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U.S. Army Toxic and Hazardous Materials Agency

Report of Sampling and Analysis Results

Addison Army Housing Units
Addison, Illinois

September 1990

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Prepared for:

U.S. ARMY TOXIC AND
HAZARDOUS MATERIALS AGENCY
Aberdeen Proving Ground
Maryland 21010-5401

Prepared by:



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Roy F. Weston, Inc. has conducted a sampling and analysis program of the Army housing property located in Addison, Illinois. The objectives of this effort include further characterization of environmental contamination identified in an enhanced preliminary assessment carried out in 1989. The specific activities performed at this site were identification, evaluation of the condition, and collection of samples from specific suspected asbestos-containing materials, including floor tiles, pipe run and pipe fitting insulation, dust in the ductwork, and exterior siding, where present. These evaluations were necessary to clarify potential environmental issues identified in the earlier report, prior to the sale or realignment of the property.

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**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
ADDISON, ILLINOIS**

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EXECUTIVE SUMMARY

The U.S. Army family housing units (FHUs) at Addison, Illinois were inspected by Roy F. Weston, Inc. (WESTON) personnel during February 1990 to further evaluate the environmental concerns identified in the enhanced Preliminary Assessment reports prepared and submitted earlier by Argonne National Laboratory (ANL) for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA). Three of the 12 single-family "Capehart" housing units were examined on 27 February to investigate the possible presence of asbestos-containing materials (ACM). Transformers were inspected on 20 March 1990.

The ANL Draft Sampling and Analysis Plan, Revision 1 (SAP) specified sampling the following materials, where present, which are suspected to contain asbestos, from ten per cent of the housing units or a minimum of three housing units, whichever is greater.

- Pipe run insulation.
- Dust accumulated inside heating ductwork within the concrete slab, where present and open.
- Vinyl floor tiles.

The WESTON personnel selected three housing units for inspection after review of maintenance records and drawings, discussions with housing management personnel, and determination that the units were in similar condition. The housing units chosen, Nos. 001, 005, and 006, were considered to be representative of the other nine units, but this was not confirmed by an examination of all the units.

Twelve dust samples and eight samples of floor tile and vinyl sheeting were collected by WESTON and analyzed. These analyses revealed that asbestos is present in dust accumulated within the heating ductwork and in floor tile and vinyl sheeting at the three housing units examined. Asbestos was found in nine of the twelve dust samples by transmission electron microscopy (TEM), and in at least two samples from each unit. Asbestos was quantified at 7% or greater by polarized light microscopy (PLM) in two of the floor tile and vinyl sheeting samples and quantified at less than 1% in three additional samples. Three other samples were qualitatively identified by TEM. No pipe insulation samples were collected since the pipes in the units examined were not insulated. During the asbestos sampling activity, other suspect materials observed were roofing materials.

The following practices should be observed with regard to the known and suspected asbestos-containing materials identified:

- The risks posed by the asbestos-containing dust in the ductwork cannot be clearly evaluated, because the sampling and analysis program only included a qualitative screening of this material since no approved quantitative procedure exists. Further studies, such as air sampling, are recommended to determine if the asbestos is becoming airborne and to define what risks, if any, are presented by these findings. These studies could not be performed at this facility as a part of the follow-up effort because there was no vacant unit at that time.

- The vinyl floor coverings pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. They should be managed in place under an Operations and Maintenance (O&M) program which describes procedures for the regular inspection of the floor coverings and the removal and replacement of any that become damaged.
- Other suspect materials identified but not sampled, including roofing materials, should be assumed to contain asbestos and managed in place under an O&M program until they are either removed or determined to contain no asbestos.

Four Army-owned transformers that may contain PCBs were identified at the Addison site. One of the transformers appeared to be in a condition that would have permitted an attempt to collect a sample. The condition of the other three devices was such that the sampling could not be safely performed. No sample was obtained from the sound unit after the WESTON team waited for over four hours for assistance from the Commonwealth Edison support personnel. WESTON concludes that the transformers are likely to belong to the PCB-transformer category based on their age. These transformers should be assumed to contain PCBs, based on their age. This fact should be noted in facility records and the devices should be labeled appropriately. Since the transformers are old and their housing are deteriorating, they should be checked periodically as long as they are in service to ensure that no leaks have developed. When the units are ultimately removed, they should be transported to a location where they can be safely sampled. A proper area should be capable of containing any oils that may be spilled during the opening and sampling of the transformers until the residues can be cleaned up satisfactorily. The findings of this sampling program should be used to determine the proper disposal method.



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SECTION 1. INTRODUCTION

**SAMPLING AND ANALYSIS AT THE U.S. ARMY
FAMILY HOUSING UNIT (FHU) PROPERTY
ADDISON, ILLINOIS**

SECTION 1. INTRODUCTION

Roy F. Weston, Inc. (WESTON) was retained by Argonne National Laboratory (ANL) to provide assistance in gathering additional environmental data for the U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) at 53 family housing unit (FHU) properties in 12 states. The Addison, Illinois property is one of these FHUs.

1.1 PURPOSE AND SCOPE

The purpose of this project was to provide the Department of the Army with sound environmental data on the properties which are scheduled for sale or realignment as a result of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526). Environmental assessments of each property covered by the Act are required by the Secretary of Defense prior to their closure or realignment. Such actions must be performed in accordance with applicable provisions of the National Environmental Policy Act (NEPA) to ensure that any environmental hazards will be identified and mitigated where required.

Previously, ANL conducted enhanced preliminary assessments (PAs) for each property. These enhanced PAs made recommendations regarding sampling and analysis to determine (1) whether and in what quantities asbestos is present in certain building construction materials (including pipe run insulation, dust accumulated in heating ductwork, vinyl floor tile, and exterior siding shingles, where present), (2) in selected contexts, whether and in what concentration soils and groundwater may be contaminated, and (3) whether and in what range transformer oils at selected sites may contain polychlorinated biphenyls (PCBs). WESTON gathered this data by implementing ANL's Draft FHU Sampling and Analysis Plan, Revision 1 (SAP).

1.2 SITE DESCRIPTION

The Department of the Army's FHU property in Addison, Illinois consists of 12 single-family housing units located on 5.01 acres. The units are immediately surrounded by other residential properties. Addison is a western suburb of Chicago and is located in Du Page County

The three-bedroom "Capehart"-style single-family housing units were constructed in 1958. The single-story, wood-frame units were built on concrete slab foundations with no basements or crawl spaces. The ducts for the original heating system and domestic water lines were embedded in the concrete slab, which was covered with vinyl floor coverings. The units have pitched roofs surfaced with asphalt shingles and exteriors finished with wood siding.

1.3 REPORT ORGANIZATION

This report contains the results of the sampling and analysis program performed by WESTON. Section 2 contains a description of the asbestos sampling performed at the property and laboratory results for samples of suspected asbestos-containing material (ACM) collected. Copies of field notes and laboratory results pertaining to asbestos are provided in Appendices A.1 and A.2. Section 3 contains a description of field activities and the findings from the transformer evaluations. Copies of field notes and supporting data for this effort are included in Appendix B. Section 4 is a summation of all activities and findings for the Addison, Illinois site.

SECTION 2. ASBESTOS-CONTAINING MATERIALS

SECTION 2. ASBESTOS-CONTAINING MATERIALS

WESTON personnel inspected three of the 12 "Capehart" units at the Addison family housing facility on 27 February 1990 for the presence of suspected ACM. Vinyl floor tile, vinyl sheeting, and dust accumulated within the heating ductwork were the only suspect materials found within the buildings that were sampled. All sampling was done following the requirements of ANL's SAP. Additionally, all field work was performed in accordance with applicable Federal regulations, including 40 CFR Part 61 Subpart M, 40 CFR Part 763 Subpart E, and 29 CFR Part 1910.1001.

2.1 SAMPLING RATIONALE

The sampling rationale used by WESTON for this project followed the recommendations set forth by ANL. The type of suspect ACM to be sampled, the number of housing units to be examined at each FHU facility, and number of samples to be taken for each material found were described in the SAP. The plan for Addison required sampling of the following materials, if present:

- Pipe run insulation.
- Accumulated dust inside heating ductwork if not sealed.
- Vinyl floor tiles.

In accordance with the SAP, three units were examined at this facility. The sampling plan, however, did not identify specific units which were to be sampled. The task of determining which housing units were representative of the facility as a whole and, therefore, would be sampled was left to the WESTON field team. After reviewing all available maintenance records and drawings and discussing the facility with Directorate of Engineering and Housing (DEH) personnel, it was determined that all of the units at the Addison FHU were similar in condition. Units 001, 005, and 006 were chosen by the WESTON field team leader as representative units to be sampled, based on availability of occupants to permit sampling.

The SAP specifies that a minimum of two pipe run insulation samples, four dust samples, and one sample of each color of floor tile be collected from each of the housing units examined. Twelve dust samples and eight samples of vinyl floor coverings were collected at the facility. No pipe insulation samples were collected since the pipes in the units examined were not insulated.

2.2 FIELD ACTIVITIES AND OBSERVATIONS

Each of the units was inspected to determine if suspect materials were present. Heating ductwork vents in the units were not sealed, so dust samples were collected by wiping the inner surface of the duct near the designated exhaust vents with a fiber-free wipe selected for its ability to trap dust in a non-fibrous matrix. Each wipe was placed in the jaws of a flexible small parts pick-up tool and moistened with fiber free water. The grille was then removed and the tool inserted into the duct opening. The interior surface was wiped to collect dust on the moistened surface of the wipe. After the dust was gathered, the wipe was placed in a small plastic wide-mouth jar, sealed, labeled with the sample number, and shipped to the lab. The grille was then replaced and the tool was cleaned by rinsing and wet wiping the surfaces prior to collecting the next sample. Samples were collected from the living room, kitchen, bedroom, and main bathroom in all three units.

Black 9" x 9" floor tile, gray and brown 12" x 12" floor tile, and white and brown floor tile of unknown size, were sampled. Units 005 and 006 contained brown 12" x 12" floor tile. Unit 006 also contained gray 12" x 12" floor tile. Unit 001 contained black 9" x 9" floor tile, brown vinyl sheeting, and gray vinyl sheeting which covered the white and brown floor tile. The size of this bottom layer could not be determined without removal of a portion of the upper layer, but it was probably 9" x 9", based on findings elsewhere. One sample of each of the floor tile and vinyl sheeting types was taken in each housing unit, resulting in a total of eight samples for laboratory determination of asbestos content. These samples were taken by breaking off a small piece of floor tile in an inconspicuous location. About one square inch of the tile surface area was taken for each sample. No effort was made to separate the mastic, which sometimes contains asbestos, from the floor tile samples themselves.

The vinyl floor covering in all three of the units inspected was in good condition. This material is considered to be a non-friable type of ACM, unless damaged. If significant damage occurs, such that the material becomes friable as defined in the asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP), the U. S. Environmental Protection Agency (EPA) would classify these tiles as friable materials. However, an EPA interpretation was recently released that changes certain previous interpretations regarding non-friable ACM. On 23 February 1990, a memorandum was issued by the Director of Emissions Standards Division, the Director of Stationary Source Compliance Division, and the Associate Enforcement Counsel for Air Enforcement of the EPA Office of Air Quality Planning and Standards (OAQPS). This memorandum was circulated to other air quality officials and EPA regional offices in early March 1990. This latest position states that floor tiles and certain other non-friable materials do not have to be removed from a facility prior to demolition, unless they are severely damaged and thus are considered friable, or unless the demolition may cause fiber release through grinding or abrasion of the tiles. Floor tile removal shall be done if demolition is to be accomplished by burning, either of the unit or of the debris from demolition. However, if the floors in the housing units are to be renovated, special care must be taken during the process to prevent the release of asbestos fibers.

The WESTON field team was directed, as a part of the project scope contained in the SAP, to perform sampling and analysis of specific suspect ACM. Other suspect materials observed were roofing shingles and felt. Copies of the field notes are included in Appendix A.1.

2.3 LABORATORY PROCEDURES AND RESULTS

The bulk samples of building materials were analyzed for asbestos content by WESTON's optical microscopy laboratory in Auburn, Alabama. This laboratory is accredited by the American Industrial Hygiene Association (AIHA) and the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). The bulk samples were analyzed by Polarized Light Microscopy (PLM) using the EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples", EPA 600/M4-82-020, December 1982. Copies of the laboratory reports are included in Appendix A.2.

Vinyl floor tile samples for which no asbestos was found using PLM methods and wipe samples of dust accumulated within heating ductwork were analyzed qualitatively for the presence of asbestos by Transmission Electron Microscopy (TEM) at WESTON's NVLAP accredited electron microscopy laboratory in Auburn, Alabama. Copies of these laboratory reports are also included in Appendix A.2.

All analyses were performed in accordance with protocols set forth in the Laboratory Accreditation package submitted by WESTON under NVLAP. This document includes standard procedures for sample analysis

analysis and quality assurance / quality control (QA/QC) which were acceptable to NIST. The QA/QC protocols for the laboratory differ significantly from those commonly found in chemical analysis procedures, due to the nature of the analytical procedure. Since there are no reagents, digestions, or other steps in the process that provide significant opportunities for sample contamination or analyte loss, lot blanks and sample spikes are not performed. Instead, all analyses are performed using the following steps:

- Incoming samples are divided into lots of ten for analysis.
- One sample is selected at random to serve as the QC check and divided into two containers.
- The sample lot is assigned to an analyst who determines the asbestos content of each sample.
- The QC sample is analyzed by a different analyst, designated by the sample custodian.
- The results of both analysts are submitted to the QC Coordinator for review, and comparison to the laboratory QC chart.
- The results are reviewed and approved, based on the written QC review procedures, or rejected. If rejected, the sample lot and QC sample are reanalyzed.

The WESTON laboratory routinely runs blank checks to ensure that equipment and refractive index oils are not contaminated, collects and analyzes samples of the air in the work areas to document that airborne asbestos fibers do not threaten worker health or contaminate samples, and analyzes samples submitted by NIST to document precision of results as required by the NVLAP program. Samples provided in past rounds of proficiency checks are used for analyst training and to document analyst proficiency. The use of third party laboratory comparisons is often done, and is accomplished by sending duplicates of samples to an outside laboratory and comparing the results obtained by the two facilities.

In interpreting the asbestos results, it should be noted that the definition of asbestos presence differs between the EPA and some state agencies. According to the EPA definition, any materials that contain greater than one per cent (>1%) asbestos are classified as ACM by the 1977 NESHAP regulations. However, California has recently implemented state regulations that consider all materials containing 0.1 per cent or more asbestos as asbestos-containing. It is believed that several other states will soon follow the lead of California in lowering the threshold limit to 0.1 per cent, including some in which properties under review in this study are located. Currently, the state of Illinois continues to abide by the EPA definitions, hence, all samples containing >1% asbestos are considered to be ACM.

The matter is further complicated by the fact that the PLM method was developed specifically for friable materials, but not for non-friable types of suspect ACM such as vinyl floor tiles, vinyl sheeting, and siding. In fact, no specific method has been developed and promulgated to date for such samples, so laboratories use PLM as the only available documented procedure for their analysis. PLM has an inherent limitation on fiber resolution of about 0.25 micrometer (μm) in diameter, while reliable detection and quantification of fibers smaller than 1 μm in diameter is difficult. The manufacturing process for vinyl floor tiles, for example, often produces the very small fiber diameters which cannot be seen by PLM. WESTON's experience is that frequently such samples do, in fact, contain significant quantities of asbestos. WESTON has developed a qualitative technique using TEM to detect the presence of such small fibers and minimize false

negatives in the laboratory results. This technique, however, does not allow a good quantitative estimate of asbestos content.

For these reasons, the WESTON laboratories have implemented a policy of reporting asbestos presence as follows:

- Asbestos determined by PLM to be present at greater than 1% is reported as the quantity detected.
- If asbestos is estimated to be less than 1% by PLM, it is reported as "<1%". This estimate of asbestos content may be made when only one asbestos structure is observed.
- If asbestos is not detected in certain non-friable materials by PLM, then the samples are subjected to TEM analysis. The results are reported as positive if asbestos is detected by TEM.

Recommendations made in this report are based on the >1% regulatory limit, except for floor tiles as discussed earlier and except as otherwise noted. However, all samples in which asbestos was detected are discussed. This represents a conservative approach to the assessment of asbestos presence at the facility.

Table 2.1 contains a summary of all samples collected at the Addison FHU, including sample locations, material descriptions, and laboratory results. PLM results are quantitative while TEM results are qualitative. Quantity estimates for materials sampled that were suspected to contain asbestos are presented in Table 2.2. The field notes describing the observations are provided in Appendix A.1, while copies of the original laboratory reports are included as Appendix A.2.

Two of the floor covering samples were found by PLM to contain asbestos at or greater than the 7% level. Three other samples were found by PLM to contain asbestos, but at a concentration of <1%. Three of the samples, for which no asbestos was reported following PLM analysis, was found to contain asbestos fibers by the TEM procedure. While this result is qualitative in nature, consideration of the process through which floor tiles were manufactured which involves the use of very small asbestos fibers invisible to PLM leads to the conclusion that this material should be treated as ACM. Thus, all eight of the floor tile and vinyl sheeting samples were found to contain asbestos. The nine units not inspected should be considered to have ACM present in the floor tiles and vinyl sheeting unless additional sampling and analysis is performed and shows that no asbestos is present in these units.

Analytical results for the dust samples taken from the heater ductwork indicate that this dust contains some asbestos fibers. Qualitative TEM analyses revealed the presence of asbestos in nine of the twelve dust samples. At least two samples from each unit had detectable asbestos fibers. This data lead to the conclusion that asbestos is found in the dust trapped by the heating ducts.

TABLE 2.1
 BULK SAMPLE SUMMARY
 ADDISON FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	ASBESTOS CONTENT PLM ANALYSIS	CONFIRMATION TEM ANALYSIS
Unit 006				
BU208-52-1L-006-AFT	Gray 12" x 12" floor tile	Kitchen	Chrysotile, <1%	
BU209-52-1L-006-AFT	Brown 12" x 12" floor tile	All bedrooms/Hall/ Bath/Living room	None Detected	Positive
BU210-52-1L-006-ATD	Dust within ductwork	Bedroom 2	---	Positive
BU211-52-1L-006-ATD	Dust within ductwork	Bath	---	Positive
BU212-52-1L-006-ATD	Dust within ductwork	Kitchen	---	Positive
BU213-52-1L-006-ATD	Dust within ductwork	Living room	---	Positive
Unit 005				
BU214-52-1L-005-AFT	Brown 12" x 12" floor tile	All rooms	Chrysotile, <1%	
BU215-52-1L-005-ATD	Dust within ductwork	Bedroom 3	---	Positive
BU216-52-1L-005-ATD	Dust within ductwork	Bath	---	Positive
BU217-52-1L-005-ATD	Dust within ductwork	Kitchen	---	Positive
BU218-52-1L-005-ATD	Dust within ductwork	Living room	---	Negative
Unit 001				
BU219-52-1L-001-AFT	Black 9" x 9" floor tile	All rooms	Chrysotile, 7%	
BU220-52-1L-001-AFT	Brown vinyl sheeting	Kitchen	None Detected	Positive
BU221-52-1L-001-AFT	Gray vinyl sheeting	Bath	None Detected	Positive
BU222-52-1L-001-AFT	White floor tile	Bath	Chrysotile, 10%	
BU223-52-1L-001-AFT	Brown floor tile	Bath	Chrysotile, <1%	
BU224-52-1L-001-ATD	Dust within ductwork	Living room	---	Positive
BU225-52-1L-001-ATD	Dust within ductwork	Kitchen	---	Positive
BU226-52-1L-001-ATD	Dust within ductwork	Bath	---	Negative
BU227-52-1L-001-ATD	Dust within ductwork	Bedroom 3	---	Negative

TABLE 2.2
ASBESTOS CONTAINING MATERIALS
ADDISON FAMILY HOUSING

SAMPLE IDENTIFICATION	MATERIAL TYPE	LOCATION	QUANTITY	UNITS

Unit 006				

BU208-52-IL-006-AFT	Gray 12" x 12" floor tile	Kitchen	112	Square ft
BU209-52-IL-006-AFT	Brown 12" x 12" floor tile	All bedrooms/Hall/ Bath/Living room	740	Square ft
BU210-52-IL-006-ATD	Dust within ductwork	Bedroom 2	N/A	
BU211-52-IL-006-ATD	Dust within ductwork	Bath	N/A	
BU212-52-IL-006-ATD	Dust within ductwork	Kitchen	N/A	
BU213-52-IL-006-ATD	Dust within ductwork	Living room	N/A	
Unit 005				

BU214-52-IL-005-AFT	Brown 12" x 12" floor tile	All rooms	1075	Square ft
BU215-52-IL-005-ATD	Dust within ductwork	Bedroom 3	N/A	
BU216-52-IL-005-ATD	Dust within ductwork	Bath	N/A	
BU217-52-IL-005-ATD	Dust within ductwork	Kitchen	N/A	
Unit 001				

BU219-52-IL-001-AFT	Black 9" x 9" floor tile	All rooms	1075	Square ft
BU220-52-IL-001-AFT	Brown vinyl sheeting	Kitchen	84	Square ft
BU221-52-IL-001-AFT	Gray vinyl sheeting	Bath	44	Square ft
BU222-52-IL-001-AFT	White floor tile	Bath	1	Square ft
BU223-52-IL-001-AFT	Brown floor tile	Bath	1	Square ft
BU224-52-IL-001-ATD	Dust within ductwork	Living room	N/A	
BU225-52-IL-001-ATD	Dust within ductwork	Kitchen	N/A	

2.4 CONCLUSIONS AND RECOMMENDATIONS

The sample analyses performed by WESTON have revealed that asbestos is present in all floor tile and vinyl sheeting samples collected in the three housing units examined and that the dust inside the heater supply ducts contains asbestos. These units are thought to be representative of the other nine at the site, but this was not confirmed by sampling all units.

The asbestos dust accumulated within the heating ductwork represents an unusual problem, since the source of this asbestos is not readily apparent, and the quantity is not precisely known. As a conservative approach, the heating ductwork located within the concrete slab should be cleaned or permanently sealed when the units are renovated. Since the heating systems are currently operational, sealing the floor vents will require replacement with attic ducts and ceiling vents, or provisions of an alternate heating source. If the ducts are cleaned, a high-powered vacuum cleaner equipped with a high-efficiency particulate air (HEPA) filter should be employed, since other vacuum cleaners are not capable of trapping all of the small asbestos fibers that may be present.

The source of the asbestos in the ducts cannot be positively determined, due to the sampling and analysis procedures employed. However, there are several potential sources, based on observations at the numerous facilities inspected during this project. Units, presumed to be the original heaters, found at other facilities frequently contained an expansion joint which served to isolate the return air plenum from the heater itself, preventing the transmission of vibrations and noise to the ductwork. The fabric-like material used to form this joint was determined, in some cases, to be chrysotile asbestos in a nearly pure form. It is possible, even likely, that the heating systems in these units had similar expansion joints which have been removed. During the 25 to 30 years that the original units were in service, erosion of these joints was likely, and could have caused asbestos fibers to accumulate in the dust.

Another possibility is that residual debris from the removal of vinyl-asbestos floor tiles, such as was found in other sites, may have been left in the ducts during floor tile removal and replacement. Conversations with the TEM analysis indicate that there was some evidence of chlorine observed during the identification of the asbestos fibers by X-ray dispersion analysis in samples from some sites. The most likely source of this element, considering the site history, is the vinyl chloride polymer which forms the floor tile matrix. However, other asbestos sources, such as debris imported into the facilities from outside activities of the occupants, cannot be ruled out.

Sampling and analysis for airborne asbestos was not performed at this site during the original study due to the lack of an available vacant housing unit during the time of that effort. However, it is recommended by the U.S. Army Environmental Hygiene Agency (AEHA) that, if the units are to remain under the management, operational control, or ownership of the Army, sampling and analysis for airborne asbestos be undertaken. These studies should be performed to provide data from at least ten percent or a minimum of three of the housing units, whichever is greater. This additional sampling and analysis effort, along with the other recommended actions, will help to ensure that there is no long-term exposure risk to the occupants or to maintenance personnel.

The vinyl floor tiles in the three housing units inspected were in good condition, but, should they become broken or damaged, asbestos fibers may be released. The recent EPA clarification of the definition for damaged non-friable materials apparently removes some concerns about the status of these materials at the time of renovation or demolition. Inspection of these normally non-friable materials prior to demolition is required, but, if they are in good condition at the time, they may be left in place as long as planned demolition procedures will not release a significant amount of asbestos fibers. However, if demolition will subject these non-friable materials to grinding, sanding, or abrading, or if demolition involves burning of the structure or debris from the structure, all forms of ACM, including these floor tiles, must be removed in advance.

The vinyl floor coverings should be left in place and managed under an Operations and Maintenance (O&M) program. An O&M program must address the following:

- The locations of all known and suspected ACM.
- The procedures and frequency for periodically assessing the ACM in the facility.
- The procedures for safely handling the ACM during maintenance or removal activities.
- Designation of an asbestos coordinator for the facility.
- The responsibilities and requirements for training of personnel involved with maintenance and renovation of the facility.
- The record-keeping program for the facility.

The vinyl floor coverings should be removed during a planned renovation of the units, in accordance with the regulations applicable at the time.

Other suspect materials noted were roofing shingles and felt, which should be managed under an O&M program. Care should be taken during renovations or demolition to identify suspect materials that may have been hidden from the view of the assessment team. The suspect materials observed by the field team, and any hidden suspect materials found later, should be analyzed for the presence of asbestos prior to being disturbed.

SECTION 3. TRANSFORMER OILS

SECTION 3. TRANSFORMER OILS

WESTON personnel conducted a site visit at the Addison facility on 19 March 1990 to evaluate the potential use of polychlorinated biphenyls (PCBs) in mixtures used as insulating oils in the existing transformers serving the facility. Following inspection of several properties where the condition of the transformers was poor, a protocol was developed to address problems that were being encountered during this activity. Due to the age and deteriorated condition of many of the transformers, collection of samples, in some cases, posed an undue risk of causing environmental damage or exacerbating any that may already exist. If the transformers could not be sampled safely, in the judgement of the field team leader, or if the ownership of the units was in question, the planned sample collection was abandoned and any observations made by the field team were documented.

3.1 SAMPLING RATIONALE

Electrical transformers are often filled with a dielectric liquid which increases the resistance of the unit to arcing and also acts as a heat transfer medium to cool the coils. Many transformers are filled with a chlorinated fire-resistant fluid which meets the definition established in the National Electrical Code for "askarel", the generic name for non-flammable insulating liquids used in transformers. Prior to 1979, transformer askarel typically contained 60 to 100% PCBs. Askarel transformers were made in a variety of sizes containing from three to 3,000 gallons of PCB liquid.

Three types of transformers are defined in the regulations:

- PCB Transformer: Any transformer containing 500 ppm or greater PCBs.
- PCB-Contaminated Transformer: Any transformer containing 50-499 ppm PCBs.
- Non-PCB Transformer: Any transformer containing less than 50 ppm PCBs.

Sampling of transformers is conducted to verify which of these three categories of transformers are present. Depending upon the category determined, certain regulatory requirements including recordkeeping, marking, storage, and disposal must be satisfied.

In general, the sampling protocol followed by WESTON for this project was outlined in ANL's SAP. The plan identified sites where unlabeled, Army-owned transformers were thought to be present. The types, sizes, and precise locations of the transformers were not identified in the plan. Local utility company assistance was needed to identify ownership of the transformers and to provide services necessary to de-energize the high power lines prior to sampling. The objective of this task was to sample all Army-owned transformers serving the facility. However, it was agreed that if the sampling team determined that a spill that may result in environmental damage could occur due to the intrusive effort involved, sampling was not to be attempted. In such cases, name plate information and a general description of the transformer would be obtained. The following list presents potential conditions where sampling activities would not be attempted:

- Transformers are rusted and/or in very poor condition.
- Certain transformer hardware is in poor condition (i.e. drain valves, stopcocks, lid fastening bolts etc.)

- Transformers appear to be in good condition, but access is thwarted by bolts, wing nuts etc. that are "rusted shut".
- Transformer and/or transformer mounting pole ownership is questionable or is other than the U.S. Army.

3.2 SAMPLING METHODOLOGY AND OBSERVATIONS

On 21 March 1990, WESTON personnel arrived at the site to conduct transformer sampling activities. Four Army-owned transformers were identified, mounted on individual utility poles. Three devices were located between Army Trail Road and Natoma Avenue while the other transformer is attached to a utility pole behind one of the houses. A Commonwealth Edison Electric Company (CEECO) utility crew was requested to assist with the sampling by de-energizing the high-voltage power feed. In preparation for sampling, WESTON personnel posted both the Health and Safety Plan and the route to the nearest medical center at the work area. The CEECO crew had not arrived at the site by 10:00. Mr. Bill Crutcher of CEECO was contacted and said he had forgotten to notify the crew and may not be able to assist. Despite several telephone conversations and a site visit by Mr. Crutcher, no assistance was provided to de-energize the system to permit safe sampling. The sampling team eventually left the site since no CEECO assistance was forthcoming. Only one of the four transformers could have possibly been sampled, because the other three sampled were in relatively poor condition, but this was not done due to the lack of timely assistance by CEECO.

3.3 CONCLUSIONS AND RECOMMENDATIONS

Four Army-owned transformers that may contain PCBs were identified at the Addison site. One of the transformers appeared to be in a condition that would have permitted an attempt to collect a sample. The condition of the other three devices was such that the sampling could not be safely performed. However, no sample was obtained, despite waiting for over four hours for assistance from the CEECO support personnel. WESTON concludes that the transformers are likely to belong to the PCB-transformer category based on their age. These transformers should be assumed to contain PCBs, based on their age. This fact should be noted in facility records and the devices should be labeled appropriately. Since the transformers were old and their housing are deteriorating, they should be checked periodically as long as they are in service to ensure that no leaks have developed. When these units are replaced with newer transformers that do not contain PCBs, they should be moved to a staging area where they can be opened safely and sampled. A proper area should be capable of containing any oils that may be spilled during the opening and sampling of the transformers until the residues can be cleaned up satisfactorily. The findings of this sampling program should be used to determine the proper disposal method.

SECTION 4. SUMMARY OF FINDINGS

SECTION 4. SUMMARY OF FINDINGS

Sampling and analyses performed at the Addison, Illinois FHU reveal the presence of issues of concern from an environmental standpoint. The most significant are the detection of asbestos in nine of the 12 dust samples and in all of the eight samples of floor tile and vinyl sheeting, and the presence of four transformers which may contain PCBs.

The following practices should be observed with regard to the known and suspected asbestos-containing materials identified:

- The risks posed by the asbestos-containing dust in the ductwork cannot be clearly evaluated, since the program only called for a qualitative screening of this material. Airborne asbestos was not sampled at this site to determine the impact, if any, of asbestos fibers that were detected in the dust deposited in the ductwork of the heating system. During the follow-up study by a WESTON Certified Industrial Hygienist there was no available vacant housing unit in which to collect the necessary samples. Further studies, such as air sampling, are recommended by AEHA to define what risks, if any, are presented by these findings.
- The vinyl floor coverings pose no significant risk as long as they are in good condition and are not damaged by excessive wear or misuse. They should be left in place and managed under an O&M program which describes procedures for the regular inspection of the floor coverings and the removal and replacement of any that become damaged.
- Other suspect materials identified at the site, including roofing materials, should be assumed to contain asbestos and managed in place under an O&M program until they are either removed or determined to contain no asbestos.

Examination of the electrical supply system at the property revealed that four Army-owned transformers which may contain polychlorinated biphenyls (PCBs) are located on the property. The transformers appear to be about 30 years old. They appeared to be in poor-to-fair condition, and efforts were made to collect oil samples from one device. However, the local utility company failed to provide assistance as scheduled, despite several phone calls. Based on the age of the units, WESTON concludes that they are likely to contain PCBs. The units should be assumed to be PCB transformers pending a determination of the PCB content of the oils. This fact should be noted in the facility records and the devices should be appropriately labeled. Upon removal, sampling and analysis should be performed after the transformers are replaced and transported to a facility where the bolts can be removed and the oils sampled safely. The findings of this sampling program should be used to determine the proper disposal method.

APPENDIX A.1. FIELD DATA, ASBESTOS SAMPLING

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01

FACILITY/BLDG. NO. Addison Family Housing Unit 6

FACILITY CONTACT Gale Morton TELEPHONE NUMBER (708) 926-3315

TECHNICIAN NAME Michael Kuntley SIGNATURE Michael Kuntley

TECHNICIAN NAME Rolf Erga SIGNATURE Rolf Erga

TIME ARRIVED 1125 TIME DEPARTED 1210 DATE 27 Feb/90
dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

Arrived at Gale Morton's office at 0820. She said that we could only do two units at Addison, because occupants are on TOX. We told her that our contract specified that we would do three buildings at Addison. Also, no units had been scheduled for Worth Family Housing for today. Ms Morton ^{made} several calls and arranged for us to do another unit at Addison, but we would have to wait until tomorrow to survey Worth.

Buildings chosen to survey were selected by Sam Check of Weston Inc. and Gale Morton, Housing Administrator, to cover a representative range of the different types of houses. The houses chosen, as indicated by a records check, have had no major renovations in the last few years. There have been minor renovations and repairs to selective houses (new furnaces, new roofs, new painting, etc.)

Housing Unit 6 is a two bedroom Capehart-style house with a concrete slab base. Outside walls are covered by cedar shake shingles; the roof is covered by tar shingles. The inside is covered by vinyl flooring, white

ACTIVITY CHECKLIST

Interviews Completed	<u>Yes</u>	Number of Samples	<u>6</u>
Drawings Reviewed	<u>No</u>	Survey Form Completed	<u>Yes</u>
Drawings Attached	<u>Yes</u>	Site Log Completed	<u>Yes</u>
Visual Inspection	<u>Yes</u>	Chain-of-Custody Initiated	<u>Yes</u>
Number of Photos	<u>0</u>	Exp. Assess. Form Init.	<u>Yes</u>
P.A. Check <input checked="" type="checkbox"/>	SIGNATURE <u>Michael Skatrnicki</u>	DATE <u>21 MAR/90</u>	<small>dd mm yy</small>



SITE SURVEY LOG

(Continued)

walls and ceilings are painted over plaster board. There is also an attic with both lamin-in and blown-in fiberglass and cellulose insulation. No insulation could be found in any of the pipe runs in the furnace area. Two floor tile samples and four duct samples were taken in this unit. The areas for the closets are included with the rooms in which the closets occur.

The units originally chosen to survey had to be altered based on the availability of occupants. Instead of Unit 6, 10, and 12, we will survey Units 1, 5, and 6. Brad Bailey from Argonne Labs will accompany us ~~with~~ while we survey. We asked him about the change in survey plans, and he said that this would not be a problem as long as each house was randomly selected.

(We have no escort for these units at Addison. It was understood that we would meet a Sgt. Bennett, at Unit 1, who would let us in the units. When we arrived, a lady from Unit 6 approached us and said that she had the keys to the units to be surveyed. She ~~lets~~^{let} us into the units (Unit 6 was her house), then left. Since Brad Bailey from Argonne Labs was with us, we surveyed the units, even though the person from the Housing Dept. was with us.)

ASBESTOS SURVEY DATA

0747

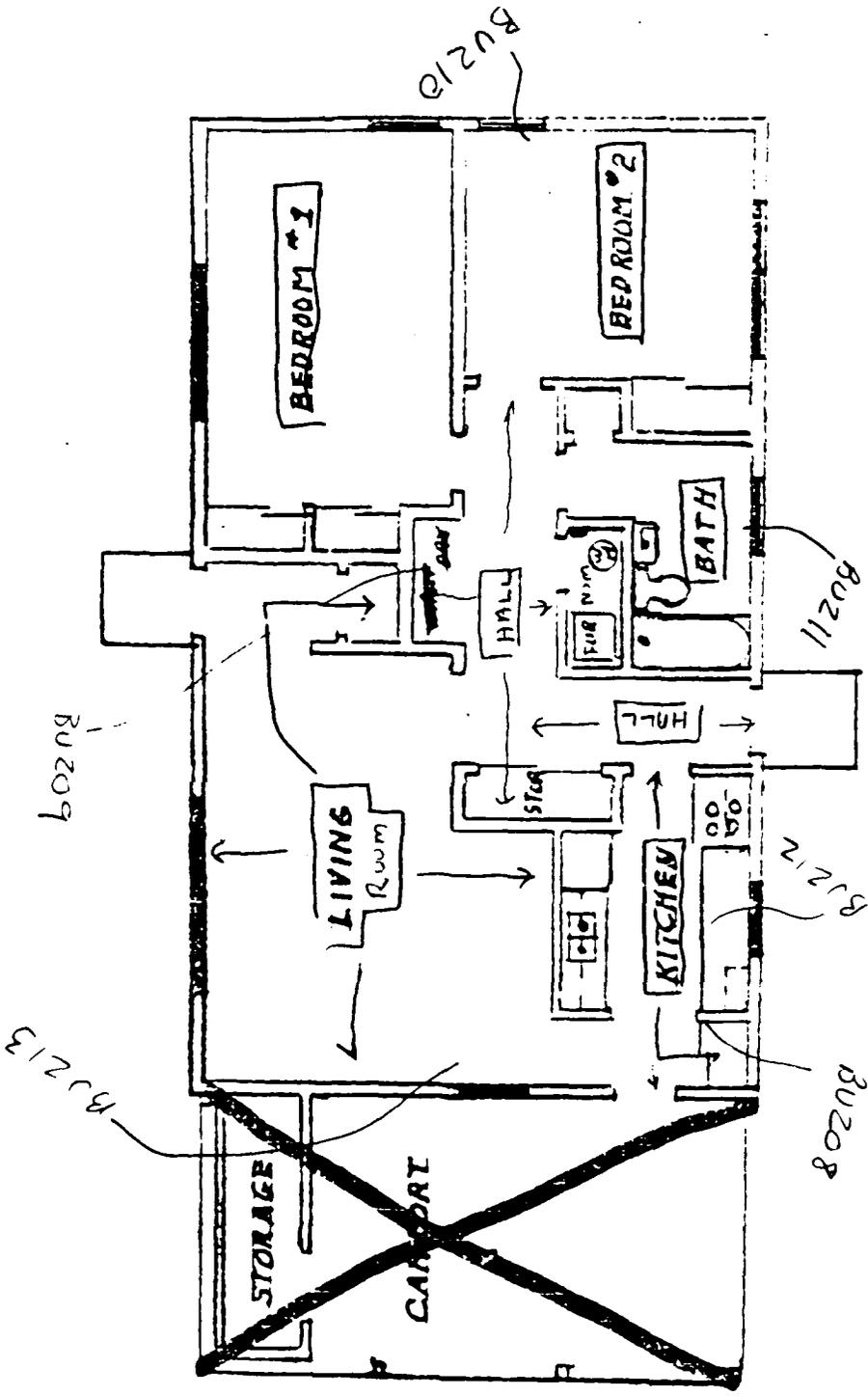
BLDG. NO.: 01016
 INSTALLATION 01512
 TASK TEAM MEMBERS
Michael Kindley
Rolf Erga
 BLDG. NAME: Adrian Family Housing, Unit 6
 BLDG. DESCRIPTION: Cupboard

W.O. No. 2104-13-01
 CLIENT: ARGONNE NATIONAL LAB
 DATE (dd/mm/yy): 21/02/90
 TIME ARRIVED: 1125

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	B1012018	-512	-11L	-01016	-A1F11	KITCHEN	1112	-	111424F	018
2.	B1012017	-512	-11L	-01016	-A1F11	LIVING	1740	-	111421A	012
3.	B1012010	-512	-11L	-01016	-A1T10	BEDROOM 1	1111	-	1111	013
4.	B1012011	-512	-11L	-01016	-A1T10	BEDROOM	1111	-	1111	013
5.	B1012012	-512	-11L	-01016	-A1T10	KITCHEN	1111	-	1111	013
6.	B1012013	-512	-11L	-01016	-A1T10	LIVING ROOM	1111	-	1111	013
7.	1111	-1	-1	-11	-A11		1111	-	1111	1
8.	1111	-1	-1	-11	-A11		1111	-	1111	1
9.	1111	-1	-1	-11	-A11		1111	-	1111	1
10.	1111	-1	-1	-11	-A11		1111	-	1111	1
11.	1111	-1	-1	-11	-A11		1111	-	1111	1
12.	1111	-1	-1	-11	-A11		1111	-	1111	1

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	Gray 12" x 12" floor tile
02	Brown 12" x 12" floor tile. Also occurs in Bath, Bedroom 1, Bedroom 2, and Living Room.
03	Dust in floor ducts.

TECHNICIAN SIGNATURE: Michael Kindley QUALITY ASSURANCE SIGNATURE: Michael Steffner



MC A 2 BEDROOM TYPE B HOME

ADDISON, XII LEMONT, ILL. WORTH, XII 98 1/2'

Addison Family Housing
Unit 6

SCALE: 3/16"
12-30-69 HDV

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. Adrian Family Housing, Unit 5
 FACILITY CONTACT Gail Merton TELEPHONE NUMBER (708) 926-3315
 TECHNICIAN NAME Michael Kindley SIGNATURE Michael Kindley
 TECHNICIAN NAME Rolf Erga SIGNATURE Rolf Erga
 TIME ARRIVED 1212 TIME DEPARTED 1235 DATE 27 / Feb / 90
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

Unit 5 is a three bedroom Capehart-style house with a concrete slab base. Outside walls are covered by cedar shake shingles; the roof is covered by tar shingles. The inside is covered by vinyl flooring while the walls and ceiling are painted over plaster board. No insulation could be found on any of the pipe runs. All were bare. One floor tile and four dust samples were taken. The areas for the closets were included with the area for the room in which the closet occurs. We could see down the pipe chase behind the Bath. All the pipes were bare.

After the woman in Unit 6 let us in the unit, she left while we surveyed. Brad Bailey of Argonne Labs was in the unit with us while the survey was proceeding.

ACTIVITY CHECKLIST

Interviews Completed No Number of Samples 5
 Drawings Reviewed No Survey Form Completed Yes
 Drawings Attached Yes Site Log Completed Yes
 Visual Inspection Yes Chain-of-Custody Initiated Yes
 Number of Photos 0 Exp. Assess. Form Init. Yes
 P.A. Check SIGNATURE Michael Skotnicki DATE 21 MAR / 90
 dd mm yy

ASBESTOS SURVEY DATA

0751

BLDG. NO.: 01015
 INSTALLATION 01512
 TASK TEAM MEMBERS
Michael Kindley
Rolf Erga
 BLDG. NAME: Adrian Family Housing Unit 5
 BLDG. DESCRIPTION: Cupboard

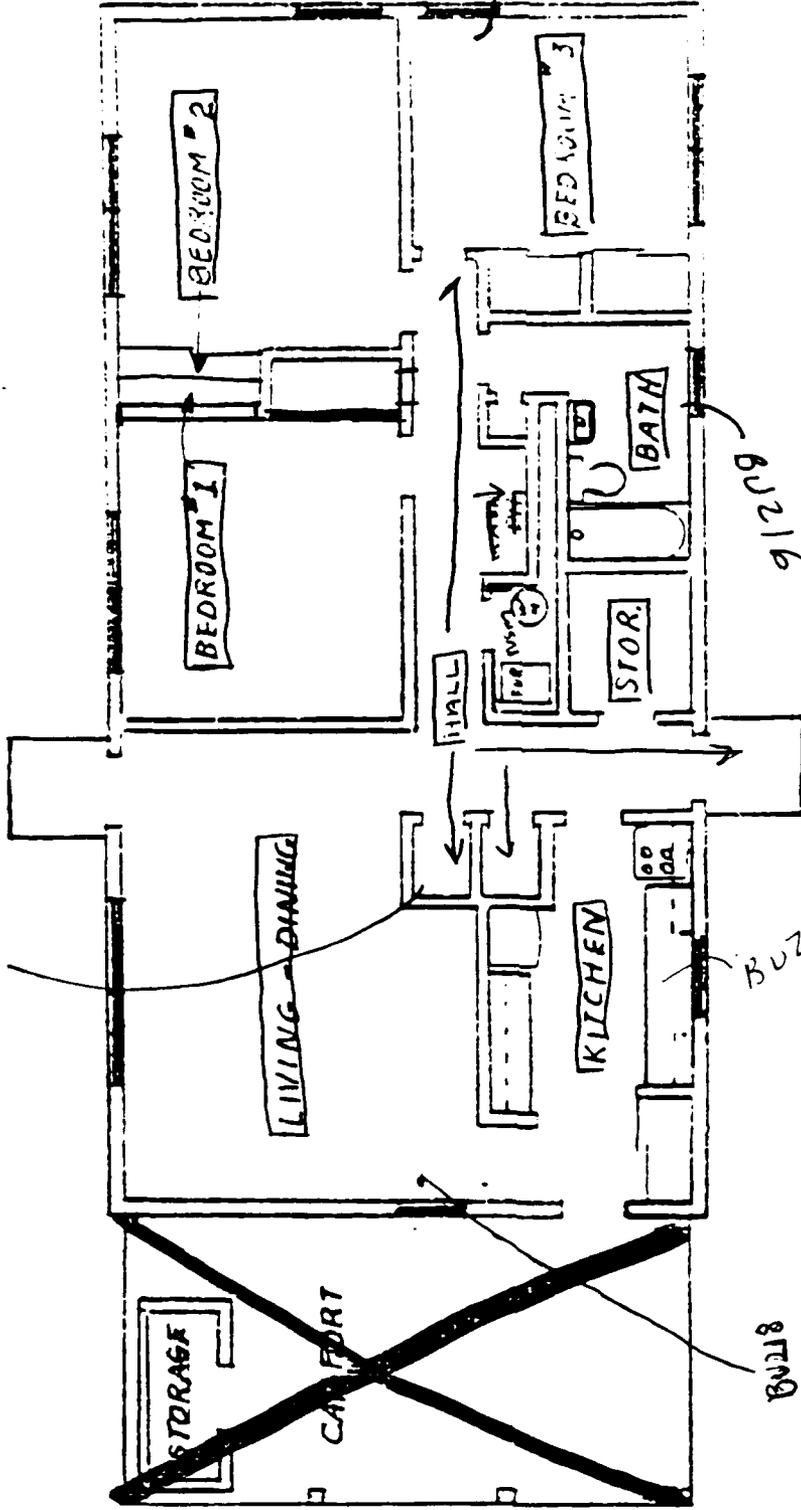
W.O. No. 2104-13-01
 CLIENT: ARGONNE NATIONAL LAB
 DATE (dd/mm/yy): 27/02/90
 TIME ARRIVED: 1212

ITEM NO.	LAB SAMPLE NO.	BASE NO.	STATE	UNIT NO.	SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
1.	B1012117-512-114-01015-A1F17					HALL	10175	-	1014315	01
2.	B1012115-512-114-01015-A1D					BEDROOM 13	111	-	111	02
3.	B1012116-512-114-01015-A1D					BATH	111	-	111	02
4.	B1012117-512-114-01015-A1D					KITCHEN	111	-	111	02
5.	B1012118-512-114-01015-A1D					LIVING ROOM	111	-	111	02
6.	1111-1-1-11-ALL						111	-	111	1
7.	1111-1-1-11-ALL						111	-	111	1
8.	1111-1-1-11-ALL						111	-	111	1
9.	1111-1-1-11-ALL						111	-	111	1
10.	1111-1-1-11-ALL						111	-	111	1
11.	1111-1-1-11-ALL						111	-	111	1
12.	1111-1-1-11-ALL						111	-	111	1

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	Brown 12" x 12" floor tile. Also in Living Room, Kitchen, Hall, Stair, Bath, Bedroom 1, Bedroom 2, and Bedroom 3 (covers whole building, essentially)
02	Dust in floor ducts

TECHNICIAN SIGNATURE Michael Kindley QUALITY ASSURANCE SIGNATURE Michael Skofnicko

B0214



MCA 3 BEDROOM TYPE D HOME

ARLINGTON, ILL.

LEMONT, ILL.

WORTH, ILL.

1200 sq. ft.

SCALE: 1/8" = 1'-0"
12-31-64 JMK

Alhambra Family Housing
Unit 5

SITE SURVEY LOG

CLIENT Argonne National Labs WESTON WORK ORDER NO. 2104-13-01
 FACILITY/BLDG. NO. Addison Family Housing, Unit 1
 FACILITY CONTACT Gale Merten TELEPHONE NUMBER (708) 926-3315
 TECHNICIAN NAME Michael Skotnicki SIGNATURE Michael Skotnicki
 TECHNICIAN NAME Rolf Erga SIGNATURE Rolf Erga
 TIME ARRIVED 1245 TIME DEPARTED 1317 DATE 27 / Feb / 90
 dd mm yy

SPECIFIC SITE ACTIVITIES, COMMENTS, INTERVIEW RESULTS & BRIEF DESCRIPTION OF FACILITY

Unit 1 is a three bedroom Capehart-style house with a concrete slab base. Outside walls are covered by cedar shake shingles; roof is covered by tar shingles. Inside is covered by vinyl flooring, while the walls and ceilings are painted plaster board. No insulation could be found on any of the pipe runs observed. All pipes were bare. The areas for each closet are included with the room in which the closet occurs.

This unit appears to have original floor tile. The other two units had newer 12" x 12 floor tiles, ^{while} Unit 1 has older, blank 9" x 9" floor tile. Five samples of vinyl flooring, and four dust samples were taken.

After letting us in the unit, the lady from Unit 6 left while we performed the survey. Brad Bailey from Argonne Labs accompanied us while we surveyed. At 1300 Mrs Benning, who lives in Unit 1, returned home, and was in the unit while we finished our work.

ACTIVITY CHECKLIST

Interviews Completed No Number of Samples 9
 Drawings Reviewed No Survey Form Completed Yes
 Drawings Attached Yes Site Log Completed Yes
 Visual Inspection Yes Chain-of-Custody Initiated Yes
 Number of Photos 0 Exp. Assess. Form Init. Yes
 Q.A. Check SIGNATURE Michael Skotnicki DATE 21 MAR 90
 dd mm yy

ASBESTOS SURVEY DATA

0755

BLDG. NO.: 01011
 INSTALLATION 01512

TASK TEAM MEMBERS
Michael Kindley
Rolf Erga

W.O. No. 2104-13-01
 CLIENT: ARGONNE NATIONAL LAB

BLDG. NAME: Address Family Housing, Unit 1
 BLDG. DESCRIPTION: Cupboard

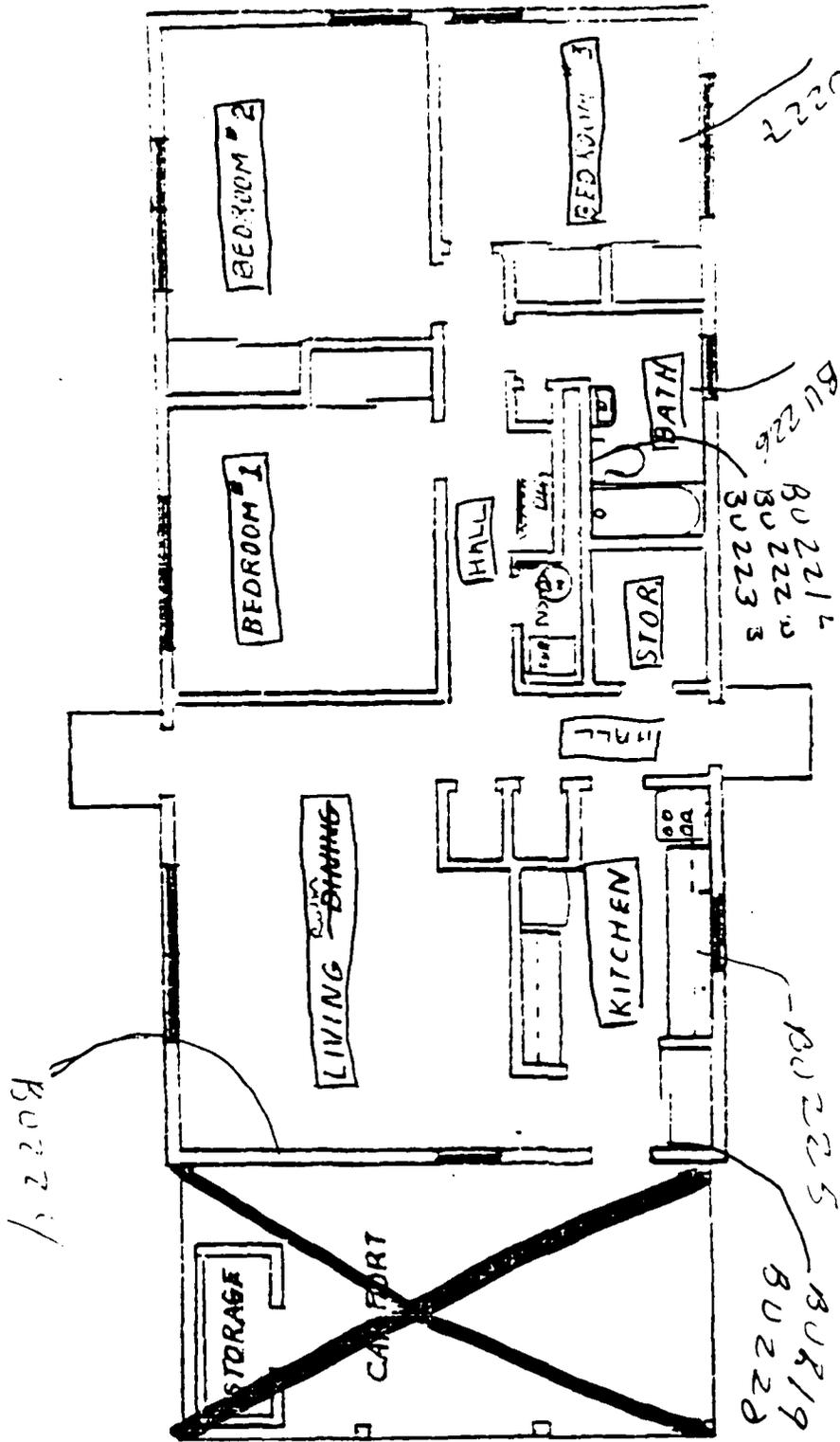
DATE (dd/mm/yy): 27/06/90
 TIME ARRIVED: 1245

ITEM NO.	LAB SAMPLE NO.	BASE NO.			SAMPLE CODE	AREA	QUANTITY	PHOTO	E.A. FORM NO.	NOTES
		BASE NO.	STATE	UNIT NO.						
1.	B1012114	-512	-11L	-01011	-A1F1	KITICIMEM	10715	-	1117131C	01
2.	B1012120	-512	-11L	-01011	-A1F1	KITICIMEM	11814	-	1117131D	02
3.	B1012121	-512	-11L	-01011	-A1F1	B1ATIM	11414	-	1117131E	03
4.	B1012122	-512	-11L	-01011	-A1F1	B1ATIM	11111	-	1117131F	04
5.	B1012123	-512	-11L	-01011	-A1F1	B1ATIM	11111	-	1117131A	05
6.	B1012124	-512	-11L	-01011	-A1T0	B1012124	11111	-	11111	06
7.	B1012125	-512	-11L	-01011	-A1T0	KITICIMEM	11111	-	11111	06
8.	B1012126	-512	-11L	-01011	-A1T0	B1ATIM	11111	-	11111	06
9.	B1012127	-512	-11L	-01011	-A1T0	B1012127	11111	-	11111	1
10.	11111	-	-	-	-A11	11111	11111	-	11111	1
11.	11111	-	-	-	-A11	11111	11111	-	11111	1
12.	11111	-	-	-	-A11	11111	11111	-	11111	1

NOTE NO.	NOTES/REMARKS/COMMENTS/DETAILS/OTHER MATERIALS, QUANTITY, ETC.
01	Black 9" x 9" floor tile. Also occurs in Hall, Living Room, Bath, Stair, Bedroom 1, Bedroom 2, and Bedroom 3. In Kitchen and Bath this floor tile lies under rolled flooring (linoleum). Essentially every entire house.
02	Brown rolled flooring (linoleum)
03	Gray rolled flooring (linoleum)
04	White floor tile used as patch. Couldn't discern dimensions without tearing linoleum.
05	Brown floor tile used as patch. Dimensions could not be determined without tearing linoleum.
06	Dust in floor ducts

ANALYST SIGNATURE Michael Kindley

QUALITY ASSURANCE SIGNATURE Michael Skofnicki



MCA 3 BEDROOM TYPE D HOME

ARRISON, ILL. LEMONT, ILL. WORTH, ILL.
1200 sq. ft.

SCALE: 1/8" = 1'-0"
12-31-69 M.A.V.

Allison Family Housing
Unit 1

R0225
R0222
R0223

R0227

R0227

APPENDIX A.2. LABORATORY DATA, ASBESTOS SAMPLES

Madison

BULK SAMPLE ANALYSIS SUMMARY

Weston W.O. No. 2104-13-01-0000

Sample Number BU208 through Sample BU223

LAB ID NO	CLIENT/CLIENT ID	LOCATION	MATERIAL DESCRIPTION *	DATE RECEIVED	RESULTS **					LAYERS	ANALYST
					CH	AM	CR	OT	TL		
BU208	52-IL-006-AFT	KITCHN	NF, GY, 12X12 FT	03/05/90	<1	ND	ND	ND	<1	Yes	07323
BU209	52-IL-006-AFT	HALL	NF, BR, 12X12 FT	03/05/90	ND	ND	ND	ND	ND	Yes	07323
BU214	52-IL-005-AFT	HALL	NF, BR, 12X12 FT	03/05/90	<1	ND	ND	ND	<1	Yes	07323
BU219	52-IL-001-AFT	KITCHN	NF, BK, 9X9 FT	03/05/90	7	ND	ND	ND	7	Yes	07323
BU220	52-IL-001-AFT	KITCHN	NF, BR, LINOLEUM	03/05/90	ND	ND	ND	ND	ND	No	07323
BU221	52-IL-001-AFT	BATH	NF, GY, LINOLEUM	03/05/90	ND	ND	ND	ND	ND	No	07323
BU222	52-IL-001-AFT	BATH	NF, WH, FLOOR TILE	03/05/90	10	ND	ND	ND	10	Yes	07323
BU223	52-IL-001-AFT	BATH	NF, BR, FLOOR TILE	03/05/90	<1	ND	ND	ND	<1	Yes	07323

MATERIAL DESCRIPTION	FRIABLE	COLOR ²	SYSTEM ³
Friable ¹ , Color ² , System ³ , Type	F Friable NF Non-Friable	BK - Black BL - Blue BR - Brown GR - Green GY - Gray RD - Red TN - Tan WH - White YL - Yellow	CHW - Chilled Water DOM - Domestic Water HHW - Heating Hot Water STM - Steam UNK - Unknown

** RESULTS
 CH - Chrysotile OT - Other
 AM - Amosite TL - Total
 CR - Crocidolite

Upon issue, this report may be reproduced only in full.

All analyses are performed in accordance with the methods set forth in U.S. EPA 600/M4-82-020, as amended. Weston's Optical Microscopy Laboratory is accredited by the National Institute of Standards and Technology's National Voluntary Laboratory Accreditation Program for asbestos fiber analysis (Laboratory Code 1254).



ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

Transmission Electron Microscopy
Asbestos Summary Report

Client: Argonne National Laboratories Weston W.O. No.: 2104-13-01-0000

Sample Type(s): Dust and Floor Tiles Sampling Location: Addison

QUALITATIVE ANALYSIS

FLOOR TILES: A 0.5 to 2.0 gram portion of each floor tile sample was ultrasonically disaggregated in four milliliters of deionized, 0.2 μ m membrane filtered water. After the coarse fraction settled, a drop of the suspended, clay-sized fraction was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated for thermal stability in the electron beam and examined with a Philips CM12 transmission electron microscope operating at 120 kilovolts accelerating voltage.

DUST WIPE SAMPLES: A generous loading of dust was collected on a pre-wetted, 25 square centimeter section of a cleanroom wipe. The wipe was placed in a two ounce wide mouth collection vial and returned to the laboratory. Ten to fifteen milliliters of filtered, deionized water was added to suspend the dust. The suspension was ultrasonically dispersed and the coarse fraction was allowed to settle. A drop of the suspension was placed on a Formvar coated 200 mesh Cu TEM grid and allowed to dry. The grid was carbon coated as above and examined by transmission electron microscopy at 120 kilovolts accelerating voltage.

ANALYTICAL RESULTS

<u>SAMPLE IDENTIFICATION</u>	<u>RESULTS</u>
BU209-52-IL-006-AFT	Positive
BU210-52-IL-006-ATD	Positive
BU211-52-IL-006-ATD	Positive
BU212-52-IL-006-ATD	Positive
BU213-52-IL-006-ATD	Positive
BU215-52-IL-005-ATD	Positive



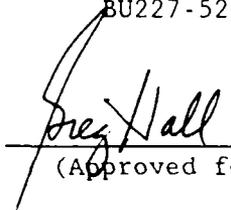
ROY F. WESTON, INC.
1635 PUMPHREY AVE.
AUBURN, AL 36830
PHONE: (205) 826-6100
FAX: (205) 826-8232

ANALYTICAL RESULTS
(continued)

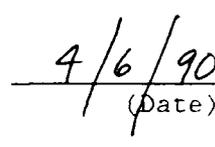
SAMPLE IDENTIFICATION

RESULTS

BU216-52-IL-005-ATD	Positive
BU217-52-IL-005-ATD	Positive
BU218-52-IL-005-ATD	Negative
BU220-52-IL-001-AFT	Positive
BU221-52-IL-001-AFT	Positive
BU224-52-IL-001-ATD	Positive
BU225-52-IL-001-ATD	Positive
BU226-52-IL-001-ATD	Negative
BU227-52-IL-001-ATD	Negative



(Approved for Transmittal)



(Date)

- * This test report relates only to the specific items tested.
- ** These sample results may only be reproduced in full, and are valid only if approved for transmittal.

APPENDIX B. FIELD DATA, TRANSFORMER EVALUATIONS

wants to
that he
so that
for PCB's
time

- (6) Call Dr. Grossman. 866-2229?
- Slide under office door
- office 171 cten eng office BLDG 4
- Couldn't get Steve Resic

s down
giving S, put
nt H
n envelope

Analyses

03-16-90

- Douglassville Site
- Phone calls
- PAT RAPPERTY
- Ben Shapiro - Holding tires for LOSS
TUBES two weeks
- Dan Holland - use today's or others
to estimate

3-19-90

- BUCKET TRUCK
- Wilson Rentals
- 13574 Cicero
- Arrived in Chicago AT 0830.
- SET UP Hotel
- RESEVED BUCKET TRUCK-

Site

sd SITE

- 1312 - Arrived AT Addison Site
- IDENTIFIED 4 potential Army
owned transformers. 3 in between
Army Trail Road & Natoma Ave
& one in back of A House on
Natoma Ave
- only one looks in decent shape

3-21-90 - Addison, Ill

- Arrived AT 0915 For 0930
Scheduled meeting

1600 Arrive
- Insf
IF
From
- present
Collec.

1000 - No one from power company shows
Aurora Dist 844-6211
Laudale 627-5500
Bill Crutcher 691-4412

1030 - Finally got shold of Mr. Crutcher
who said that he forgot about it
& might not be able to get a
truck today

MO -
old
MO -
- new
with

1115 - met Bill Crutcher (con.ed) at
the site; he needed the information
on the poles & transformers. I
AT to call him back in ~ 15 min

MO -
- UAC
on his

1130 Talked to Bill again. He said that
someone may be at the site in
approximately one hour. I mentioned
the fact that I have a plane to
catch & to try to get someone out
as soon as possible

MO -
- UAC

Clean
ckset

1315 Left site

~~Messner~~
Mikes 3650

100 Corp North Site 101
RT 22 & Lakeside Dr
Barron 60015 (312 295-6020)