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LEAD BASED PAINT SURVEY REPORT

BACHELOR'S ENLISTED QUARTERS (ID: Building 512C)

NASA-AMES

Moffett Field, CA 94035

PREPARED FOR

NASA AMES PAI CORPORATION
NASA Ames Research Center
Moffett Field, CA 94035-1000

PREPARED BY

Benchmark Environmental Engineering
August 17, 2001
Project Number: E01-448w-L-SU

Prepared By:

Richard E. MacFarlane
DHS Inspector/Assessor
DHS# I-2241

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COO, UPIN, Inc
14946

BUILDING INSPECTIONS

ENVIRONMENTAL ENGINEERING

SPECIALIZED TRAINING

CONTRACT MANAGEMENT

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EXECUTIVE SUMMARY

Benchmark Environmental Engineering was retained by PAI Corporation, to conduct a lead-based paint survey at Building 512C, Bachelors Enlisted Quarters Boiler Room at Moffett Field, California.

In order to determine if lead based paint was present, three (3) paint chip samples were collected and 55 assays were taken using an X-RAY FLUORESCENCE (XRF) instrument. The results indicated that the following building components were above the EPA and DHS level of 1.0 mg/ cm² or 5000 PPM.

Lead-based Paint was identified on the following building components:

- Exterior:** No lead based paint was identified on exterior of building.
- Interior:** Mechanical Room Exterior Door.

INTRODUCTION

Benchmark Environmental Engineering was retained by Mr. Kris McGlothlin, to conduct a lead-based paint survey at NASA Ames-PAI Corporation, Moffett Field, California.

Authorization to perform this survey was received via signed agreement to BENCHMARK from Mr. Kris McGlothlin, on or about May 1, 2001, as referenced by BENCHMARK'S proposal E01-448.

BACKGROUND

The Bachelor's Enlisted Quarters Boiler Room, Building 512C, was built in 1970. This facility was built in 1970 to supply steam heat to the bachelor's enlisted quarters. This building is unoccupied due to earthquake damage.

WARRANTY

Benchmark Environmental Engineering warrants that the findings contained herein have been prepared with the level of care and skill exercised by experienced and knowledgeable environmental consultants who are appropriately licensed or otherwise trained to perform lead-related construction risk assessments and inspections pursuant to the scope of work required on this Project.

The survey included inspection of accessible materials. BENCHMARK did not inspect or sample inaccessible areas such as behind walls or within ductwork, and did not dismantle any part of the structure to survey inaccessible areas. For the purpose of this warranty, inaccessible is defined as areas of the building that could not be tested (sampled) without destruction of the structure or a portion of the structure. Inaccessible materials that are not visible to Benchmark's inspectors are assumed to be lead containing.

Authorization to perform this survey was received by BENCHMARK from Mr. Kris McGlothlin, of The PAI Corporation, on May 1, 2001, as referenced by Benchmark's Proposal E01-488.

The survey was conducted on August 17, 2001. A comprehensive site survey was performed based on the building plan. All building components identified in the specifications that may contain lead-based paint/coating were targeted for testing. (Exterior and interior walls, exterior and interior windows, doors and numerous associated components).

Sampling protocol for identification of lead-based paint was in accordance with The U.S. Department of Housing and Urban Development (HUD) Guidelines for

the Evaluation and Control of Lead-Based Paint Hazards in Housing, Chapter 7. All suspect lead-coated surfaces were identified by building, wall, and building component, as such each component had a unique identification number.

The report establishes lead concentrations in painted surfaces as a general guidance tool for the purpose of conducting demolition activities for Building 512C.

A total of 55 XRF assays and three (3) paint chip samples were collected within this building.

SCOPE OF SERVICES

Benchmark recognized the scope of work for the NASA Ames-PAI Corporation, to be composed of a Lead Based Paint Inspection for the Bachelor's Enlisted Quarters Boiler Room(ID: Building 512C). The survey consisted of testing for lead-base paint in general accordance with the U.S Department of Housing and Urban Development (HUD) guidelines for the evaluation and control of Lead-Based Paint Hazards in Housing, Chapter 7.

Certain building components that are adjacent to each other and not likely to have different painting histories have been grouped together into a single testing combination, as follows: Window Casings/Stops/Jambs/Aprons -Or- Door Jambs/Stops/Transoms/Casings and other door frame parts.

The following building components were inspected when applicable:

- Exterior Areas:

Walls	Windows
Windowsills	Stair Handrails
Doors	Door Molding
Downspouts	Window Screen
Building Trim	Skylight
Balusters	Stair Handrail
Stair Risers	Support Pillar

- Interior Areas:

Walls	Windows
Windowsills	Stair Treads
Balusters	Doors
Door Molding	Stair Stringer
Ceilings	Ceiling Molding
Skylight	Floors
Ceiling Molding	Grates
Baseboards	Support Beams
Electrical Box	Book Shelf
Chair Rail	Wainscot

Paint chip samples were collected from three (3) building components to provide conclusions that would be in compliance with DOSH 8 CCR 1532.1.

METHODOLOGY

GENERAL REFERENCES

Inspection, sampling, and assessment procedures were performed in general accordance with the guidelines published by The Department of Housing and Urban Development's (HUD) 1995 Guidelines, Chapter 7. The survey consisted of three major activities: visual inspection, sampling, and analysis. Although these activities are listed separately, they are integrated tasks.

VISUAL INSPECTION

An inspector that is a Department of Health Services Certified Lead Inspector/Risk Assessor performed the inspection. An initial building walkthrough was conducted to determine the presence of suspect materials that were accessible or exposed.

SAMPLING PROCEDURES

Following the walkthrough, the inspector selected samples areas of exposed or accessible materials identified as suspect LBP. EPA and HUD guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material.

X-RAY FLUORESCENCE (XRF) ANALYSIS

XRF instruments measure lead in paint by directing high energy X-rays and gamma rays into the paint, causing the lead atoms in the paint to emit X-rays which are detected by the instrument and converted to a measurement of the amount of lead in the paint. The EPA approved technology allows for measurement of X-rays without scraping or samples preparation to characterize substrate or matrix effects. The Spectrum Analyzer, Metals Analysis Probe (MAP 4) is combined with a microprocessor system that enables field-testing with a high degree of quality control and speed. Sample locations, descriptions, conditions, and measurement results are automatically recorded by the instrument and easily downloaded to a PC or laptop.

QUALITY CONTROL PROGRAM

Benchmark Environmental Engineering utilizes only DHS approved inspectors, which are certified to use radioactive instruments. The MAP 4 Spectrum Analyzer has on-board calibration routines, which continuously operate, and self-correct to minimize sampling error. This is known as substrate correcting software.

PAINT CHIP SAMPLE COLLECTION

A total of three (3) paint chip samples were collected in accordance with the HUD Evaluation and Control of Lead-Based Paint Hazards in Housing, Paint Chip Sampling. A two-inch by two-inch area was measured and delineated. The paint chip sample was collected with the use of a sharp stainless steel paint scraper. Paint was scraped directly off the substrate. The goal is remove all layers of paint equally, but none of the substrate. Paint chip samples collected in this fashion are reported in PPM or % by weight .

LEAD

Laboratory analysis was performed by Schneider Laboratories, Inc. Their AIHA Accredited Laboratory Identification Number is AIHA/ELLAP #100527, and CA ELAP #2078. Samples are analyzed by Flame Atomic Absorption in accordance with EPA's "Standard Operating Procedures for Lead in Paint by Hotplate or Microwave based Acid digestions and Atomic Absorption or Inductively Coupled Plasma Emission Spectrometry" (1991), EPA/600/8-91/213, NTIS Document No. PB92-114172. Samples are prepared by hotplate digestion with nitric acid and hydrogen peroxide, and analyzed by Flame AA.

LABORATORY QUALITY CONTROL PROGRAM

Schneider Laboratories, Inc. maintains an in-house quality control program. This program involves blind reanalysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.

FINDINGS AND OBSERVATIONS

LEAD

A total of 55 assays were taken. The results indicated that none of the assays contained lead above the EPA and DHS level of 1.0 mg/cm² or greater.

Cal/OSHA's Lead in Construction Standard, Title 8, CCR section 1532.1, is primarily concerned with worker protection when disturbing any detectable level of lead in paint or surface coatings.

Assays with results **less than** 1.0 mg/cm² and paint chip samples with results less than 5000 ppm may create hazardous conditions if subjected to poor and/or prohibited work practices. Refer to Work Activities on the following page.

OSHA LEAD REGULATION SUMMARY

The Federal Occupational Safety and Health Administration (OSHA) has enacted an interim lead standard, which was adopted by Cal/OSHA as 8 CCR 1532.1. The purpose of both standards is to protect construction workers from exposure to lead. OSHA is primarily concerned with activities that disturb lead-containing material. Lead was used in most paints until the mid 1950's and was banned in amounts in excess of 0.06% by weight in 1978 for most non-industrial paints by the Consumer Product Safety Commission (CPSC).

The new standard requires contractors and employers who perform activities that would disturb lead, must monitor their employees to determine whether they are being exposed in excess of the Action Level (AL) of 30 micrograms per cubic meter of air (ug/m³) over an eight-hour time weighted average (TWA) or the Permissible Exposure Limit (PEL) of 50 ug/m³ TWA. Monitoring is performed by personal exposure air sampling.

Even when concentrations are below the AL, an employer must provide employees with High Efficiency Particulate Air (HEPA) filtered vacuums, wetting agents and hand-washing facilities. If the exposure exceeds the AL or the PEL, other procedures such as containing the area, decontamination facilities and medical monitoring are required.

OSHA has identified several activities that pose varying levels of potential lead exposure to laborers disturbing lead-containing paint. Estimated exposure levels of lead are founded on the activity itself, rather than the concentrations of lead present in paint. Therefore, as an example, paints that contain 0.5% versus 15% of lead by weight or 0.8 mg/cm² versus 3.5 mg/cm² of lead in paint could present the same levels of potential exposure to workers depending on the activities that cause the disturbance and the administrative and engineering controls that are followed.

The following is a summary of work activities that disturb paint, the expected exposures and the respiratory protection requirements as outlined in the OSHA standards:

Class I Activities:

Class I activities include: Manual demolition, manual scraping, manual sanding, heat gun application, general cleanup, power tool cleaning with dust collection systems and spray painting activities.

Potential Exposure: 50 ug/m³ to 500 ug/m³
Minimum Respiratory Protection: Half mask air purifying respirator equipped with HEPA filters having a protection factor of 10.

Class II Activities:

Class II activities include: Using lead-containing mortars, lead burning, lead riveting, rivet busting, power tool cleaning without dust collection systems, cleanup of dry expendable abrasives and abrasive blasting.

Potential Exposure: 500 ug/m³ to 2,500 ug/m³
Minimum Respiratory Protection: Full face powered air-purifying respirators equipped with HEPA filters having a protection Factor of 100.

Class III Activities:

Class II activities include: Abrasive blasting, welding, cutting and torch burning on steel structures.

Potential Exposure: Greater than 2,500 ug/m³.
Minimum Respiratory Protection: Full face supplied - air respirator operated in pressure demand mode or - the positive pressure mode.

DOSH 8 CCR 1532.1 requires that an initial exposure assessment be performed if workers will be performing any of the trigger tasks found in 1532.1. It should be noted that the California Department of Health Services (DHS) has issued emergency work procedures for lead paint materials that in the absence of any other procedures are recommendations.

The following recommendations are general site specific work practice specifications.

- You must use "containment" when you sand, scrape, or disturb any detectable level of lead in paint or surface coatings.
- Containment is required for abatement and/or any activity that or disturb any detectable level of lead in paint or surface coatings.
- You must be DHS-certified (workers, supervisors, monitors, and inspectors) if you are conducting abatement.
- You must follow an abatement plan.
- A DHS -certified supervisor, monitor, and/or project designer must design an abatement project.
- A clearance inspection by dust wipe sampling is required for abatement.

RESULTS OF THE PAINT CHIP SAMPLES COLLECTED

Paint Chip Samples
NASA Ames-PAI Corporation
August 17, 2001

Sample Number	Component	Location	PPM	% By Weight
01-4856-1	Wall 4	Door at Counter	270	0.027
01-4857-2	Wall 4	Door Frame	900	0.090
01-4858-3	Wall 3	Exterior Door to Mechanical Room	12620	1.262

LEAD WASTE DISPOSAL

The visual determination indicated that all building components that tested positive were in intact to poor condition (minor cracking to flaking and peeling). As such, these components need to be considered a lead hazard if flaking paint is not stabilized. All small debris (paint chips, rags, filters, and components smaller than 2"x2") that may be generated during the paint stabilization process (paint preparation) should be considered Class I, lead hazardous waste. The debris generated from paint stabilization of LBP building components, which tested positive, should be segregated from all other dust and debris. Building components, which tested positive, should be stabilized by a DHS-accredited Contractor.

Power washing may be conducted on the building. Run off water must be collected and analyzed by an accredited laboratory to meet the criteria

established by the Clean Water Act, Resource Conservation and Recovery Act (RCRA 1972). Lead levels must not exceed 5mg/L.

CODES AND REGULATIONS - LEAD-BASED PAINT

Federal and state regulations, which govern lead-based, paint work or hauling and disposal of lead-based paint waste materials include but are not limited to the following:

FEDERAL

Housing and Urban Development (HUD) 1995 Guidelines For The Evaluation and Control of Lead-Based Paint in Housing

OSHA

Lead In Construction
29 CFR 1926.62

NESHAP

Emissions Standards
40 CFR 50.12

Lead-Based Paint Poisoning Prevention Act (LBPPPA), 1970.

Title 10 - Residential LBP Hazard Reduction Act, 1992, (amendment for LBPPPA, 1970)

Resource Conservation Recovery Act (RCRA)

STATE

Cal/OSHA

Lead In Construction
Title 8 CCR 1532.1

Department of Health Services (DHS)
Emergency Work Practice Regulations
Title 17 CCR, Division 1, Chp.

APPENDIX A
XRF - DATA RESULTS TABLE

Bldg.	Floor	Room	Result	Shot Sequence	Location	Wall	Description	XRF Result	AA Analysis in PPM
512C	0001		Negative	32632	Office 1	1	Wall	-0.626	
512C	0001		Negative	32633	Office 1	2	Wall	0.262	
512C	0001		Negative	32634	Office 1	3	Door Frame	-0.408	
512C	0001		Negative	32635	Office 1	1	Heater	-0.63	
512C	0001		Negative	32636	Office 1	1	Window Frame	0.073	
512C	0001		Negative	32637	Office 1	1	Ceiling	0.083	
512C	0001		Negative	32638	Counter Area	1	Wall	-0.197	
512C	0001		Negative	32639	Counter Area	1	Window Frame	-0.052	
512C	0001		Negative	32640	Counter Area	1	Ceiling	-0.063	
512C	0001		Negative	32641	Counter Area	4	Wall	-0.071	270
512C	0001		Negative	32642	Counter Area	3	Vent	0.021	
512C	0001		Negative	32643	Counter Area	4	Door	0.187	
512C	0001		Negative	32644	Counter Area	4	Door Frame	-0.073	
512C	0001		Negative	32645	Counter Office	1	Wall	-0.076	900
512C	0001		Negative	32646	Counter Office	4	Cabinets	-0.102	
512C	0001		Negative	32647	Counter Office	3	Cabinets	0.022	
512C	0001		Negative	32648	Counter Office	1	Ceiling	0.201	
512C	0001		Negative	32649	Counter Office	1	Window Frame	-0.143	
512C	0001		Negative	32650	Reception	2	Window Frame	-0.473	
512C	0001		Negative	32651	Reception	3	Paneling	0.455	
512C	0001		Negative	32652	Reception	3	Door	-0.068	
512C	0001		Negative	32653	Reception	3	Door Frame	-0.105	
512C	0001		Negative	32654	Reception	4	Wall	0.248	
512C	0001		Negative	32655	Reception	4	Door Frame	-0.567	
512C	0001		Negative	32656	Janitor's Closet	3	Tile wall	0.077	
512C	0001		Negative	32657	Janitor's Closet	1	Ceiling	0.451	
512C	0001		Negative	32658	Janitor's Closet	3	Door Frame	0.152	
512C	0001		Negative	32659	Janitor's Closet	3	Door	0.213	
512C	0001		Negative	32660	Wmns.Bathroom	2	Tile wall	0.313	
512C	0001		Negative	32661	Wmns.Bathroom	1	Ceiling	0.202	
512C	0001		Negative	32662	Wmns.Bathroom	3	Stall door	-0.031	
512C	0001		Negative	32663	Wmns.Bathroom	1	Tile Floor	0.128	
512C	0001		Negative	32664	Wmns.Bathroom	3	Door	0.015	
512C	0001		Negative	32665	Wmns.Bathroom	3	Door Frame	0.42	

Bldg.	Floor	Room	Result	Shot Sequence	Location	Wall	Description	XRF Result	AA Analysis in PPM
512C	0001		Negative	32666	Exterior	4	Wall	0.457	
512C	0001		Negative	32667	Exterior	4	Bldg. Supports	0.215	
512C	0001		Negative	32668	Exterior	4	Door Frame	0.062	
512C	0001		Negative	32669	Exterior	4	Door	-0.658	
512C	0001		Negative	32670	Exterior	1	Wall	-0.2	
512C	0001		Negative	32671	Exterior	1	Bldg. Supports	0.034	
512C	0001		Negative	32672	Exterior	1	Window Frame	0.076	
512C	0001		Negative	32673	Exterior	2	Overhang	-0.05	
512C	0001		Negative	32674	Exterior	2	Wall	0.626	
512C	0001		Negative	32675	Exterior	2	Window Frame	0.195	
512C	0001		Negative	32676	Exterior	3	Wall	-0.994	
512C	0001		Negative	32677	Exterior	3	Bldg. Supports	0.37	
512C	0001		Negative	32678	Exterior	3	Vent	-0.363	
512C	0001		Negative	32679	Exterior	3	Door	0.485	
512C	0001		Negative	32680	Exterior	3	Door Frame	0.247	
512C	0001		Negative	32681	Mechanical Rm	1	Vent	0.082	
512C	0001		Negative	32682	Mechanical Rm	1	Wall	-1.248	
512C	0001		Negative	32683	Mechanical Rm	1	Wall	0.375	
512C	0001		Negative	32684	Mechanical Rm	4	Door	0.382	
512C	0001		Paint Chip	32685	Mechanical Rm	4	Door Frame	-0.603	
512C	0001		Negative		Mechanical Rm	3	Ext. Door	1.262	12620
512C	0001			32686	Exterior	4	Ceiling	0.094	

APPENDIX B
CERTIFICATION(S)

2200-Related Constructor
Interim Certificate

Richard E. MacFarlane

Inspector/Assessor
I-2241 (Exp. 11/03/01)

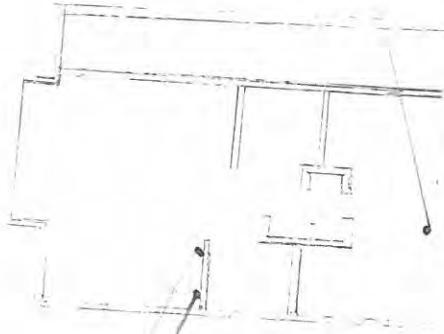


APPENDIX C
SITE MAP

LEAD PAINT SAMPLES

01-4851-512C-2

01-4856-512C-1



01-4858-512C-3



Property Inspections - Environmental Engineering
Specialized Training - Contract Management
3732 - A Charter Park Drive
San Jose, CA 951366
Phone: (408) 448-7594 - Fax: (408) 448-3849

PROJECT NAME:
NASA AMPLC
PARCEL S
Bldg 512C

DRAFT PERSON:
WLB

DATE:
11/14

DWG. No.
2

PROJECT No.
FOI 1000

APPENDIX D
LABORATORY RESULTS

SCHNEIDER LABORATORIES INCORPORATED

2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • (FAX) 804-353-6928

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AIHA/ELLAP 100527, NVLAP 1150, NYELAP 11413, CAELAP 2078, NC 593, SC 93003

LABORATORY ANALYSIS REPORT

Lead Analysis by EPA 3050B/7420 Method

ACCOUNT #: 2541-01-72
CLIENT: Benchmark
ADDRESS: 3732 Charter Park Drive
San Jose, CA 95136
PO NO.:
PROJECT NAME: PAI
PROJECT NO: E01-448
JOB LOCATION: NASA Bldg 512-C

DATE COLLECTED: 8/17/2001
DATE RECEIVED: 8/21/2001
DATE ANALYZED: 8/21/2001
DATE REPORTED: 8/22/2001

SAMPLE TYPE: PAINT

SLI Sample No.	Client Sample No.	Sample Description	Sample Wt (mg)	Dilution Factor	Total Lead (µg)*	Lead Conc (% by wt)	Lead Conc (PPM)
2022774	01-4856-1	Dr at Counter Wall 4	452	1	122.2	0.027	270
2022775	01-4857-2	Dr Frame Wall 4	494	1	446.4	0.090	900
2022776	01-4858-3	Ext Dr Mech Rm W/3	237	10	2,990.3	1.262	12620
	QC - 19056	10.0 ppm Calibration Std			989.6	99.0%	
	QC - 19056	200 µg spike			210.6	105.3%	
	QC - 19056	5.0 ppm Calibration Std			509.6	101.9%	
	QC - 19056	Blank			< 20.0		
	QC - 19056	NIST 2710 Standard			585.4	105.8%	

ANALYST: MATTHEW ASBURY

Total no. of pages in report = 1

REVIEWED BY

AJ
Amy J. Colosimo, Analyst

Minimum Reporting Limit: 20 µg Total Lead. For work involving HUD, child-occupied building and other residential units, the Federal Lead Standard is 0.5% lead by weight [5000 ppm]. The requirements of the OSHA Lead in Construction Standard, 29 CFR 1926.62, are invoked if any lead is present in the sample; there is no minimum concentration. *For true values, assume two (2) significant figures. All testing is performed in strict accordance with Schneider Laboratories, Inc. protocol.

