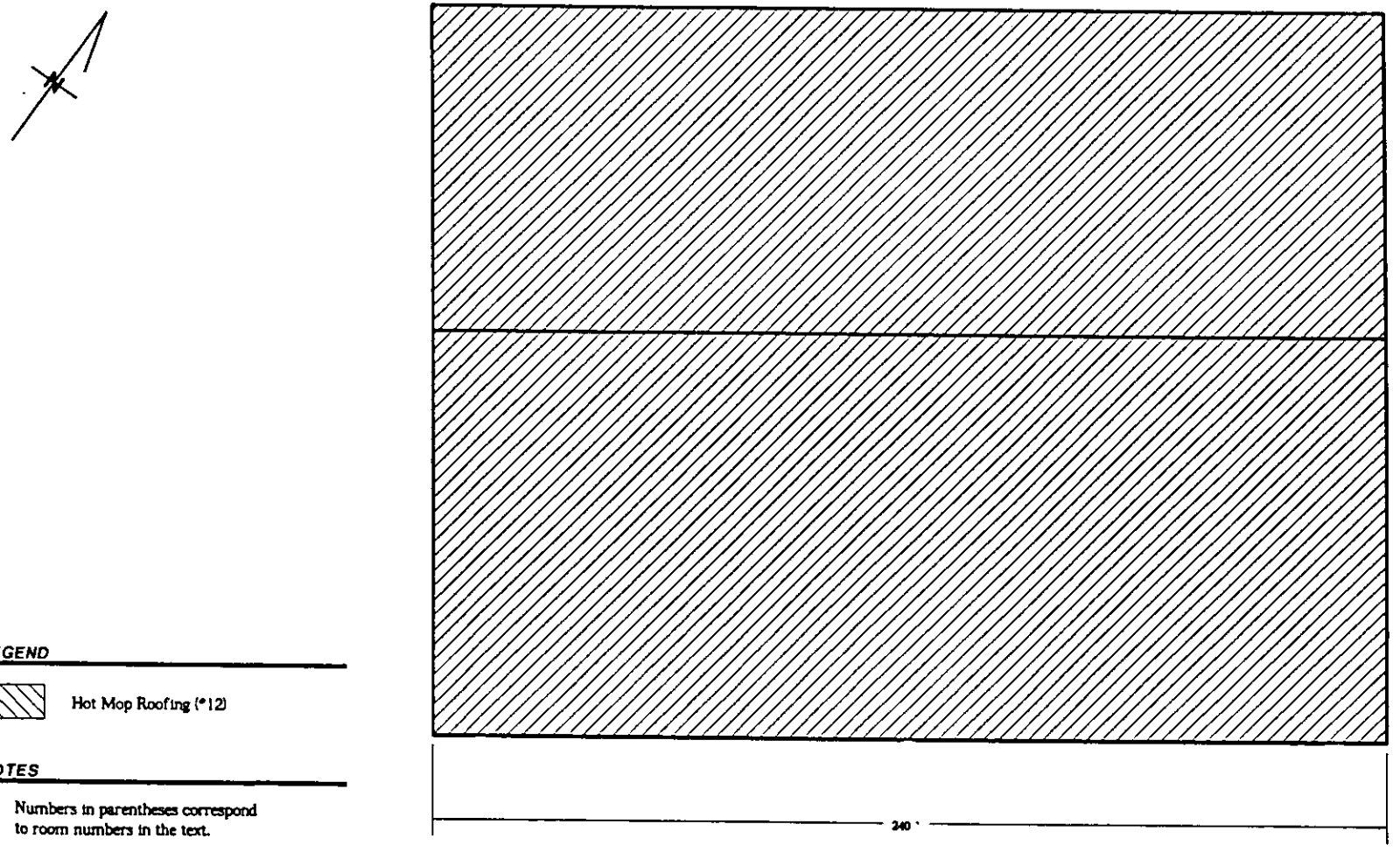
NOTES

1. Numbers in parentheses correspond to room numbers in the text.
2. The prefix, FRA-WH-, was left off for readability.

ROOF DIAGRAM

FIGURE 3

Anchorage, AK Fort Richardson Aviation Complex White Hangar #6, #47427 (#1)	Sampling Locations	0 40 Scale: 1"= 40'



ROOF DIAGRAM

LEGEND

Hot Mop Roofing (*12)

NOTES

1. Numbers in parentheses correspond to room numbers in the text.

FIGURE 4

Anchorage, AK Fort Richardson Aviation Complex White Hangar *6, *47427 (*1)	Asbestos Containing Material	0 40 Scale: 1"= 40'

Table 7 - 2 Cost Estimates for ACM

Building No., Name: 2, Ground Support Building, #47428
Location: Fort Richardson Aviation Complex
Area (SF): 4150
Date of Inspection: 25-Sep-95

HA	ACM	Description	Location	Quantity	Friabile	Response Actions	*Repair	O&M	Remove	Replace
4	Yes	Roofing Flash	Roof	500 SF	NO	O&M Program	$65	$7	$4,250	$2,250
						Totals	**$65**	**$7**	**$4,250**	**$2,250**

* Repair costs are calculated from percent damage, removal rate, and replacement rate.

** Fire Doors cannot be repaired. Repair cost for Fire Doors would reflect total removal and total replacement.

Table 3 - 2 **Inspection Inventory Summary**

Fort Richardson Aviation Complex

Ground Support Building, #47428

Building No 2

Homogeneous Area Number	Description of Material	Asbestos Containing	Quantity
1	Gypsum Board I	No	2650 SF
2	Gypsum Board II	No	1650 SF
3	Hot Mop Roofing	No	2700 SF
4	Roofing Flash	Yes	500 SF

Year Built and Square Footage:	1976 4150 SF
Building Number:	2
Building Description:	Ground Support Building, #47428
Asbestos Program Manager:	Dave Bufo
Phone:	(907) 563-6436
Address:	Ogden 4040 B Street Anchorage, AK 99503
Inspector Name:	Roberto Chavarria
EPA Accreditation No:	5PSI 47403

Table 5 - 2 **Asbestos Homogeneous Area Summary**

Fort Richardson Aviation Complex

Ground Support Building, #47428 25-Sep-95

Building No 2 **Inspected**

Homogeneous Area : **No. 4** **Roofing Flash**

Approximate Quantity: 500 SF **No. of Occupants:** 2

Type of Material: ☐ TSI ☐ Surfacing Material ☑ Miscellaneous

Friable: ☐ Yes ☑ No

Accessible: ☑ Yes ☐ No

Located in a Plenum: ☐ Yes ☑ No

Material Location: Roof

Condition

Percent Damage: < 1 % ☐ Localized ☐ Distibuted

Type of Damage: ☐ Deterioration ☐ Water ☐ Physical

Overall Rating: ☑ Good ☐ Damaged ☐ Significantly Damage

Potential for Disturbance

	High 1	2	3	4	Low 5
Vibration:	☐	☐	☐	☐	☑
Contact:	☐	☐	☐	☐	☑
Air Erosion:	☐	☐	☐	☐	☑

Analytical Results

Sample Designation	Percent Asbestos:	Type of Asbestos
FRA-GSB-4-01	8	Chrysotile
FRA-GSB-4-02	10	Chrysotile
FRA-GSB-4-03	7	Chrysotile

Comments:

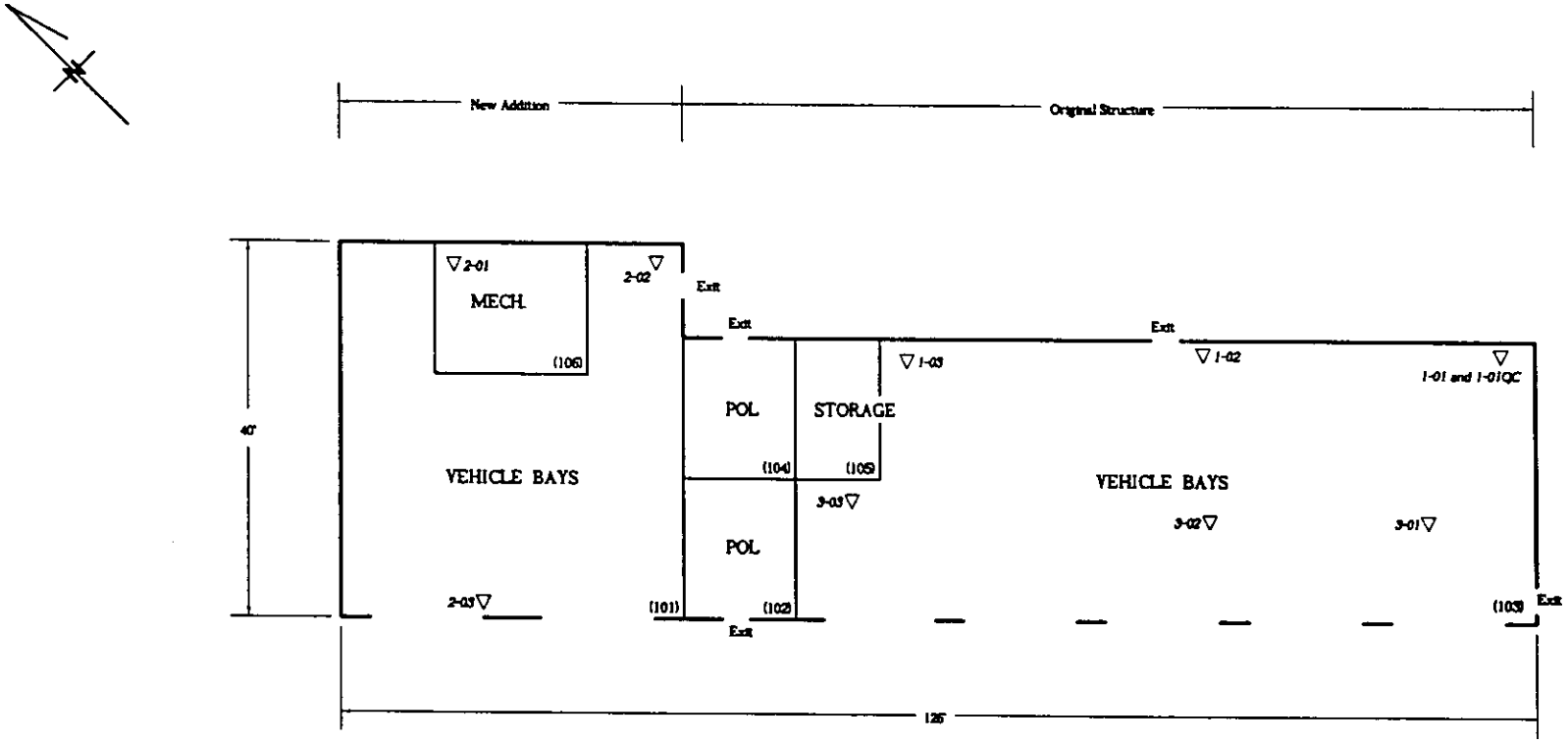
Recomended Response Action: O&M Program

Table 2 - 2 Sample Locations and Description

Ground Support Building, #47428, Building No 2

Sample Number Prefix	Sample Number Suffix	Inspected	Description	Material Location	Quantity
FRA-GSB-	1-01	9/25/95	Gypsum Board I	Throughout the ceilings of rooms 102 adn 104 and the Interior Wall	2650 SF
FRA-GSB-	1-02	9/25/95	Gypsum Board I	Throughout the ceilings of rooms 102 adn 104 and the Interior Wall	2650 SF
FRA-GSB-	1-03	9/25/95	Gypsum Board I	Throughout the ceilings of rooms 102 adn 104 and the Interior Wall	2650 SF
FRA-GSB-	2-01	9/25/95	Gypsum Board II	Throughout the ceiling of room 106 adn the Interior Walls of thebui	1650 SF
FRA-GSB-	2-02	9/25/95	Gypsum Board II	Throughout the ceiling of room 106 adn the Interior Walls of thebui	1650 SF
FRA-GSB-	2-03	9/25/95	Gypsum Board II	Throughout the ceiling of room 106 adn the Interior Walls of thebui	1650 SF
FRA-GSB-	3-01	9/25/95	Hot Mop Roofing	Roof	2700 SF
FRA-GSB-	3-02	9/25/95	Hot Mop Roofing	Roof	2700 SF
FRA-GSB-	3-03	9/25/95	Hot Mop Roofing	Roof	2700 SF
FRA-GSB-	4-01	9/25/95	Roofing Flash	Roof	500 SF
FRA-GSB-	4-02	9/25/95	Roofing Flash	Roof	500 SF
FRA-GSB-	4-03	9/25/95	Roofing Flash	Roof	500 SF

Note. Shaded sample numbers indicate asbestos containing material.



FIRST FLOOR

LEGEND

▼ 3-01 Locations where Asbestos was found.

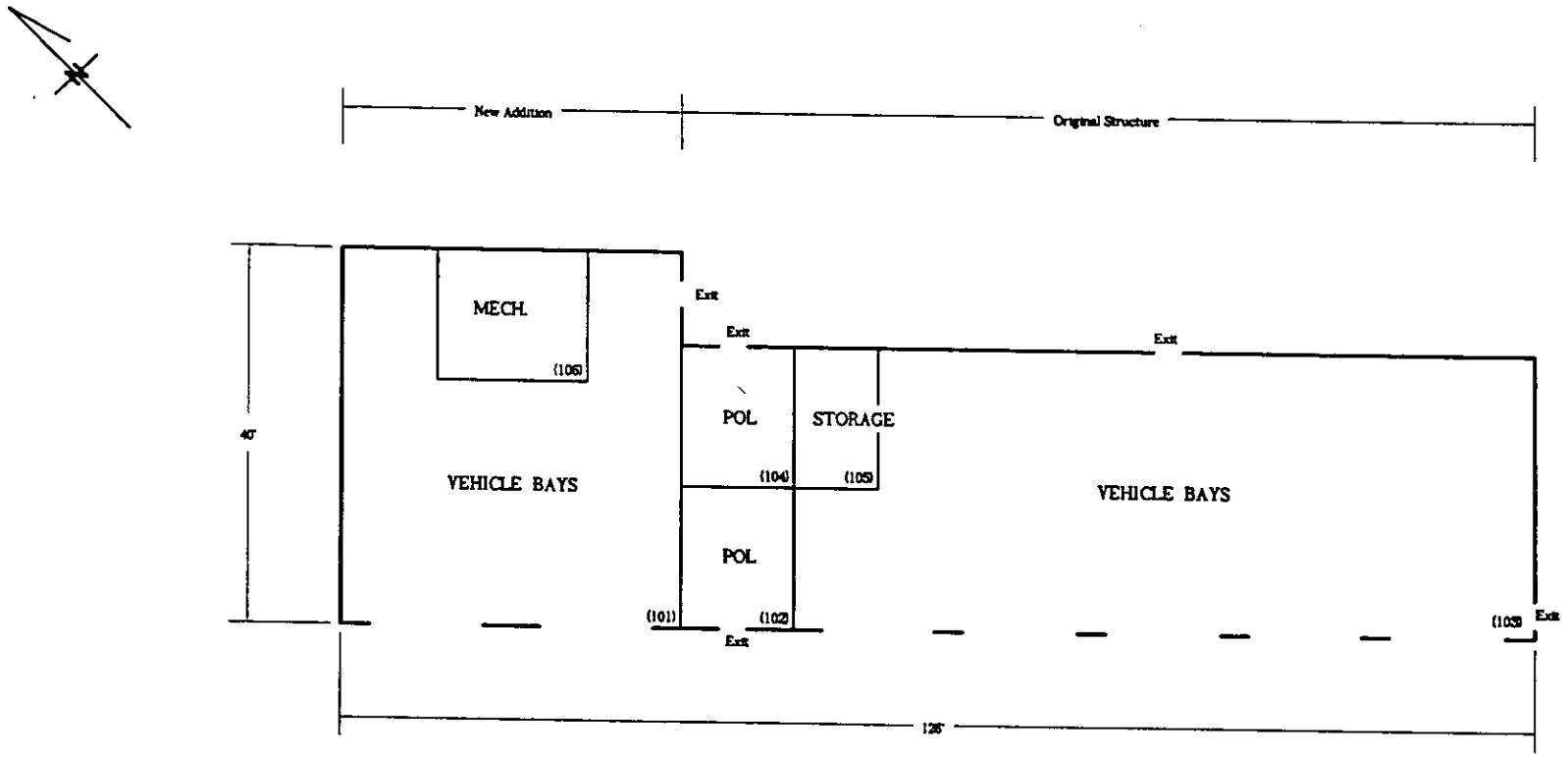
▽ 4-02 Locations where no Asbestos was found.

NOTES

1. Numbers in parentheses correspond to room numbers in the text.
2. The prefix, FRA-GSB-, was left off for readability.

FIGURE 5

Anchorage, AK Fort Richardson Aviation Complex Ground Power Building *47428(*2)	Sampling Locations	0 20 Scale: 1"= 20'



FIRST FLOOR

NOTES

1. Numbers in parentheses correspond to room numbers in the text.

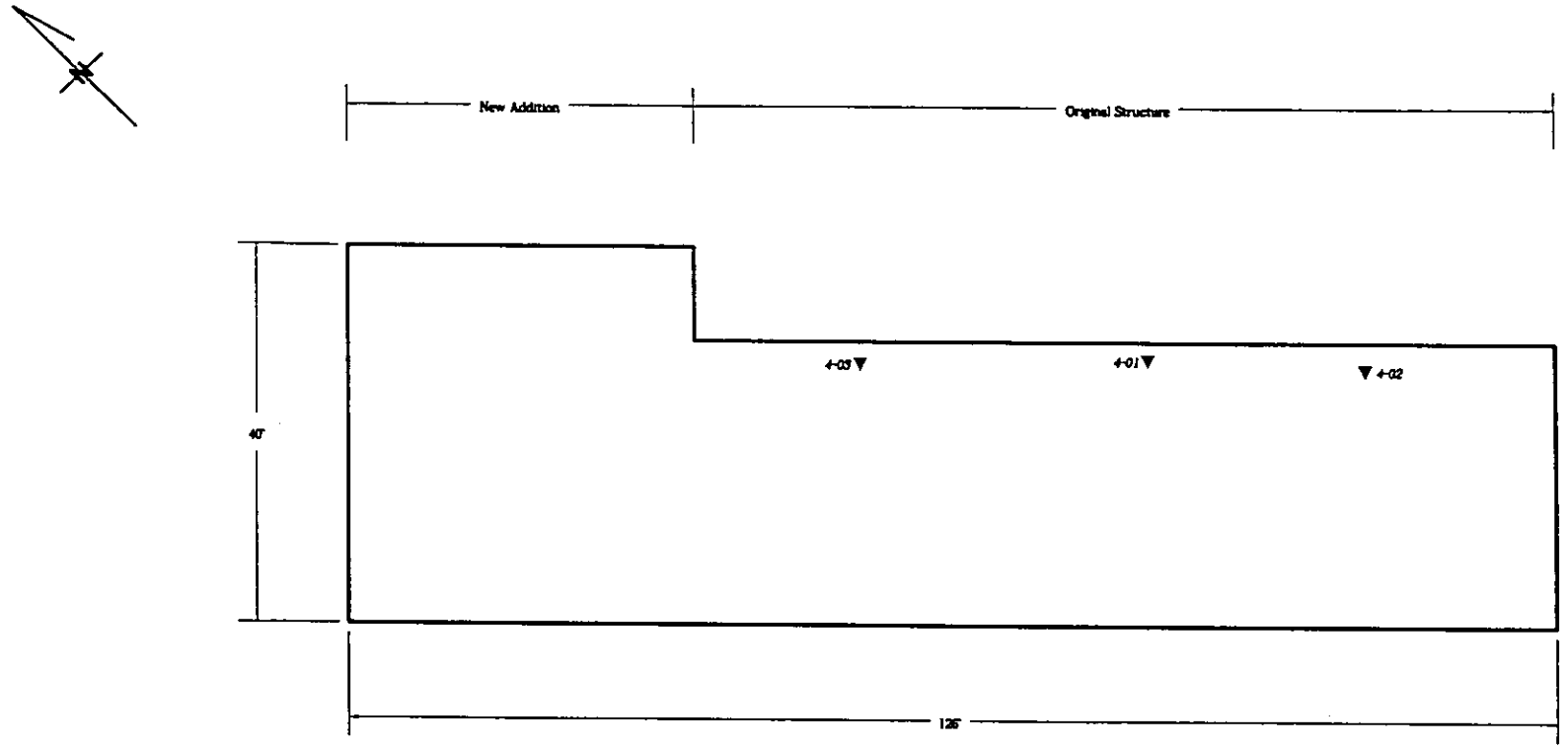
FIGURE 6

Anchorage, AK
Fort Richardson Aviation Complex
Ground Power Building *47428(*2)

No Asbestos Detected

0 20

Scale: 1"= 20'



ROOF DIAGRAM

LEGEND

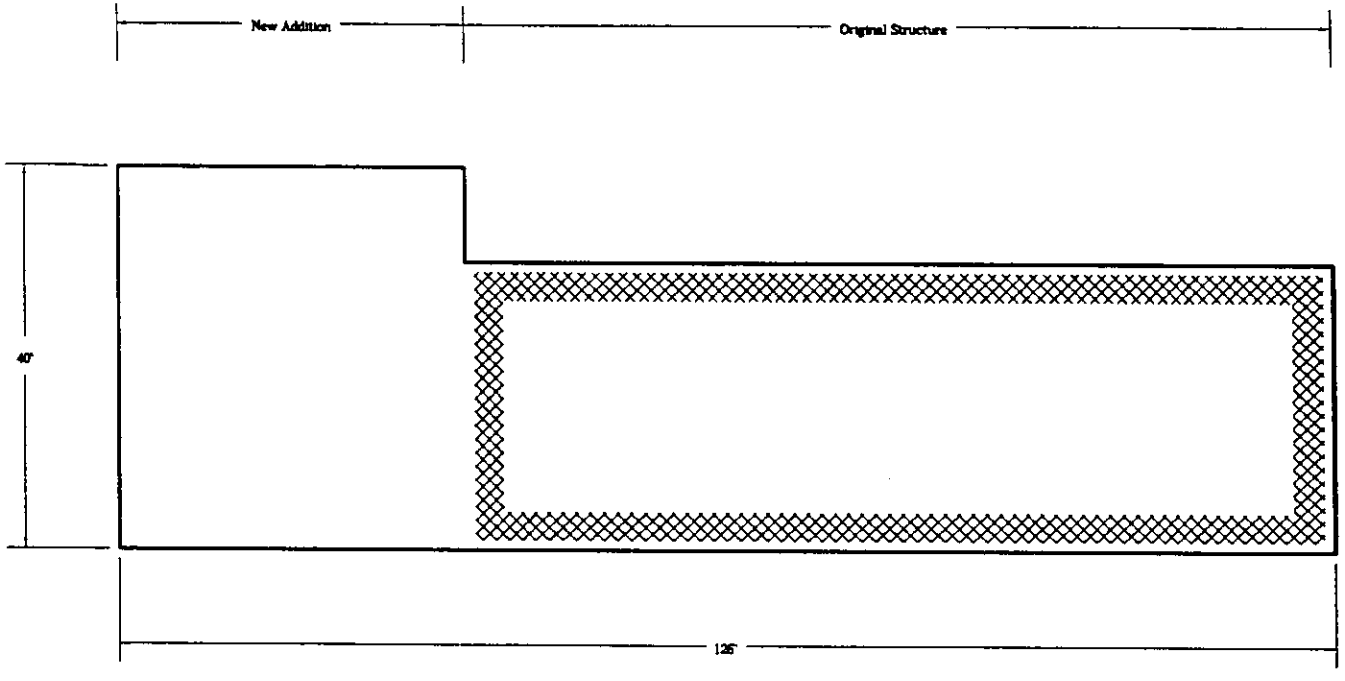
▼ 4-01 Locations where Asbestos was found.

NOTES

1. Numbers in parentheses correspond to room numbers in the text.
2. The prefix, FRA-GSB-, was left off for readability.

FIGURE 7

Anchorage, AK Fort Richardson Aviation Complex Ground Power Building #47428(#2)	Sampling Locations	0 20 Scale: 1" = 20'



ROOF DIAGRAM

LEGEND

Roof Flash (*4)

NOTES

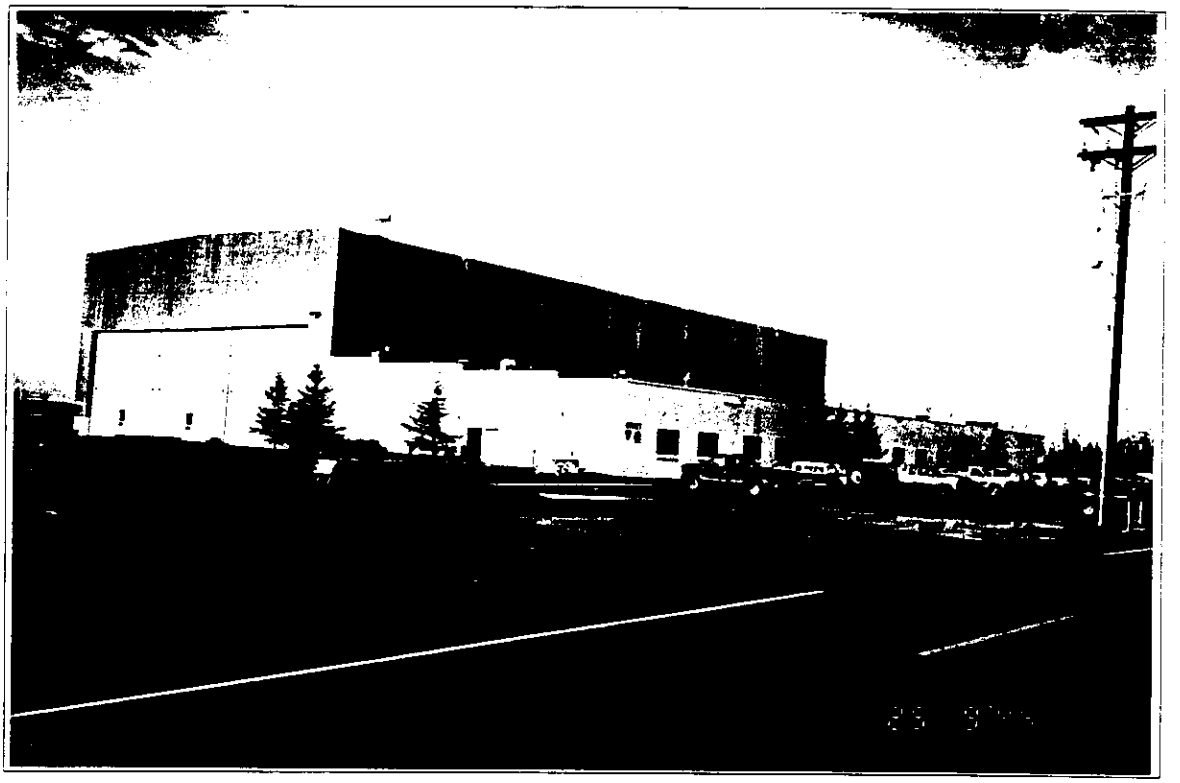
1. Numbers in parentheses correspond to room numbers in the text.

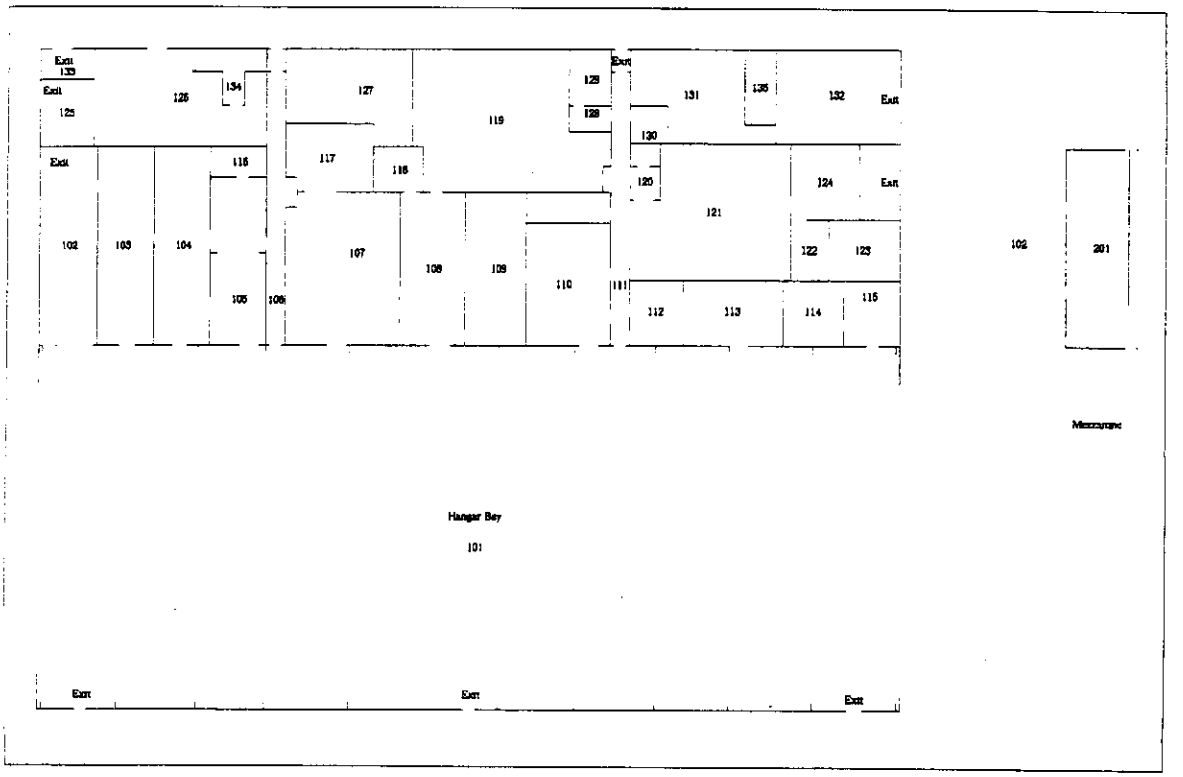
FIGURE 8

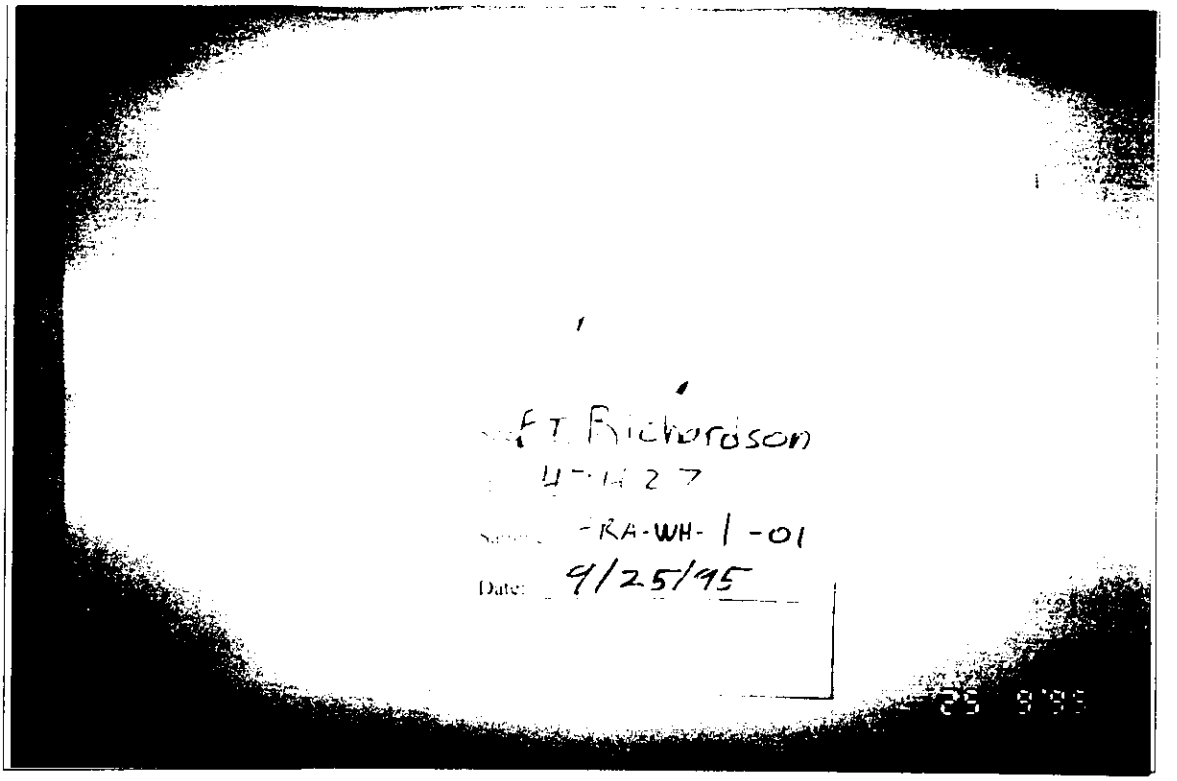
Anchorage, AK Fort Richardson Aviation Complex Ground Power Building *47428(*2)	Asbestos Containing Material	0 20 Scale: 1"= 20'

APPENDIX A
PHOTOGRAPHS

Building Number 1 White Hangar, #47427





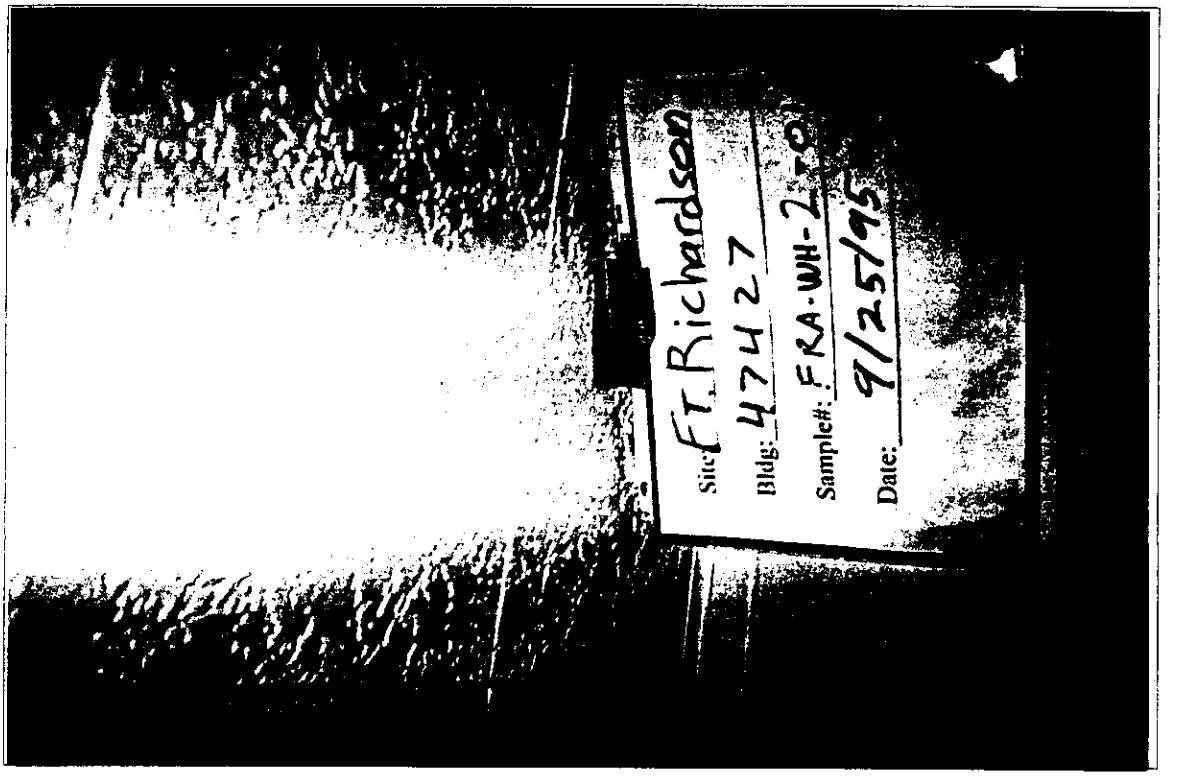


Gypsum Board *Photo No. 1*

Building No. *1* **HA No.** *1*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska

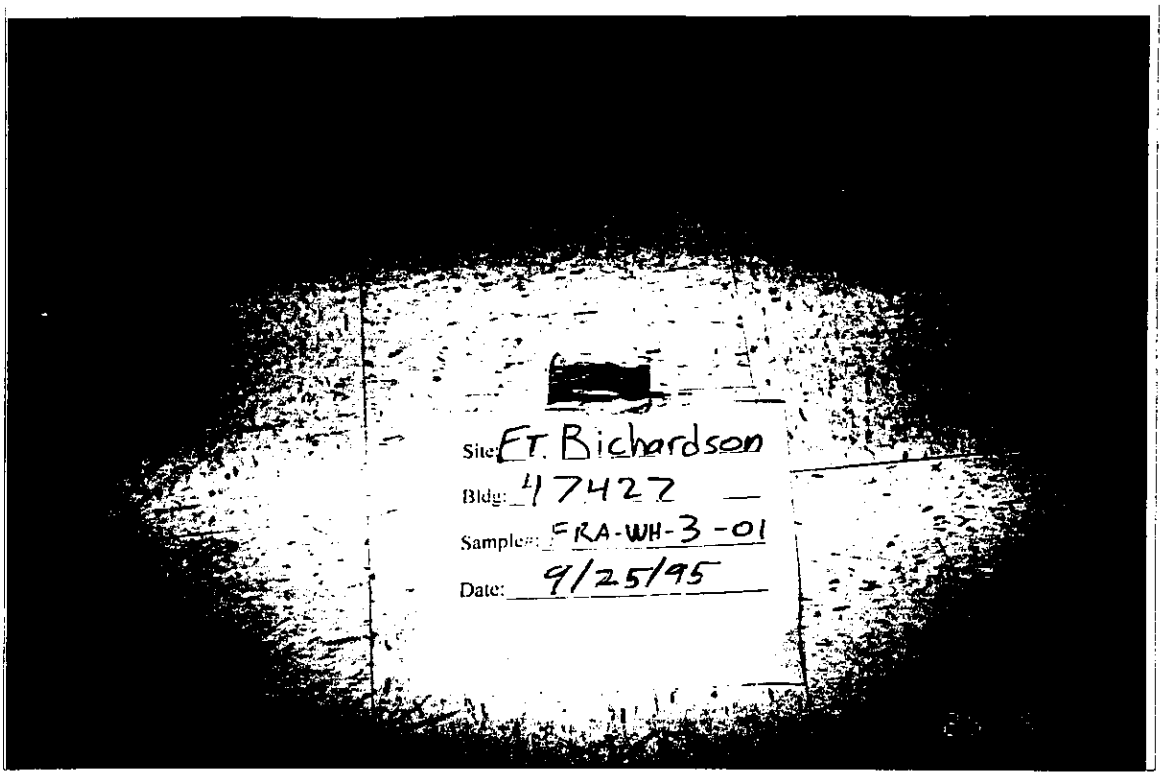


1' x 1', Ceiling Tile, Textured *Photo No. 2*

Building No. *1* **HA No.** *2*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



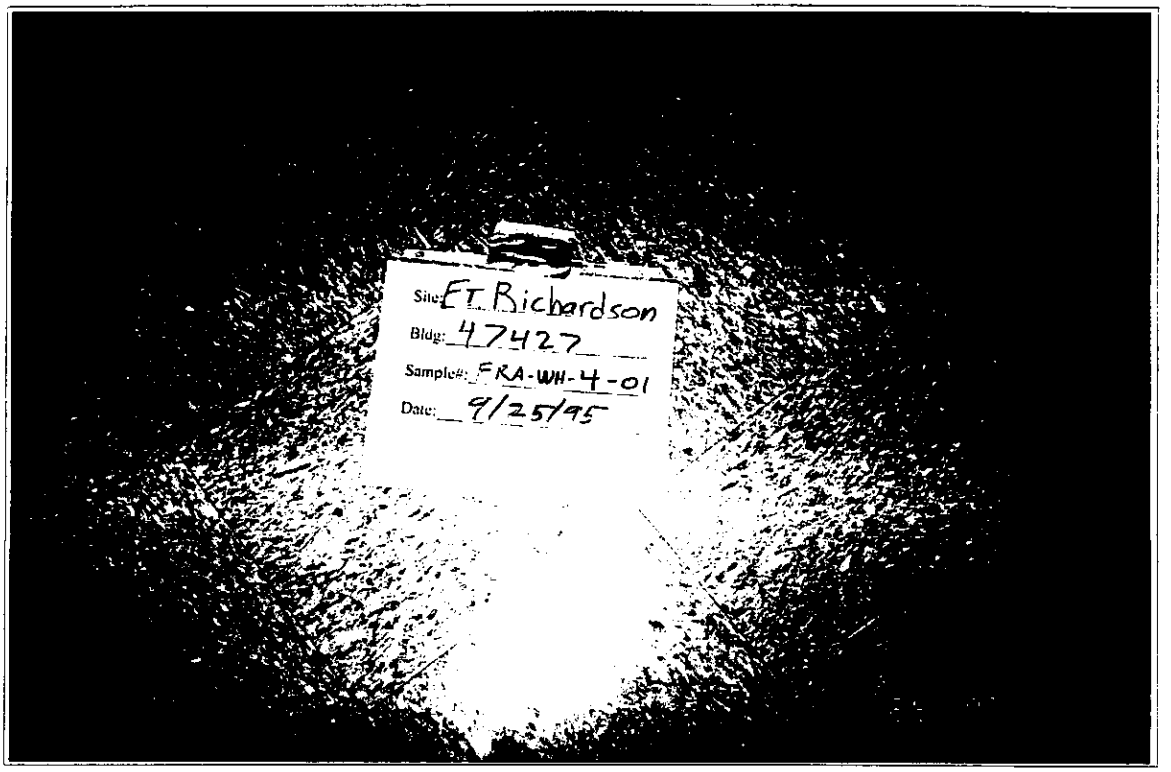
12" x 12", Floor Tile, White

Photo No. 3

Building No. *1* **HA No.** *3*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



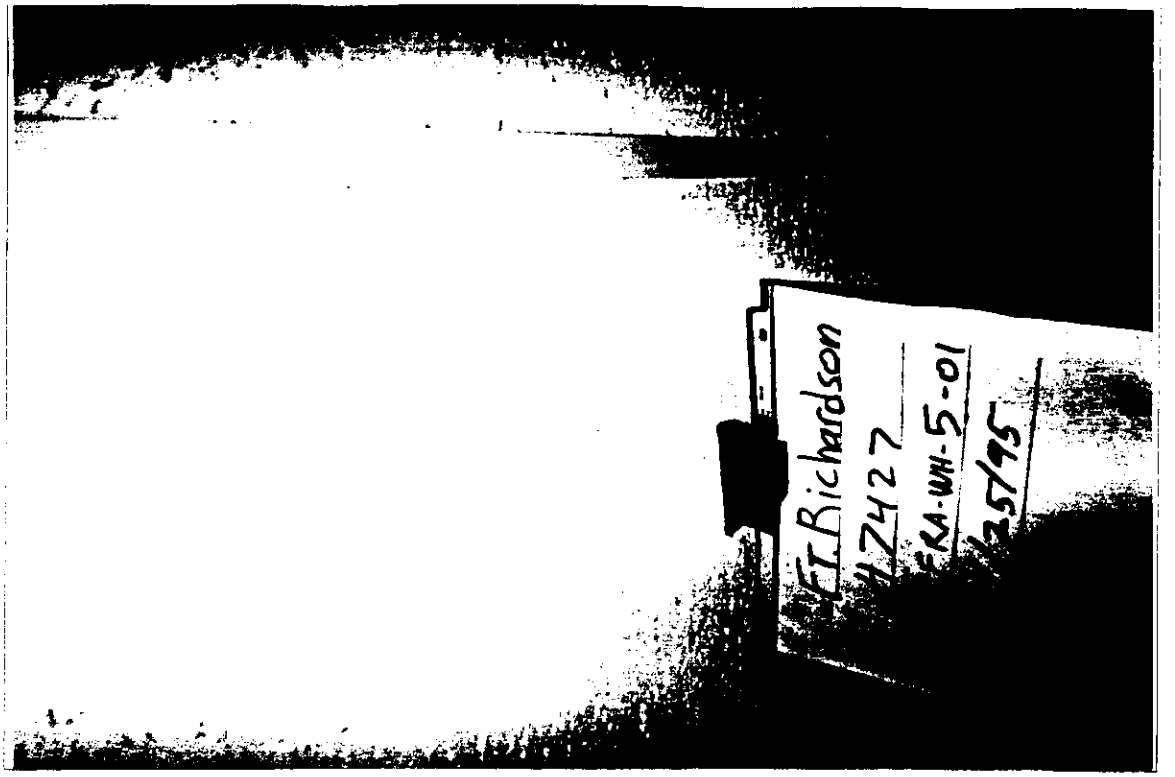
12" x 12", Floor Tile, Tan

Photo No. 4

Building No. *1* **HA No.** *4*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



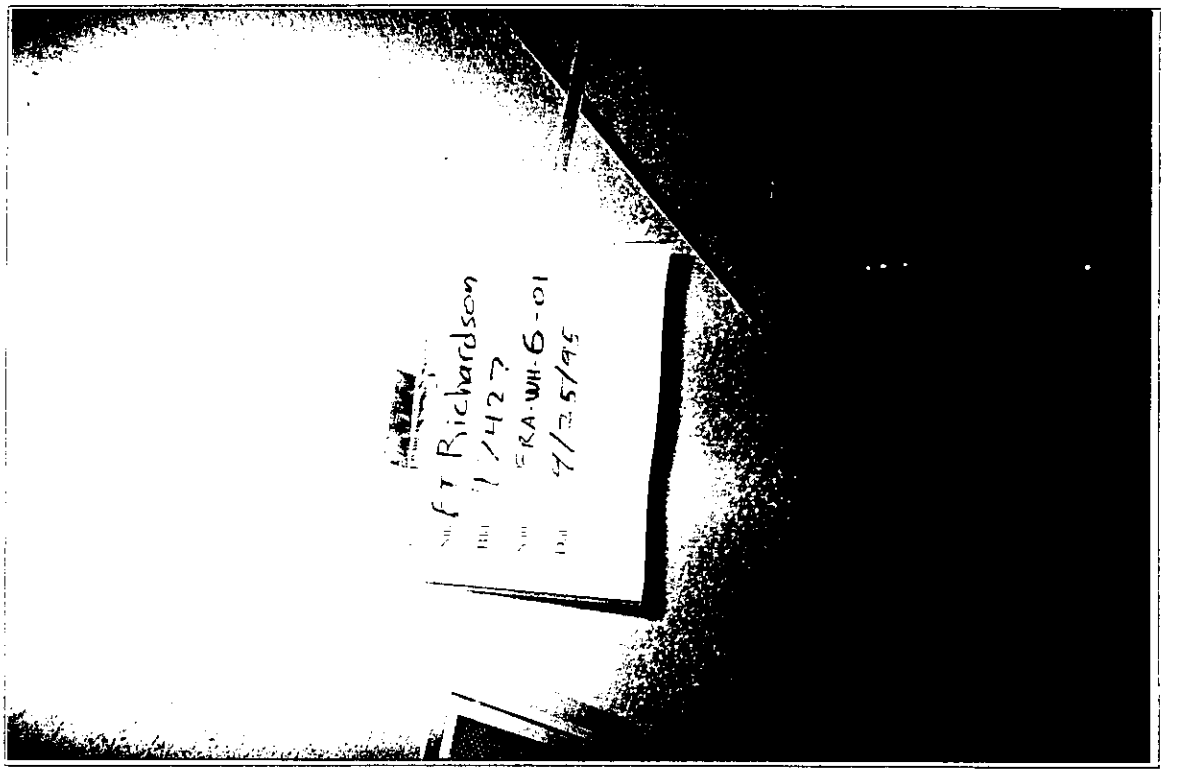
2' x 4', Ceiling Tile, Pinhole

Photo No. 5

Building No. *1* **HA No.** *5*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



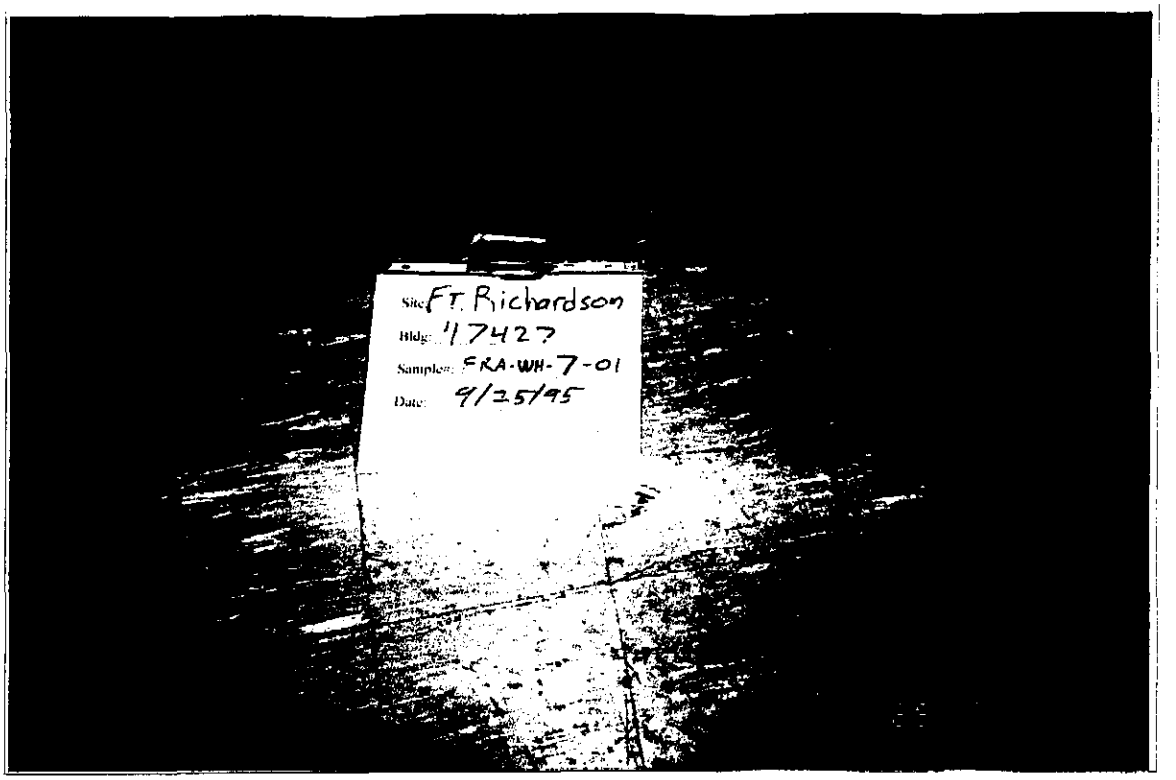
2' x 4', Ceiling Tile, Fissured

Photo No. 6

Building No. *1* **HA No.** *6*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska

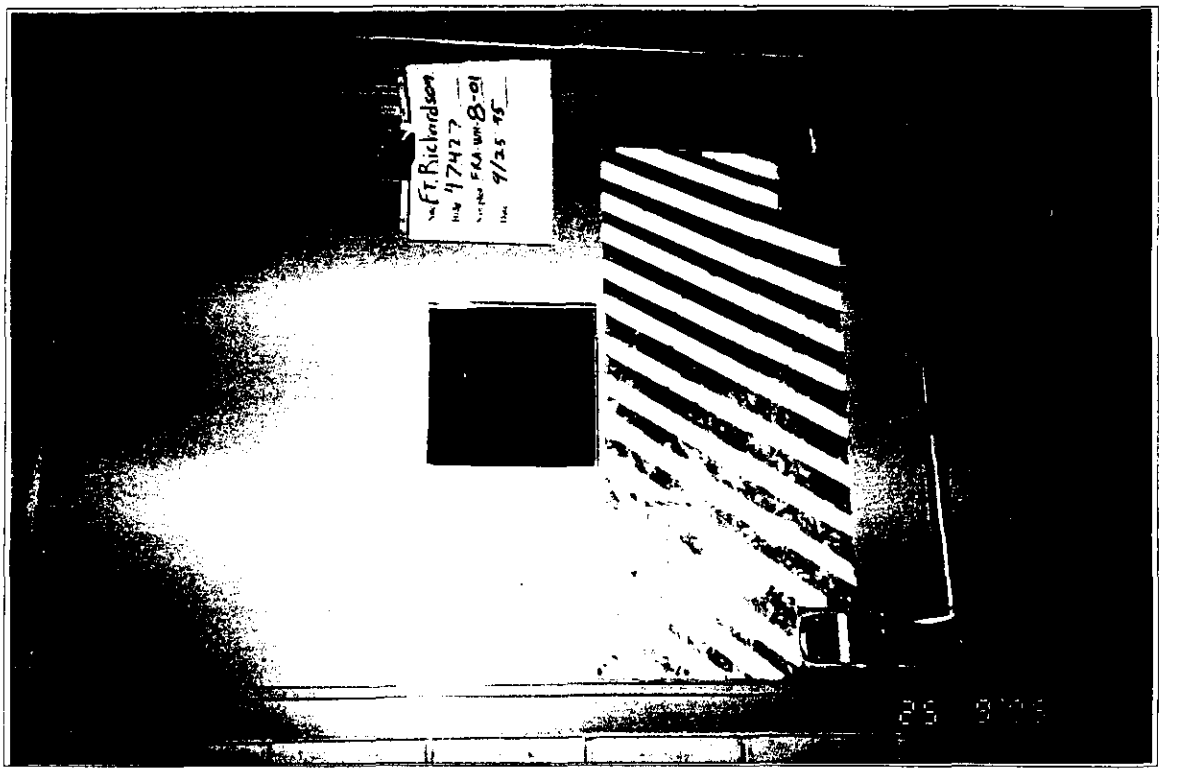


9" x 9", Floor Tile, Tan *Photo No. 7*

Building No. *1* **HA No.** *7*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska

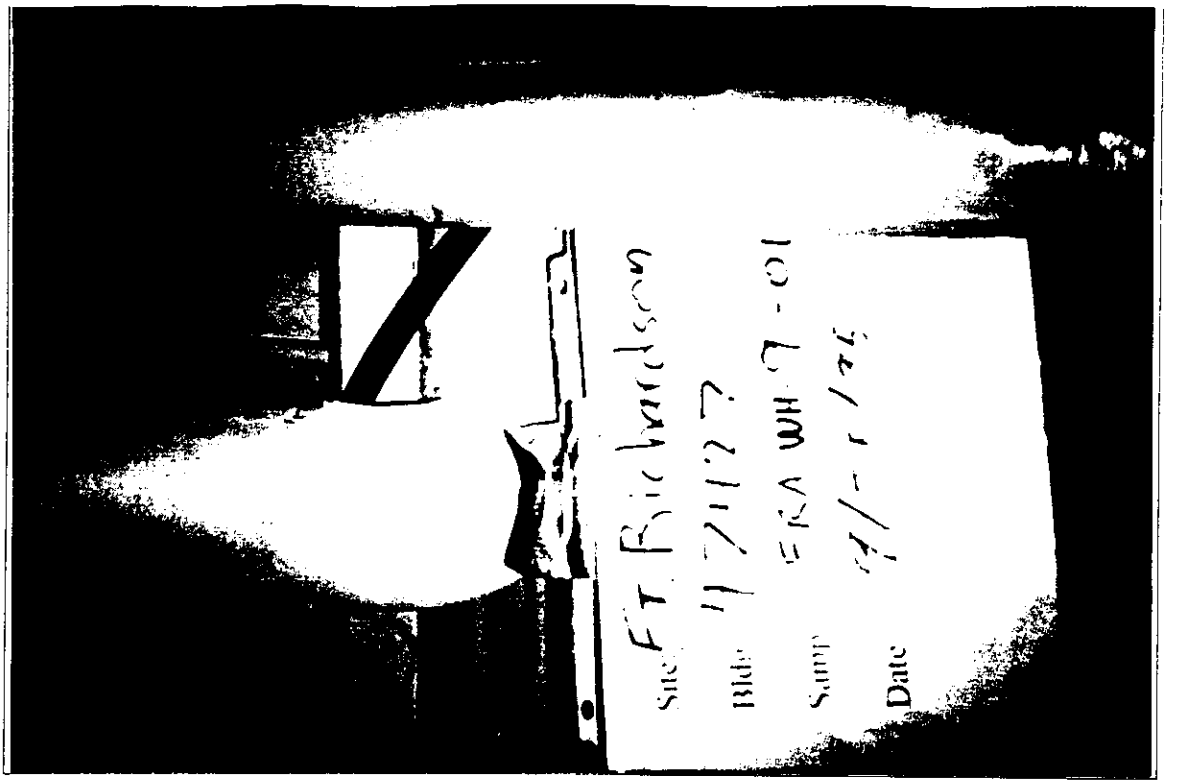


Fire Doors *Photo No. 8*

Building No. *1* **HA No.** *8*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



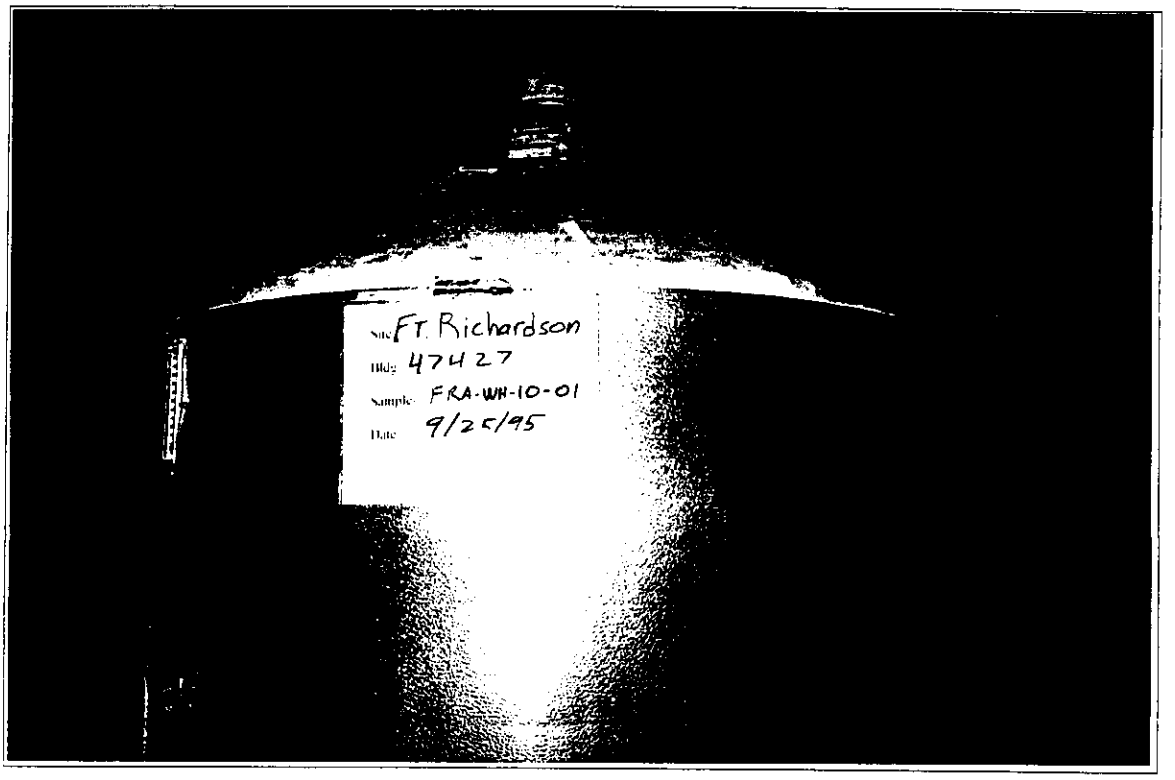
PFI

Photo No. 9

Building No. *1* **HA No. *9***

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



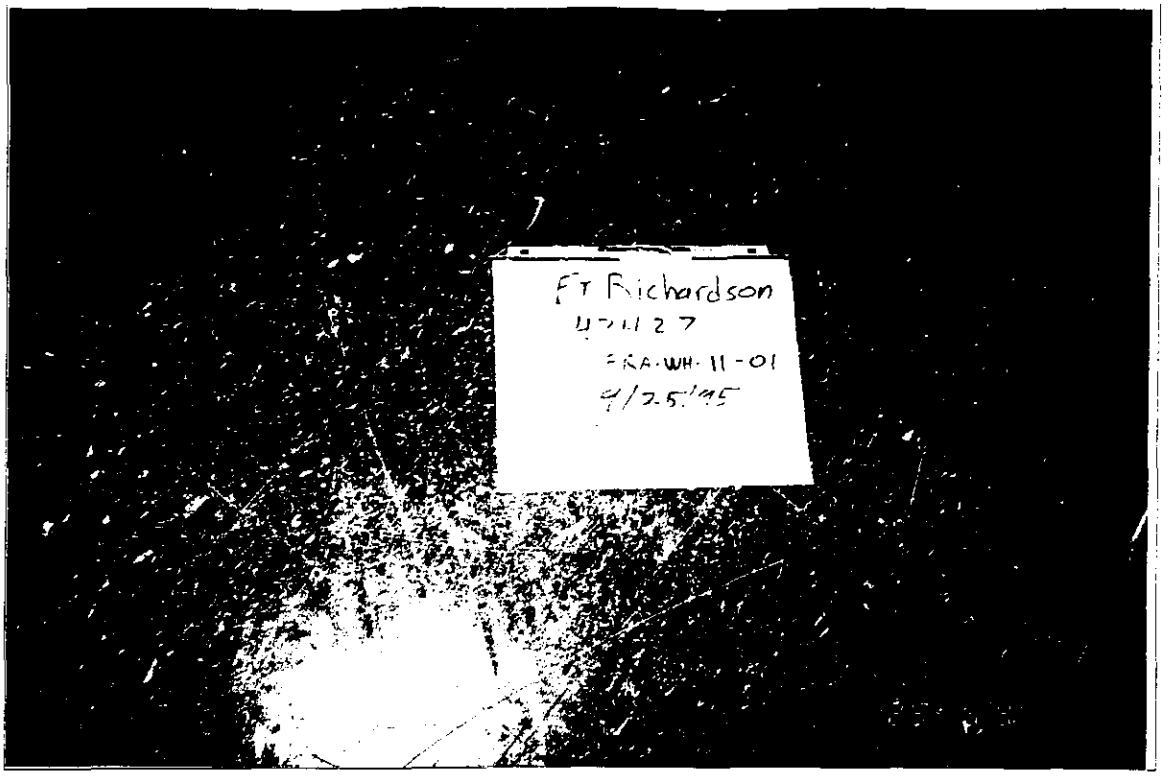
TI, Heating Hot Water

Photo No. 10

Building No. *1* **HA No. *10***

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



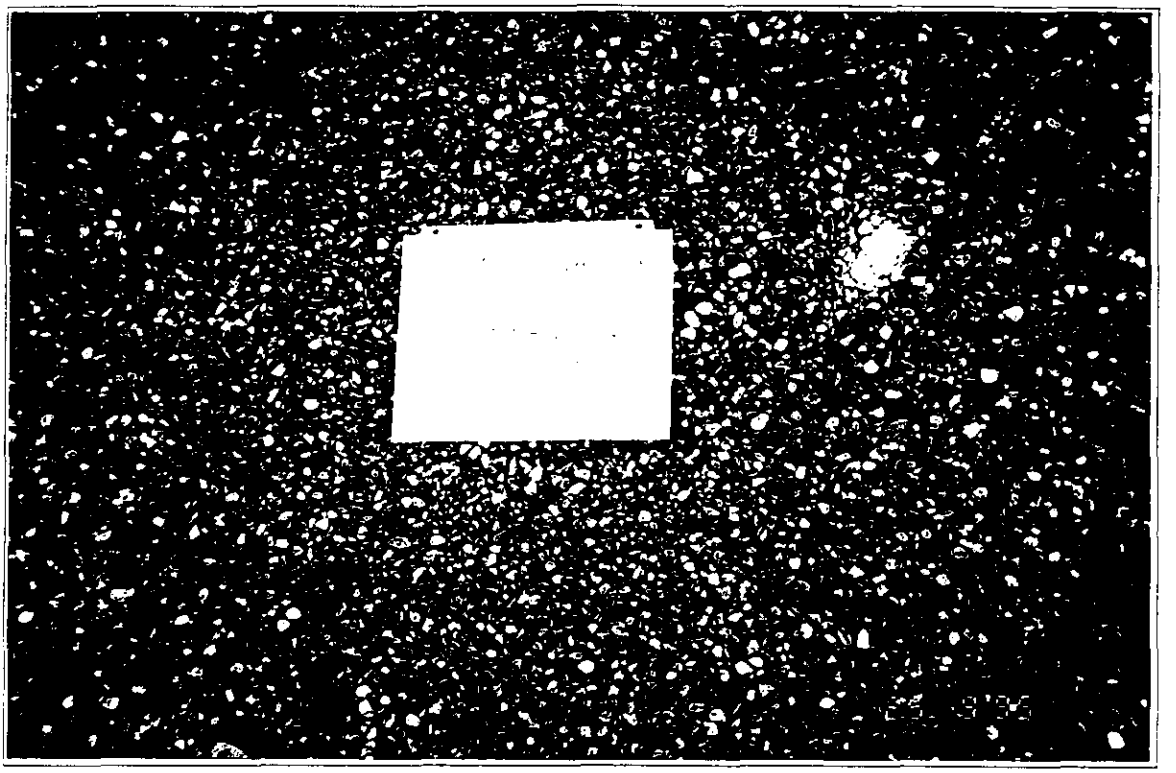
12" x 12", Floor Tile, Black

Photo No. 11

Building No. *1* **HA No.** *11*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska



Hot Mop Roofing

Photo No. 12

Building No. *1* **HA No.** *12*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska

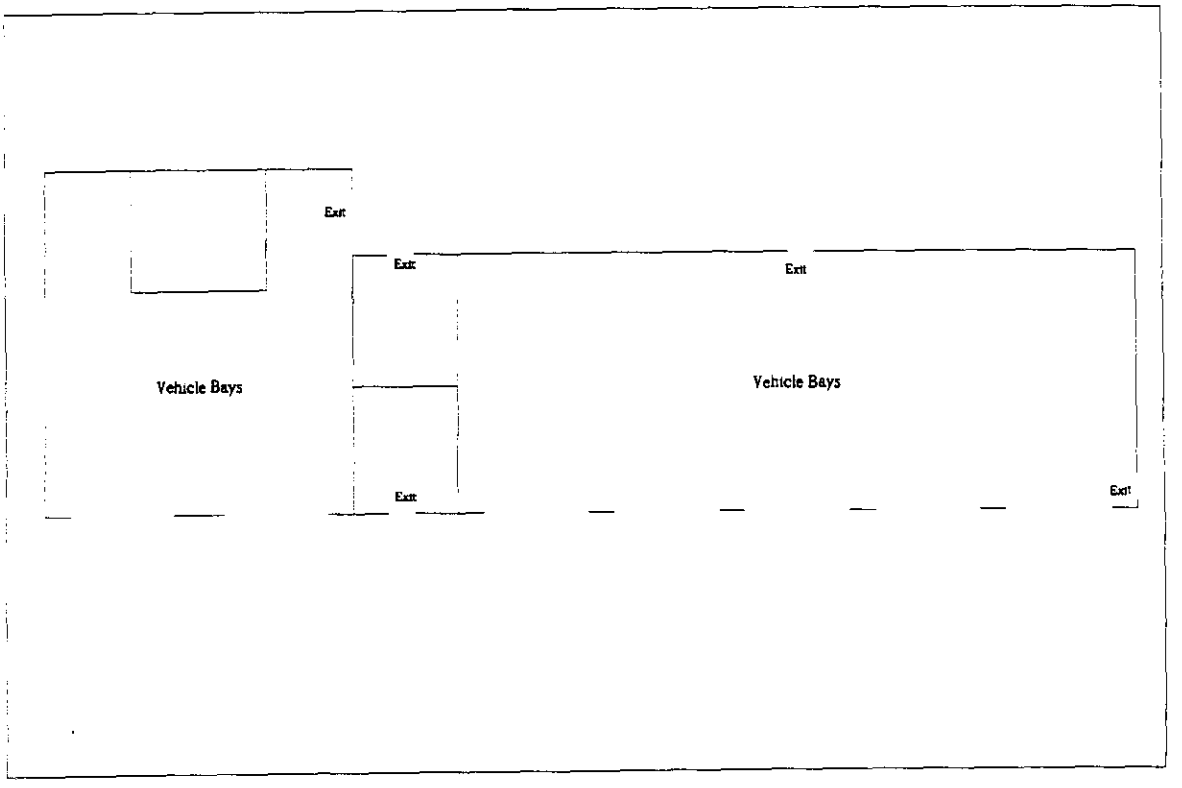
Roofing Flash

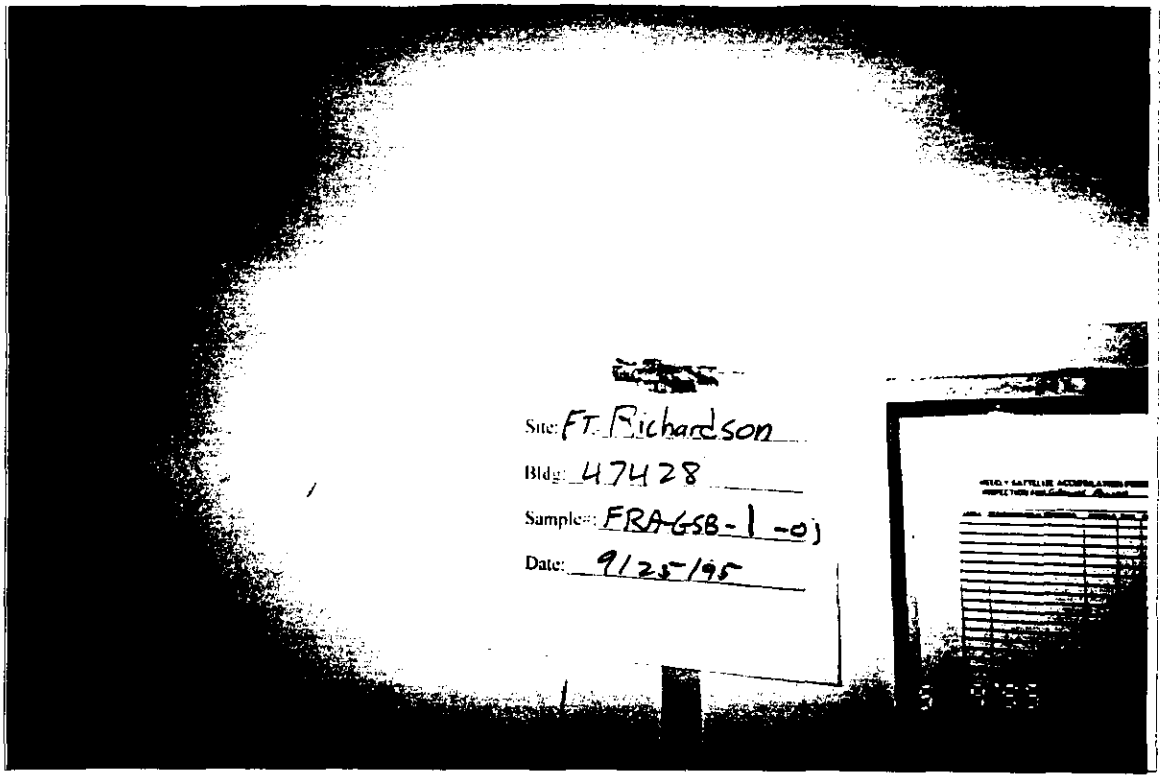
Building No. *1* **HA No.** *13* *Photo No. 13*

White Hangar, #47427

Fort Richardson Aviation Complex , Anchorage, Alaska

Building Number 2 Ground Support Building, #47428



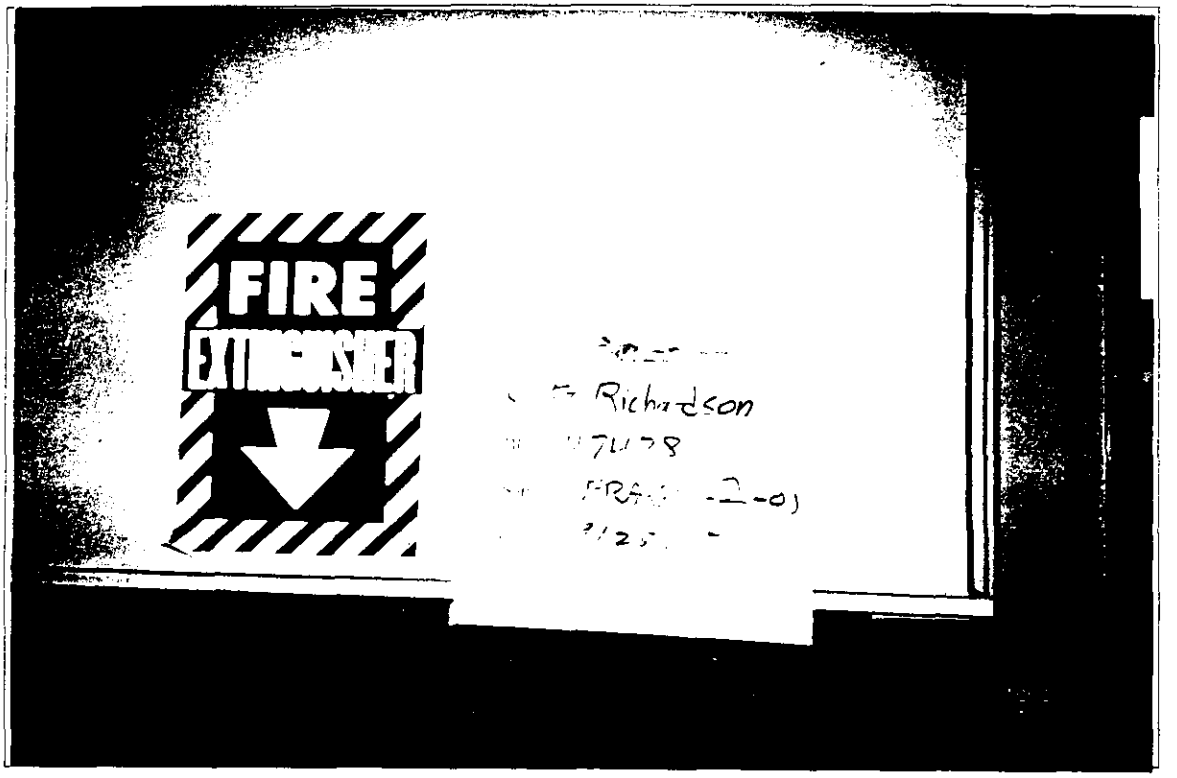


Gypsum Board I *Photo No. 14*

Building No. *2* **HA No. *1***

Ground Support Building, #47428

Fort Richardson Aviation Complex , Anchorage, Alaska

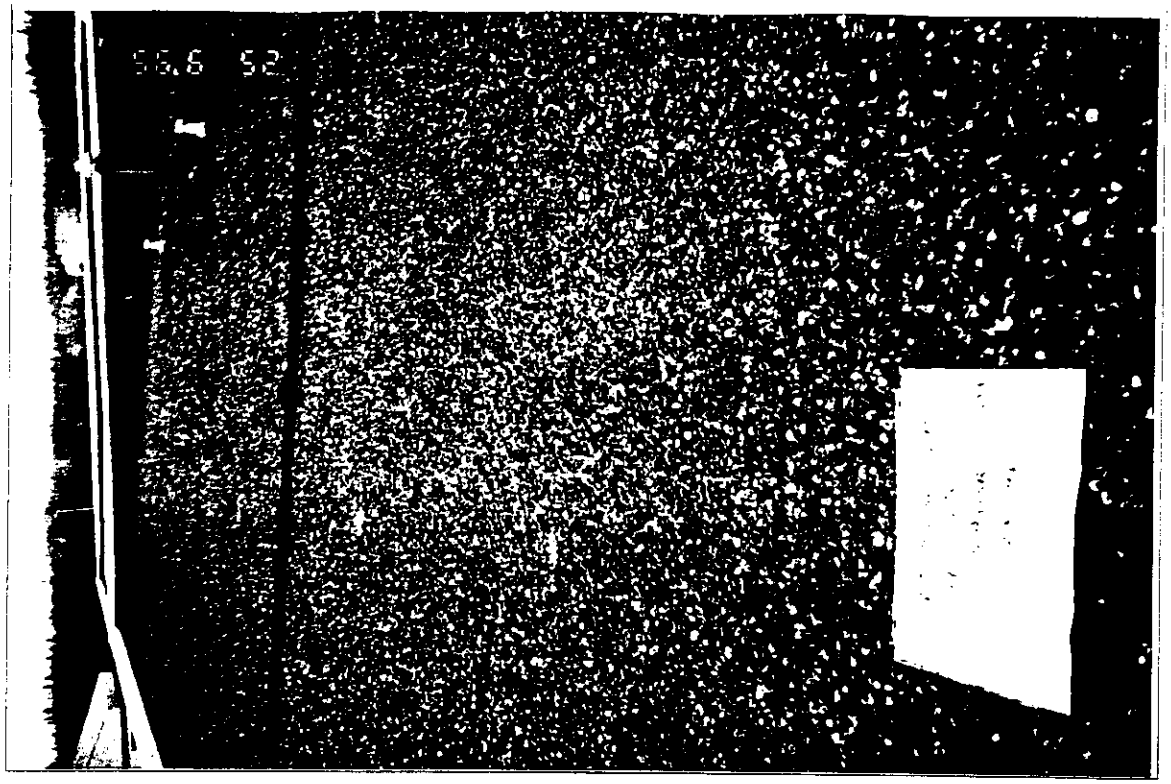


Gypsum Board II *Photo No. 15*

Building No. *2* **HA No. *2***

Ground Support Building, #47428

Fort Richardson Aviation Complex , Anchorage, Alaska

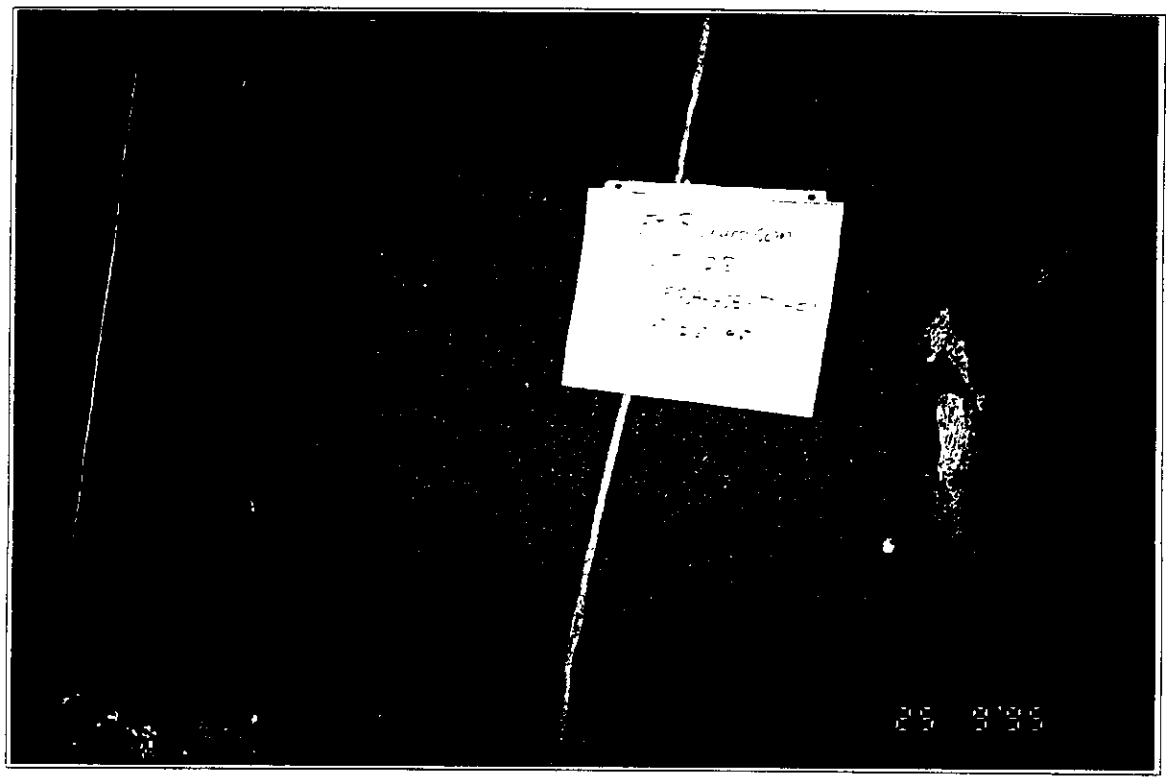


Hot Mop Roofing *Photo No. 16*

Building No. *2* **HA No.** *3*

Ground Support Building, #47428

Fort Richardson Aviation Complex , Anchorage, Alaska



Roofing Flash *Photo No. 17*

Building No. *2* **HA No.** *4*

Ground Support Building, #47428

Fort Richardson Aviation Complex , Anchorage, Alaska

APPENDIX B

ANALYTICAL RESULTS FROM EMSL/CHAIN OF CUSTODY REPORTS

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Friday, October 06, 1995

Ref Number: WT956156

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich-Hangar

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-WH-1-01		Tan Non-Fibrous Homogeneous	Crushed		None Detected	25%	Cellulose	75%	Other
FRA-WH-1-02		Tan Non-Fibrous Homogeneous	Crushed		None Detected	25%	Cellulose	75%	Other
FRA-WH-1-03		Tan Non-Fibrous Homogeneous	Crushed		None Detected	30%	Cellulose	70%	Other
FRA-WH-2-01		Tan Fibrous Homogeneous	Teased		None Detected	80%	Cellulose	20%	Other
FRA-WH-2-02		Tan Fibrous Homogeneous	Teased		None Detected	80%	Cellulose	20%	Other
FRA-WH-3-01		White Other Homogeneous	Crushed		None Detected			100%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

Robin Ratkowski
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Disclaimers: PLM has been known to miss asbestos in a small percentage of samples which contain asbestos. Thus negative PLM results cannot be guaranteed. Floor tiles and wipes should be tested with either SEM or TEM. The above test report relates only to the items tested. This report may only be reproduced in full with written approval by EMSL. The above test must not be used by the client to claim product endorsement by NVLAP nor any agency of the United States Government. All "NVLAP" reports with NVLAP logo must contain at least one signature to be valid. Laboratory is not responsible for the accuracy of results when requested to physically separate and analyze layered samples.

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Friday, October 06, 1995

Ref Number: WT956156

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich-Hangar

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-WH-3-02		White Other Homogeneous	Crushed		None Detected			100%	Other
FRA-WH-3-03		White Other Homogeneous	Crushed		None Detected			100%	Other
FRA-WH-4-01		Tan Non-Fibrous Homogeneous	Crushed		None Detected			100%	Other
FRA-WH-4-02		Tan Non-Fibrous Homogeneous	Crushed		None Detected			100%	Other
FRA-WH-5-01		Grey Fibrous Homogeneous	Teased		None Detected	30% 25%	Cellulose Min. Wool	15% 30%	Perlite Other
FRA-WH-5-02		Grey Fibrous Homogeneous	Teased		None Detected	30% 25%	Cellulose Min. Wool	15% 30%	Perlite Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

Robin Ratkowski
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Friday, October 06, 1995

Ref Number: WT956156

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich-Hangar

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-WH-5-03		Grey Fibrous Homogeneous	Teased	None Detected		30% 25%	Cellulose Min. Wool	15% 30%	Perlite Other
FRA-WH-6-01		Grey Fibrous Homogeneous	Teased	None Detected		30% 25%	Cellulose Min. Wool	15% 30%	Perlite Other
FRA-WH-6-02		Grey Fibrous Homogeneous	Teased	None Detected		30% 25%	Cellulose Min. Wool	15% 30%	Perlite Other
FRA-WH-7-01		Tan Non-Fibrous Homogeneous	Crushed	None Detected		2%	Cellulose	98%	Other
FRA-WH-7-02		Tan Non-Fibrous Homogeneous	Crushed	None Detected		2%	Cellulose	98%	Other
FRA-WH-9-01		Grey Fibrous Homogeneous	Teased	None Detected		15% 20%	Cellulose Min. Wool	65%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to *number of separable* subsamples.

Robin Ratkowski
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Friday, October 06, 1995

Ref Number: WT956156

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich-Hangar

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-WH-9-02		Grey Fibrous Homogeneous	Teased		None Detected	15% 20%	Cellulose Min. Wool	65%	Other
FRA-WH-10-01		Grey Fibrous Homogeneous	Teased		None Detected	15% 20%	Cellulose Min. Wool	65%	Other
FRA-WH-10-02		Grey Fibrous Homogeneous	Teased		None Detected	15% 20%	Cellulose Min. Wool	65%	Other
FRA-WH-11-01		Black Other Homogeneous	Crushed		None Detected	2%	Cellulose	98%	Other
FRA-WH-11-02		Black Other Homo				2%	Cellulose	98%	Other
FRA-WH-12-01		Black Other Homoger				15%	Cellulose	65%	Other

Robin Ratkowski
(908) 981 0550
Asbestos EMSL

Comments: For all obviously heterogeneous samp[les], each component is analyzed separately.
Also, "# of Layers" refers to number of separable s[amples].

Robin Ratkowski
Analyst

DELTA AIR LINES
(0432-0199)
Supervisor

Other Approved
Signatory

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Friday, October 06, 1995

Ref Number: WT956156

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich-Hangar

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-WH-12-02		Black Other Homogeneous	Teased	20%	Chrysotile	15%	Cellulose	65%	Other
FRA-WH-12-03		Black Other Homogeneous	Teased	20%	Chrysotile	15%	Cellulose	65%	Other
FRA-WH-13-01		Black Other Homogeneous	Teased	None Detected		15% 10%	Cellulose Glass	75%	Other
FRA-WH-13-02		Black Other Homogeneous	Teased	None Detected		15% 10%	Cellulose Glass	75%	Other
FRA-WH-13-03		Black Other Homogeneous	Teased	None Detected		15% 10%	Cellulose Glass	75%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to *number of* separable subsamples.

Robin Ratkowski
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Thursday, October 05, 1995

Ref Number: WT956152

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich Grd Support Bldg.

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-GSB-1-01		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	3%	Cellulose	97%	Other
FRA-GSB-1-02		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	4%	Cellulose	96%	Other
FRA-GSB-1-03		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	4%	Cellulose	96%	Other
FRA-GSB-2-01		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	3%	Cellulose	97%	Other
FRA-GSB-2-02		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	2%	Cellulose	98%	Other
FRA-GSB-2-03		White Fibrous Heterogeneous	Teased	< 1%	Chrysotile	2%	Cellulose	98%	Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to number of separable subsamples.

Rodica Stanca
Analyst

Laboratory
Supervisor

Other Approved
Signatory

Westmont, NJ 609-858-4800 | Piscataway, NJ 908-981-0550 | Carle Place, NY 516-997-7251 | Manhattan, NY 212-290-0052 | Melbourne, FL 407-725-5223 | Ann Arbor, MI 313-668-6810 | San Mateo, CA 415-570-5401 | Smyrna, GA 404-333-6066 | Greensboro, NC 910-297-1487 | Houston, TX 713-686-3635

EMSL

Ogden Environmental & Energy
1009 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

Thursday, October 05, 1995

Ref Number: WT956152

POLARIZED LIGHT MICROSCOPY (PLM)

Project: 3-1300-0502/Akarng-ACM/Ft. Rich Grd Support Bldg.

SAMPLE	LOCATION	APPEARANCE	SAMPLE TREATMENT	ASBESTOS %	ASBESTOS TYPE	NONASBESTOS %	NONASBESTOS FIBROUS	NONASBESTOS %	NONASBESTOS NONFIBROUS
FRA-GSB-3-01		Black Fibrous Heterogeneous	Teased/Crushed	None Detected		20%	Cellulose	30% 50%	Matrix Other
FRA-GSB-3-02		Black Fibrous Heterogeneous	Teased/Crushed	None Detected		15%	Cellulose	45% 40%	Matrix Other
FRA-GSB-3-03		Black Fibrous Heterogeneous	Teased/Crushed	None Detected		15%	Cellulose	25% 60%	Matrix Other
FRA-GSB-4-01		Black Fibrous Heterogeneous	Teased	8%	Chrysotile	12%	Cellulose	20% 60%	Matrix Other
FRA-GSB-4-02		Black Fibrous Heterogeneous	Teased	10%	Chrysotile	10%	Cellulose	30% 50%	Matrix Other
FRA-GSB-4-03		Black Fibrous Heterogeneous	Teased	7%	Chrysotile	13%	Cellulose	30% 50%	Matrix Other

Comments: For all obviously heterogeneous samples easily separated into subsamples, and for layered samples, each component is analyzed separately. Also, "# of Layers" refers to *number of separable subsamples.*

Rodica Stanca
Analyst

Laboratory
Supervisor

Other Approved
Signatory

CHAIN OF CUSTODY

DESCRIPTION

GB	Gypsum Board	FT	Floor Tile
CT	Ceiling Tile	TSI	Thermal Systems Insulation
SM	Surfacing Material	Misc.	Miscellaneous

LAB ID# ______

CLIENT OGDEN ENVIRONMENTAL & ENERGY

ADDRESS 1009 Commerce Park Drive, Suite 100

CITY Oak Ridge

STATE TN ZIP 37830

PHONE NO. (615) 481-8002

FAX NO. (615) 482-4074

PROJECT NUMBER 3-1300-11-12

PROJECT NAME AVIPNG - ACM

SAMPLED BY B. Chavarria

SAMPLE SITE H. Rich - Hangar

PURCHASE ORDER NUMBER ______

PROJECT MANAGER (person to receive data) D. BuCo

FAX DATA BY ASAP

NEED FINAL RESULTS BY ______

	SAMPLE ID	DATE	DESCRIPTION	PLM	LAB USE ONLY
1)	FRA-WH-1-01	9/26/95	GB	✓	
2)	-1-02	↓	GB	↓	
3)	-1-03		↓		
4)	-2-01		CT		
5)	-2-02		↓		
6)	-3-01		FT		
7)	-3-02		↓		
8)	-3-03		↓		
9)	-4-01		↓		
10)	-4-02		↓		
11)	-5-01		CT		
12)	-5-02		↓		
13)	-5-03		↓		
14)	-6-01		↓		
15)	-6-02		↓		
16)	-7-01		FT		
17)	-7-02		↓		
18)	-9-01		TSI		
19)	-9-02		↓		
20)	-10-01	↓	NTSI	↓	
	TOTAL NUMBER OF SAMPLES		20		

RELINQUISHED BY:	DATE	TIME (Military)	RECEIVED BY:	DATE	TIME
[illegible signature]	[illegible]	[illegible]			
	/ /				
	/ /				

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TURN AROUND TIME

☐ (NORMAL) 2 WEEKS

RUSH: ☐24 HOURS ☐48 HOURS ☐72 HOURS ☐1 WEEK

SAMPLE DISPOSAL INSTRUCTIONS

SPECIAL INSTRUCTIONS:

White Copy - Lab Yellow Copy - File

CHAIN OF CUSTODY

DESCRIPTION

GB	Gypsum Board	FT	Floor Tile
CT	Ceiling Tile	TSI	Thermal Systems Insulation
SM	Surfacing Material	Misc.	Miscellaneous

LAB ID# _____

CLIENT OGDEN ENVIRONMENTAL & ENERGY

ADDRESS 1009 Commerce Park Drive, Suite 100

CITY Oak Ridge

STATE TN ZIP 37830

PHONE NO. (615) 481-8002

FAX NO. (615) 482-4074

PROJECT NUMBER 3-1310-0502

PROJECT NAME ARNG - ACM

SAMPLED BY B. Chandria

SAMPLE SITE Ft. Pick-Hawyar

PURCHASE ORDER NUMBER

PROJECT MANAGER (person to receive data)
D. Bufo

FAX DATA BY ASAP

NEED FINAL RESULTS BY _____

	SAMPLE ID	DATE	DESCRIPTION	P L M	LAB USE ONLY
1)	FRN-WH-10-02	9/25/15	FT	V	
2)	-11-01		FT		
3)	-11-02		↓		
4)	-12-01		Misc		
5)	-12-02				
6)	-12-03				
7)	-13-01				
8)	-13-02				
9)	-13-03	↓	↓	↓	
10)					
11)					
12)					
13)					
14)					
15)					
16)					
17)					
18)					
19)					
20)					
	TOTAL NUMBER OF SAMPLES		9		

RELINQUISHED BY:	DATE	TIME (Military)	RECEIVED BY:	DATE	TIME
	11				
	11				

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TURN AROUND TIME

☐ (NORMAL) 2 WEEKS

RUSH: ☐24 HOURS ☐48 HOURS ☐72 HOURS ☐1 WEEK

SAMPLE DISPOSAL INSTRUCTIONS

SPECIAL INSTRUCTIONS:

White Copy - Lab Yellow Copy - File

CHAIN OF CUSTODY

DESCRIPTION

GB	Gypsum Board	FT	Floor Tile
CT	Ceiling Tile	TSI	Thermal Systems Insulation
SM	Surfacing Material	Misc.	Miscellaneous

LAB ID# __________

CLIENT OGDEN ENVIRONMENTAL & ENERGY

ADDRESS 1009 Commerce Park Drive, Suite 100

CITY Oak Ridge

STATE TN ZIP 37830

PHONE NO. (615) 481-8002

FAX NO. (615) 482-4074

PROJECT NUMBER 3-1296-0502

PROJECT NAME [illegible] - ACM

SAMPLED BY S. Chavarria

SAMPLE SITE Ft. Pickett [illegible] Support Bldg.

PURCHASE ORDER NUMBER __________

PROJECT MANAGER (person to receive data) D. Bufo

FAX DATA BY ASAP

NEED FINAL RESULTS BY __________

SAMPLE ID	DATE	DESCRIPTION	PLM	LAB USE ONLY
1) FRA-GSB-1-01	9/25/11	GB	✓	
2) -1-02	↓	↓	↓	
3) -1-03				
4) -2-01				
5) -2-02				
6) -2-03		↓		
7) -3-01		Misc.		
8) -3-02		↓		
9) -3-03				
10) -4-01				
11) -4-02				
12) -4-03	↓	↓	↓	
13)				
14)				
15)				
16)				
17)				
18)				
19)				
20)				
TOTAL NUMBER OF SAMPLES		12		

RELINQUISHED BY:	DATE	TIME (Military)	RECEIVED BY:	DATE	TIME
[illegible signature]	[illegible]	[illegible]			
	/ /				
	/ /				

PRIOR AUTHORIZATION IS REQUIRED FOR RUSH PROJECTS

TURN AROUND TIME

☐ (NORMAL) 2 WEEKS

RUSH: ☐24 HOURS ☐48 HOURS ☐72 HOURS ☐1 WEEK

SAMPLE DISPOSAL INSTRUCTIONS

SPECIAL INSTRUCTIONS:

White Copy - Lab Yellow Copy - File

APPENDIX C

INSPECTOR ACCREDITATION CERTIFICATES

Professional Service Industries, Inc.

Asbestos Inspector

Refresher Training Course
IDPH and IDEM Accredited

Robert Chavarria

457-92-3419

has successfully completed the EPA-Approved Asbestos Inspector Refresher Training Course and passed the examination, with a score of 70% or above for the purposes of accreditation required under Section 206 of Title II of the Toxic Substance Control Act (TSCA). Conducted by Professional Service Industries, Inc., 510 East 22nd Street, Lombard, Illinois 60148, 1-800-346-2860.
Continuing Education Units awarded: 0.4

The Continuing Education Unit

Location: Oak Ridge, TN *Examination: October 28, 1994*

Course Dates: October 28, 1994 *Expiration Date: October 28, 1995*

Director of Training

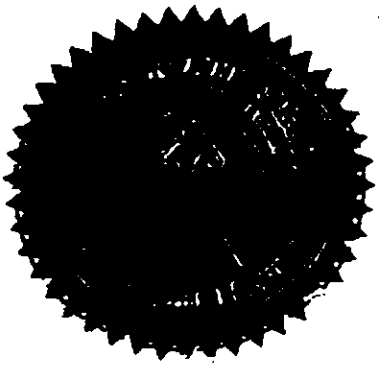
PROFESSIONAL SERVICE INDUSTRIES INC PSI

Certificate Number 5PSI 47403 IR

APPENDIX D

LABORATORY ACCREDITATION CERTIFICATES

The American Industrial Hygiene Association



is proud to acknowledge that

EMSL Analytical, Inc.

Westmont, NJ

Laboratory ID# 7012

has fulfilled the requirements for Industrial Hygiene Laboratory Accreditation and has earned distinguished recognition as an

AIHA IH Accredited Laboratory

Originally Accredited February 1, 1989, current certificate effective February 1, 1995 until February 1, 1998, subject to continued compliance with AIHA accreditation criteria

August 18, 1995

President
American Industrial Hygiene Association

Date Prepared

381

Chairman
IH Laboratory Accreditation Committee

Certificate Number

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Certificate of Accreditation

EMSL ANALYTICAL, INC.
SAN MATEO, CA

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

July 1, 1996
Effective until

For the National Institute of Standards and Technology

NVLAP-01C (4-96)

NVLAP LAB CODE: 101048-3

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

EMSL ANALYTICAL, INC.
SAN MATEO, CA

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:

AIRBORNE ASBESTOS FIBER ANALYSIS

July 1, 1996
Effective until

For the National Institute of Standards and Technology

NVLAP 01C (4-95)

NVLAP LAB CODE: 101048-3

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

EMSL ANALYTICAL, INC.
WESTMONT, NJ

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:

AIRBORNE ASBESTOS FIBER ANALYSIS

July 1, 1996
Effective until

For the National Institute of Standards and Technology

NVLAP/01C (4-95)

NVLAP LAB CODE: 101048-0

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE
UNITED STATES OF AMERICA

EMSL ANALYTICAL, INC.
WESTMONT, NJ

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

July 1, 1996
Effective until

For the National Institute of Standards and Technology

NVLAP QIC (4-90)

NVLAP LAB CODE: 101049-0

The American Industrial Hygiene Association

is proud to acknowledge that

Analytical Environmental Services, Inc.

Atlanta, GA

Laboratory ID# 9096

has fulfilled the requirements for
Industrial Hygiene Laboratory Accreditation
and has earned distinguished recognition as an

AIHA Accredited Laboratory

since March 1, 1994 through March 1, 1997

subject to continued compliance with AIHA accreditation criteria.

President
American Industrial Hygiene Association

March 1, 1994
Date Prepared

Donald J. Hart

Chairman
Laboratory Accreditation Committee

505
Certificate Number

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE ★ UNITED STATES OF AMERICA ★

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, 1996
Effective until

For the National Institute of Standards and Technology
NVLAP Lab Code: 102033-0

NVLAP-01C (4-95)

AES

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

ACCREDITATIONS

AIHA
American Industrial Hygiene Association
Metals, Organic Solvents, Fiber Analysis
Lab # 9096

ELPAT
American Industrial Hygiene Association
Lead in Soil, Wipe and Paint Samples
Lab # 9096

NVLAP
National Voluntary Laboratory Accreditation Program
Asbestos Fiber Analysis by PLM
Lab # 102033

ELAP
Environmental Laboratory Approval Program
Waste Water, Solid and Air Emmission Analysis
Lab # 11379

ODH
Ohio Department of Health
Lead Sample Analysis
Lab # 10003

PAT
Proficiency Analytical Testing
Fiber, Metals & Organic Solvents
Lab # 30340-002

SCDHEC
South Carolina Department of Health
Clean Water Act Parameters
Lab # 98016001

TDUST
Tennessee Division of Underground Storage Tanks

National Institute of Standards and Technology

NVLAP®

National Voluntary Laboratory Accreditation Program

ISO/IEC GUIDE 25:1990
ISO/IEC GUIDE 58:1993
ISO 9002:1994

Scope of Accreditation

BULK ASBESTOS FIBER ANALYSIS

NVLAP LAB CODE 102033-0

ANALYTICAL ENVIRONMENTAL SERVICES, INC.
3781 Presidential Parkway, Suite 111
Atlanta, GA 30340
Mr. Ady Padan
Phone: 404-457-8177 Fax: 404-457-8188

NVLAP Code	*Designation*
18/A01	U.S. EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" as found in 40 CFR, Part 763, Subpart F, App. A, or the current U.S. EPA method for the analysis of asbestos in building material

September 30, 1996

Effective until

For the National Institute of Standards and Technology

APPENDIX E

COMPANIES PROVIDING COST ESTIMATES

1. **Central Environmental, Inc.**
Contact: Stuart M. Jacques
700 East 46th Avenue
Anchorage AK 99503
Phone: (907) 561.0125
Fax: (907) 561.0178

2. **Asbestos Removal Specialists of Alaska, Inc.**
Contact: John H. Abrams
1189 Van Horn Road
Fairbanks AK 99701-7415
Phone: (907) 451-8550
Fax: (907) 452-6374

APPENDIX F

IMPORTANT INFORMATION ABOUT YOUR ASBESTOS INSPECTION

OGDEN

Important Information About Your Environmental Site Evaluation/Assessment

Imagine purchasing a site for $500,000, only to learn later during construction, that hazardous materials have been discovered, that you are legally obliged to remove them before work may continue. and that the unanticipated cost will be $5 million, or more.

The risks are real. There is no way of eliminating them, but they can be managed by relying on a qualified engineering firm to perform an environmental site evaluation/assessment, also known as preacquisition site assessment, or PSA.

RELY ON A QUALIFIED FIRM. THE COST OF OWNING A POLLUTED SITE CAN BE IMMENSE AND YOU MAY HAVE TO BEAR IT ALL YOURSELF.

Insurance will not ordinarily pay for cleanup because most policies exclude pollution coverage. You may be unable to force prior owners to pay unless they have previously assumed the obligation in writing. Even the option of abandoning the site may be unavailable to you.

Although evaluations/assessments are required by law in some states, no current ordinance, regulation, code, or standard is known to prescribe what an assessment must consist of. This is as it should be. For an assessment to be effective, those who design it need flexibility to adequately consider the unique set of factors created by the site itself and your own particular risk management objectives.

Although reliance on a competent consultant is necessary to manage your risk, it does not eliminate <u>your</u> risk. the engineers who perform evaluations or assessments generally are engaged to determine if a site is affected by hidden problems. If they could see the unseeable, they would know precisely where to look and what methods to apply, but engineers are not clairvoyant. Even the most rigorous professional assessment may fail to identify al existing conditions. This potential creates risk. **The risk is yours.** Do not look to your engineering consultant to assume it. Your engineer serves as your professional advisor to provide guidance and opinions based on analysis and judgment. Were professional firms to accept your risk in addition to their own, the cost of performing evaluations or assessments would be prohibitive.

A FIRM UNCONCERNED ABOUT ITS OWN RISK CANNOT BE EXPECTED TO CARE ABOUT YOURS.

It is essential to work with a consultant who understands the risks involved, who can explain them to you clearly, and who can competently apply appropriate technical measures to reduce those risks to levels you can tolerate. The technical measures usually are pursued in stages, with each step being based on information obtained from the previous one.

The initial stage of an assessment usually comprises an historical review of the site. Typical tasks associated with an historical review might include, among others:

- reviewing public documents to chronicle site ownership for the past 30, 40, or more years;
- investigating the site's regulatory history to learn about permits granted or citations issued;
- determining prior uses of the site and those adjacent to it;
- reviewing available topographic and real estate maps, historical aerial photos, geologic information, and hydrologic data;
- reviewing readily available published information about surface and subsurface conditions;
- evaluating the potential for naturally occurring hazards, such as radon gas, asbestos, or methane;
- interviewing public officials with respect to local concerns.

WAITING UNTIL THE LAST MINUTE CAN DILUTE THE QUALITY OF WORK AND INCREASE RISK.

Because so many aspects of an historical review require reliance on third parties, it is essential to give your consultant adequate lead time. Following the hysterical review, or in conjunction with it, your consultant will

probably performs site reconnaissance. This means "walking" the site, using any current maps, aerial photos, or development plans available. Particular concerns are distressed vegetation, ground stains, trash, landfills, depression, and evidence of any below-grade tanks or other potential contaminant sources. Discussions with site personnel, former employees, and adjacent property owners can also be of value, particularly with respect to any chemical use, storage, treatment, or disposal practices, past or present. In cases where buildings, piping, or transformers exist on the site, site reconnaissance should be expanded to consider the potential for asbestos or PCB contamination.

Some clients direct their consultants to terminate a PSA without sampling when historical review and site reconnaissance alone indicate that hazardous materials probably are not present. Other clients prefer additional review as a general risk reduction measure, or when prior findings or professional intuition suggest the site may be "dirty."

Additional review can take a variety of forms. Many consultants proceed by collecting samples of subsurface materials for visual evaluation and laboratory analysis. If these procedures indicate the presence of hazardous substances, the client is so informed. Follow-up activity then might include additional subsurface sampling to help determine the source of contamination or contaminant migration paths. Qualitative and/or quantitative chemical testing may also be appropriate to evaluate the contaminants' composition.

In those instances where the client believes some type of contaminant is present, the consultant is usually engaged to provide a comprehensive survey, including groundwater analysis. This would be followed by a report of findings. Depending on the workscope, the report may identify the procedures necessary to mitigate hazardous conditions (assuming they are found) and the likely cost of performing the required remedial measures.

TO CERTIFY THAT CERTAIN CONDITIONS EXIST, WHEN IT IS IMPOSSIBLE TO KNOW THEY EXIST, MAY BE RULED A NEGLIGENT ACT.

Most consulting engineers will refuse to certify--i.e., warrant--that a site is free of contaminants, because it is impossible to know if such a condition exists. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas that showed no signs of contamination when previously sampled. A prudent consultant can only provide an opinion.

WHY INDEMNIFICATION AND/OR LIMITATION OF MONETARY EXPOSURE IS IMPORTANT TO THE CLIENT AND THE ENGINEER.

Idemnifications are important concerns to the engineer because of court rulings which make consulting engineers liable to any party who foreseeably could be damaged by their negligent acts. As a consequence, a consulting engineer engaged by a buyer could be sued by a site's owner because the consultant's discovery of hazardous materials effectively destroyed the land's value. Even though the consultant's position would likely be upheld in court, the claim would have to be defended, and the cost of defense might be many times larger than the fee earned for conducting the assessment. For reasons such as this, most assessment contracts include provisions which make clients responsible for project-related liabilities that consultants are powerless to control.

Also, our client (the buyer) may be sued by the current landowner for reduced property value if waste is discovered. As a result, the potential buyer in the assessment agreement should address this potential problem so that both the potential buyer and the engineer are "held harmless" for the possible discovery of waste.

ONE OF THE OBLIGATIONS OF YOUR CONSULTING ENGINEER/SCIENTIST IS TO PROTECT THE SAFETY, PROPERTY, AND WELFARE OF THE PUBLIC.

Occasionally, a geotechnical engineering/subsurface waste management (remediation) investigation will disclose the existence of conditions that may endanger the safety, health, property, or welfare of the public. Your consulting engineer/scientist may be obligated under rules of professional conduct, statutory or common law to notify yourself and others of these conditions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms in the Geosciences, Silver Spring, Maryland.