COMPLIANCE MANAGEMENT INTERNATIONAL

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Industrial Hygiene Survey Report

National Guard Facility
Berlin Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Berlin Readiness Center** **2169 Riverside Drive** **Berlin, NH, 03570**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 15, 2013**
Report Date:	**June 24, 2013**

Non-Responsive

Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 15, 2013, at the Berlin Readiness Center located at 2169 Riverside Drive, Berlin, NH 03570. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in two locations. See Section 3.0 for detailed sampling results.

2. Lighting levels met the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in all locations measured. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels met the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in the areas sampled.

    b. The relative humidity level did not meet the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in one area sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 ppm.

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings.

Section 2.0 Operation Description & Observations

The Berlin Readiness Center is mainly an administrative facility with offices, classrooms, and a converted firing range area (currently a storage area). There were approximately 10 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1950s. It is a one story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, and 12”x12” floor tiles.

The heating system consists of a gas-fired, forced hot water unit. There is one mini-split A/C unit, and several window A/C units that service the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

This facility has a converted firing range (CFR) that is now used as a storage area.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 micrometer (um) mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Office 25	<6	*
2	Gym 2	<6.1	*
3	Blank	<3	*
4	Drill Hall Floor Center	*	<110
5	Drill Hall Safe Top	*	<110
6	Kitchen Microwave Top	*	<110
7	Kitchen Stove Top	*	<110
8	CFR Floor Outside Entrance	*	160
9	**CFR Floor**	*	**6800**
10	**CFR Light Fixture**	*	**410**
11	Gym 2 Window Sill	*	<110
12	Office 29 File Cabinet Top	*	<110
13	Office 25 Bookshelf Top	*	<110
14	Locker Room 9 Locker Top	*	<110
15	Blank	*	<12
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following locations:

  - CFR - Floor
  - CFR - Light Fixture

  Cleaning procedures should be improved so that no lead is detected on surfaces.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Office 25	34.9	30-50	Yes
Conference 26	44.1	30-50	Yes
Office 24	32.4	30-50	Yes
Office 23	31.2	30-50	Yes
Classroom 21	52.0	30-50	Yes
Classroom 20	42.6	30-50	Yes
Corridor 22	11.4	5	Yes
Women's Latrine	12.2	5	Yes
Janitor's Office 18	63.5	30-50	Yes
Janitor's Office 18A	43.6	30-50	Yes
Office 27	34.5	30-50	Yes
Office 28	48.9	30-50	Yes
Office 29	31.4	30-50	Yes
Drill Hall	38.6	10	Yes
Supply Bulk	15.6	10	Yes
Gym 16	59.1	30	Yes
Kitchen Prep	66.2	50	Yes
Storage 13 Bulk	27.8	10	Yes
Locker Room 9	32.7	7	Yes
Men's Latrine	10.5	7	Yes
Storage 6 Bulk	32.6	10	Yes
Corridor 1	41.7	5	Yes
Gym 2	35.8	30	Yes
Boiler Room	37.4	30	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level met the minimum recommended guidelines in all areas measured.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	64.9	18.6	371	0.0
Office 25	73.0	**24.7**	585	0.0
Criteria	**68-79**	**30-60**	**<1,071**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in occupied areas.

- Relative humidity levels did not meet the recommended guidelines in Office 25. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 371 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,071 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. No deleterious factors were noted.

Section 6.0 Suspect Asbestos Containing Building Materials

Suspect asbestos containing material (ACM) was noted at the time of this survey:

- Drill Hall Window Glazing. This material was intact and in good condition, therefore not sampled.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/15/13	3.04 LPM
SKC Air Sampling Pump	647971	5/15/13	3.00 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515945
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Berlin	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/29/2013 **Report Date:** 5/29/2013
Attention:	Non-Responsive				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13064501	1	Flame	Air	502	N/A	6	ug/m^3	<3	<6	ug/m^3	
13064502	2	Flame	Air	495	N/A	6.1	ug/m^3	<3	<6.1	ug/m^3	
13064503	3	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13064504	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064505	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064506	6	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064507	7	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064508	8	Flame	Wipe	****	0.108	110	ug/ft^2	18	160	ug/ft^2	
13064509	9	Flame	Wipe	****	0.108	110	ug/ft^2	730	6800	ug/ft^2	
13064510	10	Flame	Wipe	****	0.108	110	ug/ft^2	44	410	ug/ft^2	
13064511	11	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064512	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064513	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064514	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064515	15	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

AMA Analytical Services, Inc.

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515945
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Berlin	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/29/2013
Attention:	Non-Responsive			**Report Date:**	5/29/2013

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)
%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results
Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

OWI (410) 247-2024 159202 210 REV. 6.08

515945

(page 1 of 2)

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
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4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: Berlin
3. Job #:
4. Contact Pers[redacted] P.O. #: W912K6-09-A-0003
5. Submitted by [redacted] gnature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Inclu[redacted]ith Report
❑ 24 Hours Time Due:	☒ 5 Day + 5/29/13	☒ Ema[redacted]mpliance place.com
Comments:	❑ 2 Day Date Due:	❑ Fax: [redacted]us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verb[redacted]us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type GHOST) 12 (QTY)
❑ Pb Air 3 (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB (ALTape)
1 OFFICE	25	5/15/13	502					✓		✓						
2 GYM	2		495					✓		✓						
3	BLANK		—					✓		✓						
4 DRILL HALL	FLOOR CENTER			100cm²				✓								✓
5 DRILL HALL	SAFE TOP							✓								✓
6 KITCHEN	MICROWAVE TOP							✓								✓
7 KITCHEN	STOVE TOP							✓								✓
8 CFR - FLOOR	OUTSIDE ENT							✓								✓
9 CFR - FLOOR								✓								✓
10 CFR - LIGHT FIXTURE	TOP							✓								✓
11 GYM 2	WINDOW SILL							✓								✓
12 OFFICE 29	FILE CABINET TOP	5/21/13						✓								✓

LOT MAR 23, 2012
EXP 9/15

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5 / 21 / 13 @ Via: Fedex By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Date: / / Initials:
4. Comments:

[redacted]

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515945 2 of 2 (pg.)

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Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: Berlin
3. Job #: PO #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # (410) 942-0273
5. Submitted by: Non-Responsive Signature:

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5 Day +
❑ 2 Day Date Due:
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: Non-Responsive us.army.mil
❑ Fax:
❑ Verbal: us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)
❑ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

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❑ Pb Paint Chip (QTY)
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❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
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Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

SAMPLE INFORMATION					ANALYSIS						MATRIX						
CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWIPE WIPE	
13	OFFICE 25 Book shelf TOP	5/17/18		100cm²				✓								✓	
14	Locker Room 9 Locker TOP	"		1				✓								✓	
15	BLANK			–				✓								✓	

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Appendix B. Photographs

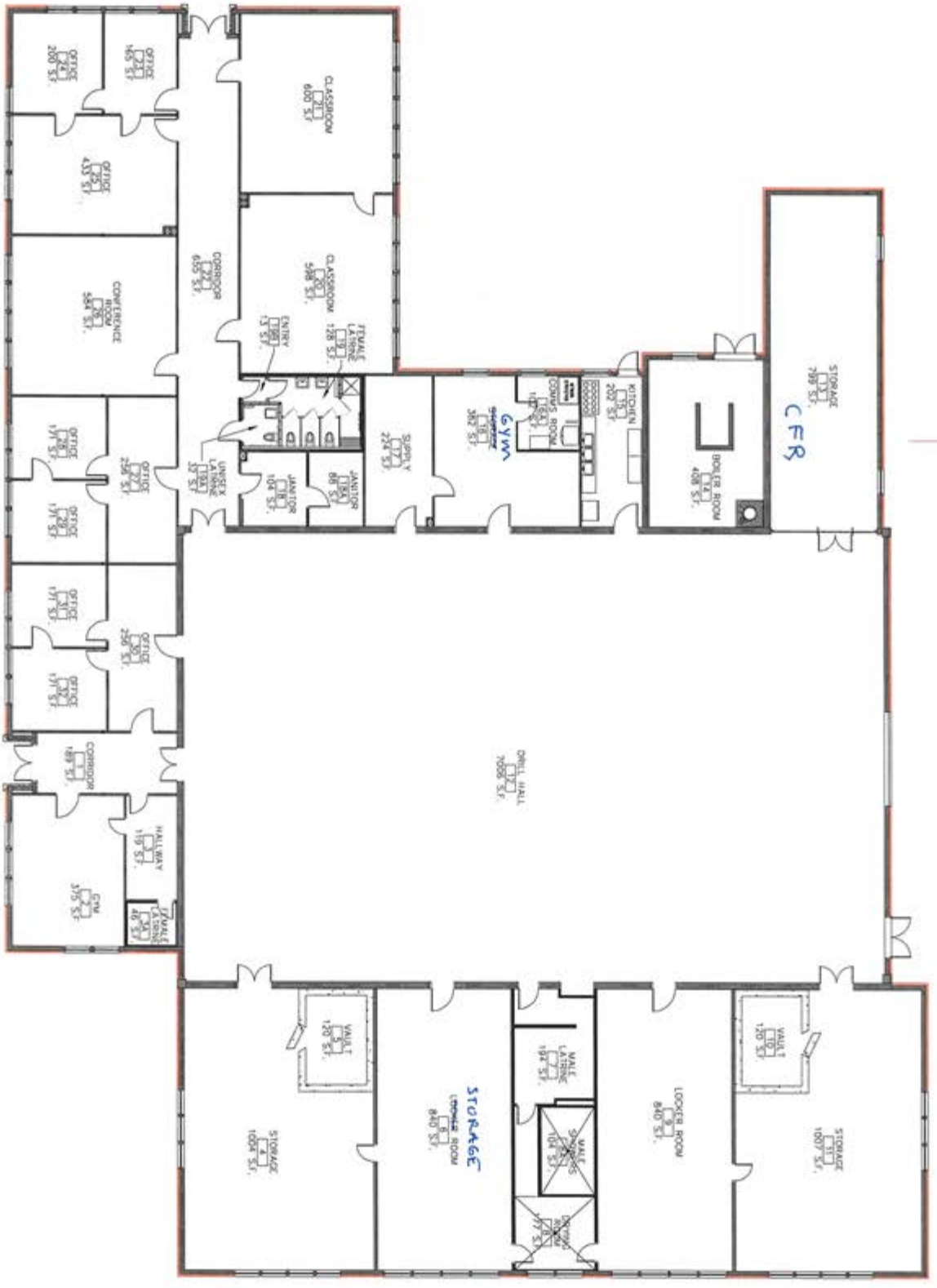
Berlin Armory

Boiler Room

Drill Hall

Drill Hall Window Glazing

Appendix C. Floor Plan



BERLIN READINESS CENTER FLOOR PLAN

NOT TO SCALE

DATE: 14 MAY 15

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute/Illuminating Engineering Society of North America (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
FRANKLIN READINESS CENTER
FRANKLIN, NEW HAMPSHIRE

April 2006
PN: 39741509

Non-Responsive
Office Manager

Non-Responsive
Project Manager

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Section **Page**

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APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3
Lighting		
On the day of the survey the illuminance in the administrative area was inadequate in most offices.	Increase lighting in the administrative areas through use of task lighting. While work is in progress the administrative area shall be lighted by at least the minimum light intensities (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting)	RAC 4
Lead		
Lead was detected in wipe samples collected from the floor of the firing range and from the top of the flammable materials cabinet in amounts greater than 350 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (h)(1))	RAC 4
Asbestos		
Exposed ends or damaged asbestos-containing pipe insulation were present in the janitor's closet, drill hall and boiler room.	Repair or remove exposed ends or damaged asbestos-containing pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001 (k)(1))	RAC 3
No site specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenace plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001(j))	RAC 3
Hazard Communication		
No site specific hazard communication plan available.	Develop a site specific hazard communication plan (OSHA 29 CFR 1910.1200 (e)(1)(i))	RAC 4
Chemical inventory was out of date. MSDS binder contained information on obsolete chemicals	Update chemical inventory on an annual basis. (OSHA 29 CFR 1910.1200 (e)(1)(i))	RAC 4

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Exit Routes		
The emergency exit in the drill floor was obstructed by a howitzer.	Keep emergency exit routes free from obstruction (OSHA 29 CFR 1910.37 (a)(3))	RAC 2
Mold		
Water stains and mold where observed in the boiler room	Remove or reduce water sources and have properly trained personnel remove mold contaminated building materials where feasible and clean all remaining surfaces. (Best management practice)	RAC 4
Fire Extinguishers		
The fire extinguisher in the kitchen is partially blocked	The NH ANG must provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury (OSHA 29 CFR1910.157 (c)(1)).	RAC 4
Walking Surfaces		
The supply has a few housekeeping issues, which could create slips, trips and falls for personnel in the area	The NH ANG should keep storerooms clean and orderly (OSHA 29 CFR 1910.22 (a)(1)).	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Readiness Center located at 300 South Main Street, Franklin, New Hampshire. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

Mr. Non-Responsive an industrial hygienist with URS, conducted the site visit at the Franklin Readiness Center on December 9, 2003. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, light measurements and a review of site health and safety procedures. SFC Non-Responsive of the New Hampshire ARNG was Mr. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

Mr. Non-Responsive asbestos training certifications are contained in Appendix E.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This area has multiple offices throughout the building with desks and computer workstations. This area also includes the kitchen, classroom, janitor's room, locker room, shower room and supply room. There were a few ergonomic issues in this area (Photo #'s 2923-4). Chairs with adjustable arms should be used in the computer stations because they can be adjusted to fit the worker, making them comfortable and reducing skeletal-muscular strain. Computer monitors are not adjusted for the person working at the station. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

2.2 Chemical and Physical Agents Sampled

2.2.1 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were collected from the Readiness Center. Carbon dioxide concentrations ranged from 475 to 874 parts per million (ppm), with an average of 600 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

2.2.2 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations ranged from 0 to 1 parts per million (ppm), with an average of 0 ppm. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

2.2.3 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement (ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
FDC Office # 1	Administrative Duties	424	500
Commanders Office # 2	Administrative Duties	591	500
1ST SGTs Office # 3	Administrative Duties	503	500
Recruiters Office # 4	Administrative Duties	455	500
Orderly Room # 6 Desk 1	Administrative Duties	558	500
Orderly Room # 6 Desk 2	Administrative Duties	407	500
Janitors Room # 7	Administrative Duties	467	500
Supply Room # 15	Administrative Duties	225	500

On the day of the survey the illuminance in the administrative area was inadequate in most offices.

2.2.4 Asbestos

Bulk samples were taken in the administrative area of damaged suspect asbestos containing materials (ACM). Table 2-2 below shows the results of the samples.

Table 2-2
Samples Taken of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Hallway # 10	9"x9" Floor Tile/Mastic	1209-02A	2
Hallway #10	9"x9" Floor Tile/Mastic	1209-02B	2
Classroom # 8	9"x9" Floor Tile/Mastic	1209-02C	2
Hallway #10	4" Brown Cove Base/Mastic	1209-03A	NAD
Classroom # 8	4" Brown Cove Base/Mastic	1209-03B	NAD
Classroom # 8	4" Brown Cove Base/Mastic	1209-03C	NAD

NAD = No Asbestos Detected

The EPA states that any material with greater than 1% asbestos be treated as asbestos containing material.

2.2.5 Lead

Wipe testing for lead was conducted in the administrative area using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 2-3 below shows the results of the lead sampling.

Table 2-3
Levels of Lead Dust Found in the Administrative Area

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Contamination Level ($\mu g/ft^2$)
Classroom #8- Floor	1209-LW11	0.111	<12	200
Commander #2 - Floor	1209-LW12	0.111	<12	200
1st SGT #3 - Floor	1209-LW13	0.111	<12	200
Orderly Room #6 – File Cabinet	1209-LW14	0.111	<12	200
Kitchen #11 – Top Shelf Over Stove	1209-LW15	0.111	<12	200
Blank	1209-LW Blank 2	N/A	<12 µg	

An air sample for lead was collected in classroom # 8. Table 2-4 below shows the result of the lead air sample.

Table 2-4
Levels of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
Classroom # 8	1209-LA02	1032	<2.9	50.0

On the day of the survey, the lead levels in the classroom were found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

ERGONOMICS: Computer workstations generally did not have adjustable chairs, armrests, keyboards and monitors creating a workspace that is prone to skeletal-muscular strain.

CARBON DIOXIDE: Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

CARBON MONOXIDE: Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from

exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

LIGHTING: On the day of the survey the illuminance in the administrative area was inadequate in most offices. The lighting in this area falls below the minimum lighting requirements indicated on table 2-1. While work is in progress, the administrative area shall be lighted by at least the minimum light intensities. Recommend increasing the lighting in the administrative areas through use of task lighting.

ASBESTOS: The floor tile that was found throughout this area came back positive for asbestos. The floor tile has multiple sections of damage (Photo # 2912), which is rising and cracking in some spots. Recommend replacing the damaged tile with new, non-asbestos tile, by an appropriate trained technician. The floor tile also needs to be protected by at least two coats of wax.

MOLD: Water stains were found on the ceiling in classroom #8 (Photo # 2914), women's latrine #19 (Photo # 2922), recruiters office # 4 (Photo # 2925), janitors room # 7 (Photo # 2926) and in the kitchen #11 (Photo # 2916). These water stains could generate mold growth. There is visible mold growth in the shower room # 17 and there appears to be growth under the paint on the ceiling in the men's latrine # 17.

FIRE SAFETY: The fire extinguisher in the kitchen is partially blocked (Photo # 2915).

WORKING SURFACES: The supply has a few housekeeping issues, which could create slips, trips and falls for personnel in the area (Photo # 2919).

3.0 FORMER FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and is now primarily used for storage. The area is approximately 800 square feet with cinder block walls and a concrete floor.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meets ASTM E 1792 standards. Table 3-1 below shows the results of the lead tests.

Table 3-1
Levels of Lead Dust Found in the Facility

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Contamination Level ($\mu g/ft^2$)
Firing Range-Floor/Rear	1209-LW06	1.000	1500	200
Firing Range-Floor/Center	1209-LW07	1.000	440	200
Firing Range-Floor/Front	1209-LW08	1.000	350	200
Firing Range-Top of File Cabinet	1209-LW09	1.000	180	200
Firing Range-Top of Table	1209-LW10	1.000	41	200

An air sample for lead was collected in the former firing range. Table 3-2 below shows the result of the lead air sample.

Table 3-2
Levels of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
Former Firing Range #14	1209-LA01	1032	<2.9	50.0

On the day of the survey, the lead levels in the former firing range were found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: The former firing range was found to contain lead in the dust, which exceeds the maximum limit of 200 $\mu g/ft^2$ set by the NGB Region North Industrial Hygiene Office (See Appendix F). Recommend cleaning up the lead dust with an appropriate licensed contractor. Guidelines for the cleanup and rehabilitation of indoor firing ranges is provided in Appendix H.

4.0 DRILL HALL

4.1 Operation Description

A 6,000 square feet area with a 30 foot high ceiling, used for assembling personnel and storing vehicles. The walls are made from cinder blocks with a concrete floor. At the time of the inspection, a Howitzer blocked the emergency exit in the drill hall (Photo # 2918).

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead was conducted in the drill hall using ghost wipes, which meets ASTM E 1792 standards. Table 4-1 below shows the results of the lead tests.

Table 4-1
Levels of Lead Dust Found in the Facility

Sample Location	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Recommended Safe Surface Contamination Level ($\mu g/ft^2$)
Drill Hall #10 – Floor	1209-LW01	1.000	16	200
Drill Hall #10 – Floor	1209-LW02	1.000	<12	200
Drill Hall #10 – Floor	1209-LW03	1.000	<12	200
Drill Hall #10 – Top of Flammable Chemical Cabinet	1209-LW04	1.000	460	200
Drill Hall #10 – Top of Coke Machine	1209-LW05	1.000	80	200

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: The samples taken from the drill hall for lead dust were within the acceptable limits, except for the sample taken on top of the flammable chemical cabinet. Recommend having the flammable materials storage cabinet cleaned by an appropriate licensed technician.

ASBESTOS: Except for a few exposed pipe insulation ends (Photo # 2917), the asbestos pipe insulation is in good shape. Repairs need to be done by an appropriate trained technician.

EXIT ROUTES: At the time of the inspection, a Howitzer blocked the emergency exit in the drill hall (Photo # 2918).

5.0 BOILER ROOM

5.1 Operation Description

A mechanical room made of cinder block walls with a concrete floor. Contains a furnace with associated piping. There is some water damage on the ceiling, which could sustain mold growth (Photo # 2909). There is visible mold growth on the wall leading to the water damage on the ceiling (Photo #'s 2910-11).

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Bulk samples were taken in the boiler room of suspect asbestos containing materials (ACM) that had exposed end or were damaged. Table 5-1 below shows the results of the samples.

Table 5-1
Samples Taken of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room # 12	Air Cell Pipe Insulation	1209-01A	7
Boiler Room # 12	Air Cell Pipe Insulation	1209-01B	5
Boiler Room # 12	Air Cell Pipe Insulation	1209-01C	5

The EPA states that any material with greater than 1% asbestos be treated as asbestos containing material.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

ASBESTOS: Pipe insulation in the boiler room had numerous exposed ends that when disturbed can release asbestos fibers to release into the air (Photo #'s 2907-08). An appropriately trained technician should repair the exposed ends.

MOLD: There is some water damage on the ceiling, which could sustain mold growth (Photo # 2909). There is visible mold growth on the wall leading to the water damage on the ceiling (Photo #'s 2910-11).

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

The only safety book found at the site consists primarily of accident investigation and legal aspects of safety. A three ring binder was presented to URS at the time of the survey was a course manual that was written by Alamo Safety Organization for the Army National Guard 1st Line Supervisors. The manual, is not a written safety program. The manual is a great tool, which could be used to help write the sites written safety program.

6.1 Confined Spaces

No site specific written safety program found regarding confined spaces. No training records found on site. A site-specific confined spaces program is not required for this site.

6.2 Hearing Conservation

No site specific written safety program found regarding hearing conservation. No training records found on site. A site-specific hearing conservation program is not required for this site.

6.3 Respiratory Protection

No site specific written safety program found regarding Respiratory Protection. No training records found on site. A site-specific respiratory protection program may is not required for this site.

6.4 Hazard Communication

No site specific written safety program found regarding hazard communications. The Material Safety Data Sheets (MSDS) were in a binder, but contained sheets for chemicals that no longer existed on site. It was also unorganized, making it difficult to find anything. A table of contents is needed to help aid someone in finding the correct MSDS in a crisis. No training records found on site.

6.5 Personal Protective Equipment

No site specific written safety program found regarding personal protective equipment. No training records found on site. A site-specific personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollulants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Basad Paint Hazards in Housing (1995, 1997)

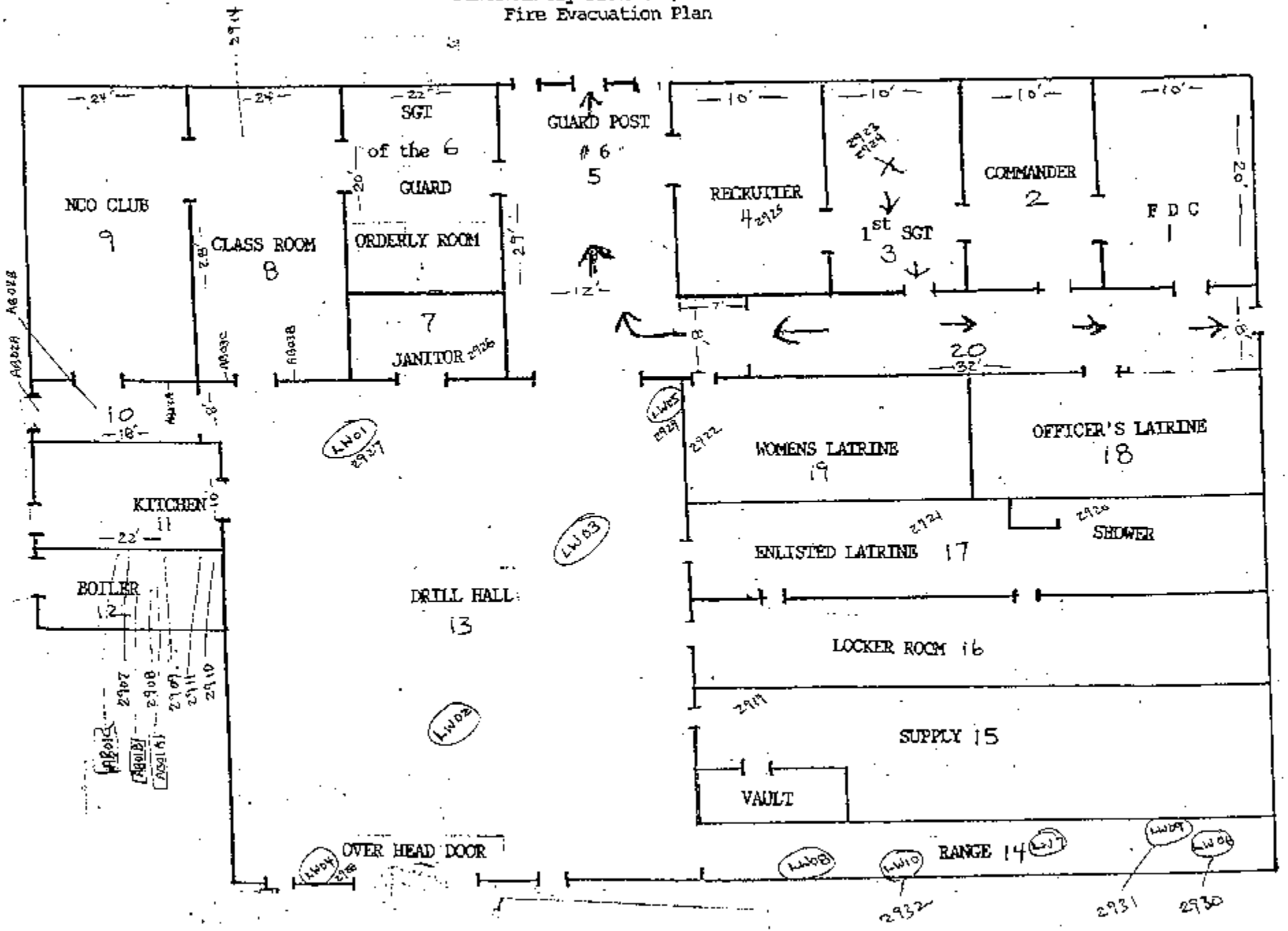
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

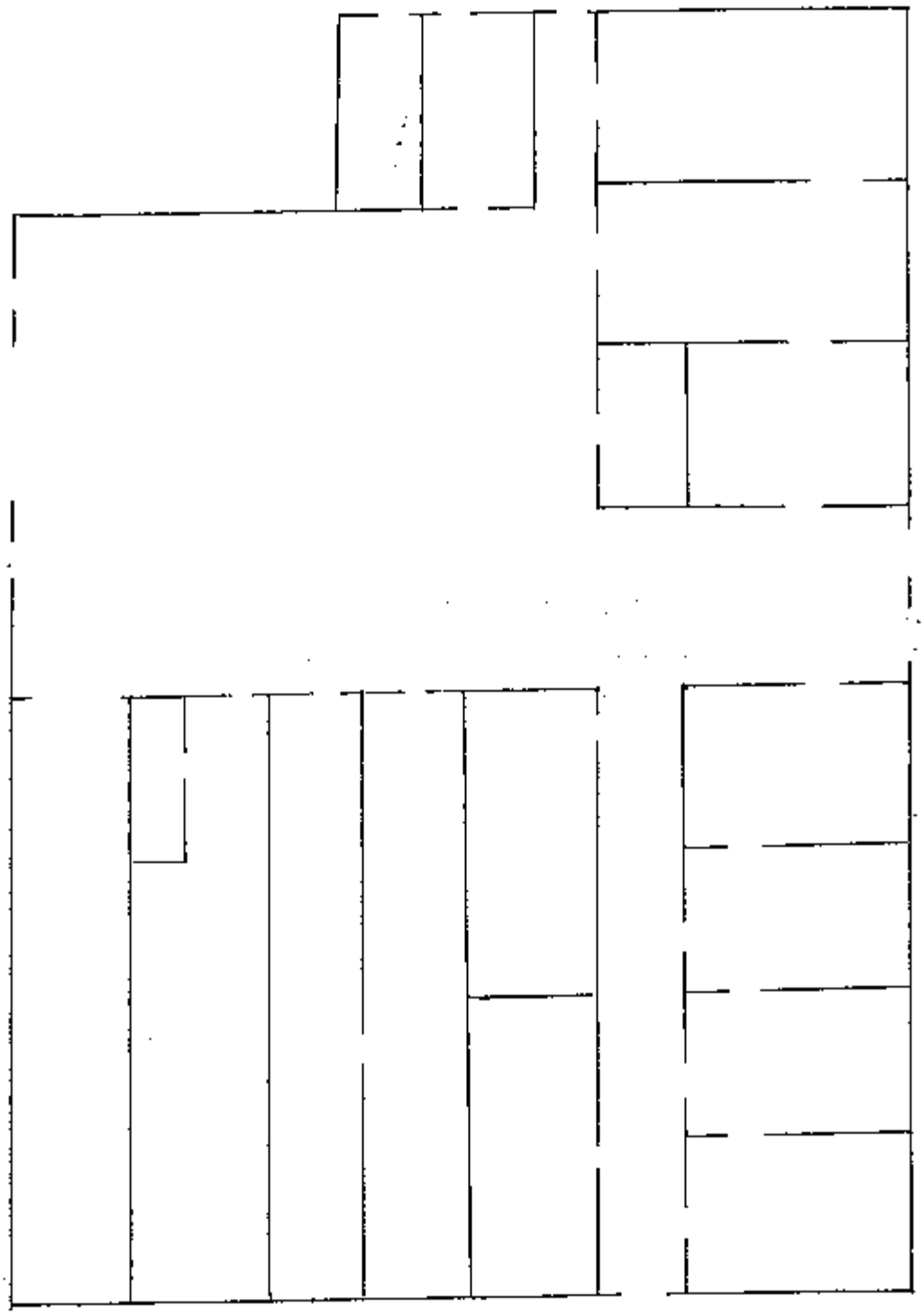
APPENDIX A

SHOP DRAWING

BATTERY C 3D BN 197TH FA
State Armory Franklin, NH 03235
Fire Evacuation Plan



FRANKLIN NH ARMY NATIONAL GUARD - ARMORY SITE PLAN



APPENDIX B

PERSONNEL LIST

Name	Rank	Last 4
Non-Responsive	SFC/E-7	2505
	SSG/E-6	9523
	SGT/E-5	9678
	SGT/E-5	1580

Custodial Engineer

Full Time Support Roster for Btry C 2/197 FA Franklin/Lebanon, NH

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APPENDIX C

HAZARDOUS MATERIALS LIST

FRANKLIN STATE ARMORY

FRANKLIN NH 03235

GAL AUSTINS BLEACH
CAN VA[illegible] BOWL CLEANER
CAN GLADIE SMOKE ODOR ELIMINATOR
GAL VISION GLASS CLEANER
OZ WATER FLAKES FLOOR CONDITIONER & NEUTRALIZER
GAL WINDEX GLASS CLEANER
GAL 3 R'S ALL PURPOSE CLEANER
GAL MOP ON/MOP OFF HEAVY DUTY STRIPPER CONCENTRATE
GAL NEUTRABRITE HARD SURFACE CLEANER
CAN HOT SHOT ROACH & ANT KILLER
CAN ORTHO HORNET & WASP KILLER
CAN REAL-KILL WASP & HORNET KILLER
GAL TRAFFIC MASTER (20%) FLOOR FINISH
GAL SUPER SEAL URETHANE/ACRYLIC FLOOR SEALER
GAL BEHR PORCH & FLOOR PAINT - GREEN
GAL " " " " - GREY
GAL " UTRA PURE WHITE - INTERIOR EGGSHELL
EA SIMPLE GREEN - ALL PURPOSE CLEANER
EA SPRAY NINE - MULTI-PURPOSE CLEANER
CAN AJAX - OXYGEN BLEACH CLEANER
QT SAFE T BOWL - NON ACID DISINFECTANT BATHROOM CLEANER
OZ EASY PAKS - NEUTRALIZER CONDITIONER
QT DEFOAMER - SUPER CONCENTRATED
QT NO-FUME - DRAIN OPENER
GAL F-1000 DISINFECTANT SANITIZER DEODORANT
GAL REGULAR - ROCK SALT
BAGS WAXINE - DUST CLEANER
BAGS SPEEDY DRY - ~~[illegible]~~ AUBUCHON HARDWARE

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121354
Address:	5 Industrial Way	**Job Location:**	300 South Main St. Franklin, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	22-Dec-03
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result			Comments
0414341	1209-LA 01	Flame	Air	1032	N/A	2.91	ug/m^3	<	2.9	ug/m^3	
0414342	1209-LA 02	Flame	Air	1032	N/A	2.91	ug/m^3	<	2.9	ug/m^3	
0414343	1209-LA BLANK	Flame	Air Blank	0	N/A	3.00	ug/m^3	<	3	ug	
0414344	1209-LW 01	Flame	Wipe	****	1.000	12.00	ug/ft^2		16	ug/ft^2	
0414345	1209-LW 02	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0414346	1209-LW 03	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0414347	1209-LW 04	Flame	Wipe	****	1.000	12.00	ug/ft^2		460	ug/ft^2	
0414348	1209-LW 05	Flame	Wipe	****	1.000	12.00	ug/ft^2		80	ug/ft^2	
0414349	1209-LW 06	Flame	Wipe	****	1.000	12.00	ug/ft^2		1500	ug/ft^2	
0414350	1209-LW 07	Flame	Wipe	****	1.000	12.00	ug/ft^2		440	ug/ft^2	
0414351	1209-LW 08	Flame	Wipe	****	1.000	12.00	ug/ft^2		350	ug/ft^2	
0414352	1209-LW 09	Flame	Wipe	****	1.000	12.00	ug/ft^2		180	ug/ft^2	
0414353	1209-LW 10	Flame	Wipe	****	1.000	12.00	ug/ft^2		41	ug/ft^2	
0414354	1209-LW BLANK	Flame	Wipe	****	N/A	12.00	ug	<	12	ug	

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory
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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121354
Address:	5 Industrial Way	**Job Location:**	300 South Main St. Franklin, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	22-Dec-03

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] **Technical Manager:** [redacted]

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121354
Address:	5 Industrial Way	**Job Location:**	300 South Main St. Franklin, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0414355	1209-AB 01 A	7	7	--	--	--	15	--	--	--	--	78	Beige	LB	
0414356	1209-AB 01 B	5	5	--	--	--	15	--	--	--	--	80	Beige	LB	
0414357	1209-AB 01 C	5	5	--	--	--	15	--	--	--	--	80	Beige	LB	
0414358	1209-AB 02 A	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0414359	1209-AB 02 B	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0414360	1209-AB 02 C	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0414361	1209-AB 03 A	NAD	--	--	--	--	--	--	--	--	--	100	Brown	LB	
0414362	1209-AB 03 B	NAD	--	--	--	--	--	--	--	--	--	100	Brown	LB	
0414363	1209-AB 03 C	NAD	--	--	--	--	--	--	--	--	--	100	Brown	LB	

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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121354
Address:	5 Industrial Way	**Job Location:**	300 South Main St. Franklin, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

[redacted]

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0
NY ELAP 10920
AIHA 100470

Client:	National Guard Bureau	**Job Name:**	Armory	**Chain Of Custody:**	138225		
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Franklin, NH	**Date Submitted:**	5/20/2005		
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**			
		P.O. Number:	Not Provided	**Date Analyzed:**	5/23/2005	**Report Date:**	23-May-05

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
0540437	1209-LW11	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
0540438	1209-LW12	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
0540439	1209-LW13	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
0540440	1209-LW14	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
0540441	1209-LW15	Flame	Wipe	****	1.000	12.00	ug/ft²	<	12	ug/ft²	
0540442	1209-LW Blank2	Flame	Wipe Blank	****	N/A	12.00	ug	<	12	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7421; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)

%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Analyst: [redacted] **Technical Manager:** [redacted]

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APPENDIX E

TRAINING CERTIFICATES

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive, Wilmington, MA 01887
(978) 658-5272

IEE IEE

This is to certify that

[redacted] Non-Responsive

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

April 11, 2003
Course Dates

Course Location
Institute for Environmental Education
16 Upton Drive
Wilmington, MA 01887

April 11, 2003
Examination Date

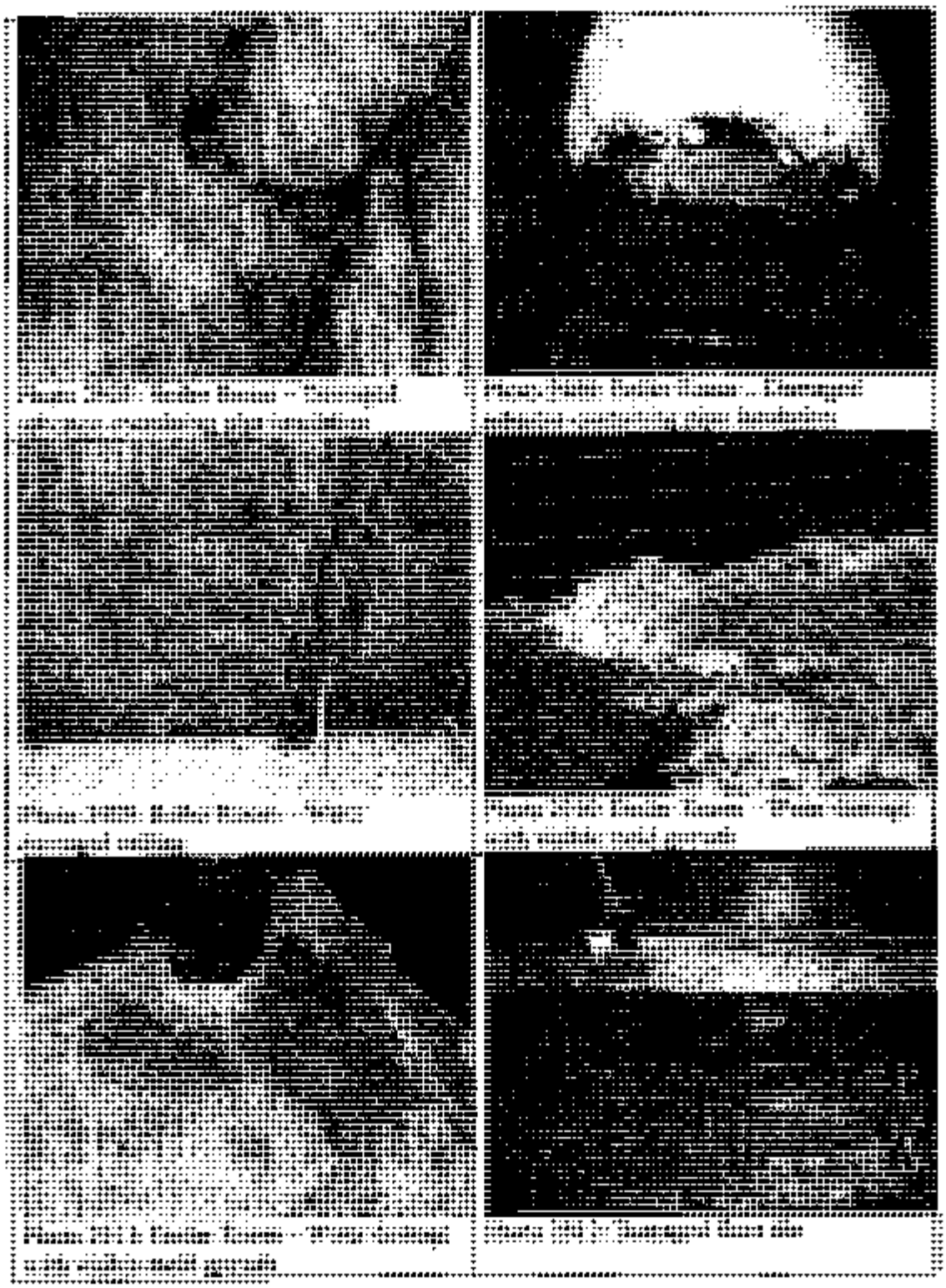
April 10, 2004
Expiration Date

03518010625349
Certificate Number

[redacted] Non-Responsive
President/Director of Training

APPENDIX F

PHOTOGRAPHS



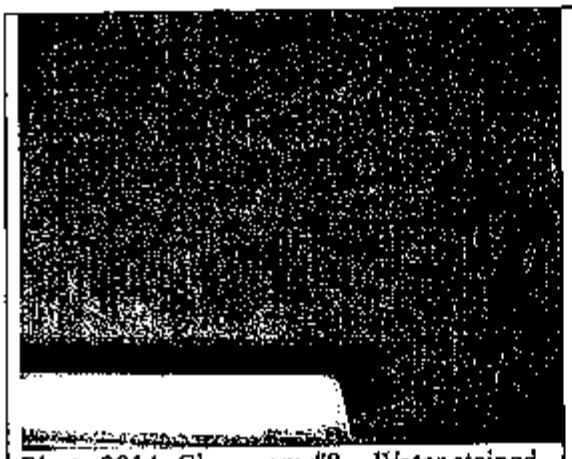


Photo 2914: Classroom #8 – Water stained ceiling tile

Photo 2915: Kitchen – Partially blocked fire extinguisher

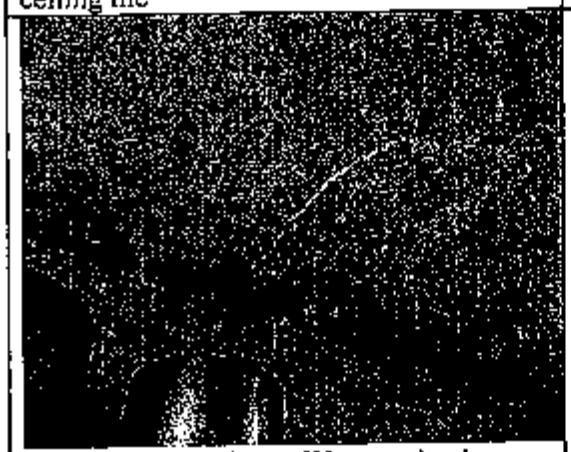


Photo 2916: Kitchen – Water stained ceiling

Photo 2917: Drill Hall – Asbestos-containing pipe insulation with exposed ends

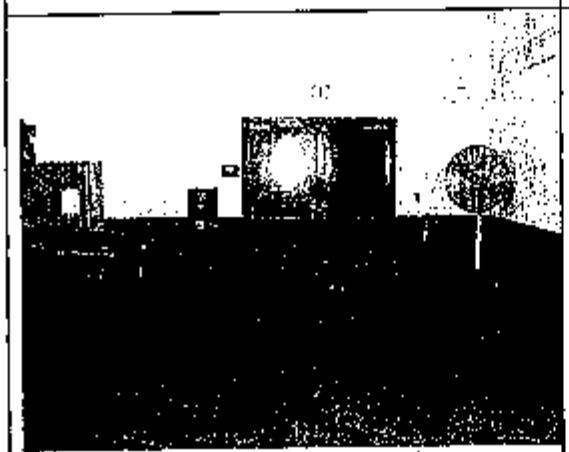


Photo 2918: Drill Hall – Blocked emergency exit

Photo 2919: Supply – Cluttered walking surface

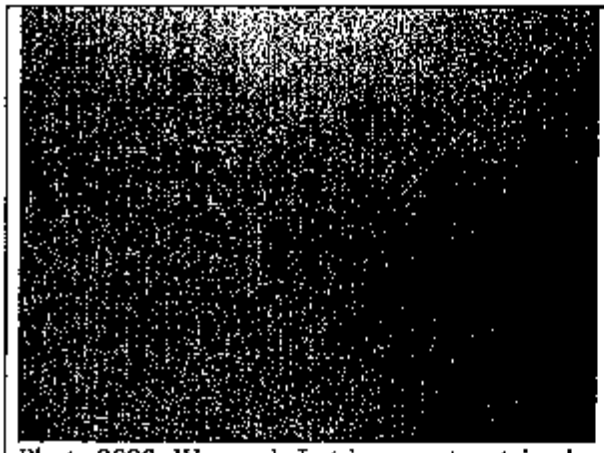


Photo 2922: Women's Latrine – water stained ceiling tile

Photo 2923: Computer work station with ergonomic problems

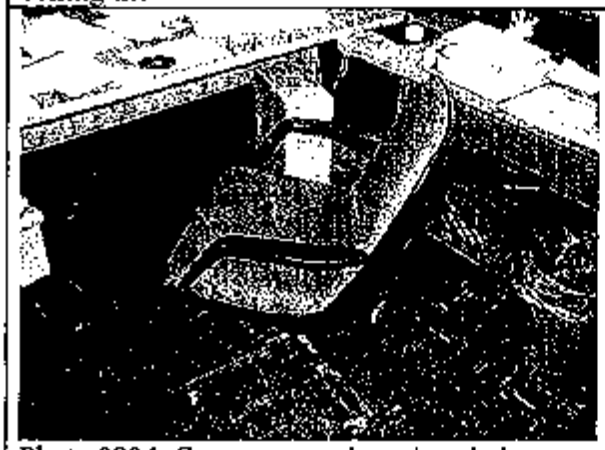


Photo 2924: Computer work station chair

Photo 2925: Recruiter Office #4 – Water damage on floor in front of desk

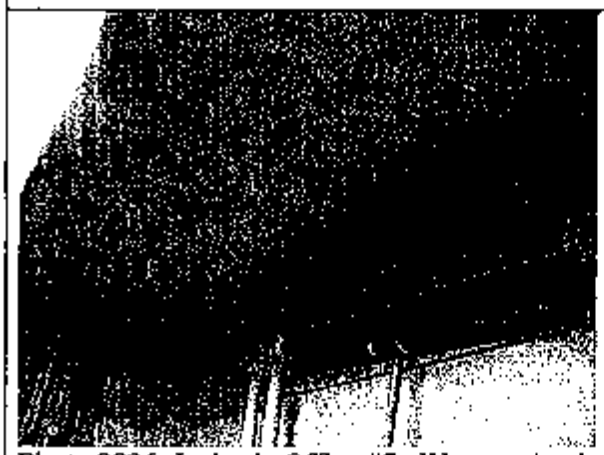


Photo 2926: Janitor's Office #7 –Water stained ceiling tiles

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD IN DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
I. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:
(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site; prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatmen™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellafonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381M

APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			
Sampling Data			

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	Persons Exposed	Hrs/Day	Method of Collection
Analysis Desired			

Sampling Data

Sample No.								B
Pump No.								L
Time On								A
Time Off								N
Total Time (min)								K
Flow Rate (LPM)								
Volume (liters)								
GA/GZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

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APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Franklin Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Franklin Readiness Center** **300 South Main Street** **Franklin, NH, 03235**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 16, 2013**
Report Date:	**June 24, 2013**

Non-Responsive

Non-Responsive, CIH
Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 16, 2013, at the Franklin Readiness Center located at 300 South Main Street, Franklin, NH 03235. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in one location. See Section 3.0 for detailed sampling results.

2. Lighting levels met the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in every location measured. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels met the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in the areas sampled.

    b. The relative humidity level met the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in each area sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 parts per million (ppm).

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings.

5. The Drill Hall garage door was open while construction was in progress, allowing equipment exhaust fumes and dust to enter the building.

    See Section 5.0 for detailed sampling results.

Section 2.0 Operation Description & Observations

The Franklin Readiness Center is mainly an administrative facility with offices, classrooms, and a converted firing range area (currently the Honor Guard Office). There were approximately 3 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1950s. It is a one story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, and 12”x12” floor tiles.

The heating system consists of a gas-fired, forced hot water unit. There is one mini-split A/C unit, and several window A/C units that service the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

This facility has a converted firing range that is now used as the Honor Guard Office.

At the time of this survey, the large Drill Hall garage door was open while construction was in progress. This allowed machine exhaust fumes and dust to enter the building.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Orderly Room	<7.4	*
2	Drill Hall	<7.4	*
3	Blank	<3	*
4	Drill Hall Floor Center	*	<110
5	Drill Hall Vending Top	*	<110
6	Drill Hall Coffee Machine Top	*	<110
7	Honor Guard (Converted Firing Range) Floor	*	<110
8	Honor Guard (CFR) Floor Outside Entrance	*****	<110
9	Honor Guard (CFR) Desk Top	*****	<110
10	Kitchen Stove Top	*	<110
11	Kitchen Window Sill	*****	<110
12	Classroom 5 Bookshelf Top	*	<110
13	**Training Room 20 Heater Top**	*****	**920**
14	Recruiting Office Bookshelf Top	*	<110
15	Orderly Office Desk Top	*	<110
16	Blank	*	<12
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following location:
    - Training Room – Heater Top

  Cleaning procedures should be improved so that no lead is detected on surfaces.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Locker Room 13	41.8	7	Yes
Unit Storage	42.3	10	Yes
Drill Hall	30.7	10	Yes
Honor Guard Office Rear	35.1	30-50	Yes
Men's Latrine	9.4	5	Yes
Classroom 4	49.0	30-50	Yes
Exercise Room	76.7	30	Yes
Kitchen (Prep)	51.9	50	Yes
Corridor 6	89.2	5	Yes
Boiler Room	37.7	30	Yes
Latrine	39.7	5	Yes
Corridor 15	31.9	5	Yes
Recruiting Office	63.2	30-50	Yes
Commander's Office	59.4	30-50	Yes
Honor Guard Office Front	84.7	30-50	Yes
Officer's Latrine	16.5	5	Yes
Lobby	32.9	10	Yes
Orderly Office	52.7	30-50	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level met the minimum recommended guidelines in all areas measured.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	67.1	44.6	416	0.3
Honor Guard Office	72.3	42.3	481	1.0
Criteria	**68-79**	**30-60**	**<1,116**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in occupied areas.

- Relative humidity levels met the recommended guidelines in all areas measured.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 416 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,116 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. It was noted that the Drill Hall garage door was open while construction was in progress just outside the building. This allowed exhaust fumes and dust to enter the building. Perimeter doors should remain closed during construction.

Section 6.0 Suspect Asbestos Containing Building Materials

No suspect asbestos containing material (ACM) was noted at the time of this survey:

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/16/13	3.02 LPM
SKC Air Sampling Pump	647971	5/16/13	2.99 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515944
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Franklin	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/28/2013 **Report Date:** 5/29/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13064485	1	Flame	Air	408	N/A	7.4	ug/m³	<3	<7.4	ug/m³	
13064486	2	Flame	Air	404	N/A	7.4	ug/m³	<3	<7.4	ug/m³	
13064487	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13064488	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064489	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064490	6	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064491	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064492	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064493	9	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064494	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064495	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064496	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064497	13	Flame	Wipe	****	0.108	110	ug/ft²	99	920	ug/ft²	
13064498	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064499	15	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13064500	16	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

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INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515944
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Franklin	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/28/2013 **Report Date:** 5/29/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)
%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results
Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analys Non-Responsive

Technical Manager: Non-Responsive

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515944 (1 of 2)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: FRANKLIN
3. Job #: PO #: W912K6-09-A-0003
4. Contact Perso Non-Responsive @ phone # Non-Responsive
5. Submitted by: Non-Responsive nature: Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day + 5/29/13	☒ Email: Non-Responsive
Comments:	❑ 2 Day Date Due:	❑ Fax: [redacted]us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verba [redacted]us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
- ❑ NIOSH 7400 (QTY)
- ❑ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
- ❑ AHERA (QTY)
- ❑ NIOSH 7402 (QTY)
- ❑ Other (specify) (QTY)

PLM Bulk
- ❑ EPA 600 – Visual Estimate (QTY)
- ❑ EPA Point Count (QTY)
- ❑ NY State Friable 198.1 (QTY)
- ❑ Grav. Reduction ELAP 198.6 (QTY)
- ❑ Other (specify) (QTY)

MISC
- ❑ Vermiculite
- ❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
- ❑ ELAP 198.4/Chatfield (QTY)
- ❑ NY State PLM/TEM (QTY)
- ❑ Residual Ash (QTY)

TEM Dust
- ❑ Qual. (pres/abs) Vacuum/Dust (QTY)
- ❑ Quan. (s/area) Vacuum D5755-95 (QTY)
- ❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ❑ Qual. (pres/abs) (QTY)
- ❑ ELAP 198.2/EPA 100.2 (QTY)
- ❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
- ❑ Pb Paint Chip (QTY)
- ❑ Pb Dust Wipe (wipe type GHOST) 13 (QTY)
- ❑ Pb Air 3 (QTY)
- ❑ Pb Soil/Solid (QTY)
- ❑ Pb TCLP (QTY)
- ❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
- ❑ Spore-Trap (QTY)
- ❑ Surface Swab (QTY)
- ❑ Surface Tape (QTY)
- ❑ Other (Specify) (QTY)
- ❑ Surface Vacuum Dust (QTY)
- ❑ Culturable ID Genus (Media) (QTY)
- ❑ Culturable ID Species (Media) (QTY)

SAMPLE INFORMATION / ANALYSIS / MATRIX

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB Large	CLIENT CONTACT (LABORATORY STAFF ONLY)
1	ORDELLY ROOM	5/16/13	408					✓		✓							Date/Time: Contact: By:
2	DRILL HALL		404					✓		✓							
3	BLANK		—					✓		✓							
4	DRILL HALL	FLOOR CENTER			100cm²			✓								✓	
5	DRILL HALL	Vending TOP						✓								✓	Date/Time: Contact: By:
6	DRILL HALL	coffee Mach TOP						✓								✓	
7	HONOR GUARD	CFR FLOOR						✓								✓	
8	HONOR GUARD	CFR OUT-FLOOR						✓								✓	
9	HONOR GUARD	CFR DESK TOP						✓								✓	Date/Time: Contact: By:
10	Kitchen	STOVE TOP						✓								✓	
11	Kitchen	WINDOW SILL						✓								✓	
12	CLASSRM 5	Bookshelf TOP						✓								✓	

LOT 7/6/10
EXP 1/14

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5 / 21 / 13 @ Via: Fedex By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

OWI (410) 247-2024 159202 210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515944 (2 of 2)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: FRANKLIN
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # Non-Responsive
5. Submitted by: Non-Responsive Signature: Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5 Day +
❑ 2 Day Date Due:
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: Non-Responsive @us.army.mil
❑ Fax:
❑ Verba @us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
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❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
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❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
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❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

❑ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type GHOST) 13 (QTY)
❑ Pb Air 3 (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB Swipe
13	TRAINING Room 20 Heater Top	5/16/13		100cm²				✓								✓
14	Recruiting Office Bookshelf RD	"		"				✓								✓
15	orderly Office DESKTOP	"		"				✓								✓
16	BLANK							✓								✓

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Appendix B. Photographs

Franklin Armory

Drill Hall

Converted Firing Range- Now Honor Guard Office

Appendix C. Floor Plan

FRANKLIN READINESS CENTER FLOOR PLAN

NOT TO SCALE

DATE: 14 MAY 13

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute/Illuminating Engineering Society of North America (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

FINAL
INDUSTRIAL HYGIENE SURVEY REPORT
LANCASTER READINESS CENTER
LANCASTER, NEW HAMPSHIRE

July 2006
PN: 39741509

Non-Responsive
Office Manager

Non-Responsive
Project Manager

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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomics		
Several ergonomic issues were observed in this area. Chairs with adjustable arms should be used at the computer workstations because they can be adjusted to fit the worker, making them more comfortable. Computer monitors could not be adjusted for different individuals working at the workstations.	Correct ergonomic issues with the desks, chairs and monitors by redesigning the equipment or worksite to fit the limitations and capabilities of workers (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 4
Fire Exits		
The fire exit in the kitchen is narrow because of the refrigerator and a table holding a microwave is creating an exit path of only 23 inches wide, instead of the required 28 inches or more.	Recommend finding a new place for the table and microwave to create the wider path to exit from (OSHA 29 CFR 1910.36(g)(2))	RAC 3
Lighting		
Lighting throughout administrative areas was inadequate	Increase lighting in the administrative areas. While work is in progress, offices, facilities, access ways, working areas, etc., shall be lighted by at least the minimum light intensities. URS suggests the use of task lighting. (ANSI/IESNA RP-01-04 American National Standard Practice for Office Lighting)	RAC 4
Asbestos		
Spot damaged asbestos-containing floor tile observed throughout	Remove and replace damaged asbestos-containing floor tile. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3

FINDINGS AND RECOMMENDATIONS (Continued)

Findings	Recommendation	Risk Assessment Code
Asbestos (Cont)		
There are some exposed pipe insulation ends in the kitchen, janitor's closet and a storage room (#5) that need to be repaired. The Drill Hall has asbestos pipe covering that has some damaged fittings, splits where sections come together and puncture holes throughout the area which need to be repaired.	Repair and seal damaged asbestos-containing pipe insulation and asbestos-containing pipe insulation with exposed ends. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001)	RAC 3
No site specific written asbestos management plan was available on site. No training records were found on site.	Develop a site specific written asbestos operation and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3
Hazard Communication		
URS also found several bottles in the janitor's that were not labeled.	Label all secondary containers unless intended for immediate use (OSHA 1910.1200 (f)(4))	RAC 4
No site specific written safety program was found regarding hazard communications. No training records were found on site.	Develop a site-specific hazard communication plan to manage the storage and use of hazardous materials at the site (OSHA 29 CFR 1910.1200 (e))	RAC 4
Lead		
The former firing range was found to contain lead levels in the dust which exceed the maximum limit of 200 $\mu g/ft^2$ set by the NGB Region North Industrial Hygiene Office (see Appendix G).	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3

FINDINGS AND RECOMMENDATIONS (Continued)

Findings	Recommendation	Risk Assessment Code
Electrical		
The electrical panels in the boiler room were obstructed	Access to electrical control panels must be unobstructed (OSHA 29 CFR1910.303(g)(iv))	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau (NGB) Region North Industrial Hygiene Office, URS Corporation (URS) conducted an industrial hygiene survey at the Readiness Center located on 532 Main Street in Lancaster, New Hampshire 03584. This report includes an executive summary and a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On December 3, 2003, Mr. Non-Responsive an industrial hygienist with URS, conducted the site visit to the Lancaster Readiness Center. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, light measurements and a review of site health and safety procedures. SSG Non-Responsive of the New Hampshire ARNG was Mr. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A. The risk assessment codes associated with this project are contained in Table 1.

Lead wipe samples held at URS Corporation will be analyzed and results will be provided in a supplemental letter report.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices with desks and computer workstations. This area also includes the kitchen, classroom, janitor's closet, locker room, shower room and supply area. Several ergonomic issues were observed in this area (Photo # 2814). Chairs with adjustable arms should be used at the computer workstations because they can be adjusted to fit the worker, making them more comfortable. Computer monitors could not be adjusted for different individuals working at the workstations. If more than one person is using a workstation, then proper adjustments need to be made to accommodate each individual.

2.2 Chemical and Physical Agents Sampled

2.2.1 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Readiness Center. Carbon dioxide concentrations ranged from 378 to 574 parts per million (ppm), with an average of 496 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

2.2.2 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations remained at 0 parts per million (ppm). Therefore carbon monoxide levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.3 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirements ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting – Table B-1).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (foot candles)	Recommended Minimum Illuminance (foot candles)
CDR's Office # 1 Desk 1	Administrative Duties	56	50
CDR's Office # 1 Desk 2	Administrative Duties	31	50
AST Room # 2	Administrative Duties	71	50
AST Room # 2	Administrative Duties	50	50
Library # 3 Desk 1	Administrative Duties	8	50
Library # 3 Desk 2	Administrative Duties	20	50
Classroom #19	Administrative Duties	29	50
Kitchen # 6	Food Preparation	24	50

On the day of the survey the illuminance in the administrative area was inadequate in most offices.

2.2.4 Asbestos

Bulk samples of damaged suspect asbestos-containing materials (ACM) were collected in the administrative area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116). Table 2-2 below presents the results of the sample analysis. Table 2-2 below shows the results of the samples.

Table 2-2
Sample Results of Suspect ACM

Location Of ACM Sample Taken	Material Sampled	AMA Sample Number	URS Sample Number	Total Asbestos (%)
FDC Room # 15	9"x9" Floor Tile/Mastic	0412857	1203-02A	4 (chrysotile)
FDC Room # 15	9"x9" Floor Tile/Mastic	0412858	1203-02B	4 (chrysotile)
FDC Room # 15	9"x9" Floor Tile/Mastic	0412859	1203-02C	3 (chrysotile)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

EMERGENCY EXITS: The fire exit in the kitchen is narrow because of the refrigerator and a table holding a microwave are creating an exit path of only 23 inches wide, instead of the required 28 inches or more (Photo #2797). Recommend finding a new place for the table and microwave to create the wider path to exit from.

LIGHTING: It is recommended that the lighting in the administrative areas be increased. While work is in progress, the administrative area should be lighted by at least the minimum light intensities (indicated in Table 2-1). URS suggests the use of task lighting

ASBESTOS: The floor tile that was found throughout this area was determined to contain asbestos. It is recommended that the damaged tile be replaced with new, non-asbestos tile, by an appropriately trained technician. There are some exposed pipe insulation ends in the kitchen (#6), janitor's closet (#18) and a storage room (#5) that need to be repaired (Photos # 2798, 2796 and 2804 respectively).

HAZARD COMMUNICATION: URS also found several bottles in the janitor's that were not labeled, which need to be (Photo # 2794)

3.0 FORMER FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and is now primarily used for storage.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. Table 3-1 below shows the results of the lead wipe testing.

Table 3-1
Levels of Lead Dust Found in the Facility

Location Of Wipe Taken	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Firing Range-Floor/Front	1203-LW6	1.000	200	200
Firing Range-Floor/Center	1203-LW7	1.000	9500	200
Firing Range-Floor/Rear	1203-LW8	1.000	3100	200
Firing Range-File Cabinet	1203-LW9	1.000	150	200
Firing Range-Light Fixture	1203-LW10	1.042	2700	200
Blank	1203-Blank1	N/A	<12 µg	N/A

One air sample for lead was collected in the former firing range. Table 3-2 below shows the results of the lead air sample.

Table 3-2
Airborne Lead Concentration

Location Of Air Sample Taken	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL ($\mu g/m^3$)
Former Firing Range	1203-AA01	1096	<2.7	50.0
Air Blank	1203-Blank AA	N/A	<3.0 µg	N/A

On the day of the survey, the airborne lead concentration in the former firing range was found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.10259(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: The former firing range was found to contain lead levels in the dust which exceed the maximum limit of 200 $\mu g/ft^2$ set by the NGB Region North Industrial Hygiene Office (see Appendix G). Recommend cleaning the lead dust by an appropriately licensed contractor. Guidelines for the cleanup and rehabilitation of indoor firing ranges are included in Appendix H.

4.0 DRILL HALL

4.1 Operation Description

A 7,500 square foot area with a roughly 30 foot high ceiling, used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. Table 4-1 below shows the results of the lead testing.

Table 4-1
Levels of Lead Dust Found in the Facility

Location Of Wipe Taken	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Surface Contamination Level ($\mu g/ft^2$)
Drill Hall-Floor #8	1203-LW1	1.000	<12	200
Drill Hall-Floor #8	1203-LW2	1.000	29	200
Drill Hall-Floor #8	1203-LW3	1.000	<12	200
Drill Hall-Floor #8	1203-LW4	1.000	<12	200
Drill Hall-Floor #8	1203-LW5	1.000	<12	200
Blank	1203-Blank1	N/A	<12 µg	N/A

An air sample for lead was collected in the drill hall. Table 4-2 below shows the result of the lead air sample.

Table 4-2
Airborne Lead Concentrations

Location Of Air Sample Taken	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
DRILL HALL # 8	1203-AA02	1092	<2.7	50.0
BLANK	1203-BlankAA	0	<3.0	50.0

On the day of the survey, the airborne concentration of lead dust in this building area was found to be below the OSHA's PEL (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Both the air and wipe samples collected in the drill hall for lead were found to be within the acceptable limits and require no further action at this time.

ASBESTOS: The asbestos pipe covering has some damaged fittings, splits where sections come together and puncture holes throughout the area which need to be repaired (Photos # 2800-2802). The repairs need to be made by an appropriately trained technician.

5.0 BOILER ROOM

5.1 Operation Description

A mechanical room constructed of cinder block walls with a concrete floor, containing a furnace with associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Bulk samples of suspect asbestos-containing materials (ACM) were collected in the boiler room from materials that were exposed for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116). Table 5-1 below shows the results of the samples.

Table 5-1
Sample Results of Suspect ACM

Location Of ACM Sample Taken	Material Sampled	URS Sample Number	Total Asbestos (%)
Boiler Room # 7	Air Cell Pipe Insulation	1203-01A	55 (chrysotile)
Boiler Room # 7	Air Cell Pipe Insulation	1203-01B	85 (chrysotile)
Boiler Room # 7	Air Cell Pipe Insulation	1203-01C	55 (chrysotile)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D. Mr. Hazzard's asbestos inspector training certificate is provided in Appendix E.

One air sample was collected in the boiler room to determine the background airborne fiber concentration in this area. The air sample was collected according to guidelines set forth in the National Institute for Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7400. AMA, using Phase Contrast Microscopy (PCM) in

accordance with the NIOSH Method 7400, analyzed the air sample. Table 5-2 below shows the result of the air sample.

Table 5-2
Airborne Fiber Concentration

Location Of Sample Taken	URS Sample Number	Volume (Liters)	Results: Fibers Per Cubic Centimeter (f/cc)	OSHA PEL (f/cc)
Boiler Room # 7	1203-ASB01	255	<0.011	0.1

The analytical result of the air sample was determined to be below the detection limit of the NIOSH 7400 method.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

ASBESTOS: The only issue concern identified in this area was the condition of the pipe insulation (Photo # 2783). There were numerous exposed ends that could cause asbestos fibers to be released into the air. The exposed ends and punctures need to be repaired by an appropriately trained technician.

ELECTRICAL: The electrical panels need to be maintained in an easily accessible condition with no obstructions placed in front of them (Photo # 2785).

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

The only safety manual found at this site consisted primarily of accident investigation reports and legal aspects of safety. A three ring binder was reviewed at the time of the IH survey that contained all pertinent documents... However, this document was determined to be a course manual that was written by Alamo Safety Organization for the Army National Guard 1st Line Supervisors and was generic in nature and not site specific. This manual is a good tool, which could be used to help write the site's actual safety program.

6.1 Confined Spaces

No site-specific written safety program was found regarding confined spaces. No training records were found on site. A written confined spaces program is not required for this site.

6.2 Hearing Conservation

No site specific written safety program was found regarding hearing conservation. No training records were found on site. A written hearing conservation is not required for this site.

6.3 Respiratory Protection

No site specific written safety program was found regarding Respiratory Protection. No training records were found on site. A written respiratory protection program is not required for this site.

6.4 HAZCOM

No site specific written safety program was found regarding hazard communications. No training records were found on site. A site specific written hazard communication plan is required for this site.

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6.5 Personal Protective Equipment

No site specific written safety program was found regarding personal protective equipment. No training records were found on site. A written respiratory protection program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62-2001: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

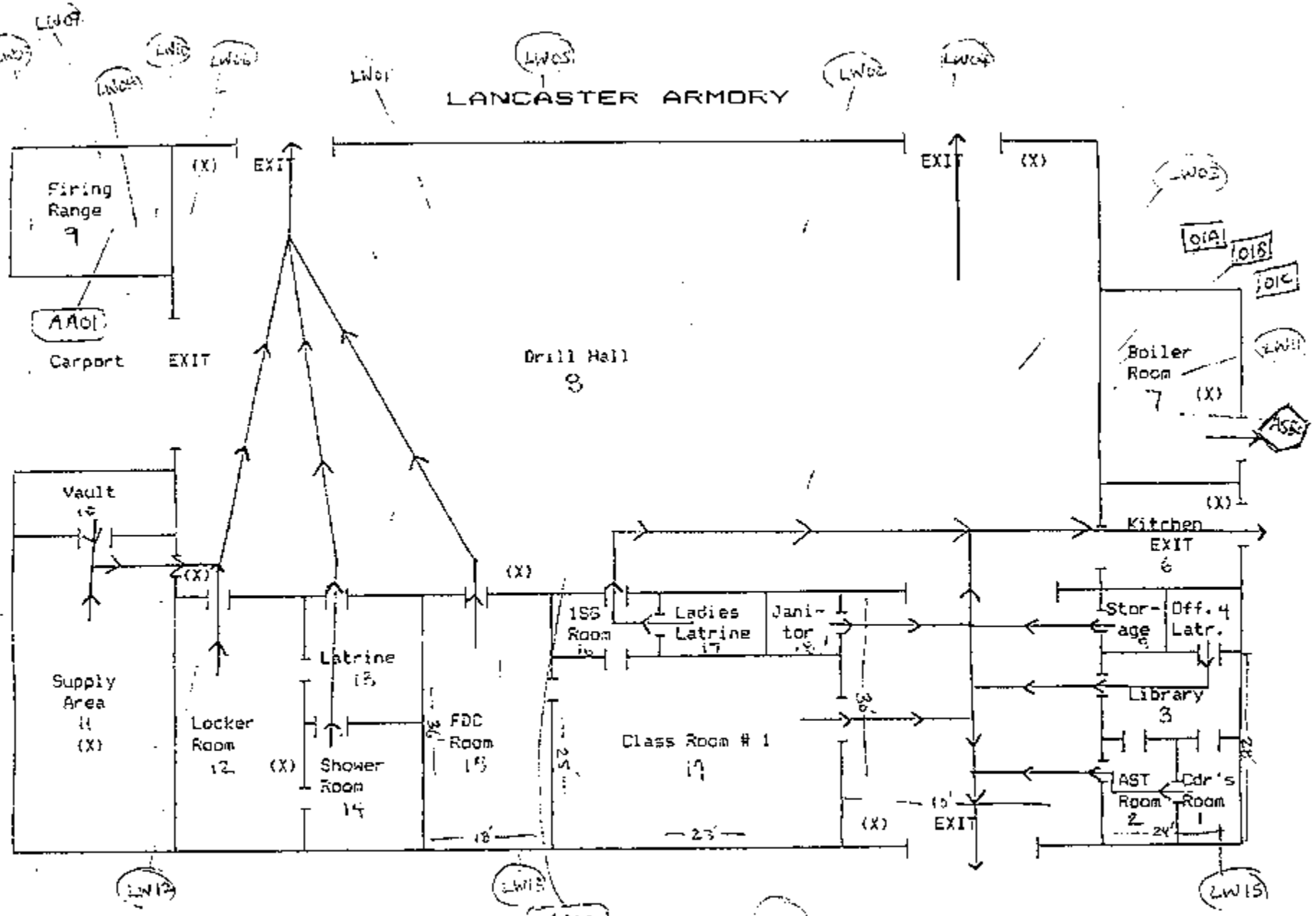
U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

READINESS CENTER DRAWING

LANCASTER ARMORY

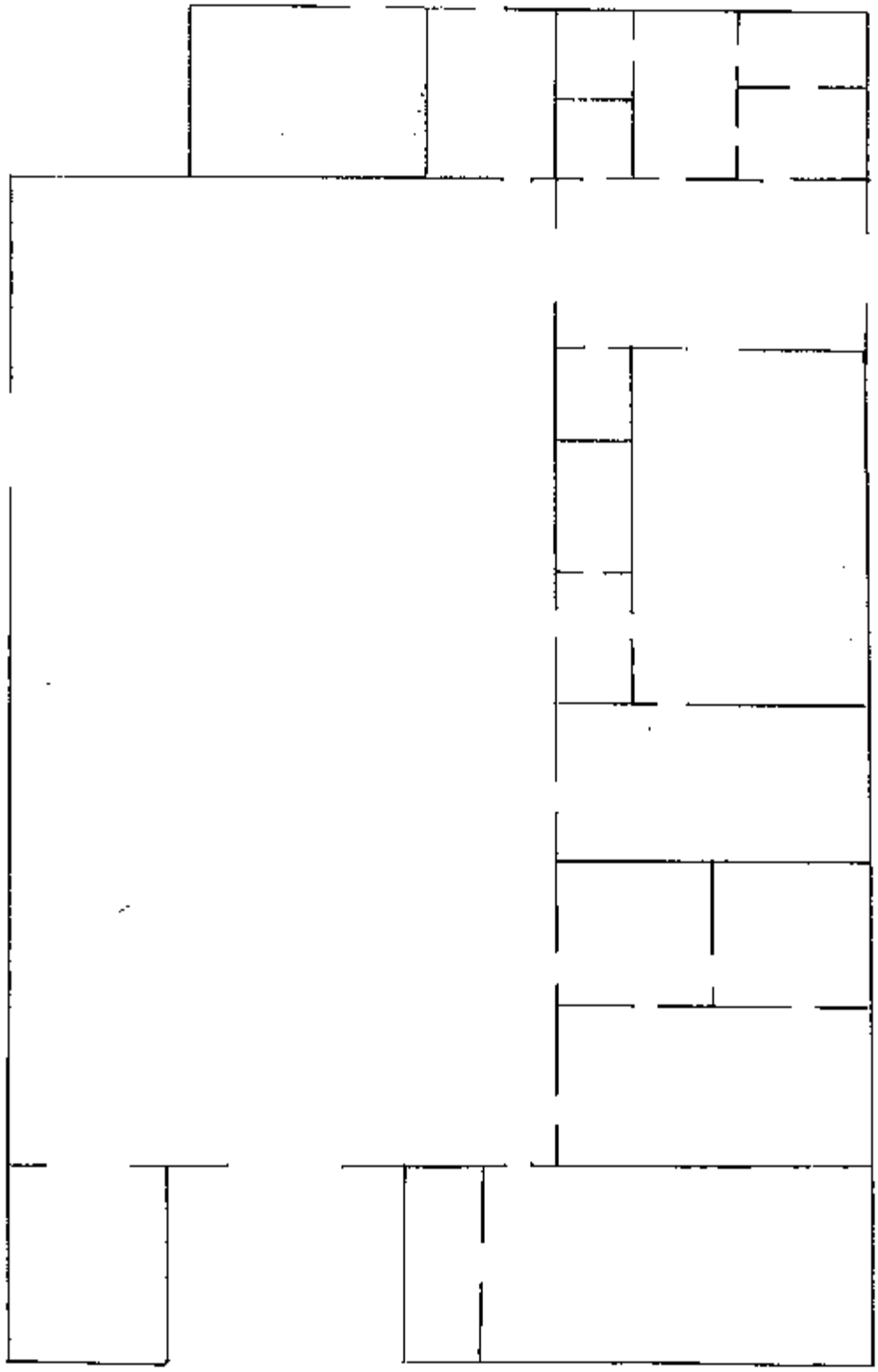


Notes: Fire exits will not be locked.
All extinguishers installed and inspected.
Entrance through kitchen for emergency use only.

(X) = Extinguisher Locations.

⬠ = ASBESTOS AIR
◯ = LEAD WIRES
▭ = ASBESTOS BOARD
⬭ = LEAD AIR

LANCASTER NH ARMY NATIONAL GUARD - ARMORY SITE PLAN



APPENDIX B

PERSONNEL LIST

PERSONNEL LIST

LANCASTER READINESS CENTER

NAME	RANK
Non-Responsive	SSG

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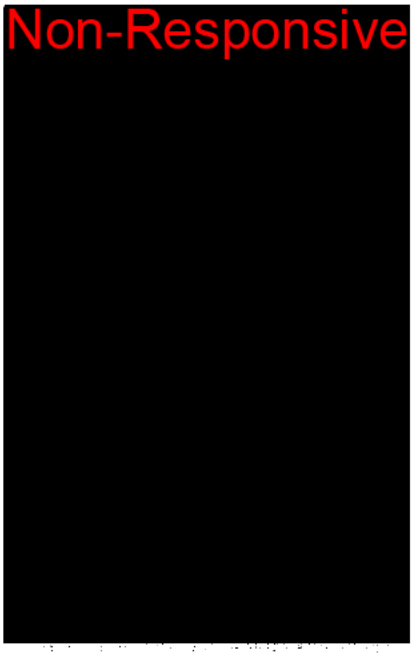
Non-Responsive

APPENDIX C

HAZARDOUS MATERIALS LIST

DET 1 BTRY A 2D BN 197TH FA
532 MAIN STREET
LANCASTER, NH 03584-9610

3 September 2002

HAZARDOUS CHEMICAL INVENTORY
Yellow Locker Number 1

Nomenclature	NSN	Unit of issue	Qty
Graphite	9620-00-180-6712	1 LB	1
Waterless Grease (WTR)	9150-00-145-0268	5 LB	4
Compound, Windshield	6850-00-926-2275	16 OZ	0
Dry Cleaning Solvent	6850-00-281-1985	GAL	1
Anti Freeze	6850-01-441-3218	GAL	1
Waterless Grease	9150-00-935-5851	35 LB	1
CLP	1025-01-053-6688	GAL	3
Canvas Pres. Coating	8030-00-664-4944	GAL	9
Propane	6830-00-584-3044	14 OZ	13

Inventory Performed By: SC Non-Responsive

DET 1 BTRY A 2D BN 197TH FA
532 MAIN STREET
LANCASTER, NH 03584-9610

3 September 2002

HAZARDOUS CHEMICAL INVENTORY
Yellow Locker Number 2, Sheet 2 of 2

Nomenclature	NSN	Unit of Issue	QTY
OE HDO 10W Oil	9150-01-177-3988	QT	9
Laundry Soap	No NSN	GAL	1
Paint Thinner	8010-00-558-7026	5 GAL	1
Inhibitor, Fuel Additive	6850-00-753-5061	5 GAL	1
CLP	9150-01-053-6688	GAL	5
Preservative Coating	8030-00-664-4944	GAL	7
Gasoline	No NSN	GAL	1

Inventory Performed By: Non-Responsive

DET 1 BTRY A 2D BN 197TH FA
532 MAIN STREET
LANCASTER, NH 03584-9610

3 September 2002

HAZARDOUS CHEMICAL INVENTORY
Yellow Locker Number 2 With Cont. Sheet

Nomenclature	NSN	Unit of Issue	Qty
Water Reagent	6810-00-682-6867	GAL	2
Silicone, Brake Fluid	9150-01-102-9455	GAL	2
Adhesive, Cement	8040-00-264-3848	8 OZ	5
Corrosive Preventative	8030-00-546-8637	16 OZ	1
Contact Cement	No NSN	PT	1
Cleaning Compound, Optical	6850-00-227-1887	QT	1
Waterless Hand Cleaner	8520-00-082-2146	LB	0
Solid Film Lube	9150-00-823-7860	16 OZ	5
Inhibitor, Corrosion	6850-00-368-5233	LB	2
Quick Start, Ether	2910-00-646-9727	32 OZ	3
OE HDO 10 W Oil	9150-01-177-3988	GAL	3
HTO Oil	9150-00-935-9807	QT	3
Methanol	6810-00-597-3608	GAL	1
15W40 Oil	9150-01-421-1427	QT	1
Dextron III Oil	9150-01-353-4799	QT	6

Inventory Performed By: S[redacted] Non-Responsive

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DET 1 BTRY A 2D BN 197TH FA
532 MAIN STREET
LANCASTER, NH 03584-9610

3 September 2002

HAZARDOUS CHEMICAL INVENTORY
Yellow Locker Number 3

NOMENCLATURE	NSN	UNIT OF ISSUE	QTY
Paint, Blue Spray	No NSN	16 OZ	1
Paint, OD Spray	8010-00-848-9272	16 OZ	6
Paint, Black Spray	8010-00-582-5382	3 OZ	4
Paint, Met. Aluminum	No NSN	QT	1
Paint, Brown	8010-00-598-5460	GL	3
Paint, Black	8010-00-297-0547	GL	1
Paint, OD	8010-00-597-7862	GL	2
Paint, White	8010-01-333-7762	GL	1
Paint, Thinner	8010-01-441-5940	GL	4
Paint, Yellow Spray	No NSN	12 OZ	1
Paint, Brass Spray	No NSN	11.5 OZ	1

Non-Responsive

Inventory Performed By:
S[redacted]

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J 9-1 - Hazmat Response Kit Items

DRAFT

HAND RECEIPT/ANNEX NUMBER *For use of this form, see DA PAM 710-2-1. The proponent agency is DDCSLOG.*	FROM:	TO:	HAND RECEIPT NUMBER
FOR ANNEX ONLY	END ITEM STOCK NUMBER: 5180-00-X33-1377	END ITEM DESCRIPTION: HAZMAT SPILL RESPONSE KIT	PUBLICATION NUMBER: USPFO LETTER# 7-92 7 AUG 92
		PUBLICATION DATE: 21 Feb 1996	QUANTITY

STOCK NUMBER a.	ITEM DESCRIPTION b.			* c.	SEC d.	U/I e.	QTY AUTH f.	QUANTITY A	B	C	D	E	F
7240-00-819-7735	Waste Receptacle, W/Lid, 32 Gal	CL II	12.62	X	U	EA	1						
7240-00-965-4427	Waste Receptacle, W/Lid, 10 Gal	CL II	6.03	X	U	EA	1						
8135-00-618-1783	Plastic Sheet, 6MM, 16X100 Foot	CL II	23.25	X	U	RO	1						
7920-01-396-0830 (LP)	Booms, Oil-Absorbent, 3" X 10'	CL II (White)	11.13	X	U	EA	4						
7920-LP-X33-0180 (LP)	Booms, Mat-Absorbent, 3" X 10'	CL II (Pink)	4.92	X	U	EA	4						
7930-LP-X33-0172 (LP)	Lite-Dri Absorbent	CL II	8.40	X	U	BG	3						
9330-01-219-7414 (LP)	Pad, Oil-Absorbent, 100 Count	CL II	59.00	X	U	BE	1						
4020-00-243-3156	Twine Cotton, 70 # Breaker Strenght	CL II	3.93	X	U	LB	1						
8105-01-183-9768	Bag Plastic, Heavy Duty, 30 Gal	CL II	12.81	X	U	BX	1						
8110-00-366-1728	Drum, Removable Lid	CL II	57.09	X	U	EA	1						
8415-LP-X33-0236 (LP)	Gloves, Chemical Resistant	CL II	1.45	X	U	PR	4						
8415-LP-X33-0177 (LP)	Suit (Tyvek) Coveralls, W/O Hood and Feet	CL II	4.15	X	U	EA	4						
8415-LP-X33 0176 (LP)	Suit (Tyvek) Coveralls, W/ Hood and Feet	CL II	5.20	X	U	EA	2						
4240-00-497-5302 (LP)	Goggles, Chemical Protection, Anti-Fog	CL II	3.35	X	U	PR	4						
5120-LP-X33-0147 (LP)	Shovel, Square, Non-Sparking	CL II	33.98	X	U	EA	2						
7920-00-267-2967	Broom, Push	CL II	4.77	X	U	EA	2						

* WHEN USED AS A:
HAND RECEIPT, enter Hand Receipt Annex Number
HAND RECEIPT FOR QUARTERS FURNITURE, enter Condition Codes
HAND RECEIPT ANNEX/COMPONENTS RECEIPT, enter Accounting Requirements Code (ARC)

PAGE ____ OF ____ PAGES

DA FORM 2062 JAN 87 — EDITION OF JAN 58 IS OBSOLETE.

46

29 February 1996 * NHARNGR 200-1-1, C-1

STOCK NUMBER a.	ITEM DESCRIPTION b.	* c.	SEC d.	UI e.	QTY AUTH f.	QUANTITY g. A	B	C	D	E	F
7920-00-141-5452	Handle, Extension CL II 2.01	X	U	EA	2						
5180-00-X33-1695 (LP)	Drainblocker 18"W X 18"L X 1/8"T 8Lbs CL II 99.00	X	U	EA	2						
2330-00-706-5495	LIN: NH1317 Trailer, 1/4T, 2WH, M416 (Per Fixed Facility)	N	U	EA	2						

Reverse of DA Form 3049 *U.S. GOVERNMENT PRINTING OFFICE 1985 381-646/8452 PAGE ___ OF ___ PAGES

DRAFT

HAND RECEIPT/ANNEX NUMBER
For use of this form, see DA PAM 710-2-1. The proponent agency is ODCSLOG.

FROM:

TO:

HAND RECEIPT NUMBER:

END ITEM STOCK NUMBER: 5180-00-X33-1378 NH1210

END ITEM DESCRIPTION: Hazardous Leak Repair Kit

PUBLICATION NUMBER: USPFO Letter 87-92 (1Aug92)

PUBLICATION DATE: 21 Feb 1996

QUANTITY:

STOCK NUMBER a.	ITEM DESCRIPTION b.	* c.	SEC d.	UI e.	QTY AUTH f.	QUANTITY g. A	B	C	D	E	Z
8135-01-294-4143 (LP)	CL IX Barrier Tape	X	U	RO	1						
8105-01-183-9768	CL II Bag Plastic, Heavy Duty, 30 Gal ASSSC	X	U	BX	1						
5120-00-293-1609	CL II Screwdriver, Flat Tip, 6" 5/16 Tip, Non-Sparking	X	U	EA	1						
5140-00-498-8772	CL II Tool Box ASSSC	D	M	EA	1						
4910-01-211-2195	CL IX Drip Pan, Oil	X	U	EA	1						
6625-01-330-4669 (LP)	CL II Epoxy Putty ASSSC	X	U	TU	1						
5120-00-243-2959	CL II Hammer, Hand Claw 16oz 12 - 14lg Non-Sparking	X	U	EA	1						
5120-00-240-6217	CL II Pliers, Slip Joint 8" Lg Non-Sparking	X	U	EA	1						
5120-00-293-0031	CL II Wrench, Adjustable 7 1/2 to 8 1/2 Lg Non-Sparking	X	U	EA	2						
5120-00-244-4390	CL II Wrench, Sung, 14 1/2 to 16 Lg Non-Sparking	D	M	EA	1						

* MAIN ACCESS AS:
HAND RECEIPT, enter Hand Receipt Annex Number
HAND RECEIPT FOR QUARTERS FURNITURE, enter Condition Code
HAND RECEIPT ANNEX/COMPONENTS RECEIPT, enter Accounting Requirements Code (ARC)

PAGE ___ OF ___ PAGES

DA FORM 2062 EDITION OF JAN 83 IS OBSOLETE.

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121112
Address:	5 Industrial Way	**Job Location:**	Lancaster, NH	**Date Analyzed:**	12/15/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	15-Dec-03
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result			Comments
0412837	1203-LW1	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0412838	1203-LW2	Flame	Wipe	****	1.000	12.00	ug/ft^2		29	ug/ft^2	
0412839	1203-LW3	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0412840	1203-LW4	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0412841	1203-LW5	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2	
0412842	1203-LW6	Flame	Wipe	****	1.000	12.00	ug/ft^2		200	ug/ft^2	
0412843	1203-LW7	Flame	Wipe	****	1.000	12.00	ug/ft^2		9500	ug/ft^2	
0412844	1203-LW8	Flame	Wipe	****	1.000	12.00	ug/ft^2		3100	ug/ft^2	
0412845	1203-LW9	Flame	Wipe	****	1.000	12.00	ug/ft^2		150	ug/ft^2	
0412846	1203-LW10	Flame	Wipe	****	1.042	11.52	ug/ft^2		2700	ug/ft^2	
0412847	1203-BLANK 1	Flame	Wipe Blank	****	N/A	12.00	ug	<	12	ug	
0412848	1203-AA01	Flame	Air	1096	N/A	2.74	ug/m^3	<	2.7	ug/m^3	
0412849	1203-AA02	Flame	Air	1092	N/A	2.75	ug/m^3	<	2.7	ug/m^3	
0412850	1203-BLANK AA	Flame	Air Blank	0	N/A	3.00	ug/m^3	<	3	ug	

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121112
Address:	5 Industrial Way	**Job Location:**	Lancaster, NH	**Date Analyzed:**	12/15/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	15-Dec-03

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted]

Technical Manager: [redacted]

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121112
Address:	5 Industrial Way	**Job Location:**	Lancaster, NH	**Date Analyzed:**	12/16/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Phase Contrast Microscopy

AMA Sample Number	Client Sample Number	Volume Sampled (Liters)	Fibers Per Millimeter Squared		Fibers Per Cubic Centimeter		Analyst I.D.	Sample Type	Comments
0412851	1203-ASB 01	255	< 7.0	*	< 0.011	*	LB	N/P	
0412852	1203-BLANK 1	0	< 7.0	*	*****		LB	BLK	2 fiber(s) per 100 fields
0412853	1203-BLANK 2	0	< 7.0	*	*****		LB	BLK	3.5 fiber(s) per 100 fields

* The Reporting Limit for AMA Laboratory is 7.0 fibers per square millimeter of filter. The reporting limit for the air concentration of fibers (f/cc) is dependent on the sampled air volume. Fibers counts were determined by the methods described in NIOSH Analytical Method 7400, 'Fibers' (Revision 3, Issue 2, 8/15/94). All personnel samples were analyzed following the OSHA Reference Method.

[redacted]

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121112
Address:	5 Industrial Way	**Job Location:**	Lancaster, NH	**Date Analyzed:**	12/16/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		
Attention:	[redacted]				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0412854	1203-01 A	55	55	--	--	--	--	--	15	--	--	30	Gray	LB	
0412855	1203-01 B	85	85	--	--	--	--	--	15	--	--	30	Gray	LB	
0412856	1203-01 C	55	55	--	--	--	--	--	15	--	--	30	Gray	LB	
0412857	1203-02 A	4	4	--	--	--	--	--	--	--	--	96	Gray	LB	
0412858	1203-02 B	4	4	--	--	--	--	--	--	--	--	96	Gray	LB	
0412859	1203-02 C	3	3	--	--	--	--	--	--	--	--	97	Green	LB	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

[redacted]

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 121112

Mailing/Billing Information:
1. Client Name: USNH
2. Address 1: _____
3. Address 2: _____
4. Address 3: _____
5. Phone #: _____ Fax #: _____

Submittal Information:
1. Job Name: Lamont
2. Job Location: Hinsdale NH
3. Job #: _____ P.O. #: _____
4. Contact Perso [redacted] @ phone # _____
5. Submitted by: _____ Signature: _____

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: 12/16/03 @ 0930 ☐ Immd. ☒ 24hr ☐ 48hr ☐ 72hr ☒ 5 Day + ☐ Immd. After-Hours* ☐ 24hr After-Hours* ☐ Late-Night* (*must be pre-scheduled)
☐ Verbals: _____ @ cell # _____ ☐ Fax Copy: _____ @ fax # _____ ☐ Email Copy: _____ @ _____

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☒ NIOSH 7400 3 (QTY)
☐ Fiberglass _____ (QTY)

TEM Air – Please Indicate Filter Type:
PC MCE Porosity ____ in a 25mm 37mm
☐ AHERA _____ (QTY)
☐ NIOSH 7402 _____ (QTY)
☐ Other (specify _____) _____ (QTY)

PLM Bulk
☒ EPA 600 – Visual Estimate 6 (QTY)
☐ EPA Point Count _____ (QTY)
☐ NY State Friable _____ (QTY)
☐ Grav. Reduction ELAP 198.1 _____ (QTY)
☐ Other (specify _____) _____ (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield _____ (QTY)
☐ NY State PLM/TEM _____ (QTY)
☐ Residual Ash _____ (QTY)

TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust _____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 _____ (QTY)
☐ Quan. (s/area)Dust D6480-99 _____ (QTY)

TEM Water
☐ Qual. (pres/abs) _____ (QTY)
☐ ELAP 198.2/EPA 100.2 _____ (QTY)
☐ EPA 100.1 _____ (QTY)

Lead Analysis
☐ Paint Chip _____ (QTY)
☐ Dust Wipe (wipe type _____) 11 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid _____ (QTY)
☐ TCLP _____ (QTY)
☐ Drinking Water _____ (QTY)
☐ Waste Water _____ (QTY)
☐ Dust Wipe Furnace (wipe type _____) _____ (QTY)

Miscellaneous Analysis
☐ Radon _____ (QTY)
☐ Other (specify _____) _____ (QTY)

SAMPLE ANALYSIS INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	OTHER	MATRIX: AIR	BULK	WIPE	WATER AND OTHER	CLIENT CONTACT (LABORATORY STAFF ONLY)
														Date/Time: Contact: By:
														Date/Time: Contact: By:
														Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 12/16/03 @ 0930 Via: Fed X By (Print): [redacted] Sig:
2. Date/Time Analyzed: 12/16/03 @ _____ By (Print): [redacted] Sig:
3. Results Reported To: _____ Via: FAX Date: 12/16/03 Time: [redacted]
4. Comments: _____

APPENDIX E

TRAINING CERTIFICATES

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive, Wilmington, MA 01887
(978) 658-5272

IEE IEE

This is to certify that

[redacted]

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

April 11, 2003
Course Dates

Course Location
Institute for Environmental Education
16 Upton Drive
Wilmington, MA 01887

April 11, 2003
Examination Date

April 10, 2004
Expiration Date

03518010625349
Certificate Number

[redacted]
President/Director of Training

APPENDIX F

PHOTOGRAPHS

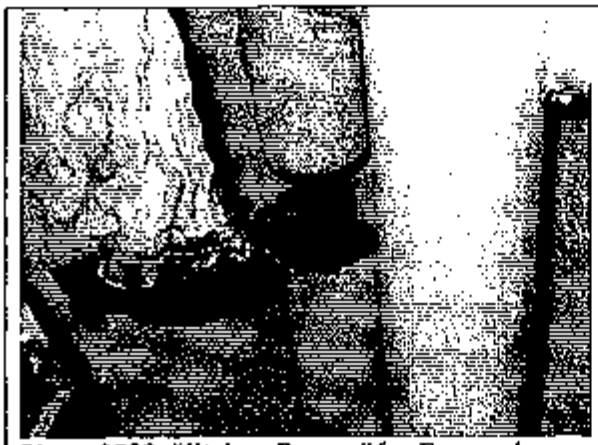


Photo 2798: Kitchen Room #6 – Exposed asbestos-containing pipe insulation ends

Photo 2800: Drill Hall – Asbestos-containing pipe insulation splitting apart

Photo 2801: Drill Hall – Asbestos-containing pipe insulation splitting apart

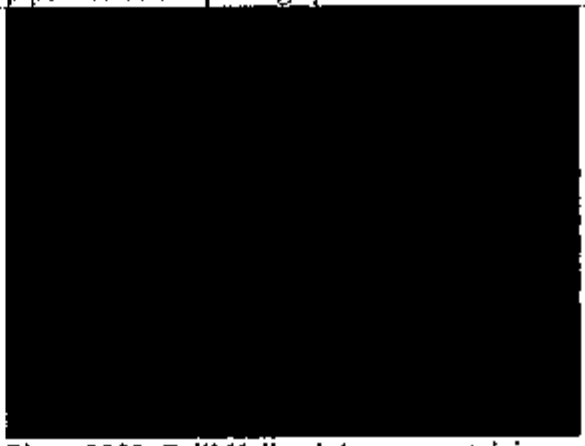


Photo 2802: Drill Hall – Asbestos-containing pipe insulation splitting apart

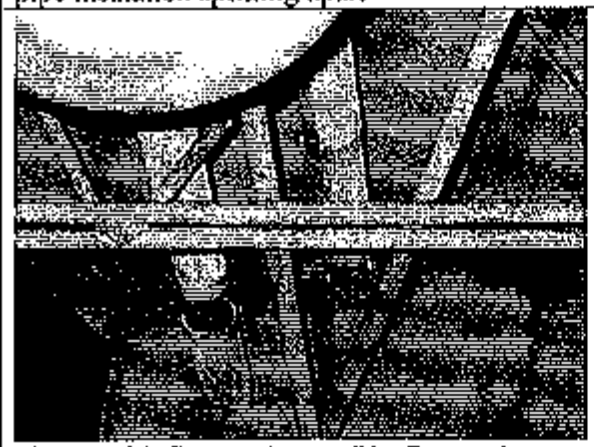
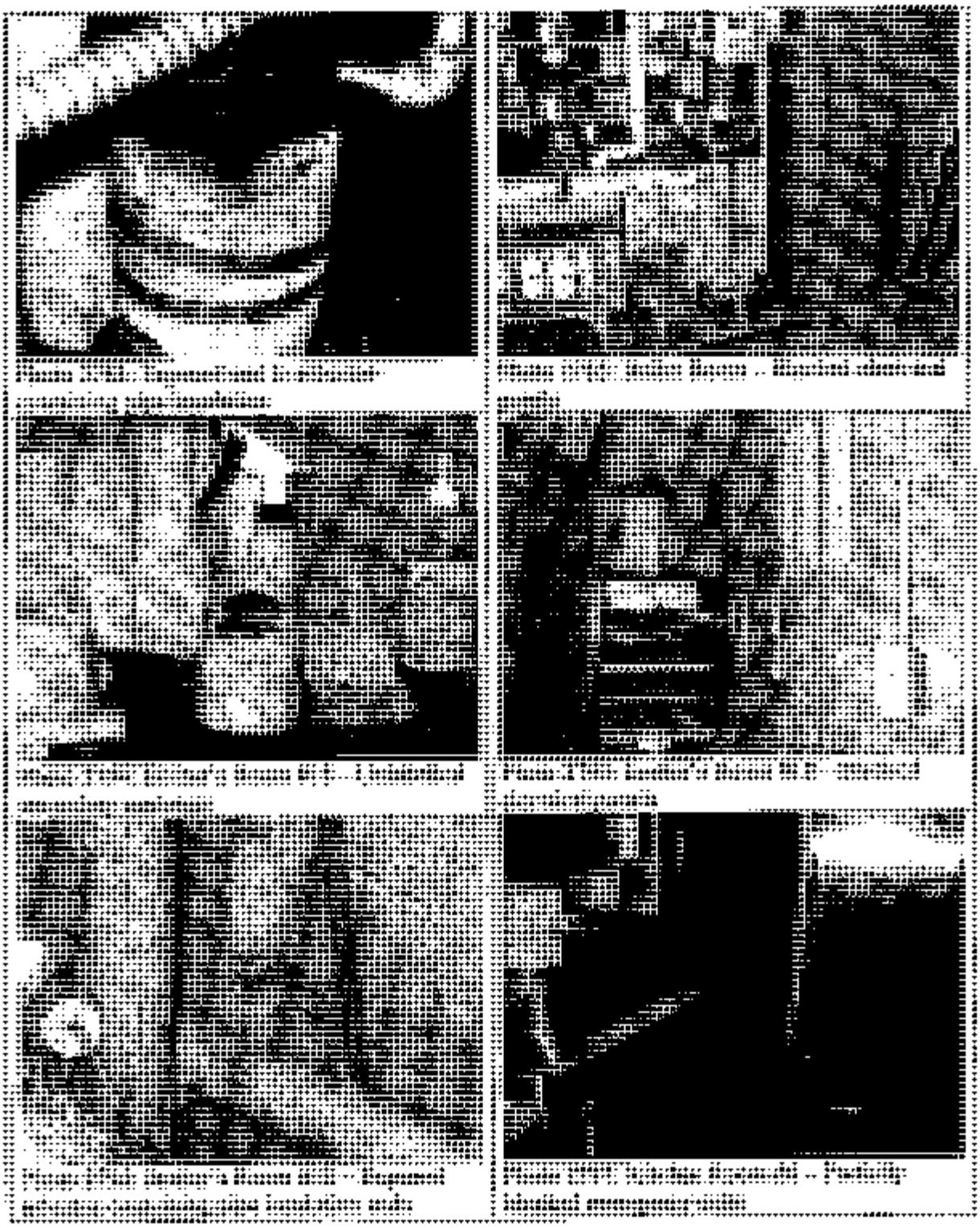


Photo 2804: Storage Room #5 - Exposed asbestos-containing pipe insulation ends

Photo 2814: Computer work station with a low monitor



APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot (□g/ft^2). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 μg/ft^2) and windowsills (250 μg/ft^2) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 □g/ft^2 in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 □g/ft^2 is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, [5021] Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to--
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include---

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:
(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200 micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-33811M

APPENDIX E (Continued)

800-247-6628
800-959-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft -- Square foot

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped

Analysis Desired

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address

Point of Contact *(name/phone #)*

Samples Collected By

Sampled Facility | City | State | Location *(bldg/area)*

Description of Operation | ___ Persons Exposed | ___ Hrs/Day | Method of Collection

Analysis Desired

Sampling Data

Sample No.								B
Pump No.								L
Time On								A
Time Off								N
Total Time (min)								K
Flow Rate (LPM)								
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM) Pre-Use	Calibration (LPM) Post-Use	Rotameter Setting	Date

Name of Calibrator | Calibration Date | Pump Manufacturer

Comments to Lab:

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing load surface contamination.

Prepared for:
National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
Havre De Grace, Maryland




Industrial Hygiene Survey
for NHARNG – Manchester Readiness Center
1059 Canal Street
Manchester, New Hampshire 03101

AECOM Environment
June 2010
Document No.: 60151253/Manchester Readiness Center

Prepared for:
National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
Havre De Grace, Maryland

Industrial Hygiene Survey
for NHARNG – Manchester Readiness Center
1059 Canal Street
Manchester, New Hampshire 03101

Non-Responsive
Industrial Hygienist

Non-Responsive
Project Manager

Non-Responsive
CHMM
Section Manager – EHS Management

AECOM Environment
June 2010
Document No.: 60151253/Manchester Readiness Center

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Executive Summary

On April 27, 2010, AECOM Environment conducted an Industrial Hygiene (IH) survey of the Manchester Readiness Center facility located at the state armory at 1059 Canal Street in Manchester, New Hampshire. SSG Non-Responsive was the point of contact for the facility, but was not present on the day of the survey. Non-Respon Non-Responsive of the State Occupational Health Office and a building custodian accompanied AECOM during the survey to provide access and information concerning the Manchester Readiness Center operations.

The industrial hygiene survey was generally conducted in accordance with the scope of work as described in the "Statement of Work – Industrial Hygiene Services for National Guard Bureau Industrial Hygiene Region North – Baseline Surveys for Readiness Centers and Administrative Buildings", dated March 2009.

The Manchester Readiness Center is currently staffed by twenty to thirty personnel. The facility is located in the State Armory and consists of a three story building housing administrative offices, a Drill/Assembly Hall, and Field Maintenance Shop 4 is located in the basement of the building.

Personnel at the facility were undertaking normal daily activities at the time of the survey, which are generally administrative in nature.

The activities undertaken during the Industrial Hygiene survey included facility descriptions, lead wipe sampling, evaluation of housekeeping, illumination studies, ventilation system evaluation, and a review of the physical building condition.

The Manchester Readiness Center is housed in a three story masonry building, consisting of approximately 50% administrative space and 25% drill hall, and 25% maintenance shop.

Lighting levels measured throughout approximately 75% of the accessible spaces in the facility were adequate as per ANSI/IESNA RP-1-2004, Office Lighting, ANSI/IESNA RP-7-2001, Industrial Lighting, and the IESNA Lighting Handbook, 9th Edition, 11 April 2005. In approximately 25% of the accessible spaces lighting levels were inadequate.

AECOM did not observe any issues associated with housekeeping, building condition, asbestos, lead or mold during this evaluation. However, surface lead concentrations exceeded the ARNG guideline level at three locations. Airborne lead was not detected in any of the ambient air samples collected.

The HVAC system in the building consists of a boiler room that feeds radiant heaters throughout the building. There is no active HVAC system that provides fresh air from the building exterior. An evaluation of local exhaust ventilation systems in the garage indicated systems used to control engine emissions and welding fumes generally did not meet established guidelines.

1.0 Facility Description and Operations

The Manchester Readiness Center is an administrative facility within a masonry structure constructed in 1942. The building consists of three main sections. The north section of the building is three stories and contains office and administrative areas, and is finished with painted and ceramic tiled concrete walls, acoustical ceilings, and floor tile. The drill hall comprises the south portion of the building, and FMS-4 is located in the basement section of the drill hall. The drill hall area is finished with painted cinder block walls, an exposed wood roof deck, and concrete floors. The FMS Shop area consists of concrete floors, walls, and ceiling.

The primary activity at the Manchester Readiness Center is routine administrative duties and occasional use by units for support and training of soldiers. The Manchester Readiness Center is currently staffed by 20-30 personnel. Vehicle maintenance activities are undertaken at FMS-4 in the basement of the facility (see Section 6.0).

2.0 Sampling in Readiness Centers

2.1.1 Wipe Sampling

Wipe sampling for lead was conducted in the drill hall and in administrative areas following the OSHA wipe sampling method and using Ghost wipes. Samples were collected in areas that are not frequently cleaned and showed signs of dust whenever possible.

Site personnel indicated that the locker room located at the south end of the basement is a converted indoor firing range. There is no active ventilation system associated with the space. There is no remaining bullet trap. The space appears to have been completely renovated at some time prior to this assessment. The following table presents the results of the lead wipe sampling conducted at the facility.

Table 2-1: Lead Wipe Sample Results

Sample Number	Sample Location	Lead Concentration
MRC-03	Drill Hall Cabinet	<110 ug/ft^2
MRC-04	Drill Hall Floor	<110 ug/ft^2
MRC-05	Drill Hall on Cabinet	340 ug/ft^2
MRC-06	Light Fixture in Converted Indoor Firing Range	160 ug/ft^2
MRC-07	On Stored materials in Converted Indoor Firing Range	<110 ug/ft^2
MRC-08	On Floor in Converted Indoor Firing Range	200 ug/ft^2
MRC-09	Outside Converted Indoor Firing Range	220 ug/ft^2
MRC-10	1st Floor Room under Stairs	<110 ug/ft^2
MRC-11	1st Floor Corridor	<110 ug/ft^2
MRC-12	Kitchen	<110 ug/ft^2
MRC-13	1st Floor Foyer	<110 ug/ft^2
MRC-14	2nd Floor Copy Room Sill	<110 ug/ft^2
MRC-15	2nd Floor Corridor	<110 ug/ft^2
MRC-16	3rd Floor Room 319	<110 ug/ft^2
MRC-17	3rd Floor Corridor	<110 ug/ft^2

Three of the wipe samples collected identified quantifiable lead at or above the ARNG action level of 200ug/ft^2. Laboratory analytical reports are presented in Appendix C.

2.1.2 Air Sampling

Air sampling for lead was conducted in two normally occupied areas of the facility.

Table 2-2: Lead Air Sample Results

Sample Number	Sample Location	Lead Concentration
MRC-01	At FMS Entrance (High Foot Traffic Area)	<17 ug/m^3
MRC-02	Drill Hall	<17 ug/m^3

None of the air samples collected indicated the presence of airborne lead above detectable limits. For reference, the OSHA Action Level for lead is 30 ug/m^3 and the Permissible Exposure Limit (PEL) is 50 ug/m^3. Laboratory analytical results are presented in Appendix C.

3.0 Physical Condition of Facility and Personnel Concerns

3.1.1 Lead Based Paint

Interior surfaces of walls are coated with paint or ceramic glazed tile. The paint on the walls appeared to be in good condition. Concrete flooring was generally tiled or unpainted. AECOM did not observe damaged or peeling paint during this evaluation.

3.1.2 Suspect Asbestos Containing Materials

AECOM did not observe damaged, friable suspect asbestos containing materials (ACM) in readily accessible areas of the Manchester Readiness Center during this survey. Thermal system piping is typically covered in ACM or fiberglass insulation with associated fittings in generally good condition.

Other typical miscellaneous building materials observed but not sampled include floor tiles and associated mastic, cove base and associated mastic, ceiling tiles, and window glazing compound and caulks.

3.1.3 Water Damage/Mold

AECOM did not observe evidence of water intrusion or suspect mold growth in readily accessible areas of the building during the survey.

3.1.4 Housekeeping

The Manchester Readiness Center was observed to be generally clean and orderly during this assessment. AECOM did not observe dust accumulation on most readily accessible horizontal surfaces within areas commonly used in the facility.

3.1.5 Indoor Air Quality/ Ergonomics

The Administration Section contains general office space. The Administration Section is generally utilized by all of the Manchester Readiness Center staff members. No Indoor Air Quality concerns were noted by the Manchester Readiness Center personnel.

Instantaneous real-time reading for carbon monoxide, carbon dioxide, temperature, and relative humidity are presented in the following table. The readings appeared to be within generally accepted guidelines.

Table 3-1: Indoor Air Quality Monitoring Results

Location	Carbon Monoxide (ppm)	Carbon Dioxide (ppm)	Temp (^{o}F)	Relative Humidity (%)
Exterior - Baseline	0.3	475	50.5	79.5
1st Floor corner office	0.1	462	71.3	36.3
2nd Floor Locker Room	0.4	486	70.4	35.7
313	0.1	601	71.0	39.2
Table 1-3 Guidelines: Carbon Monoxide: Office/Warehouse Space – 9 ppm based on EPA National Ambient Air Quality Standard. OSHA Permissible Exposure Limit (PEL) = 50 ppm. ACGIH Threshold Limit value (TLV) = 25, ppm. Carbon Dioxide: Office Space -Approximately 700 ppm above background (Derived from ASHRAE Standard 62.1-2007). Not Applicable to warehouse and vehicle maintenance bays. Relative Humidity: Mechanically air-conditioned space – Maximum 65% (Derived from ASHRAE Standard 62.1-2007 – 5.10.1). Temperature: Winter (clothing insulation = 1.0 clo) Relative humidity 30-60% - Temp - 68 – 75°F Summer Temp - 73 – 79°F. (Derived from ASHRAE Standard 55-2004)				

Manchester Readiness Center personnel did not report any ergonomics issues or concerns. Office furniture and accessories designed to promote ergonomically correct behaviors were observed.

4.0 Ventilation and HVAC System

4.1.1 Ventilation Systems and Potential for Contamination of Clean Air Sources

Potential for contamination of clean air sources was observed in the facility. The presence of the maintenance shop in the basement of the drill hall could potentially contaminate clean air sources in the remaining portions of the building. There is no mechanical air movement in the building outside of the maintenance shop. As long as the local exhaust ventilation system in the maintenance shop is used properly and maintained in proper working order, the potential for contamination should be kept to a minimum. The ducts for the LEV exhaust system in the garage area is above the roof of the drill hall. The most like point of entry for exhaust fumes would be windows that are well below the termination point of the exhaust ducts. AECOM evaluated the maintenance shop ventilation systems, and this information is included in Section 6 of this report.

The Manchester Readiness Center is heated by a radiant heating system fed by boilers located in a boiler room on the first floor of the administrative section of the building. Supply and return air is not provided by mechanical means. Outdoor air is provided in the building through open windows and doors.

4.1.2 HVAC Maintenance

There was no maintenance schedule associated with an active ventilation system, as the building does not have a system that provides fresh air by mechanical means.

5.0 Lighting

Lighting levels in all areas were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels associated with FMS-4 are evaluated in Section 6. Lighting levels were variable throughout the facility. Lighting levels in some areas are within acceptable levels, and in other areas they are inadequate. Lighting levels are indicated on the facility layout provided in Appendix A. When asked about concerns within the facility, most personnel indicated they felt lighting was generally inadequate.

Table 5-1: Light Survey – Readiness Center

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Locker Room (Old firing range)	70.1	Y	7
Basement South	29.6	Y	5
Basement North	22.4	Y	5
Phone Room	7.3	N	30
Transformer Room	21.4	N	30
116 Corridor	20.3	Y	5
1st Floor Corridor	54.6	Y	5
Kitchen	71.0	Y	50
Cafeteria	37.6	Y	10
Weight Room	21.2	N	30
Maint. Supply	10.5	N	30
1st Floor Corridor	23.1	Y	5
Janitor	20.2	N	30
PAD Storage	34.4	Y	30
Locker area	10.3-27.0	Y	7
Rest Room	39.7	Y	5
PAD Office	65.4	Y	50
125 Office	51.2	Y	50
Maintenance	60.2	Y	50
Storage	21.2	Y	10
107 lockers	20.9	Y	7
CDR Office	33.8	N	50
108 office	33	N	50
Band Storage	22.0	N	30
Band Room	41.2	Y	30
Band Lounge	44.5	Y	10
Sound Room (Storage)	20.1	N	30
Office	20.5	Y	50
PAD Office	84.2	Y	50
Boiler Room Corridor	64.4	Y	5
Boiler Room	45.8	Y	30
Coal Storage	13.6	Y	10
Drill Hall	51.4	Y	10
NCO Club	51.7	Y	10
2nd Floor Corridor	15.8-43.5	Y	5
222 Locker	16.7	Y	7

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
223 Locker	16.4	Y	7
223 Storage	40.6	Y	30
225 Office	17.1	N	50
Food Service Office	17.2	N	50
225 Office	50.1	Y	50
Office	6.0	N	50
Rest Room	28.1	Y	5
226A Office	55.9	Y	50
226B Office	67.2	Y	50
229A Foyer	20.6	Y	10
229B Office	84.0	Y	50
230 Office	68.4	Y	50
201C Orderly Room	25.2	N	50
Copy Room	8.2	N	10
205 Men's' room	25.3	Y	5
219 Women's Toilet/Shower	10.8-35.7	Y	5
Men's Toilet/Shower	15.2-28.5	Y	5
207 Classroom	55.1	Y	30
Storage	62.0	Y	30
Locker Room	52.1	Y	7
Janitor 212	10.5	N	30
3rd Floor Latrine	42.9	Y	5
301 Office	50.1	Y	50
302 Office	52.5	Y	50
303 Janitor	62.1	Y	30
304 Office	24.3	N	50
305 Office	63.2	Y	50
Shower/Dressing Room	18.6-54.8	Y	5
307 Office	103.1	Y	50
308 Office	26.9	N	50
309 Office	21.2	N	50
310 Office	50.6	Y	50
311 Office	50.4	Y	50
312 Classroom	30.2	Y	30
313 Office	54.6	Y	50
314 Office	44.9	N	50
315 Office	59.2	Y	50
316 Office	37.2	N	50
317 Office	51.6	Y	50
318/319 Conference/Classroom	50.3	Y	30
Coffee Room	35.2	Y	10
3rd Floor Corridor	20.8-52.0	Y	5
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

6.0 Evaluation of Attached Garage

There is a garage (FMS-4) located in the basement of the Manchester armory. FMS-4 is a vehicle maintenance facility located in the basement area of the drill hall. The primary function of FMS-4 is routine maintenance and repair of vehicles used by the Army National Guard during drill weekends.

Hazards associated with the maintenance shop are typical of any vehicle maintenance facility, including physical and chemical hazards. Engineering controls present within the maintenance shop include local exhaust ventilation systems for controlling vehicle emissions, welding emissions, and battery room ventilation exhaust. Administrative controls include safety and industrial hygiene programs and standard operating procedures.

Personal Protective Equipment includes, but is not limited to respirators, hearing and eye protection, gloves, and safety shoes. Readiness Center personnel do not normally perform tasks within the maintenance shop.

6.1 Garage Ventilation Local Exhaust Ventilation Systems

FMS-04 is equipped with local exhaust ventilation systems that capture and control engine emissions. The local exhaust ventilation system for emissions in the Vehicle Maintenance Section consists of exhaust fans located on the west wall of the building that vent emissions to the roof level above the drill hall. The exhaust fans connect via rigid ductwork to flexible duct branches distributed throughout the service bays. The flexible duct branches (approximately four to eight inches in diameter) are connected to tapered circular plain-opening capture hoods that can be placed over engine exhaust pipes. The capture hoods are supported by a ceiling-mounted pulley system that provides for operator flexibility in maneuvering and placement.

A direct visual observation of the apparent effectiveness of the local ventilation systems was not accomplished. According to FMS-04 personnel, the local ventilation system for capturing and removing engine emissions is generally effective. AECOM activated the system and measured the face velocities of each accessible duct with a VelociCalc Plus air velocity meter.

In addition, LEV systems are used to control welding fumes at two welding stations and battery charging emissions in the battery storage room. The welding station between bay 1 and bay 2 has an overhead canopy hood that extends beyond the edges of the welding bench top, and the second welding station (welding/grinding) has a circular, vertical duct drop that terminates a few feet above the surface of the bench top. The battery charging room is exhausted by a general room exhaust system.

The following table presents measured flow rates and typical required exhaust flow rates for vehicles routinely serviced by field maintenance shops, and for the welding stations:

Table 6-1: Local Ventilation System Measured Air Flow Rates

Local Ventilation System Measured Air Flow Rates		
Location	**Air Flow – cubic feet per minute (cfm)**	**Reference Value***
Exhaust #1	1004 cfm	1370 cfm
Exhaust #2	183 cfm	1370 cfm
Exhaust #3	971 cfm	1370 cfm
Exhaust #4	398 cfm	1370 cfm
Exhaust #5	268 cfm	1370 cfm
Exhaust #6	271 cfm	1370 cfm
Exhaust #7	170 cfm	1370 cfm

Local Ventilation System Measured Air Flow Rates		
Exhaust #8	151 cfm	1370 cfm
Welding Station Exhaust – Between Bays 1 and 2	1977 fpm at hood 40 fpm at benchtop	NA
Welding Station Exhaust – Adjacent to tool room	590 cfm	250 cfm up to 6” 560 cfm 6-9” 1000 cfm 9-12”

The Reference Value (1370 cubic feet per minute, or cfm) for the vehicle emission exhaust system was determined using theoretical values in the ACGIH calculation (below), based on an engine displacement of 6.2L, exhaust temperature of 267^{o}F, and 3,800 engine rpm. These values were based on using the highest flow rate required for tactical vehicles routinely serviced by ARNG maintenance facilities.

- Reference calculation – $Q_e=(1.2)(D_{eng}xN)[(460F+T_{eng})/530F]$

  Where Q_e=Exhaust Flow; T_{eng}=Engine Tailpipe Temperature (^{o}F); D_{eng}=Engine displacement (ft^3); and N=Engine rpm; 1.2 represents a 20% safety factor.

The type of exhaust system in place for the welding station between bays 1 and 2 is not ideal since the canopy hood design will pull the welding fume plume through the worker’s breathing zone. Exhaust systems used to control welding fume exposure should be designed to pull fumes away from the worker’s breathing zone. Examples include slot hoods (with slots located along the back of the bench top, or movable capture hoods that can be placed behind and above the work piece. If the level of the work piece was raised (closer to the hood) so that fumes did not pass through the worker breathing zone, a canopy hood design may be effective. A reference value is not listed for the canopy hood in the table above since the system design (in its current configuration) is not appropriate for welding fume control. However, if the working height could be raised to a level where fumes would not pass through the worker breathing zone, a capture velocity of 100-170 feet per minute (at the work piece) would be an appropriate standard.

The reference value used for the welding station adjacent to the tool room is based on Figure VS-90-02 from the ACGIH Industrial Ventilation Manual. The measured value would be acceptable for welding activities that are conducted within 9 inches of the moveable duct opening.

It was reported that the battery room is used for limited charging of batteries as well as storage of batteries and POL. The battery room is equipped with a local ventilation system. AECOM activated and measured the effectiveness of the system.

Table 6-2: Local Ventilation System Measured Air Flow Rates – Battery Room

Battery Room Ventilation System Measured Air Flow Rates		
Location	**Air Flow – cubic feet per minute (cfm)**	**Reference Value***
Battery Room	1915 cfm	1350 cfm

Reference value determined using a required exhaust rate of 1.5 cfm per square foot of floor space as required by UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003 and 29 CFR 1910.106.

There is an emergency eyewash/shower located in the battery room. Documentation of weekly testing was not present.

6.2 Garage Lighting Evaluation

Lighting levels at various task locations and general area lighting were measured utilizing a Cal-Light 400 light meter that displays lighting levels in foot-candles. Lighting levels were inadequate in most areas.

Table 6-3: Light Survey – FMS 4

Location	Results – (Foot candles)	Met Standard (Y/N)	Standard*
Lockers	40.8	Y	7
Office	51.3	Y	50
Storage	inaccessible	N	30
Bay 1	42.1	N	75
Bay 2	29.7	N	75
Bay 3	37.4	N	75
Tool Room	56.8	Y	30
Parts Room	52.5	Y	30
Break Room	26.9	Y	10
Battery Room	3.2	N	30
Office Lighting (ANSI/IESNA RP-1-04) and Industrial Lighting Facilities (ANSI RP-7-01)			

7.0 Conclusions and Limitations

AECOM has conducted this survey in accordance with applicable OSHA methods and standard industrial hygiene practice. The following conclusions were based on the observations and assessments of activities that occurred during the on-site evaluation:

Housekeeping is performed regularly at the Manchester Readiness Center, and AECOM did not observe any damaged or peeling paint during the evaluation.

AECOM did not observed damaged suspect friable asbestos containing materials during the evaluation.

No evidence of water intrusion or suspected mold growth was observed during this evaluation.

Lighting levels were below ANSI/IESNA guideline levels in approximately 25% of accessible spaces in the facility.

The ventilation system associated with the maintenance shop does not meet minimum flow rate requirements.

Lead wipes collected in the drill hall on a cabinet, on the floor in the converted indoor firing range, and on the floor outside the converted indoor firing range indicated the presence of quantifiable lead in dust at or above the ARNG action level of 200 ug/ft^2.

Air samples collected during this evaluation did not indicate the presence of airborne lead in areas sampled.

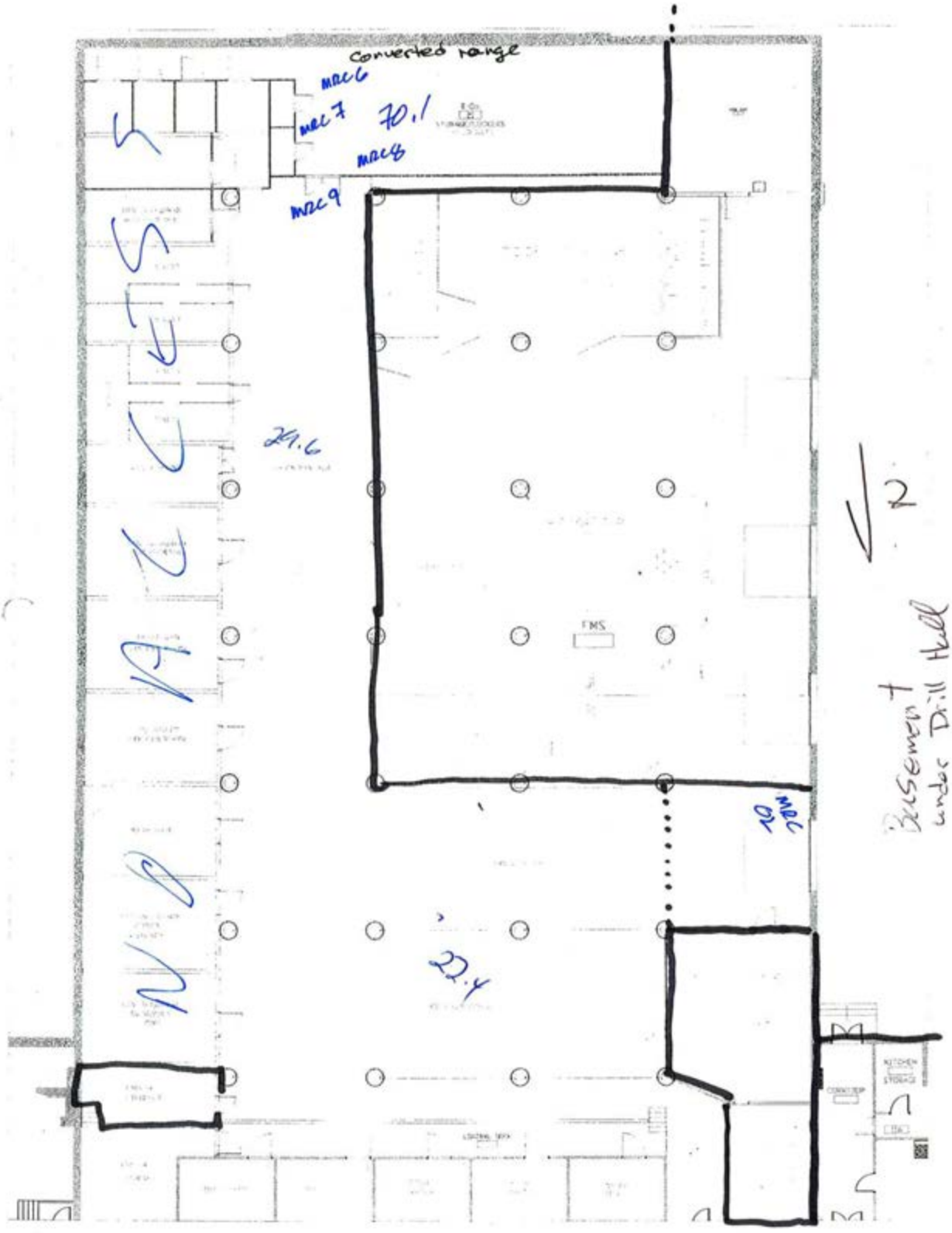
AECOM provided these services consistent with the level and skill ordinarily exercised by members of the profession currently providing similar services under similar circumstances at the time the services were provided. This statement is in lieu of other statements either expressed or implied. This report is intended for the sole use of National Guard Bureau – Army National Guard. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document, the findings, conclusions, or recommendations is at the risk of said user.

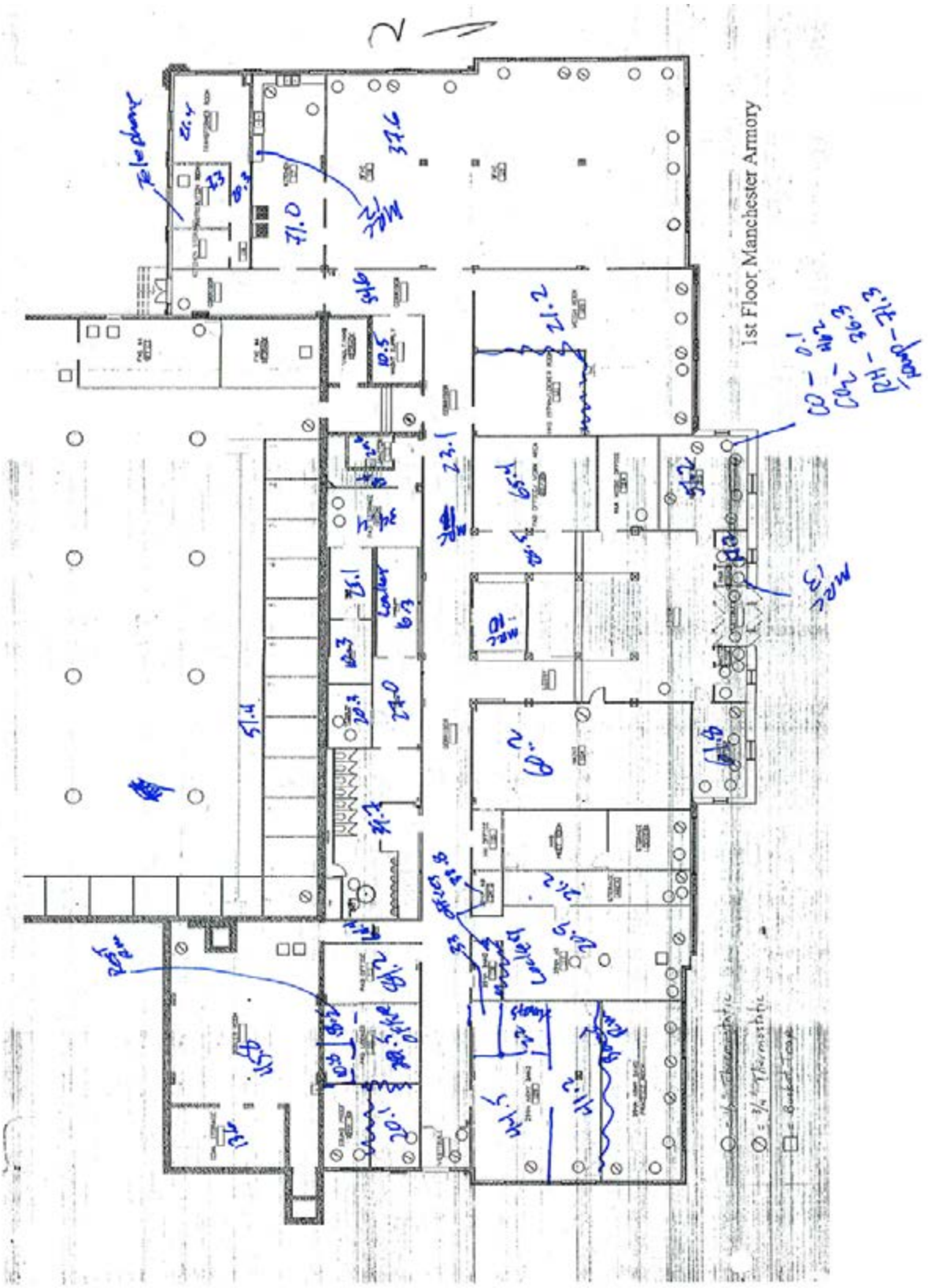
As with all such surveys, the results of the sampling represent conditions found on the date of the survey and may not represent conditions found at other times. Additionally, this survey was limited with respect to the specific parameters indicated above and should not be construed to be a comprehensive evaluation or a definitive representation of conditions within the facility. The information presented in this report is intended to be used as a guide to evaluate the need for further investigation or the need for modifications to the processes or procedures surveyed.

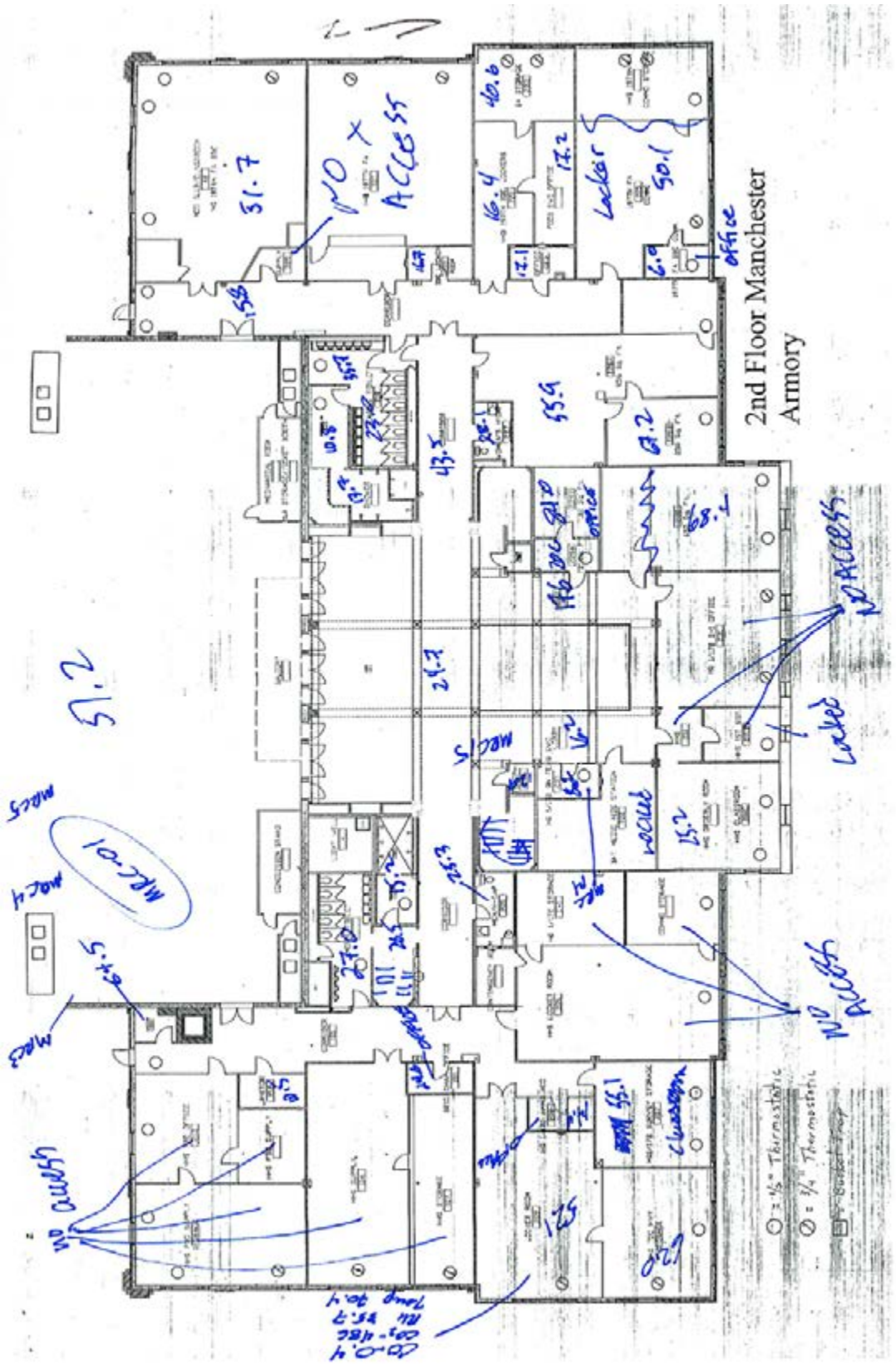
The Client recognizes and agrees that all testing and remediation methods have reliability limitations, no method nor number of sampling locations can guarantee that a condition will be discovered within the performance of the services as authorized by the Client. Additionally, the passage of time may result in a change in the environmental characteristics at this site. This report does not warrant against future operations or conditions that could affect the recommendations made. The results, findings, conclusions, and recommendations expressed in this report are based only on conditions that were observed during AECOM's inspection of the site.

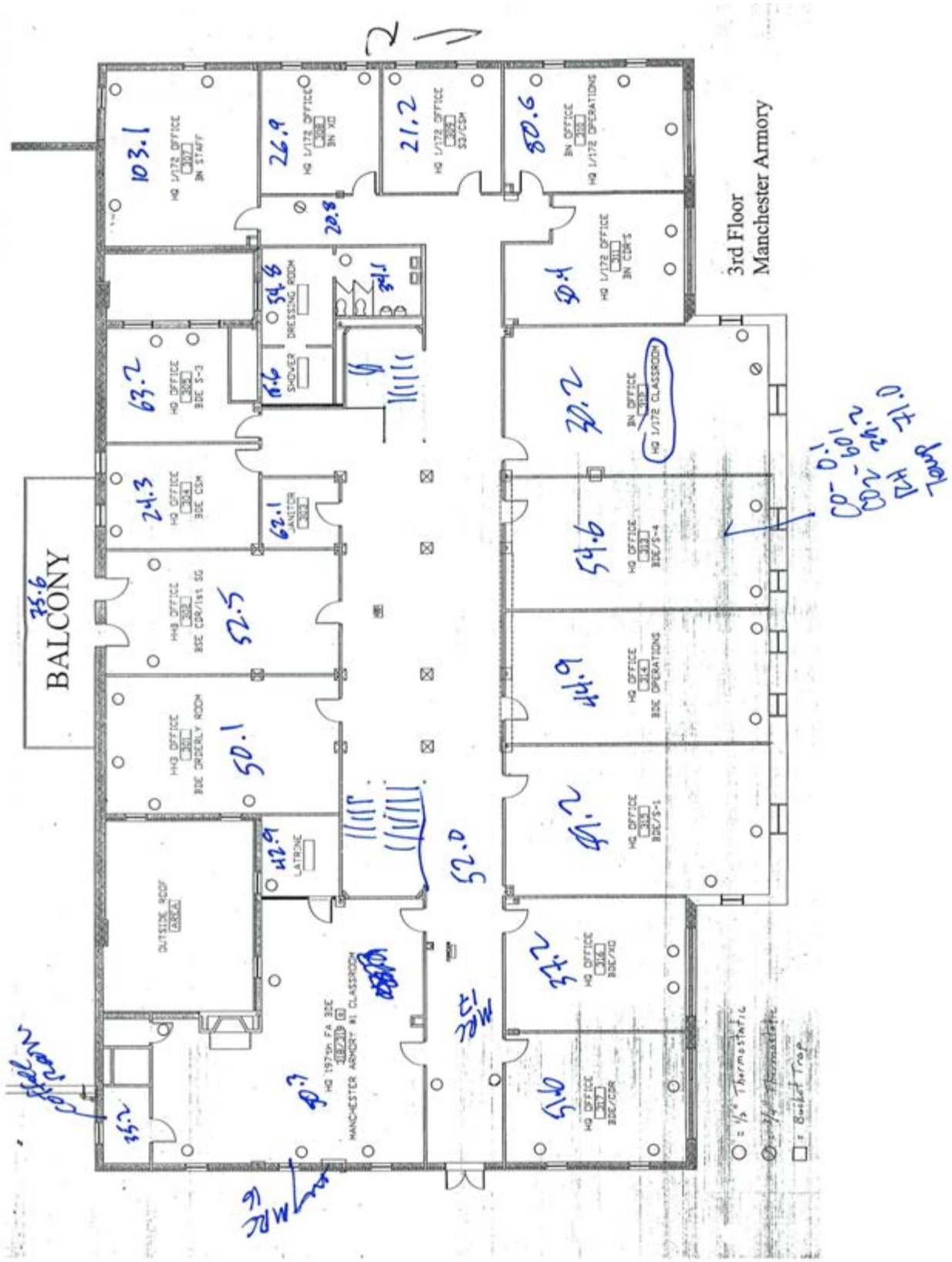
Appendix A

Manchester Readiness Center Facility Layout


converted range
MRC6
MRC7
MRC8
MRC9
70.1
29.6
FMS
MRC 01
22.4
Basement under Drill Hall


1st Floor Manchester Armory




3rd Floor
Manchester Armory
BALCONY
HQ 1/172 OFFICE
BN STAFF
HQ 1/172 OFFICE
BN XO
HQ 1/172 OFFICE
S3/CSM
BN OFFICE
HQ 1/172 OPERATIONS
HQ 1/172 OFFICE
BN CDR'S
DRESSING ROOM
SHOWER
HQ OFFICE
BDE S-3
HQ OFFICE
BDE CSM
JANITOR
HHB OFFICE
BDE CDR/1st SG
HHB OFFICE
BDE ORDERLY ROOM
LATRINE
OUTSIDE ROOF ACCESS
HQ 197th FA BDE
MANCHESTER ARMORY #1 CLASSROOM
BN OFFICE
HQ 1/172 CLASSROOM
HQ OFFICE
BDE/S-4
HQ OFFICE
BDE OPERATIONS
HQ OFFICE
BDE/S-1
HQ OFFICE
BDE/XO
HQ OFFICE
BDE/CDR
= 1/2" Thermostatic
= Bucket Trap

Appendix B

Manchester Readiness Center Photographs

Photograph 1

Building Exterior - Front

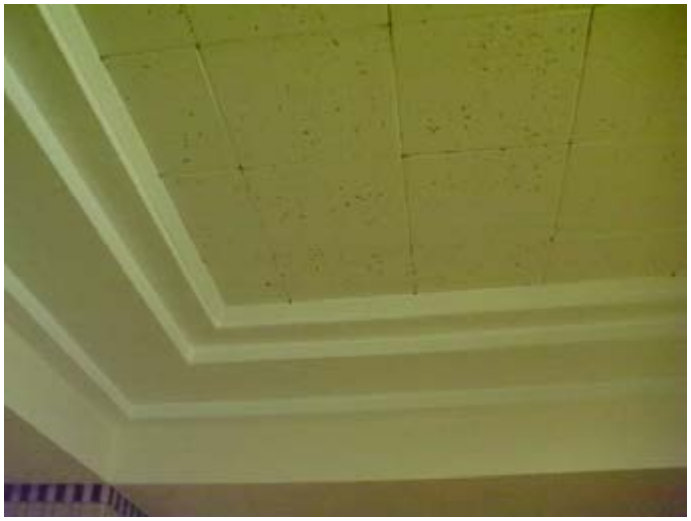
Photograph 2

Building Exterior – Rear – Note LEV exhaust ducts venting at roof level

Photograph 3

Main Stairs from Lobby

Photograph 4



Typical Ceiling Construction

Photograph 5

Typical Radiant Heating System

Photograph 6

Drill Hall

Photograph 7

Drill/Assembly Hall from Balcony

Photograph 8

Typical Floor Tile and wall construction

Photograph 9

Typical ACM Pipe Insulation

Photograph 10

Boiler Room

Photograph 11
 Fiberglass Insulation in Boiler Room

Photograph 12
 Locker Room (former indoor firing range)

Photograph 13

Radiator in former firing range

Photograph 14

Locker Room (former indoor firing range)

Photograph 15

Locker Room (former indoor firing range-converted storage rooms)

Photograph 16

Cafeteria

Photograph 17

Welding Station between garage bays 1 and 2

Photograph 18

Welding/Grinding area at south end of garage

Photograph 19

Typical Floor Tile

Appendix C

Analytical Results

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA Accredited Laboratory – Environmental Lead – 100470

NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	Manchester RC	**Chain Of Custody:**	507005
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Manchester, NH	**Date Submitted:**	4/30/2010
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/7/2010
Attention:	[redacted]			**Report Date:**	5/18/2010

Summary of Atomic Absorption Analysis for Lead

Page 1 of 2

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments
1043301	MRC-03	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043302	MRC-04	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043303	MRC-05	Flame	Wipe	****	0.111	110 ug/ft²	38	340 ug/ft²	
1043304	MRC-06	Flame	Wipe	****	0.111	110 ug/ft²	17	160 ug/ft²	
1043305	MRC-07	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043306	MRC-08	Flame	Wipe	****	0.111	110 ug/ft²	22	200 ug/ft²	
1043307	MRC-09	Flame	Wipe	****	0.111	110 ug/ft²	24	220 ug/ft²	
1043308	MRC-10	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043309	MRC-11	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043310	MRC-12	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043311	MRC-13	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043312	MRC-14	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043313	MRC-15	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043314	MRC-16	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	
1043315	MRC-17	Flame	Wipe	****	0.111	110 ug/ft²	<12	<110 ug/ft²	

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A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead See aihaap.org for details
100470
NY ELAP
10920

Client:	National Guard Bureau	**Job Name:**	Manchester RC	**Chain Of Custody:**	507005
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Manchester, NH	**Date Submitted:**	4/30/2010
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/7/2010 **Report Date:** 5/18/2010

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results
Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accreditation applies only to paint chip, wipe, and soil samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To Th Number For Inquire **507005**
1/2

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: MANCHESTER RC
2. Job Location: MANCHESTER, NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted] @ [redacted]
5. Submitted By[redacted]

Reporting Information (Results will be provided [redacted]

AFTER HOURS (must be pre-scheduled): ☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:

NORMAL BUSINESS HOURS: ☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day + Date Due: ☐ Results Required By Noon (Every Attempt Will Be Made to Accommodate)

☒ Include ☒ Email ☐ Fax ☐ Verbal [redacted] TO: th Report ...@...com; ...us.army.mil; ...us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____(QTY)
☐ Fiberglass ____(QTY)
TEM Air – Please Indicate Filter Type:
☐ AHERA ____(QTY)
☐ NIOSH 7402 ____(QTY)
☐ Other (specify ____) ____(QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ____(QTY)
☐ EPA Point Count ____(QTY)
☐ NY State Friable 198.1 ____(QTY)
☐ Grav. Reduction ELAP 198.6 ____(QTY)
☐ Other (specify ____) ____(QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ____(QTY)
☐ NY State PLM/TEM ____(QTY)
☐ Residual Ash ____(QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ____(QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____(QTY)
☐ Quan. (s/area) Dust D6480-99 ____(QTY)
TEM Water
☐ Qual. (pres/abs) ____(QTY)
☐ ELAP 198.2/EPA 100.2 ____(QTY)
☐ EPA 100.1 ____(QTY)

☒ All samples received in good condition unless otherwise noted.
TEM Water samples ____°C)

Metals Analysis
☐ Pb Paint Chip ____(QTY)
☒ Pb Dust Wipe (wipe type ghost), 11 (QTY)
☐ Pb Air ____(QTY)
☐ Pb Soil/Solid ____(QTY)
☐ Pb TCLP ____(QTY)
☐ Drinking Water ☐ Pb ____(QTY) ☐ Cu ____(QTY) ☐ As ____(QTY)
☐ Waste Water ☐ Pb ____(QTY) ☐ Cu ____(QTY) ☐ As ____(QTY)
☐ Pb Furnace (Media ____ | ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ Spore-Trap ____(QTY) ☐ Surface Vacuum Dust ____(QTY)
☐ Surface Swab ____(QTY) ☐ Culturable ID Genus (Media ____) ____(QTY)
☐ Surface Tape ____(QTY) ☐ Culturable ID Species (Media ____) ____(QTY)
☐ Other (Specify ____) ____(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND WASTE	SPORE TRAP	TAPE	SWAB
MRC.03	Drill Hall cabinet	4/29/10		16 in²				X								X
04	↓ ↓ Floor							X								X
05	st cabinet							X								X
~~[illegible]~~	~~[illegible]~~							X								X
06	Old Range Fixture							X								X
07	Stored							X								X
08	↓ Floor							X								X
09	Outside old Range							X								X
10	1st Floor [illegible]							X								X
11	Corridor							X								X
13	Foyer							X								X
14	2nd Floor Loft sill	↓						X								

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 4/30/10 @ 1620 Via: Fed Ex By (Print): [redacted]
2. Date/Time Analyzed: ___/___/___ @ ___ By (Print):
3. Results Reported To: ___ Via: ___ Date[redacted]
4. Comments:

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Focused on Results www.amalab.com
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(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 507005 2/2

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: MANCHESTER RC
2. Job Location: MANCHESTER NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso[redacted] 273
5. Submitted by[redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:	☐ Immediate ☐ Next Day ☐ 2 Day ☐ 3 Day ☒ 5 Day 4 Date Due ☐ Results Required By Noon (Every Attempt Will Be Made to Accommodate)	☒ Incl[redacted] ☒ Ema[redacted] ☐ Fax ☐ Verb … with Report …s@aecom.com …@us.army.mil …@us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ______(QTY)
☐ Fiberglass ______(QTY)
TEM Air – Please Indicate Filter Type:
☐ AHERA ______(QTY)
☐ NIOSH 7402 ______(QTY)
☐ Other (specify______) ______(QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ______(QTY)
☐ EPA Point Count ______(QTY)
☐ NY State Friable 198.1 ______(QTY)
☐ Grav. Reduction ELAP 198.6 ______(QTY)
☐ Other (specify______) ______(QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ______(QTY)
☐ NY State PLM/TEM ______(QTY)
☐ Residual Ash ______(QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ______(QTY)
☐ Quan. (s/area) Vacuum D5755-95 ______(QTY)
☐ Quan. (s/area) Dust D6480-99 ______(QTY)
TEM Water
☐ Qual. (pres/abs) ______(QTY)
☐ ELAP 198.2/EPA 100.2 ______(QTY)
☐ EPA 100.1 ______(QTY)
☐ All samples received in good condition unless otherwise noted. (TEM Water samples ______°C)

Metals Analysis
☐ Pb Paint Chip ______(QTY)
☒ Pb Dust Wipe (wipe type ghost) 4 (QTY)
☐ Pb Air ______(QTY)
☐ Pb Soil/Solid ______(QTY)
☐ Pb TCLP ______(QTY)
☐ Drinking Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Waste Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Pb Furnace (Media ______) ______(QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ______
Collection Media ______
☐ Spore-Trap ______(QTY) ☐ Surface Vacuum Dust ______(QTY)
☐ Surface Swab ______(QTY) ☐ Culturable ID Genus (Media ______) ______(QTY)
☐ Surface Tape ______(QTY) ☐ Culturable ID Species (Media ______) ______(QTY)
☐ Other (Specify ______) ______(QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
MRC 15	2nd FL Corridor	4/27/10		1ft²				X								X	Date/Time: Contact: By:
16	3rd FL Rm 319	↓		↓				X								X	
17	3rd FL Corridor	↓		↓				X								X	
MRC 12	KITCHEN	↓		↓				X								X	
																	Date/Time: Contact: By:
																	Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 4/30/10 @ 10:20 Via: FedEx By (Print): ______ Sign: ______
2. Date/Time Analyzed: __/__/__ @ ______ By (Print): ______ Sign: ______
3. Results Reported To: ______ Via: ______ Date: __/__/__ Time: ______ Initials: ______
4. Comments: ______

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CERTIFICATE OF ANALYSIS

ACCREDITED LABORATORY AIHA Environmental Lead — See aihaap.org for details
100470
NY ELAP 10920

Client:	National Guard Bureau	**Job Name:**	Manchester RC	**Chain Of Custody:**	507002
Address:	301-IH Old Bay Lane, Attn: NGB-AVN-SI, State Military Reservation	**Job Location:**	Manchester, NH	**Date Submitted:**	4/30/2010
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/6/2010 **Report Date:** 5/6/2010

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result			Comments
1043339	MRC-01	Flame	Air	180	N/A	17	ug/m³	<	17	ug/m³	
1043340	MRC-02	Flame	Air	180	N/A	17	ug/m³	<	17	ug/m³	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All samples were received in good condition unless otherwise noted.
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.
Air and Wipe results are not corrected for any blank results

See QC Summary for analytical results of quality control samples associated with these sampes.
NY ELAP accreditation applies only to paint chip, wipe, and soil samples.

Analyst: [redacted] Non-Responsive

Technical Manager: [redacted] Non-Responsive

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CHAIN OF CUSTODY

(Please Refer To Thi Number For Inquires **507002**

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-AVN-SI, State Military Reservation
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: MANCHESTER RC
2. Job Location: MANCHESTER, NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso [redacted] 3
5. Submitted b [redacted] nature [redacted]

Reporting Information (Results will be provided [redacted]):

AFTER HOURS (must be pre-scheduled): ☐ Immediate Date Due: ☐ 24 Hours Time Due: Comments:

NORMAL BUSINESS HOURS: ☐ Immediate ☐ 2 Day ☐ 3 Day ☒ Day + Date Due: 5/7/10 ☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)

[redacted] ☐ Fax ☐ Verb [redacted] ORT TO: ...will Report ...@accom.com 1@us.army.mil e@us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 ____ (QTY)
☐ Fiberglass ____ (QTY)
TEM Air – Please Indicate Filter Type:
☐ AHERA ____ (QTY)
☐ NIOSH 7402 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate ____ (QTY)
☐ EPA Point Count ____ (QTY)
☐ NY State Friable 198.1 ____ (QTY)
☐ Grav. Reduction ELAP 198.6 ____ (QTY)
☐ Other (specify ____) ____ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ____ (QTY)
☐ NY State PLM/TEM ____ (QTY)
☐ Residual Ash ____ (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ____ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ____ (QTY)
☐ Quan. (s/area) Dust D6480-99 ____ (QTY)
TEM Water
☐ Qual. (pres/abs) ____ (QTY)
☐ ELAP 198.2/EPA 100.2 ____ (QTY)
☐ EPA 100.1 ____ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples ____ °C)

Metals Analysis
☐ Pb Paint Chip ____ (QTY)
☐ Pb Dust Wipe (wipe type ____) ____ (QTY)
☒ Pb Air 2 (QTY)
☐ Pb Soil/Solid ____ (QTY)
☐ Pb TCLP ____ (QTY)
☐ Drinking Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Waste Water ☐ Pb ____ (QTY) ☐ Cu ____ (QTY) ☐ As ____ (QTY)
☐ Pb Furnace (Media ____) ____ (QTY)

Fungal Analysis
Collection Apparatus for Spore Trap/Air Samples: ____
Collection Media ____
☐ Spore-Trap ____ (QTY) ☐ Surface Vacuum Dust ____ (QTY)
☐ Surface Swab ____ (QTY) ☐ Culturable ID Genus (Media ____) ____ (QTY)
☐ Surface Tape ____ (QTY) ☐ Culturable ID Species (Media ____) ____ (QTY)
☐ Other (Specify ____) ____ (QTY)

SAMPLE INFORMATION

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
MRC-01	Drill Hall	4/27/10	180					X		X						
MRC-02	FMS Entrance	4/28/10	180					X		X						

CLIENT CONTACT (LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 4/30/10 @ 1020 Via: FedEx By (Print): [redacted] Sign [redacted]
2. Date/Time Analyzed: __/__/__ @ ____ By (Print): ____ Sign: ____
3. Results Reported To: ____ Via: ____ Date: __/__/__ Time: ____ Initials: ____
4. Comments: ____

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Appendix D

References

References

1. Title 29, Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Administration, current Ed. http://www.osha.gov/comp-links.html

2. Department of Defense Instruction (DODI) 6055.1, Department of Defense Occupational Safety and Health (OSH) Program, August 19, 1998. http://www.dtic.mil/whs/directives/corres/pdf/i60551_081998/i60551p.pdf

3. Army Regulation (AR) 11-34, The Army Respiratory Protection Program, 15 February 1990. http://www.usapa.army.mil/pdffiles/r11_34.pdf

4. AR 40-5, Medical Service, Preventive Medicine, 25 May 2007. http://www.usapa.army.mil/pdffiles/r40_5.pdf

5. AR 385-10, The Army Safety Program, 23 August 2007. http://www.usapa.army.mil/pdffiles/r385_10.pdf

6. Department of the Army Pamphlet (DA PAM) 40-501, Medical Services, Hearing Conservation Program, 10 December 1998. http://www.usapa.army.mil/pdffiles/p40_501.pdf

7. AR 40-11, Preventive Medicine, 22 July 2005. http://www.army.mil/usapa/epubs/pdf/p40_11.pdf

8. DA PAM 40-503, Medical Services, Industrial Hygiene Program, 30 October 2000. http://www.usapa.army.mil/pdffiles/p40_503.pdf

9. UFC 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003. http://www.wbdg.org/ccb/DOD/UFC/ufc_3_410_01fa.pdf

10. Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs), American Conference of Governmental Industrial Hygienists (ACGIH), current Ed.

11. Industrial Ventilation – A Manual of Recommended Practice for Design, ACGIH, current Ed.

12. American National Standards Institute (ANSI) Z358.1-2004, Emergency Eyewash and Shower Equipment.

13. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 62.1-2007, Ventilation for Acceptable Indoor Air Quality.

14. RP-1-2004, Office Lighting, ANSI/IESNA.

15. RP-7-2001, Industrial Lighting, ANSI/IESNA, change 20 July 2004.

16. Unified Facilities Criteria, (UFC) 3-410-01FA, Heating, Ventilating, and Air Conditioning, 15 May 2003, including change 3, Aug. 03.

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Manchester Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Manchester Readiness Center** **1059 Canal Street** **Manchester, NH, 03101**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 8, 2013**
Report Date:	**June 27, 2013**

Non-Responsive

Non-Responsive, **CIH**
Manager, Industrial Hygiene Services

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 8, 2013, at the Manchester Readiness Center located at 1059 Canal Street, Manchester, NH 03101. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in four (4) locations. See Section 3.0 for detailed sampling results.

2. Lighting levels did not meet the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in five locations. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels met the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in all occupied areas sampled.

    b. The relative humidity levels met the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in all occupied areas sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 parts per million (ppm).

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings.

Section 2.0 Operation Description & Observations

The Manchester Readiness Center is an administrative and training facility with offices, classrooms, a food services area, and a converted firing range area (currently a bulk storage area). There were approximately 40 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1930s. It is a three-story structure. The exterior is brick with a granite facade. The interior walls are concrete block with drywall and plaster in the offices. The floors are concrete, carpet, terrazzo, and floor tiles.

The heating system is a gas-fired, steam unit. There are window and split A/C units that service the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

This facility has a converted firing range that is now used as a bulk storage area.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Maintenance Office	<5.4	*
2	Dining Area	<5.4	*
3	Blank	<3	*
4	Dining Area Window Sill	*	<110
5	Kitchen Mixer Top	*	<110
6	Drill Hall Floor Center	*	120
7	Drill Cabinet Top	*	<110
8	**Drill Hall Fire Extinguisher Top**	*****	**15,000**
9	**Converted Firing Range (CFR) Floor**	*****	**720**
10	CFR Contents	*	<110
11	**CFR Outside Entrance Floor**	*****	**810**
12	**Band Room Window Sill**	*****	**290**
13	Family Assistance Center Desk Cabinet Top	*	<110
14	Office 122 Cabinet Top	*	<110
15	Recruiter's Office Shelf Top	*	<110
16	Office 206	*	<110
17	Office 230	*	<110
18	2nd Floor Corridor Water Machine Top	*	<110
19	Office 226	*****	<110
20	Office 313	*	<110
21	Office 315	*	<110
22	Conference Room 318	*	<110
24	Blank	*	<12
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following location:

  - Drill Hall – Fire Extinguisher Top
  - CFR – Floor
  - CFR – Outside Entrance Floor
  - Band Room – Window Sill

  Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Maintenance Office	35.1	30-50	Yes
Machine Shop	38.4	30	Yes
Lobby	23.5	10	Yes
Dining Area	54.5	10	Yes
Kitchen Food Prep	76.8	50	Yes
Communications Server Room	50.9	30	Yes
Exercise Room	42.3	30	Yes
Office 122	31.5	30-50	Yes
Office 124	**22.1**	**30-50**	**No**
Office 125	65.7	30-50	Yes
Office 103	39.7	30-50	Yes
1st Floor Main Corridor	12.7	5	Yes
Office 105	**20.7**	**30-50**	**No**
Men's Latrine	22.7	5	Yes
Office 106	30.1	30-50	Yes
Office 110	64.5	30-50	Yes
Boiler Room	**16.3**	**30**	**No**
Office 109	31.4	30-50	Yes
Office 213	36.7	30-50	Yes
Office 206	37.4	30-50	Yes
2nd Floor Corridor	24.5	5	Yes
Office 201	35.3	30-50	Yes
Office 230	44.1	30-50	Yes
Office 211	35.2	30-50	Yes
Office 226	39.3	30-50	Yes
Communications Room 225	77.7	30-50	Yes
Office 224	**13.0**	**30-50**	**No**
Office 222	14.3	30-50	No
Classroom 219	41.6	30-50	Yes
Drill Hall	48.6	30-50	Yes
Conference Room 318	47.0	30	Yes
Office 317	41.4	30-50	Yes
Office 316	40.3	30-50	Yes
Office 315	36.2	30-50	Yes

Office 314	32.0	30-50	Yes
3rdFloor Corridor	16.3	5	Yes
Office 313	35.5	30-50	Yes
Conference 312	43.8	30	Yes
Office 311	35.5	30-50	Yes
Office 310	33.7	30-50	Yes
Office 309	63.6	30-50	Yes
Office 308	62.2	30-50	Yes
Conference 307	53.5	30	Yes
Men's Latrine	23.8	5	Yes
Office 305	31.3	30-50	Yes
Office 304	**14.1**	**30-50**	**No**
Computer Classroom Room	32.3	30-50	Yes
Office 301	47.7	30-50	Yes
Converted Firing Range Bulk Storage	30.3	10	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guideline in Offices 105, 124, 224, 304, and the Boiler Room. Lighting should be improved in these areas.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	74.7	51.3	381	0.0
Maintenance Office	76.5	44.6	440	0.4
Office 125	76.5	41.1	531	0.7
Office 213	74.7	53.0	500	0.4
Office 201	76.1	48.2	472	0.7
Office 316	78.1	40.1	423	0.4
Office 315	78.2	47.6	440	0.6
Criteria	**68-79**	**30-60**	**<1,081**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in all occupied areas.
- Relative humidity levels met the recommended guidelines in all occupied areas.
- Carbon dioxide levels were measured to evaluate building ventilation or the introduction of outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 381 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,081 ppm. This is an indication that outdoor air ventilation is adequate.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following potentially deleterious factors were noted:
    - Ground water is infiltrating through the perimeter wall in the Converted Firing Range.

Section 6.0 Suspect Asbestos Containing Building Materials

The following suspect asbestos containing materials (ACM) was noted at the time of this survey:

- 9”x9” floor tile throughout the facility was intact and in good condition (approximately 40,000-50,000 sf).
- Insulation on the boiler tank in the Boiler Room was intact and in good condition (approximately 150-200 sf).
- Window glazing was deteriorated and in poor condition (approximately 30 exterior windows). This was sampled for analysis. Sample results indicate the glazing is not an ACM.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

It was unknown if an ACM management plan exists.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/8/13	2.64 LPM
SKC Air Sampling Pump	647971	5/8/13	2.65 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAP #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515885
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Manchester, NH	**Date Submitted:**	5/14/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/20/2013 **Report Date:** 5/20/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13062221	1	Flame	Air	554	N/A	5.4	ug/m^3	<3	<5.4	ug/m^3	
13062222	2	Flame	Air	557	N/A	5.4	ug/m^3	<3	<5.4	ug/m^3	
13062223	3	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	
13062224	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062225	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062226	6	Flame	Wipe	****	0.108	110	ug/ft^2	13	120	ug/ft^2	
13062227	7	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062228	8	Flame	Wipe	****	0.108	110	ug/ft^2	1600	15000	ug/ft^2	
13062229	9	Flame	Wipe	****	0.108	110	ug/ft^2	78	720	ug/ft^2	
13062230	10	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062231	11	Flame	Wipe	****	0.108	110	ug/ft^2	87	810	ug/ft^2	
13062232	12	Flame	Wipe	****	0.108	110	ug/ft^2	31	290	ug/ft^2	
13062233	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062234	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062235	15	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062236	16	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062237	17	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062238	18	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062239	19	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	

AMA Analytical Services, Inc.

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515885
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Manchester, NH	**Date Submitted:**	5/14/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/20/2013 **Report Date:** 5/20/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13062240	20	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062241	21	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062242	22	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13062243	24	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

See QC Summary for analytical results of quality control samples associated with these samples.

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP 101143-0

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515885
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation Havre de Grace, Maryland 21078	**Job Location:**	Manchester, NH	**Date Analyzed:**	5/20/2013
		Job Number:	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003		

Attention: Non-Responsive

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Type	Sample Color	Homogeneity	Analyst ID	Comments
13062244	23	NAD	--	--	--	--	--	--	--	--	--	100	WG	Multi	Homogeneous	SW	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

Uncertainty: For samples containing asbestos in range of 1-10% the CV is 0.43, 11-35% CV=0.55, >35 CV=0.23

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

Technical Director Non-Responsive **Analyst(s)** Non-Responsive

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OWI (410) 247-2024 159202 210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515885
(Page 1 of 2)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: Manchester, NH
3. Job #: [redacted] P.O. #: W912K6-09-A-0003
4. Contact Person [redacted]
5. Submitted by: [redacted] Signature: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS			REPORT TO:
☐ Immediate Date Due: ______	☐ Immediate	☐ 3 Day	☐ Results Required By Noon (Every Attempt Will Be Made to Accomodate)	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due: ______	☐ Next Day	☒ 5 Day +		☒ Email: [redacted] us.army.mil
Comments: ______	☐ 2 Day	Date Due: 5/21/13		☐ Fax: [redacted] us.army.mil
				☐ Verbal [redacted]

Asbestos Analysis
PCM Air -- Please Indicate Filter Type:
☐ NIOSH 7400 ______ (QTY)
☐ Fiberglass ______ (QTY)
TEM Air -- Please Indicate Filter Type:
☐ AHERA ______ (QTY)
☐ NIOSH 7402 ______ (QTY)
☐ Other (specify ______) ______ (QTY)
PLM Bulk
☒ EPA 600 -- Visual Estimate 1 (QTY)
☐ EPA Point Count ______ (QTY)
☐ NY State Friable 198.1 ______ (QTY)
☐ Grav. Reduction ELAP 198.6 ______ (QTY)
☐ Other (specify ______) ______ (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM__(Qual) PLM__(Quan) PLM/TEM__(Qual) PLM/TEM__(Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield ______ (QTY)
☐ NY State PLM/TEM ______ (QTY)
☐ Residual Ash ______ (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust ______ (QTY)
☐ Quan. (s/area) Vacuum D5755-95 ______ (QTY)
☐ Quan. (s/area)Dust D6480-99 ______ (QTY)
TEM Water
☐ Qual. (pres/abs) ______ (QTY)
☐ ELAP 198.2/EPA 100.2 ______ (QTY)
☐ EPA 100.1 ______ (QTY)

☒ All samples received in good condition unless otherwise noted. (TEM Water samples ______ °C)

Metals Analysis
☐ Pb Paint Chip ______ (QTY)
☐ Pb Dust Wipe (wipe type GHOST) 20 (QTY)
☐ Pb Air 3 (QTY)
☐ Pb Soil/Solid ______ (QTY)
☐ Pb TCLP ______ (QTY)
☐ Drinking Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Waste Water ☐ Pb ___(QTY) ☐ Cu ___(QTY) ☐ As ___(QTY)
☐ Pb Furnace (Media ______) ______ (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples: ______
Collection Media ______
☐ Spore-Trap ______ (QTY) ☐ Surface Vacuum Dust ______ (QTY)
☐ Surface Swab ______ (QTY) ☐ Culturable ID Genus (Media ______) ______ (QTY)
☐ Surface Tape ______ (QTY) ☐ Culturable ID Species (Media ______) ______ (QTY)
☐ Other (Specify ______) ______ (QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB (wipe)
1	MAINTENANCE Off	5/8/13	554					✓		✓						
2	Dining AREA		557					✓		✓						
3	BLANK		—					✓		✓						
4	Dining Area Window Sill			100cm²				✓								✓
5	Kitchen Mixer Top							✓								✓
6	DRILL HALL FLOOR CTR							✓								✓
7	DRILL HALL CABINET TOP							✓								✓
8	DRILL HALL FIRE EXT TOP							✓								✓
9	CFR FLOOR							✓								✓
10	CFR CONTENTS							✓								✓
11	CFR OUTSIDE ENT. FLR							✓								✓
12	Band Room Window Sill							✓								

LOT 3/23/12
EXP 9/15

CLIENT CONTACT (LABORATORY STAFF ONLY)
Date/Time: ______ Contact: ______ By: ______
Date/Time: ______ Contact: ______ By: ______
Date/Time: ______ Contact: ______ By: ______

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5 / 14 / 13 @ 1030 Via: FedEx By (Print): [redacted]
2. Date/Time Analyzed: ___ / ___ / ___ @ ___ By (Print): [redacted]
3. Results Reported To: ______ Via: ______ Date: ___ / ___ / ___ Time: ______ Initials: ______
4. Comments: 7945 0136 1790

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Focused on Results www.amalab.com
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CHAIN OF CUSTODY

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5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: ARNG 4h NH
2. Job Location: Manchester, NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso[redacted] @ phone #[redacted]
5. Submitted by:[redacted] nature:[redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
☐ Immediate Date Due:	☐ Immediate ☐ 3 Day	☒ Include COC/Field Data Sheets with Report
☐ 24 Hours Time Due:	☐ Next Day ☒ ~~5~~ Day +	☒ E[redacted]
Comments:	☐ 2 Day Date Due:	☐ Fa[redacted]@us.army.mil
	☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	☐ Ve[redacted]@us.army.mil

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
- ☐ NIOSH 7400 (QTY)
- ☐ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
- ☐ AHERA (QTY)
- ☐ NIOSH 7402 (QTY)
- ☐ Other (specify) (QTY)

PLM Bulk
- ☒ EPA 600 – Visual Estimate 1 (QTY)
- ☐ EPA Point Count (QTY)
- ☐ NY State Friable 198.1 (QTY)
- ☐ Grav. Reduction ELAP 198.6 (QTY)
- ☐ Other (specify) (QTY)

MISC
- ☐ Vermiculite
- ☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
- ☐ ELAP 198.4/Chatfield (QTY)
- ☐ NY State PLM/TEM (QTY)
- ☐ Residual Ash (QTY)

TEM Dust
- ☐ Qual. (pres/abs) Vacuum/Dust (QTY)
- ☐ Quan. (s/area) Vacuum D5755-95 (QTY)
- ☐ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ☐ Qual. (pres/abs) (QTY)
- ☐ ELAP 198.2/EPA 100.2 (QTY)
- ☐ EPA 100.1 (QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
- ☐ Pb Paint Chip (QTY)
- ☐ Pb Dust Wipe (wipe type GHOST) 20 (QTY)
- ☐ Pb Air 3 (QTY)
- ☐ Pb Soil/Solid (QTY)
- ☐ Pb TCLP (QTY)
- ☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
- ☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
- ☐ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
- ☐ Spore-Trap (QTY)
- ☐ Surface Swab (QTY)
- ☐ Surface Tape (QTY)
- ☐ Surface Vacuum Dust (QTY)
- ☐ Culturable ID Genus (Media) (QTY)
- ☐ Culturable ID Species (Media) (QTY)
- ☐ Other (Specify) (QTY)

SAMPLE INFORMATION / ANALYSIS / MATRIX

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB/WIPE
13	FAC DESK CABINET TOP	5/8/13		100cm²				✓								✓
14	OFFICE 132 CABINET TOP							✓								✓
15	Recruiter Office SHELF TOP							✓								✓
16	OFFICE 206 Computer Desk TOP							✓								✓
17	OFFICE 230 Soda Mach. TOP							✓								✓
18	2ND FLOOR CORRIDOR H2O MACH. TOP							✓								✓
19	OFFICE 226 SHELF TOP							✓								✓
20	OFFICE 313 CABINET TOP							✓								✓
21	OFFICE 315 File CAB TOP							✓								✓
22	Conf. 318 Window Sill							✓								✓
23	Conf Window Glazing			—			✓	✓			✓					
24	BLANK			—				✓								✓

CLIENT CONTACT

(LABORATORY STAFF ONLY)

Date/Time:	Contact:	By:
Date/Time:	Contact:	By:
Date/Time:	Contact:	By:

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: / / @ Via: By (Print): Sign[redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:

Comments:

Appendix B. Photographs

Manchester Amory

9”x9” Floor Tile Suspect ACM

Boiler Insulation Suspect ACM

Converted Firing Range Water Infiltration

Converted Firing Range Bulk Storage

3rd Floor Conference Widow Glazing Suspect ACM

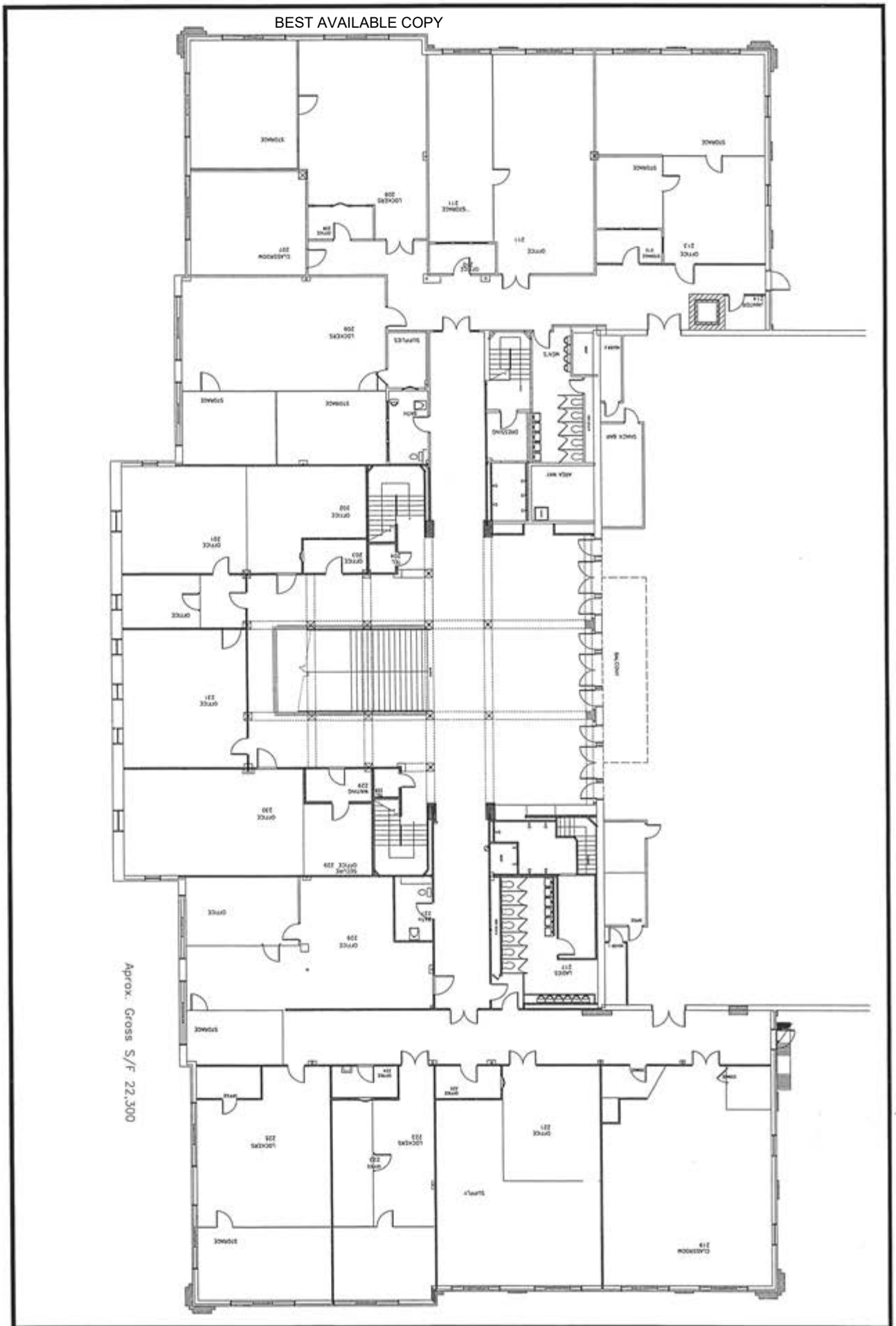
Appendix C. Floor Plan

ARMORY GROSS S/F 20,600

MANCHESTER R.C. FIRST FLOOR PART PLAN

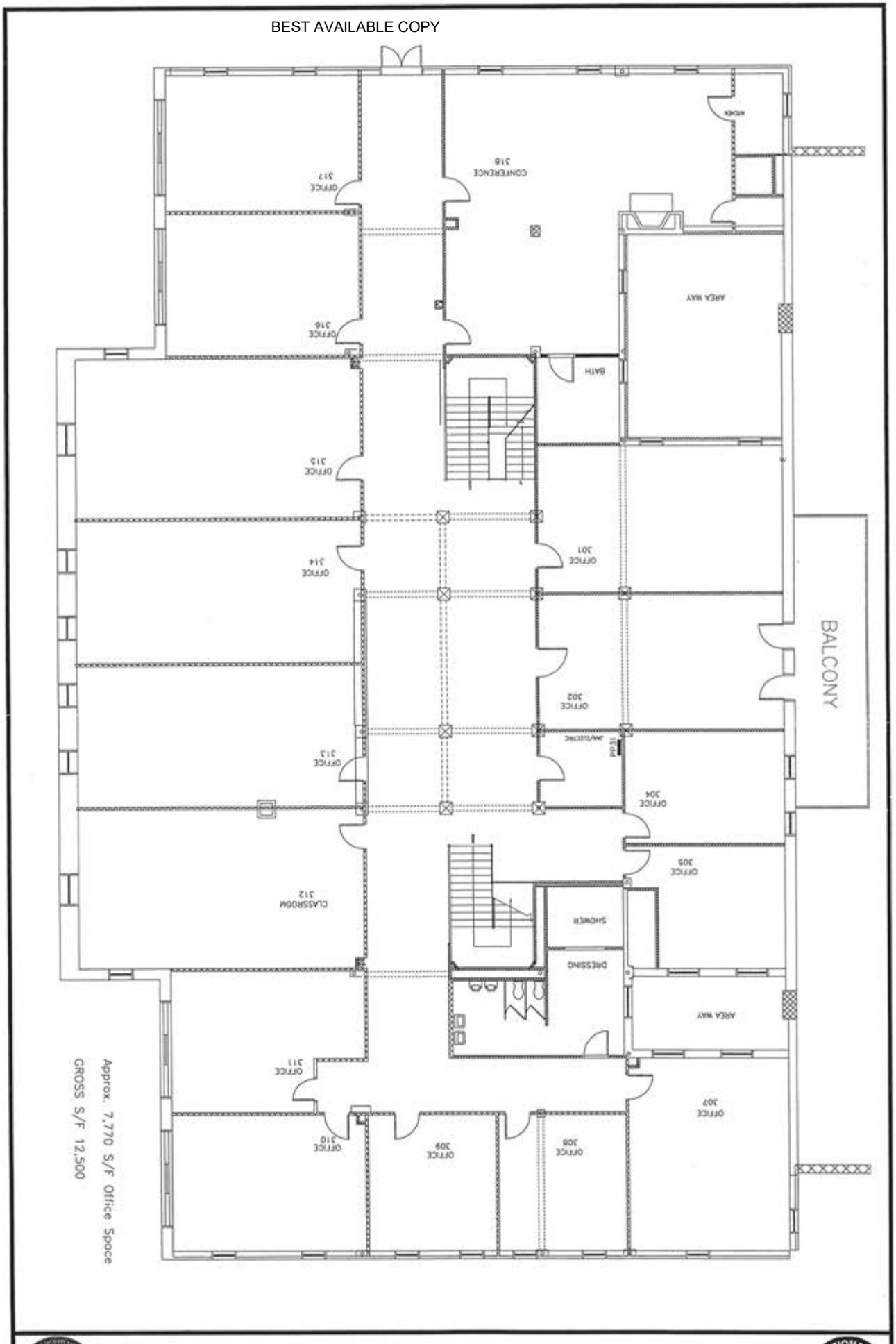
NOT TO SCALE

DATE: 01 MAY 13



MANCHESTER R.C. SECOND FLOOR PART PLAN

NOT TO SCALE



MANCHESTER R.C. THIRD FLOOR PART PLAN

NOT TO SCALE

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute/Illuminating Engineering Society of North America (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078-4094

NGB-ARS-IHNE 19 May 2005

MEMORANDUM FOR NHARNG, Nashua Readiness Center, ATTN: SFC Non-Responsive
Non-Responsive 54 Daniel Webster Hwy., Nashua, New Hampshire 03060

SUBJECT: Baseline Industrial Hygiene Survey Report

1. I have enclosed the industrial hygiene survey report completed by URS Corporation.

2. In addition to the attached discussion and recommendations regarding wipe samples for lead, if a special function is held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function.

3. Please contact me at (410) 942-0273 or 1-800-550-6967 if you have any questions regarding the enclosed report.

Non-Responsive
Regional Industrial Hygienist

Encl

CF: COL Non-Responsive OHM

BEST AVAILABLE COPY

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

INDUSTRIAL HYGIENE SURVEY REPORT
NASHUA ARMORY
NASHUA, NEW HAMPSHIRE

Non-Responsive
Office Manager

Non-Responsive
Project Manager

May 2005
PN: 39741509

TABLE OF CONTENTS

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Computer workstations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
On the day of the survey, the illumination in the administrative area was inadequate in most offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA EM 385-1-1 (3 Nov 03))	RAC 4
Asbestos		
Damaged floor tile containing greater than 1% asbestos is present throughout the facility.	Remove and replace damaged asbestos-containing floor tile. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
Exposed ends or damaged asbestos-containing pipe insulation were present in the drill hall.	Repair or remove exposed ends or damaged asbestos-containing pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(2))	RAC 3
No site-specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3

FINDINGS AND RECOMMENDATIONS (Cont.)

Findings	Recommendation	Risk Assessment Code
Electrical Safety		
Access to electrical panel in janitor's room obstructed	Access to electrical control panels must be unobstructed (OSHA 29 CFR1910.303(g)(iv))	RAC 4
Lead-Based Paint		
Lead Wipe sample collected from the drill hall exceeded 200 micrograms per square foot.	Personnel trained in accordance with the OSHA Lead Standard should clean the Drill Hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Compressed Gas Cylinder		
Compressed gas cylinder in storage room (#13) not stored in a manner to prevent tipping (unchained / unsecured)	Compressed gas cylinders should be stored in a manner to prevent tipping (OSHA 29 CFR 1910.101(b) and Compressed Gas Association Pamphlet P-1-1965)	RAC 3
Mold		
Water mold stained ceiling tiles observed throughout facility.	Repair any water leaks within the building that are causing water damage to the ceilings. If left unattended to, mold could become a factor in the future (best management practice)	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau Region North Industrial Hygiene Office (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Readiness Center located at 154 Daniel Webster Highway, Nashua, New Hampshire. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On December 10, 2003, Mr. Non-Responsive an industrial hygienist with URS, conducted the site visit to the Nashua Readiness Center. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements and a review of site health and safety procedures. SFC Non-Responsive of the New Hampshire ARNG was Mr. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This area has multiple offices located throughout the building with desks and computer workstations. This area also includes the kitchen, classrooms, game room, janitor's room, locker room, shower room, weight room and supply room. There were a few ergonomic issues in this area (Photos # 2953, 2959 & 2961). Chairs with adjustable arms should be used in the computer stations because they can be adjusted to fit the worker and avoid muscular skeletal disorders. There are computer monitors that need to be adjusted for the person working at the station. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

2.2 Chemical and Physical Agents Sampled

2.2.1 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made in the Readiness Center. Carbon dioxide concentrations ranged from 536 to 654 parts per million (ppm), with an average of 578 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE recommends that levels of carbon dioxide be maintained below 750 ppm above background level. Given a background level of 350 ppm on the day of the survey, the ASHRAE limit would be 1100 ppm.

2.2.2 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations ranged from 0 to 2 parts per million (ppm), with an average of 1 ppm. Therefore interior levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.3 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting – Table B-1).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux)	Recommended Minimum Illuminance (lux)
Office # 11	Administrative Duties	320	500
Office # 12	Administrative Duties	224	500
Office # 13	Administrative Duties	268	500
Office # 14	Administrative Duties	238	500
Office # 15	Administrative Duties	321	500
Office # 16	Administrative Duties	158	500
Recruiter Office # 8	Administrative Duties	494	500
Supply Office # 7 Desk 1	Administrative Duties	190	500
Supply Office # 7 Desk 2	Administrative Duties	283	500
Janitor Room # 24	Administrative Duties	321	500

On the day of the survey the illuminance in the administrative area was inadequate in all offices.

2.2.4 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116). Table 2-2 below presents the results of the sample analysis.

Table 2-2
Samples Results of Suspect ACM

Location Of ACM Sample Taken	Material Sampled	AMA Sample Number	URS Sample Number	Total Asbestos (%)
Old Game Room # 21	Brown 9"x9" Floor Tile	0414381	1210-AB01A-FT	2
Kitchen # 26	Brown 9"x9" Floor Tile	0414382	1210-AB01B-FT	2
Classroom2 # 22	4" Black Cove Base	0414383	1210-AB02A-CB	NAD
Kitchen # 26	4" Black Cove Base	0414384	1210-AB02B-CB	NAD
Classroom1 # 17	4" Black Cove Base	0414385	1210-AB02C-CB	NAD
Kitchen # 26	Cream 9"x9" Floor Tile	0414386	1210-AB03A-FT	2
Kitchen # 26	Cream 9"x9" Floor Tile	0414387	1210-AB03B-FT	2
Kitchen # 26	Black 9"x9" Floor Tile	0414388	1210-AB04A-FT	2
Office # 12	Black 9"x9" Floor Tile	0414389	1210-AB04B-FT	2
Supply Room # 3	Window Glazing	0414393	1210-AB06A	NAD
Supply Room # 3	Window Glazing	0414394	1210-AB06B	NAD
Supply Room # 3	Window Glazing	0414395	1210-AB06C	NAD
Old Game Room # 21	9"x9" Floor Tile Mastic	0416188	1210-AB01A-Mastic	NAD
Kitchen # 26	9"x9" Floor Tile Mastic	0416189	1210-AB01B-Mastic	NAD
Classroom2 # 22	4" Cove Base Mastic	0416190	1210-AB02A-Mastic	NAD
Kitchen # 26	4" Cove Base Mastic	0416191	1210-AB02B-Mastic	NAD
Classroom1 # 17	4" Cove Base Mastic	0416192	1210-AB02C-Mastic	NAD
Kitchen # 26	9"x9" Floor Tile Mastic	0416193	1210-AB03A-Mastic	6
Kitchen # 26	9"x9" Floor Tile Mastic	0416194	1210-AB03B-Mastic	3
Kitchen # 26	9"x9" Floor Tile Mastic	0416195	1210-AB04A-Mastic	*
Office # 12	9"x9" Floor Tile Mastic	0416196	1210-AB04B-Mastic	2

NAD = No Asbestos Detected
* = Sample Not Analyzed: Not enough material.

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. (AMA) is contained in Appendix D. Mr. [redacted] asbestos inspector training certificate is provided in Appendix F.

2.2.5 Lead

Paint chip samples were collected where paint was peeling and sent to AMA for analysis. The sample results were found to be within the acceptable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 2-3 below shows the results of the lead testing.

Table 2-3
Levels of Lead in Paint Found in the Administrative Area

Location Of Paint Chip Taken	AMA Sample Number	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Rest Room Ceiling # 23	0414367	1210-LPC01	0.03	<0.027
Office # 13 Around Window	0414368	1210-LPC02	0.02	<0.023

URS collected additional lead wipe samples in this building area, in accordance with the Army National Guard statement of work. Results from analytical wipe sample anaylsis will be provided in a supplemental letter.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

LIGHTING: The lighting in this area falls below the minimum lighting requirements indicated in table 2-1. While work is in progress, the administrative area should be lighted by at least the minimum light intensities. Recommend increasing the lighting in the administrative areas.

ASBESTOS: The floor tile samples that were collected throughout this area were determined to contain asbestos. The floor tile has multiple areas of damage (Photos # 2947, 2951-2), including cracks and missing tiles. Recommend replacing the damaged tile with new, non-asbestos tile, by an appropriately trained technician. The floor tile also needs to be protected by at least two coats of wax.

MOLD: Water stains were found on the ceiling in classroom 2, room #22 (Photo # 2949), office # 18 (Photo # 2954), office # 19 (Photo # 2956), office # 20 (Photo # 2957), recruiters office # 8 (Photo # 2960), and the restroom storage # 9 (Photo # 2962). Some of the water stains have visible mold growth, which have been painted over with white paint.

GENERAL SAFETY: There is a compressed gas cylinder which is not chained or in a storage rack, in storage room #13 (Photo # 2963).

ELECTRICAL: The electrical panel in the janitor's room is blocked (Photo # 2989).

3.0 FORMER INDOOR FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and is now primarily used for storage. The area is approximately 1250 square feet with cinder block walls and a concrete floor.

3.2 Chemical and Physical Agents Samplad

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range (Photos # 2968-71), of which 4 of the 5 samples were found to contain lead above the acceptable limits of the U.S. Army. Ghost wipes, which meets ASTM E 1792 standards, were used to test surfaces for lead. Table 3-1 below shows the results of the lead testing.

Table 3-1
Levels of Lead Dust Found in the Facility

Location Of Wipe Taken	AMA Sample Number	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Firing Range #1-Floor/Front	0414375	1210-LW6	1.000	1,000	200
Firing Range #1-Floor/Bullet Trap	0414376	1210-LW7	1.000	28,000	200
Firing Range #1-Top of Table	0414377	1210-LW8	1.000	290	200
Firing Range #1-Top of a Light	0414378	1210-LW9	0.625	**15,000**	200
Firing Range #1-Top of Equipment	0414379	1210-LW10	0.889	65	200
Blank	0414380	1210-LW Blank1	N/A	<12	200

One air sample for lead was collected in the former firing range. Table 3-2 below shows the result of the lead air sample.

Table 3-2
Airborne Lead Dust Concentration

Location Of Air Sample Taken	AMA Sample Number	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
Former Firing Range #1	0414364	1210-LA01	1108	<2.7	50.0
Air Blank	0414366	1210-Blank	0	<3.0	50.0

On the day of the survey, the airborne lead concentration in the former firing range was found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: The former firing range was found to contain lead levels in the dust, which exceed the maximum limit of 200 $\mu g/ft^2$ set by the NGB Region North IH Office. See Appendix F for recommendations for surface lead dust in armories. Recommend cleaning the lead dust by using guidance in All States Letter P01-0075. The analytical results of the air sample collected in this area contained a level of lead that was below the OSHA PEL.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a 6,000 square foot area with a 30-foot high ceiling, used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead was conducted in the drill hall and found that 4 of the 5 samples contained levels of lead that were within acceptable limits of 200 $\mu g/ft^2$ set by the NGB Region North IH Office. Ghost wipes, which meets ASTM E 1792 standards, were used to test surfaces for lead. Table 4-1 below shows the results of the lead testing.

Table 4-1
Levels of Lead Dust Found in the Facility

Location Of Wipe Taken	AMA Sample Number	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Drill Hall #2 – Floor	0414370	1210-LW1	1.000	47	200
Drill Hall #2 – Floor	0414371	1210-LW2	1.000	27	200
Drill Hall #2 – Floor	0414372	1210-LW3	1.000	42	200
Drill Hall #2 – Top of a Locker	0414373	1210-LW4	1.000	93	200
Drill Hall #2 – Top of Flammable Chemical Cabinet	0414374	1210-LW5	1.000	700	200
Blank	0414380	1210-Blank1	N/A	<12	200

One air sample for lead was collected in the drill hall. Table 4-2 below shows the result of the lead air sample.

Table 4-2
Airborne Lead Dust Concentration

Location Of Air Sample Taken	AMA Sample Number	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
Drill Hall # 2	0414365	1210-LA02	1104	<2.7	50.0
Blank	0414366	1210-Blank	0	<3.0	50.0

On the day of the survey, the airborne lead concentration in this area were found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

One paint chip sample (Photo # 2988) was collected where paint was peeling and sent to AMA for analysis. The sample analylical results were found to be within the acceptable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 4-3 below shows the results of the lead tests.

Table 4-3
Levels of Lead in Paint Found in the Drill Hall

Location Of Paint Chip Taken	AMA Sample Number	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Drill Hall #2	0414369	1210-LPC03	0.01	0.16

4.2.2 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020, EPA-600/R-93-116). Table 4-4 below presents the results of the sample analysis.

Table 4-4
Sample Results of Suspect ACM

Location Of ACM Sample Taken	Material Sampled	AMA Sample Number	URS Sample Number	Total Asbestos (%)
Drill Hall # 2	Air Cell Pipe Insulation	0414390	1210-05A	60
Boiler Room # 7	Air Cell Pipe Insulation	0414391	1210-05B	60
Boiler Room # 7	Air Cell Pipe Insulation	0414392	1210-05C	50

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA Analytical Services, Inc. is contained in Appendix D. Mr. Non-Responsive asbestos inspector training certificate is provided in Appendix E.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: The samples collected from the drill hall for lead dust were found to contain lead within the acceptable limits, except for the one sample collected from the top of the flammable storage cabinet. Recommend having the flammable materials cabinet cleaned using All State Letter P01-0075.

ASBESTOS: The pipe insulation in the drill hall had exposed ends, mainly on the risers where the insulation ends (Photo # 2987). There were also puncture holes throughout the insulation (Photos # 2984 & 2986) and splits where the sections come together (Photo # 2985). The repairs should be performed by an appropriately trained technician.

5.0 BOILER ROOM

5.1 Operation Description

The Boiler Room was locked and a state employee who was not on site at the time of the inspection had the keys so the room was not accessed. The facility was about to under go renovations, which included the mechanical room.

5.2 Chemical and Physical Agents Sampled

Not applicable to this operation.

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No site-specific written safety program found regarding confined spaces. No training records were found on site. A confined space program not required for this site.

6.2 Hearing Conservation

A written program regarding hearing conservation was found in the site's safety binder. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

A written program regarding respiratory protection was found in the site's safety binder. No training records were found on site. A respiratory protection program is not required for this site.

6.4 HAZCOM

A written program regarding hazard communications was found in the site's safety binder. No training records were found on site.

6.5 Personal Protective Equipment

A written program regarding personal protective equipment was found in the site's safety binder. No training records were found on site. A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62-2001: Ventilation for Acceptable Indoor Air Quality

Army Corps of Engineers

Safety and Health Requirements Manual EM 385-1-1 November 2003

Compressed Gas Association

Pamphlet P-1-1968

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

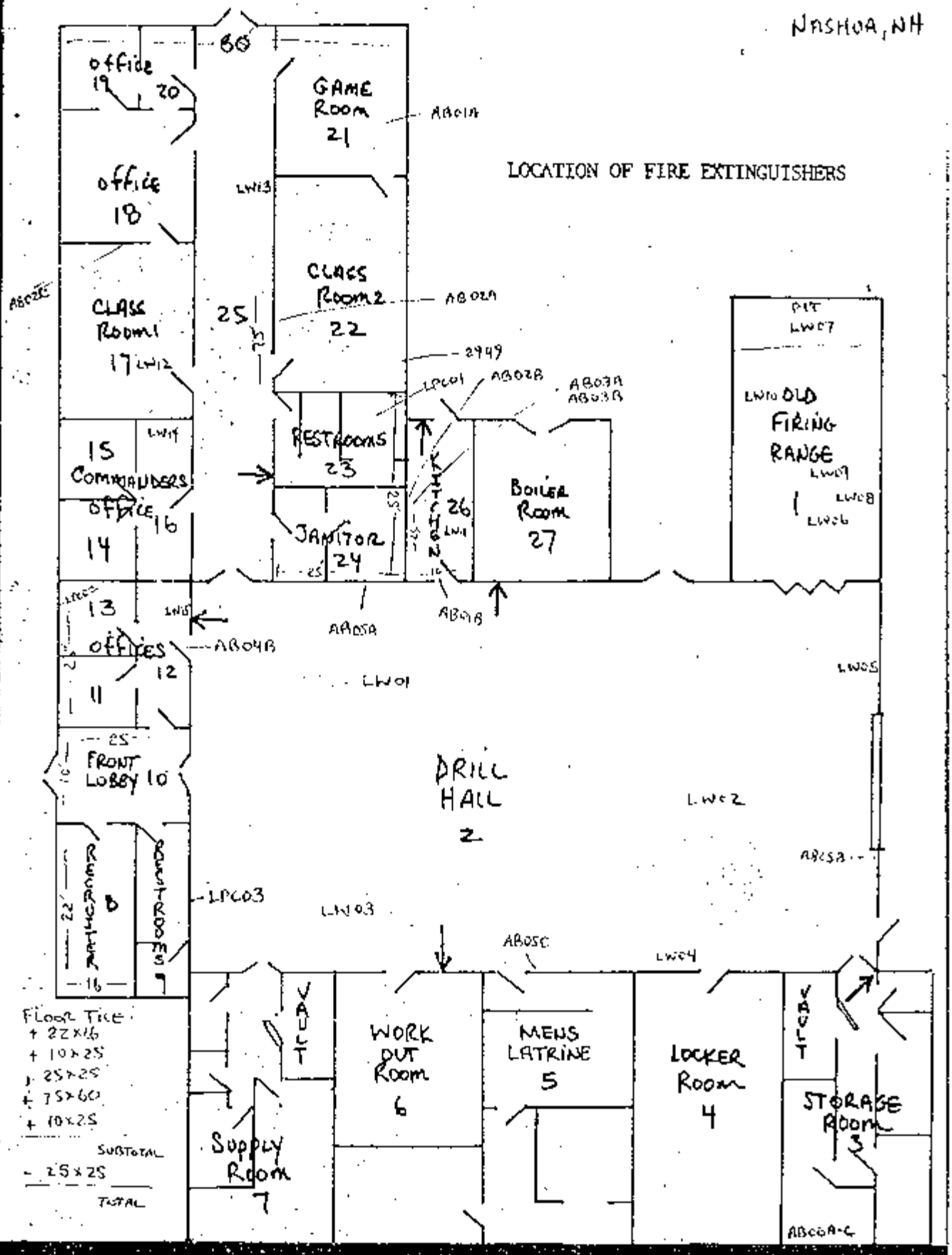
U. S. Occupational Safety and Health Administration

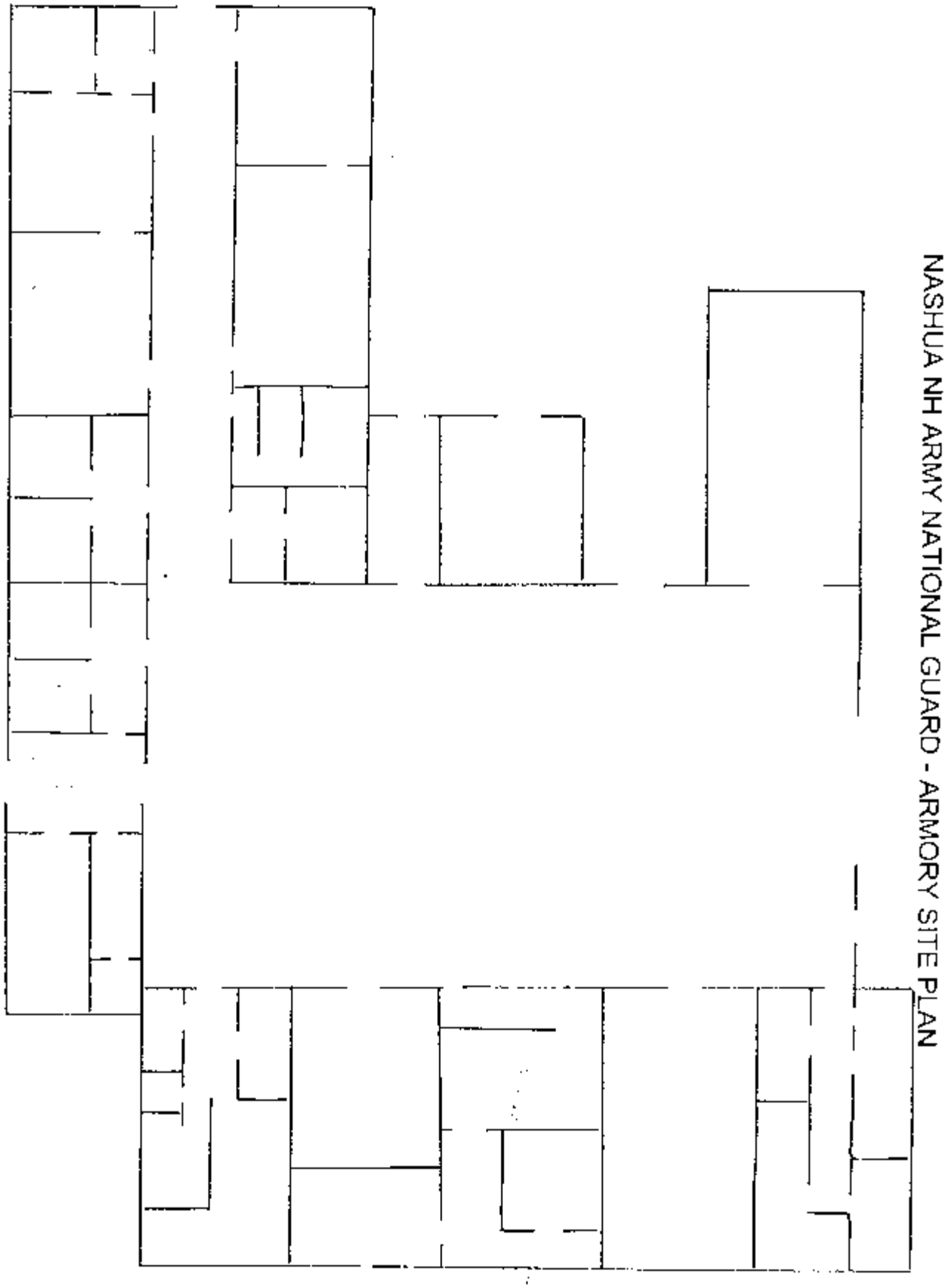
Standard for General Industry: 29 CFR 1910

APPENDIX A

SHOP DRAWINGS

NASHUA, NH





NASHUA NH ARMY NATIONAL GUARD - ARMORY SITE PLAN

APPENDIX B

PERSONNEL LIST

DEPARTMENT OF THE ARMY
B Battery, 1st Battalion 172d Field Artillery
New Hampshire Army National Guard
State Armory, 154 Daniel Webster Highway
Nashua, New Hampshire 03060-9803

NHAG-1BN-B

10 December 2003

FULL-TIME MANNING ROSTER

NAME	RANK	DUTY POSITION	LAST 4
Non-Responsive	SFC	Readiness NCO	Non-Responsive
	SSG	Training NCO	
	SSG	Supply SGT	

POC for this information is the undersigned at 603-888-9179

Non-Responsive

SFC
Readiness NCO

APPENDIX C

HAZARDOUS MATERIALS LIST

ANG: NASHUA, NH
12-16-03

Semi-Annual Hazardous Material Inventory Unit:		B Btry 1-172d FA Nashua, NH 03		
EPCRA (Emergency Planning Community Right-To-Know Act)		Date: 1-Oct-99		
Inventory to Be Done and Sent to this Office By 15 February and 15 August				
National Stock Number	Noumenclature	Location	U/I	Qty O/H
6850-00-281-1985	Dry Cleaning Solvent, Gal	Cab 1	CN	9
7930-01-174-0979	Cleaning Compound	Cab 1	BT	6
8040-00-264-3840	Adhesive Tent Patching	Cab 1	CN	3
6850-00-598-7311	Leak Prevent Comp Radiator, 1PT	Cab 1	CN	3
8030-00-082-2508	Primer Sealing Compound, 10 fl oz	Cab 1	BT	9
7930-01-294-1115	Scouring Powder	Cab 1	CN	2
6810-00-264-6618	Sodium Bicarbonate, 1PT	Cab 1	CN	1
7930-00-205-2870	Floor Wax	Cab 1	GL	1
1025-01-196-2172	Cleaning Kit Artillery	Cab 1	EA	2
9150-01-053-6688	Cleaner, Lubricant, and Preservative	Cab 1	GL	5
9150-01-054-6453	Break free	Cab 1	QT	4
9150-01-054-6453	Break Free	Cab 1	BT	75
NSN	Battery Acid	Cab 1	BX	2
9150-01-102-9455	Brake Fluid	Cab 1	GL	1
6840-01-278-1336	Insect Repellent	Cab 2	CN	23
6840-01-067-6674	Insecticide	Cab 2	CN	2
6850-00-973-9091	Penetrating Fluid	Cab 2	CN	3
8010-00-721-9743	Paint Aerosol	Cab 2	CN	2
8010-00-721-9747	Paint Aerosol	Cab 2	CN	2
8010-00-141-2950	Paint Aerosol	Cab 2	CN	2
9150-00-754-0064	Lubricant Solid Film	Cab 2	CN	2
6850-00-227-1887	Cleaning Compound Optical lens	Cab 2	QT	11
7920-00-823-9817	Pad Metal Polish	Cab 2	CN	2
NSN	Agent 99	Cab 2	QT	1
7930-00-184-9423	Glass Cleaner	Cab 2	GL	1
NSN	Spray paint	Cab 2	CN	6
NSN	Goof Off	Cab 2	CN	2
NSN	Hand Cleaner	Cab 2	GL	1
8520-00-082-2146	Hand Cleaner	Cab 2	CN	1
8010-00-598-5464	Paint (Green)	Cab 2	GL	4
8010-00-597-7862	Paint (Brown)	Cab 2	GL	2
8010-00-597-0547	Paint (Black)	Cab 2	GL	1
8010-00-598-5465	Paint (Green)	Cab 2	GL	2
NSN	Paint	Cab 2	GL	4
NSN	Paint	Cab 2	QT	1
NSN	Body Filler	Cab 2	GL	1
9150-00-145-0268	Grease	Cab 3	CN	14
6810-00-275-6010	Methyl Alcohol	Cab 3	CN	2
2910-01-128-9537	Ether	Cab 3	CN	3
6625-01-330-4668	Putty Epoxy	Cab 3	CT	1
8030-00-081-2328	Sealing Compound	Cab 3	BT	1
9150-00-935-9807	Hydrolic Fluid	Cab 3	QT	2
9150-00-698-2382	Automatic Transmission Fluid	Cab 3	QT	1
9150-00-687-4241	Lube Oil	Cab 3	QT	8
9150-00-231-6689	Lube Oil	Cab 3	QT	18
6830-00-584-3041	Propane	Cab 3	BT	2
9150-00-458-0075	Lube Oil	Cab 3	QT	1
National Stock Number	Noumenclature	Location	U/I	Qty O/H

AMG : NASHUA, NH
12-10-03

National Stock Number	Noumenclature	Location	U/I	Qty O/H
9150-00-698-2382	Hydrolic Fluid	HazMat	QT	27
9150-00-231-6689	Lube Oil	HazMat	QT	11
9150-01-054-6453	Break Free	HazMat	QT	11
NSN	Battery Acid	HazMat	BX	2
9150-01-053-6688	Cleaner, Lubricant, Preservative	HazMat	BT	3
9150-01-177-3988	Oil OE/HDO-10	HazMat	CS	5
9150-01-142-1427	Oil OE/HDO-15/40	HazMat	CS	26
9150-00-458-0075	Lube Oil	HazMat	QT	10
9150-00-687-4241	Lube Oil	HazMat	QT	6
9150-00-231-6689	Lube Oil	HazMat	QT	1
9150-01-260-2534	Lube Solid Film	HazMat	CN	16
9150-00-935-9807	Hydrolic Fluid	HazMat	CN	6
9150-01-053-6688	Break Free	HazMat	GL	5
6850-00-281-1985	Cleaning Solvent	HazMat	GL	3
9150-00-145-0268	Grease	HazMat	CN	15
9150-01-035-5393	Lube Oil Gear (80W/90)	HazMat	CN	2
9150-00-935-5851	Grease	HazMat	CN	2
6810-00-244-0290	Methane	HazMat	CN	2
2910-01-128-9537	Ether	HazMat	CN	2
9150-01-102-9455	Brake Fluid	HazMat	GL	7
6850-00-926-2275	Cleaning Compound	HazMat	PT	36

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121355
Address:	5 Industrial Way	**Job Location:**	154 Daniel Webster Hwy Nashua, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	22-Dec-03
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0414364	1210-LA 01	Flame	Air	1108	N/A	2.71	ug/m^3	< 2.7	ug/m^3	
0414365	1210-LA 02	Flame	Air	1104	N/A	2.72	ug/m^3	< 2.7	ug/m^3	
0414366	1210-BLANK	Flame	Air Blank	0	N/A	3.00	ug/m^3	< 3	ug	
0414367	1210-LPC 01	Flame	Paint Chip	****	N/A	0.03	%Pb	< 0.027	%Pb	Insufficient sample submitted to meet recommended reporting limits.
0414368	1210-LPC 02	Flame	Paint Chip	****	N/A	0.02	%Pb	< 0.023	%Pb	Insufficient sample submitted to meet recommended reporting limits.
0414369	1210-LPC 03	Flame	Paint Chip	****	N/A	0.01	%Pb	0.16	%Pb	
0414370	1210-LW 1	Flame	Wipe	****	1.000	12.00	ug/ft^2	47	ug/ft^2	
0414371	1210-LW 2	Flame	Wipe	****	1.000	12.00	ug/ft^2	27	ug/ft^2	
0414372	1210-LW 3	Flame	Wipe	****	1.000	12.00	ug/ft^2	42	ug/ft^2	
0414373	1210-LW 4	Flame	Wipe	****	1.000	12.00	ug/ft^2	93	ug/ft^2	
0414374	1210-LW 5	Flame	Wipe	****	1.000	12.00	ug/ft^2	700	ug/ft^2	
0414375	1210-LW 6	Flame	Wipe	****	1.000	12.00	ug/ft^2	1000	ug/ft^2	
0414376	1210-LW 7	Flame	Wipe	****	1.000	12.00	ug/ft^2	28000	ug/ft^2	
0414377	1210-LW 8	Flame	Wipe	****	1.000	12.00	ug/ft^2	290	ug/ft^2	
0414378	1210-LW 9	Flame	Wipe	****	0.625	19.20	ug/ft^2	15000	ug/ft^2	
0414379	1210-LW 10	Flame	Wipe	****	0.889	13.50	ug/ft^2	65	ug/ft^2	

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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121355
Address:	5 Industrial Way	**Job Location:**	154 Daniel Webster Hwy Nashua, NH	**Date Analyzed:**	12/22/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	22-Dec-03
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments
0414380	1210-BLANK 1	Flame	Wipe Blank	****	N/A	12.00 ug	< 12 ug	

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] Technical Manager: [redacted]

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Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121355
Address:	5 Industrial Way	**Job Location:**	154 Daniel Webster Hwy Nashua, NH	**Date Analyzed:**	12/29/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0414381	1210-AB 01 A-FT	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0414382	1210-AB 01 B-FT	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0414383	1210-AB 02 A-CB	NAD	--	--	--	--	--	--	--	--	--	100	Black	LB	
0414384	1210-AB 02 B-CB	NAD	--	--	--	--	--	--	TR	--	--	100	Black	LB	
0414385	1210-AB 02 C-CB	NAD	--	--	--	--	--	--	--	--	--	100	Black	LB	
0414386	1210-AB 03 A-FT	2	2	--	--	--	--	--	--	--	--	98	Gray	LB	
0414387	1210-AB 03 B-FT	2	2	--	--	--	--	--	--	--	--	98	Gray	LB	
0414388	1210-AB 04 A-FT	2	2	--	--	--	--	--	--	--	--	98	Black	LB	
0414389	1210-AB 04 B-FT	2	2	--	--	--	--	--	--	--	--	98	Black	LB	
0414390	1210-AB 05 A	60	60	--	--	--	--	--	10	--	--	30	Off-White	LB	
0414391	1210-AB 05 B	60	60	--	--	--	--	--	10	--	--	30	Gray	LB	
0414392	1210-AB 05 C	50	50	--	--	--	--	--	20	--	--	30	Gray	LB	
0414393	1210-AB 06 A	NAD	--	--	--	--	--	--	--	--	--	100	White	LB	
0414394	1210-AB 06 B	NAD	--	--	--	--	--	--	--	--	--	100	White	LB	

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CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121355
Address:	5 Industrial Way	**Job Location:**	154 Daniel Webster Hwy Nashua, NH	**Date Analyzed:**	12/29/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		
Attention:	[redacted]				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0414395	1210-AB 06 C	NAD	--	--	--	--	--	--	--	--	--	100	Off-White	LB	
0416188	1210-AB 01 A-Mastic	NAD	--	--	--	--	--	--	--	--	--	100	Black	LB	
0416189	1210-AB 01 B-Mastic	NAD	--	--	--	--	--	--	TR	--	TR	100	Black	LB	
0416190	1210-AB 02 A-Mastic	NAD	--	--	--	--	--	--	--	--	--	100	Black	LB	
0416191	1210-AB 02 B-Mastic	NAD	--	--	--	--	--	--	--	--	--	100	Brown	LB	
0416192	1210-AB 02 C-Mastic	NAD	--	--	--	--	--	--	TR	--	--	100	Black	LB	
0416193	1210-AB 03 A-Mastic	6	6	--	--	--	--	--	--	--	--	94	Black	LB	
0416194	1210-AB 03 B-Mastic	3	3	--	--	--	--	--	TR	--	--	97	Black	LB	
0416195	1210-AB 04 A-Mastic	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed: Not enough material.
0416196	1210-AB 04 B-Mastic	2	2	--	--	--	--	--	TR	--	--	98	Black	LB	

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Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	121355
Address:	5 Industrial Way	**Job Location:**	154 Daniel Webster Hwy Nashua, NH	**Date Analyzed:**	12/29/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		
Attention:	[redacted]				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments

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The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

[redacted]

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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 121355

Mailing/Billing Information:
Client Name: URS NH
Address 1:
Address 2:
Address 3:
Phone #: Fax #:

Submittal Information:
1. Job Name: Army National Guard
2. Job Location: 1510 Daniel Webster Hwy Nashua, NH
3. Job #: [redacted] P.O. #:
4. Contact Person [redacted] @ phone #
5. Submitted by: [redacted] Signature:

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required: 12/29/03 @ 1030 (1000) ☐ Immd. ☐ 24hr ☐ 48hr ☐ 72hr ☐ 5 Day + ☐ Immd. After-Hours* ☐ 24hr After-Hours* ☐ Late-Night* (*must be pre-scheduled)
☐ Verbals: @ cell # 12/29/03 ☐ Fax Copy: @ fax # ☐ Email Copy: @

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
Bulk
☑ EPA 600 – Visual Estimate 15 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable (QTY)
☐ Grav. Reduction ELAP 198.1 (QTY)
☐ Other (specify) (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY) FOR WIPES
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

Lead Analysis
☑ Paint Chip 3 (QTY)
☑ Dust Wipe (wipe type) 11 (QTY)
☑ Air 3 (QTY)
☐ Soil/Solid (QTY)
☐ TCLP (QTY)
☐ Drinking Water (QTY)
☐ Waste Water (QTY)
☐ Dust Wipe Furnace (wipe type) (QTY)

Miscellaneous Analysis
☐ Radon (QTY)
☐ Other (specify) (QTY)

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SAMPLE ANALYSIS INFORMATION | **ANALYSIS** | **MATRIX** | **CLIENT CONTACT**

CLIENT ID NUMBER	SAMPLE LOCATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	OTHER	AIR	BULK	WIPE	WATER AND OTHER	CLIENT CONTACT (LABORATORY STAFF ONLY)
														Date/Time: Contact: By:
														Date/Time: Contact: By:
														Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 12/15/03 @ 1000 Via: FedEx By (P[redacted]
2. Date/Time Analyzed: 12/24/03 @ By (Print): [redacted] Sign:
3. Results Reported To: Via: FAX Date: 12/29/03 Tim
4. Comments:

[redacted] Non-Responsive

URS Air Sample Chain Of Custody

URS CORPORATION 5 Industrial Way Salem, NH 03079 Tel# 603 893-0616 Fax# 603 893-6240	Project Number: 42056-013-211 Client/ Project Name: Army National Guard Location: 154 DANIEL WEBSTER HWY NASHUA, NH Project Manager: Non-Responsive Sampler: Non-Responsive Date Sampled: 12/10/03

Sample I.D. #	Sample Description	Pump	Flow Rate	Volume	Analysis Requested
1210-LA01	OLD FIRING RANGE / LEAD AIR	On: 0849 Off: 1326 Total: 277	On: 4.0 Off: 4.0 Average: 4.0	1108	
1210-LA02	DRILL HALL / ↓	On: 0855 Off: 1331 Total: 276	On: 4.0 Off: 4.0 Average: 4.0	1104	
1210-BLANK	BLANK / ↓	On: Off: Total:	On: Off: Average:	BLANK	
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		

Relinquished By: Non-Responsive Company: URS Corporation	Date: 12/12/03 Time: 1315	Received By: Company:	Date: Time:
Relinquished By: Company:	Date: Time:	Received By: Company:	Date: Time:

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URS Sample Chain Of Custody

URS CORPORATION 5 Industrial Way Salem, NH 03079 Tel# 603 893-0616 Fax# 603 893-6240	Project Number: 42056-013-211 Client/ Project Name: ARMY NATIONAL GUARD Location: 154 DANIEL WEBSTER HWY NASHUA, NH Project Manager: Non-Responsive Sampler: Non-Responsive Date Sampled: 12/10/03

Sample I.D. #	Sample Description	Analysis Requested
1210-LPC01	WHITE PAINT CHIP / RESTROOM SHOWER #23 CEILING	LEAD
1210-LPC02	WHITE PAINT CHIP / OFFICE #13 AROUND WINDOW.	LEAD
1210-LPC03	TAN PAINT CHIP / DRILL HALL #2	LEAD

Relinquished	Date:	Received By:	Date:
Non-Responsive	12/12/03		
Company: URS Corp.	Time: 1315	Company:	Time:

Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

Industrial Hygiene Surface Wipe Sample Sheet

Return Address: URS Corporation 5 Industrial Way Salem, NH 03079	**Point of Contact (name and phone #)** Non-Responsive 603-893-0616 **Samples Collected By** Non-Responsive
Sampled Facility: ARMORY; **City:** NASHUA; **State:** NH; **Location (bldg/area)**	
Description of Operation: ADMIN.	**Date Collected:** 12/10/03; **Date Shipped**
Analysis Requested: LEAD	

Lab Use Only	Sample Number	Area Wiped	Results	Remarks	
	1210-LW1	12"x12"		DRILL HALL #2 / FLOOR	Pic 2965
	-LW2				
	-LW3				
	-LW4			TOP of A LOCKER	Pic 2966
	-LW5			TOP of FLAM CABINET	Pic 2967
	-LW6			OLD FIRING RANGE #1 / FLOOR	Pic 2968
	-LW7				
	-LW8			TOP of A TABLE	Pic 2969
	-LW9	10"x9"		TOP of A LIGHT	Pic 2970
	-LW10	8"x16"		TOP of PIECE of EQUIP	Pic 2971
	-BLANK1			BLANK	

Samples Relinquished

Non-Responsive Name (printed)	Non-Responsive Signature	12/12/03 Date	1315 Time

Received By

Name (printed)	Signature	Date	Time

URS Sample Chain Of Custody

URS CORPORATION 5 Industrial Way Salem, NH 03079 Tel# 603 893-0616 Fax# 603 893-6240	Project Number: 42056-013-211 Client/ Project Name: ARMY NATIONAL GUARD Location: 154 DANIEL WEBSTER HWY NASHUA, NH Project Manager: Non-Responsive Sampler: Non-Responsive Date Sampled: 12/10/03

Sample I.D. #	Sample Description		Analysis Requested
1210-AB01A	9"x9" BROWN FLOOR TILE & MASTIC	OLD GAME ROOM #21	PLM
1210-AB01B	↓	KITCHEN #26	PLM
1210-AB02A	4" BLACK COVE BASE & MASTIC	CLASSROOM 2 #22	PLM
1210-AB02B	↓	KITCHEN #26	PLM
1210-AB02C	↓	CLASSROOM1 #17	PLM
1210-AB03A	9"x9" CREAM FLOORTILE & MASTIC	KITCHEN #26	PLM
1210-AB03B	↓	↓	PLM
1210-AB04A	9"x9" BLACK FLOOR TILE & MASTIC	KITCHEN #26	PLM
1210-AB04B	↓	OFFICE #12	PLM
1210-AB05A	AIR CELL PIPE INSULATION	DRILL HALL #2	PLM
1210-AB05B	↓	DRILL HALL #2	PLM
1210-AB05C	↓	DRILL HALL #2	PLM

Relinquish Non-Responsive Company: URS Corp.	Date: 12/12/03 Time: 1315	Received By: Company:	Date: Time:

Relinquished By: Company:	Date: Time:	Received By: Company:	Date: Time:

URS Sample Chain Of Custody

URS CORPORATION 5 Industrial Way Salem, NH 03079 Tel# 603 893-0616 Fax# 603 893-6240	Project Number: 42056-013-211 Client/ Project Name: ARMY NATIONAL GUARD Location: 154 DANIEL WEBSTER HWY NASHUA, NH Project Manager: Non-Responsive Sampler: Non-Responsive Date Sampled: 12/10/03

Sample I.D. #	Sample Description	Analysis Requested
1210-AB06A	WINDOW GLAZING / SUPPLY ROOM #3	PLM
1210-AB06B		PLM
1210-AB06C		PLM

Relinquished By:	Date:	Received By:	Date:
Non-Responsive	12/12/03		
Company: URS Corp.	Time: 1315	Company:	Time:

Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

APPENDIX E

TRAINING CERTIFICATES

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive, Wilmington, MA 01887
(978) 658-5272

IEE IEE

This is to certify that

[redacted]

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

April 11, 2003
Course Dates

Course Location
Institute for Environmental Education
16 Upton Drive
Wilmington, MA 01887

April 11, 2003
Examination Date

April 10, 2004
Expiration Date

03518010625349
Certificate Number

[redacted]
President/Director of Training

BEST AVAILABLE COPY

APPENDIX F

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX G

PHOTOGRAPHS

Photo 2947: Game Room #21 Broken 9" x 9" floor tile

Photo 2949: Classroom #22 - Water damaged ceiling tile with visible mold growth

Photo: 2951: Kitchen #26 Broken 9" x 9" floor tile

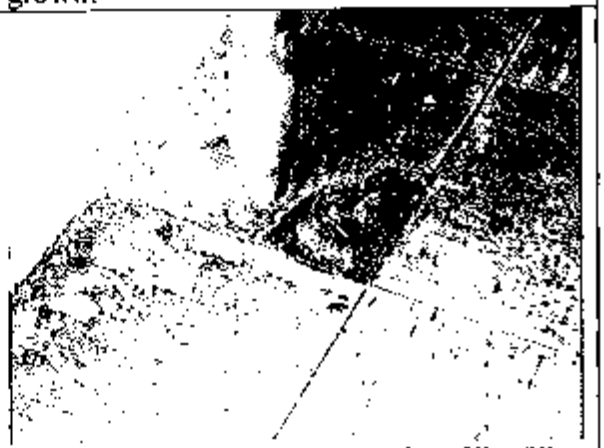


Photo 2952: Kitchen #26 - Broken 9" x 9" floor tile

Photo 2953: Commander's Office #15 - Ergonomic issues with desk (non-adjustable keyboard)

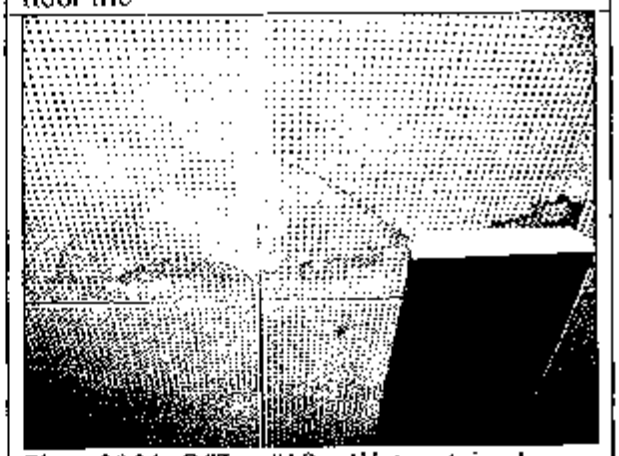


Photo2954: Office #18 – Water stained ceiling tiles

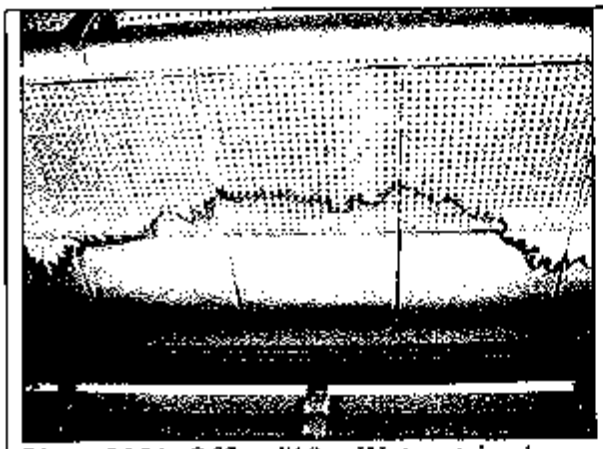


Photo 2956: Office #19 Water stained ceiling tiles

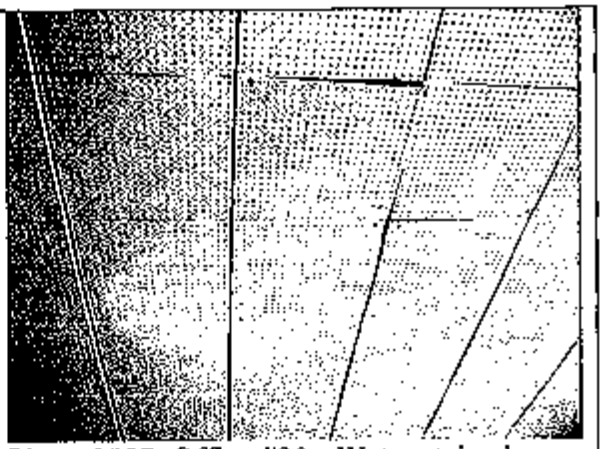


Photo 2957: Office #20 - Water stained ceiling tiles

Photo 2959: Office #13 Ergonomics issues concerning computer work station

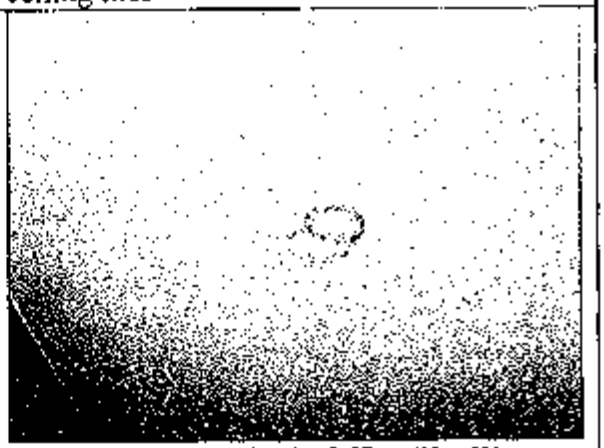


Photo 2960: Recruiter's Office #8 - Water stained ceiling tiles

Photo 2961: Recruiter's Office #8 Ergonomics issues concerning computer work station

Photo 2962: Restroom storage #9 - Water stained ceiling tiles

Photo 2963: Storage room # 3 -- Compressed gas cylinder not secured

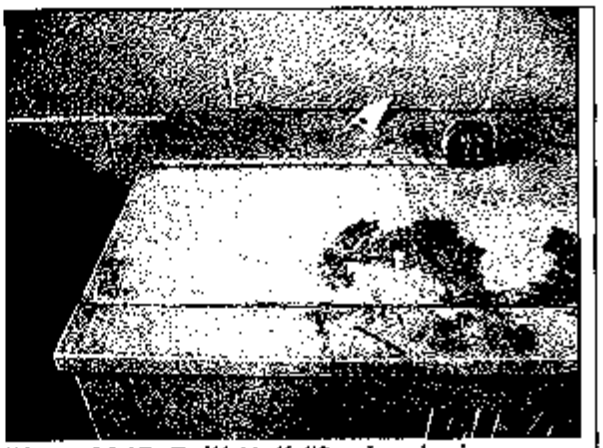


Photo 2967: Drill Hall #2 Lead wipe location from top of flammable cabinet

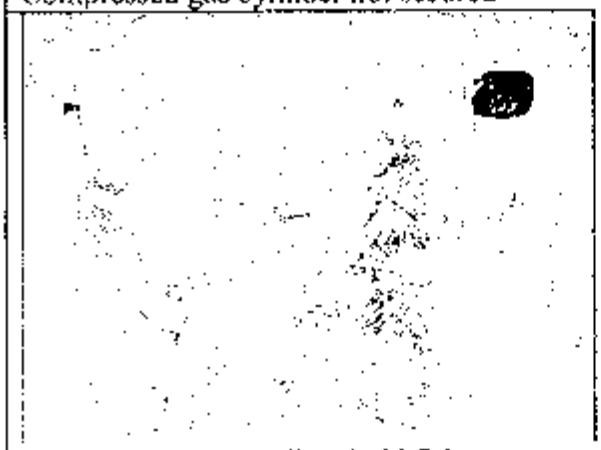


Photo 2968: Drill hall and old firing range lead wipe

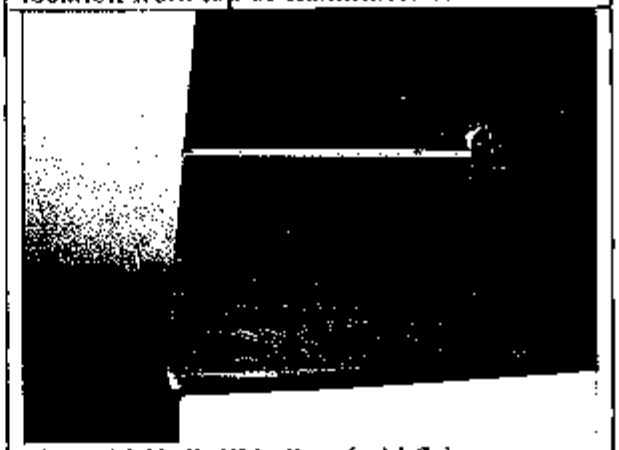


Photo 2969: Drill hall and old firing range lead wipe

Photo 2970: Drill hall and old firing range lead wipe

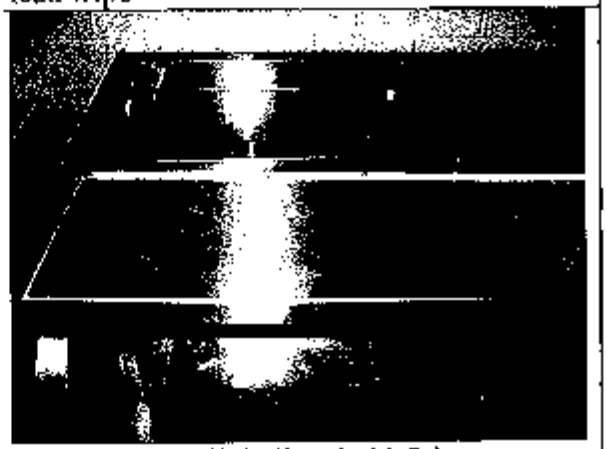


Photo 2971: Drill hall and old firing range lead wipe

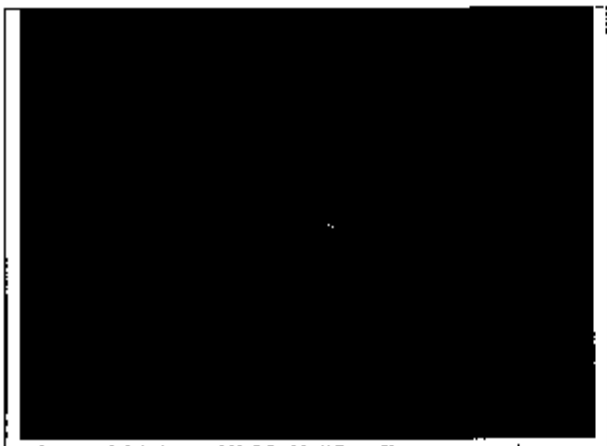


Photo 2984: Drill Hall #2 – Punctures in asbestos-containing pipe insulation

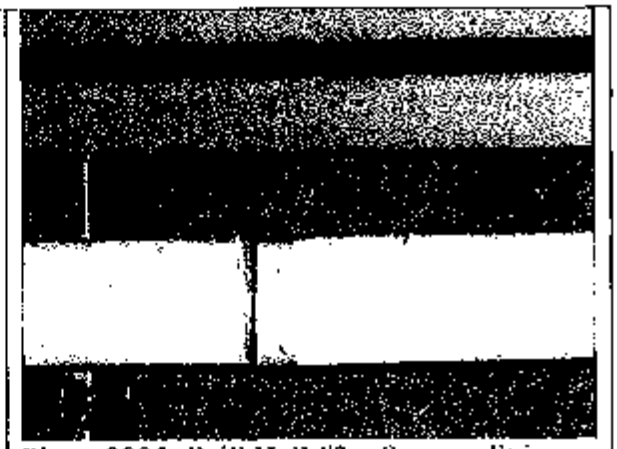


Photo 2985: Drill Hall #2 – Seam split in asbestos-containing pipe insulation

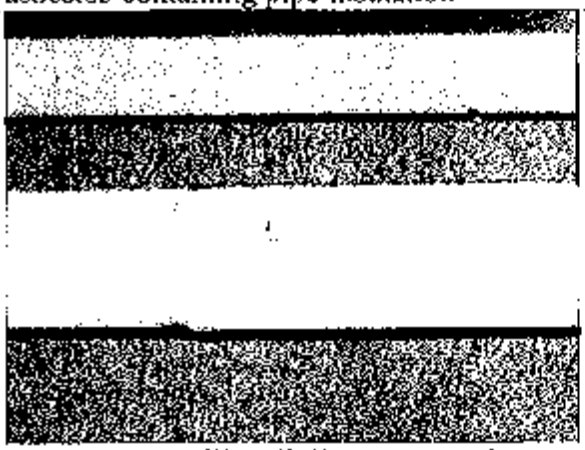


Photo 2986: Drill Hall #2 – Puncture in asbestos-containing pipe insulation

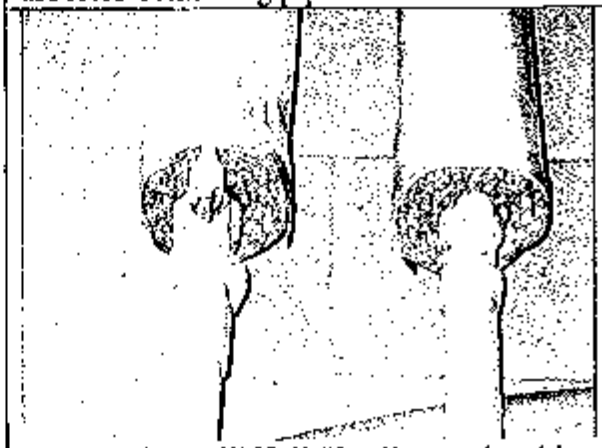


Photo 2987: Drill Hall #2 – Exposed end in asbestos-containing pipe insulation

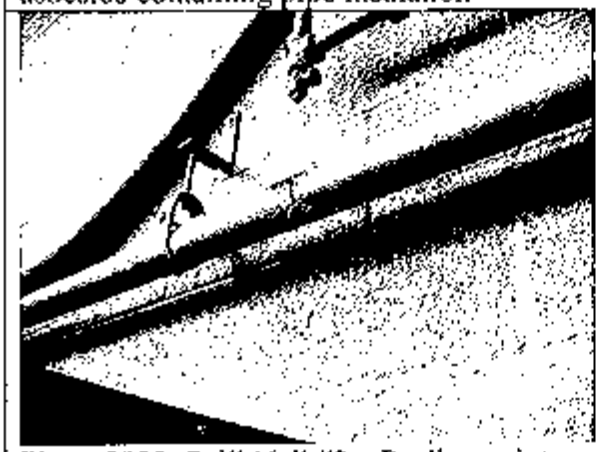


Photo 2988: Drill Hall #2 – Peeling paint from water leak above

Photo 2989: Janitor room #24 – Obstructed electrical panel

COMPLIANCE MANAGEMENT INTERNATIONAL

1215 Manor Drive, Suite 205
Mechanicsburg, PA 17055
Phone: 717.590.7031
Fax: 717.590.7936
www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Nashua Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Nashua Readiness Center** **154 Daniel Webster Highway** **Nashua, NH, 03060**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 9, 2013**
Report Date:	**June 24, 2013**

Non-Responsive

Non-Responsive, **CIH**
Senior Industrial Hygienist

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 9, 2013, at the Nashua Readiness Center located at 154 Daniel Webster Highway, Nashua, NH 03060. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in one location. See Section 3.0 for detailed sampling results.

2. Lighting levels met the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in all locations measured. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels met the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in the areas sampled.

    b. The relative humidity level met the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in all areas sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 parts per million (ppm).

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings.

5. Water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

Section 2.0 Operation Description & Observations

The Nashua Readiness Center is mainly an administrative facility with offices, classrooms, and a converted firing range area (currently a dining area and storage area). There were approximately 7 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1950s. It is a one story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, carpet, ceramic tile, and 12”x12” floor tiles.

The heating system consists of a gas-fired, forced hot water unit. There is one rooftop A/C units that services the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

This facility has a converted firing range that is now used as dining and storage areas.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	<7.7	*
2	Office 139	<7.7	*
3	Blank	<3	*
4	Drill Hall Floor Center	*	<110
5	Drill Hall Vending Top	*	<110
6	Converted Firing Range (CFR) Outside Entrance Floor	*	<110
7	CFR Floor	*	<110
8	CFR Light Fixture	*****	<110
9	CFR Contents	*****	170
10	Kitchen Freezer Top	*	<110
11	Office 139 Shelf Top	*****	<110
12	Classroom 131 Window Sill	*	<110
13	Family Assistance Center Window Sill	*	<110
14	Office 136 Desk Top	*	<110
15	**Exercise Room Shelf**	*****	**1500**
16	Lobby Heater Top	*	<110
17	Locker Room 113 Cabinet Top	*	<110
18	Blank	*	<110
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following location:
    - Exercise Room – Shelf

  Cleaning procedures should be improved to maintain lead levels on surfaces below the detection limit.

  Spot check additional areas in the Exercise Room to determine lead levels.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Family Assistance Center	52.1	30-50	Yes
West Corridor	14.3	5	Yes
Classroom 131	53.9	30-50	Yes
Office 134	47.9	30-50	Yes
Lounge	65.1	10	Yes
Maintenance Office	55.8	30-50	Yes
Office 136	38.5	30-50	Yes
Office 139	55.4	30-50	Yes
Office 140	70.6	30-50	Yes
Lobby	64.1	10	Yes
Recruiting Office	32.7	30-50	Yes
Drill Hall	36.8	10	Yes
Bulk Storage 113	31.7	30-50	Yes
Kitchen Food Prep	63.1	50	Yes
Mess Office	51.6	30-50	Yes
Food Storage	30.1	30	Yes
Kitchen Latrine	34.1	5	Yes
Dining Area	64.6	10	Yes
Bulk Storage	27.0	10	Yes
Bulk Storage 125	38.1	10	Yes
West Hall Men’s Latrine	11.9	5	Yes
Boiler Room	40.1	30	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level met the minimum recommended guidelines in all areas measured.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	73.7	60.8	360	0.1
Office 139	74.6	59.1	447	0.0
Criteria	**68-79**	**30-60**	**<1,060**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended 68-79°F in occupied areas.
- Relative humidity levels met the recommended guidelines in all areas measured.
- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 360 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,060 ppm. This is an indication that outdoor air ventilation is adequate.
- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide
- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. The following deleterious factors were noted:
    - Eight (8) water stained ceiling tiles in several sections of the facility.

Section 6.0 Suspect Asbestos Containing Building Materials

No suspect asbestos containing material (ACM) was noted at the time of this survey:

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/9/13	2.61 LPM
SKC Air Sampling Pump	647971	5/9/13	2.61 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515879
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Nashua, NH	**Date Submitted:**	5/14/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/21/2013 **Report Date:** 5/21/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Total ug	Final Result		Comments
13061972	1	Flame	Air	392	N/A	7.7	ug/m³	<3	<7.7	ug/m³	
13061973	2	Flame	Air	392	N/A	7.7	ug/m³	<3	<7.7	ug/m³	
13061974	3	Flame	Air Blank	0	N/A	3	ug/m³		<3	ug	
13061975	4	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061976	5	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061977	6	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061978	7	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061979	8	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061980	9	Flame	Wipe	****	0.108	110	ug/ft²	18	170	ug/ft²	
13061981	10	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061982	11	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061983	12	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061984	13	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061985	14	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061986	15	Flame	Wipe	****	0.108	110	ug/ft²	160	1500	ug/ft²	
13061987	16	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061988	17	Flame	Wipe	****	0.108	110	ug/ft²	<12	<110	ug/ft²	
13061989	18	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515879
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Nashua, NH	**Date Submitted:**	5/14/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/21/2013 **Report Date:** 5/21/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analyst Non-Responsive

Technical Manager: Non-Responsive

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To Thi Number For Inquires S15879 (pg 1 of 4)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: NASHUA, NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person: Non-Responsive @ phone # Non-Responsive
5. Submitted by: Non-Responsive Signature Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day +	☒ Email: Non-Responsive @us.army.mil
Comments:	❑ 2 Day Date Due: 5/21/13	❑ Fax: Non-Responsive @us.army.mil
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verb: @us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)
☒ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type GHOST) 15 (QTY)
❑ Pb Air 3 (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	STONE TRAP	TAPE	Wipe SWAB
1	DRILL Hall	5/9/13	392→392					✓		✓						
2	OFFICE 139		392→392					✓		✓						
3	BLANK		—					✓		✓						
4	DRILL HALL FLOOR CENTER			100cm²				✓								✓
5	DRILL HALL Vending TOP							✓								✓
6	CFR OUTSIDE ENT FLOOR							✓								✓
7	CFR (Dining) FLOOR							✓								✓
8	CFR Dining Light Fixture							✓								✓
9	CFR Contents							✓								✓
10	Kitchen Freezer TOP							✓								✓
11	Office 139 shelf TOP							✓								✓
12	CLASSROOM 131 W-SILL							✓								✓

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5/14/13 @ 1000 Via: FedEx By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments: 1945 0135 1790

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) ~~SIS~~ 515872

515879 (page 2 of 2)

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: ARNG 4h NH
2. Job Location: Nashua, NH
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers: Non-Responsive @ phone # Non-Responsive
5. Submitted by: Non-Responsive gnature: Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)	NORMAL BUSINESS HOURS	REPORT TO:
❑ Immediate Date Due:	❑ Immediate ❑ 3 Day	☒ Include COC/Field Data Sheets with Report
❑ 24 Hours Time Due:	❑ Next Day ☒ 5 Day +	☒ Email: Non-Responsive .army.mil
Comments:	❑ 2 Day Date Due:	❑ Fax:
	❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)	❑ Verba .army.mil

Asbestos Analysis

PCM Air – Please Indicate Filter Type:
- ❑ NIOSH 7400 (QTY)
- ❑ Fiberglass (QTY)

TEM Air – Please Indicate Filter Type:
- ❑ AHERA (QTY)
- ❑ NIOSH 7402 (QTY)
- ❑ Other (specify) (QTY)

PLM Bulk
- ❑ EPA 600 – Visual Estimate (QTY)
- ❑ EPA Point Count (QTY)
- ❑ NY State Friable 198.1 (QTY)
- ❑ Grav. Reduction ELAP 198.6 (QTY)
- ❑ Other (specify) (QTY)

MISC
- ❑ Vermiculite
- ❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
- ❑ ELAP 198.4/Chatfield (QTY)
- ❑ NY State PLM/TEM (QTY)
- ❑ Residual Ash (QTY)

TEM Dust
- ❑ Qual. (pres/abs) Vacuum/Dust (QTY)
- ❑ Quan. (s/area) Vacuum D5755-95 (QTY)
- ❑ Quan. (s/area)Dust D6480-99 (QTY)

TEM Water
- ❑ Qual. (pres/abs) (QTY)
- ❑ ELAP 198.2/EPA 100.2 (QTY)
- ❑ EPA 100.1 (QTY)

❑ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
- ❑ Pb Paint Chip (QTY)
- ❑ Pb Dust Wipe (wipe type GHOST) 15 (QTY)
- ❑ Pb Air 3 (QTY)
- ❑ Pb Soil/Solid (QTY)
- ❑ Pb TCLP (QTY)
- ❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
- ❑ Pb Furnace (Media) (QTY)

Fungal Analysis

Collection Apparatus for Spore Traps/Air Samples:
Collection Media
- ❑ Spore-Trap (QTY)
- ❑ Surface Swab (QTY)
- ❑ Surface Tape (QTY)
- ❑ Other (Specify) (QTY)
- ❑ Surface Vacuum Dust (QTY)
- ❑ Culturable ID Genus (Media) (QTY)
- ❑ Culturable ID Species (Media) (QTY)

SAMPLE INFORMATION / **ANALYSIS** / **MATRIX**

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
13	FAC W-SILL	5/9/13		100cm²				✓								✓	Date/Time: Contact: By:
14	OFFICE 136 DESK TOP							✓								✓	
15	EXERCISE ROOM SHELF							✓								✓	
16	Lobby Heater Top							✓								✓	
17	Locker Room 113 CAB. TOP							✓								✓	Date/Time: Contact: By:
18	BLANK							✓								✓	
																	Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)

1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:

Comments:

Appendix B. Photographs

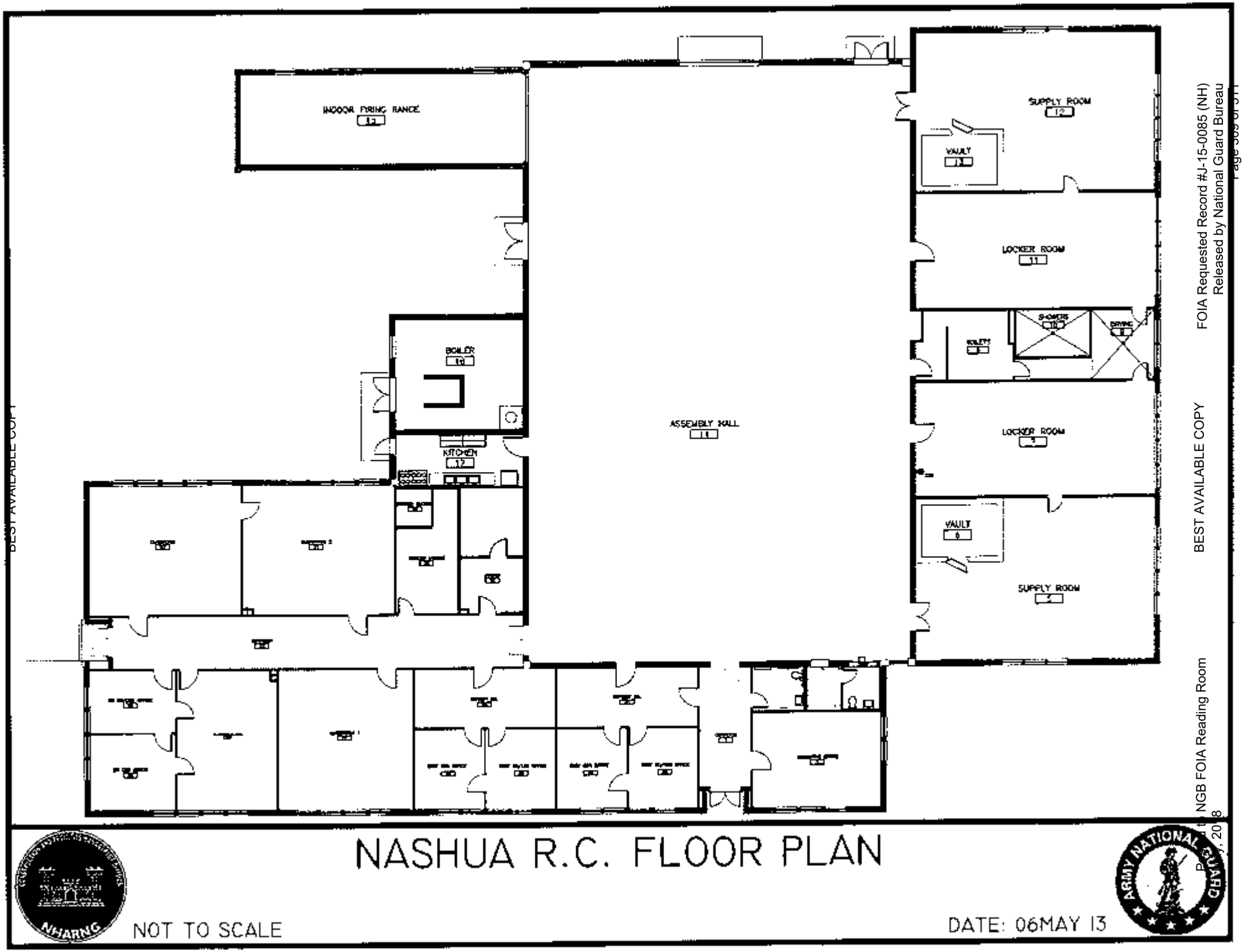
Nashua Armory

Converted Firing Range Dining Area

Converted Firing Range Bulk Storage

Boiler Room

Appendix C. Floor Plan



NASHUA R.C. FLOOR PLAN

NOT TO SCALE

DATE: 06MAY 13

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

COMPLIANCE MANAGEMENT INTERNATIONAL

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Mechanicsburg, PA 17055
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www.complianceplace.com

Industrial Hygiene Survey Report

National Guard Facility
Plymouth Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Plymouth Readiness Center** **19 Armory Road** **Plymouth, NH, 03264**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 15, 2013**
Report Date:	**June 24, 2013**

Non-Responsive

Non-Responsive
Senior Industrial Hygienist

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 15, 2013, at the Plymouth Readiness Center located at 19 Armory Road, Plymouth, NH 03264. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in one location. See Section 3.0 for detailed sampling results.

2. Lighting levels met the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in all locations measured. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels met the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in the areas sampled.

    b. The relative humidity level did not meet the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in two areas sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 parts per million (ppm).

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings.

Section 2.0 Operation Description & Observations

The Plymouth Readiness Center is mainly an administrative facility with offices, classrooms, and a drill hall. There were 7 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1950s with an addition in 2006. It is a single-story structure with a brick exterior. The interior walls are concrete block. The floors are concrete and 12”x12” floor tiles.

The heating system consists of an oil fired, forced hot water unit. There is a roof-top A/C unit that service the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

There is a converted firing range at this facility.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	<6.7	*
2	Converted Firing Range (CFR)	<6.7	*
3	Drill Hall Floor	*	<110
4	**Drill Hall Top of Locker**	*****	**260**
5	Drill Hall Top of Cabinet	*	<110
6	Kitchen Food Mixer	*	<110
7	Kitchen Table	*	<110
8	Drill Hall - Hall to Range Floor	*	<110
9	CFR Rack	*	<110
10	CFR Locker	*	<110
11	CFR Floor	*	<110
12	Office 2 Desk	*	<110
13	Classroom Desk	*	<110
14	Room 3	*****	<110
15	Blank	*****	<12
16	Blank	<3	*****
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 “Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges”

2. Occupational Safety and Health Administration (OSHA) 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following location:

    - Drill Hall – Top of Locker

  Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Office 2	80.1	30-50	Yes
Office 3	87.4	30-50	Yes
Classroom	61.3	30-50	Yes
Drill Hall	43.6	30	Yes
Kitchen	87.5	30-50	Yes
Office 15	65.3	30-50	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did meet the minimum recommended guideline all areas measured.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Outdoors	72.7	20.1	340	0.0
Office 2	71.3	**25.1**	412	0.0
Drill Hall	71.2	**27.5**	461	0.0
Criteria	**68-79**	**30-60**	**<1,040**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements met the recommended guideline of 68-79°F in occupied areas.

- Relative humidity level did not meet the recommended guideline of 30-60% in Office 2 and the Drill Hall. Low relative humidity can cause the drying of the mucous tissues and an increased susceptibility to respiratory infection. Relative humidity should be maintained at 30-60%.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 340 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,040 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ. No deleterious factors were noted:

Section 6.0 Suspect Asbestos Containing Building Materials

Suspect asbestos containing materials (ACM) materials were noted at the time of this survey in Drill Hall pipe and elbow insulation. It was intact and in good condition.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/15/13	3.00 LPM
SKC Air Sampling Pump	647971	5/15/13	3.00 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515949
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Plymouth RC	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/29/2013 **Report Date:** 5/29/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13064559	1	Flame	Air	450	N/A	6.7	ug/m^3	<3	<6.7	ug/m^3	
13064560	2	Flame	Air	450	N/A	6.7	ug/m^3	<3	<6.7	ug/m^3	
13064561	3	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064562	4	Flame	Wipe	****	0.108	110	ug/ft^2	28	260	ug/ft^2	
13064563	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064564	6	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064565	7	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064566	8	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064567	9	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064568	10	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064569	11	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064570	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064571	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064572	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064573	15	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13064574	16	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515949
Address:	301-lH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Plymouth RC	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/29/2013

Report Date: 5/29/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analys Non-Responsive

Technical Manag Non-Responsive

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515949

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4h NH
2. Job Location: Plymouth - RC
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person [redacted]
5. Submitted by: [redacted]

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5-Day + Date Due: 5/29/13
❑ 2 Day
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Includ[redacted] with Report
☒ Email: [redacted] us.army.mil
❑ Fax:
❑ Verbal

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)
☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type GHOST) 13 (QTY)
❑ Pb Air 3 (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

SAMPLE INFORMATION / ANALYSIS / MATRIX

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
1	Drill Hall	5-15	450					X		X						
2	Converted Range		450					X		X						
3	Drill Hall - floor			100 cm²				X				X				
4	Drill Hall - Top of locker							X								
5	Drill Hall - Top of cabinet							X								
6	Kitchen - food mixer							X								
7	Kitchen - table							X								
8	Drill Hall - Hall to Range floor							X								
9	Converted Range - Rack							X								
10	Converted Range - locker							X								
11	Converted Range - floor							X								
12	Office 2 - Desk							X								

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5 / 31 / 13 @ Via: Fedex By (Print): [redacted]
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time:
4. Comments:

[redacted]

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

515949 page 2 of 2

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: ARNG- 4C NH
2. Job Location: Plymouth - RS
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Perso [redacted] @ phone # [redacted]
5. Submitted by: Signature:

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
☐ Immediate Date Due:
☐ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
☐ Immediate ☐ 3 Day
☐ Next Day ☐ 5 Day +
☐ 2 Day Date Due:
☐ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: [redacted] @complianceplace.com
☐ Fax: [redacted] @us.army.mil
☐ Verbals [redacted] @us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☐ EPA 600 – Visual Estimate (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable 198.1 (QTY)
☐ Grav. Reduction ELAP 198.6 (QTY)
☐ Other (specify) (QTY)
MISC
☐ Vermiculite
☐ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

☐ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
☐ Pb Paint Chip (QTY)
☐ Pb Dust Wipe (wipe type Ghost) 13 (QTY)
☐ Pb Air 2 (QTY)
☐ Pb Soil/Solid (QTY)
☐ Pb TCLP (QTY)
☐ Drinking Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Waste Water ☐ Pb (QTY) ☐ Cu (QTY) ☐ As (QTY)
☐ Pb Furnace (Media) (QTY)

Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
☐ Spore-Trap (QTY) ☐ Surface Vacuum Dust (QTY)
☐ Surface Swab (QTY) ☐ Culturable ID Genus (Media) (QTY)
☐ Surface Tape (QTY) ☐ Culturable ID Species (Media) (QTY)
☐ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	AIR	BULK	MATRIX: DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
13	Classroom - Desk	5-15		100 cm²				X				X					Date/Time: Contact: By:
14	Room 3 - Desk	↓		↓				X				X					
15	Blank - wipe			0				X				X					
16	Blank - Air	↓	0					X		X							
																	Date/Time: Contact: By:
																	Date/Time: Contact: By:

[redacted]

LABORATORY STAFF ONLY (CUSTODY)

1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Appendix B. Photographs

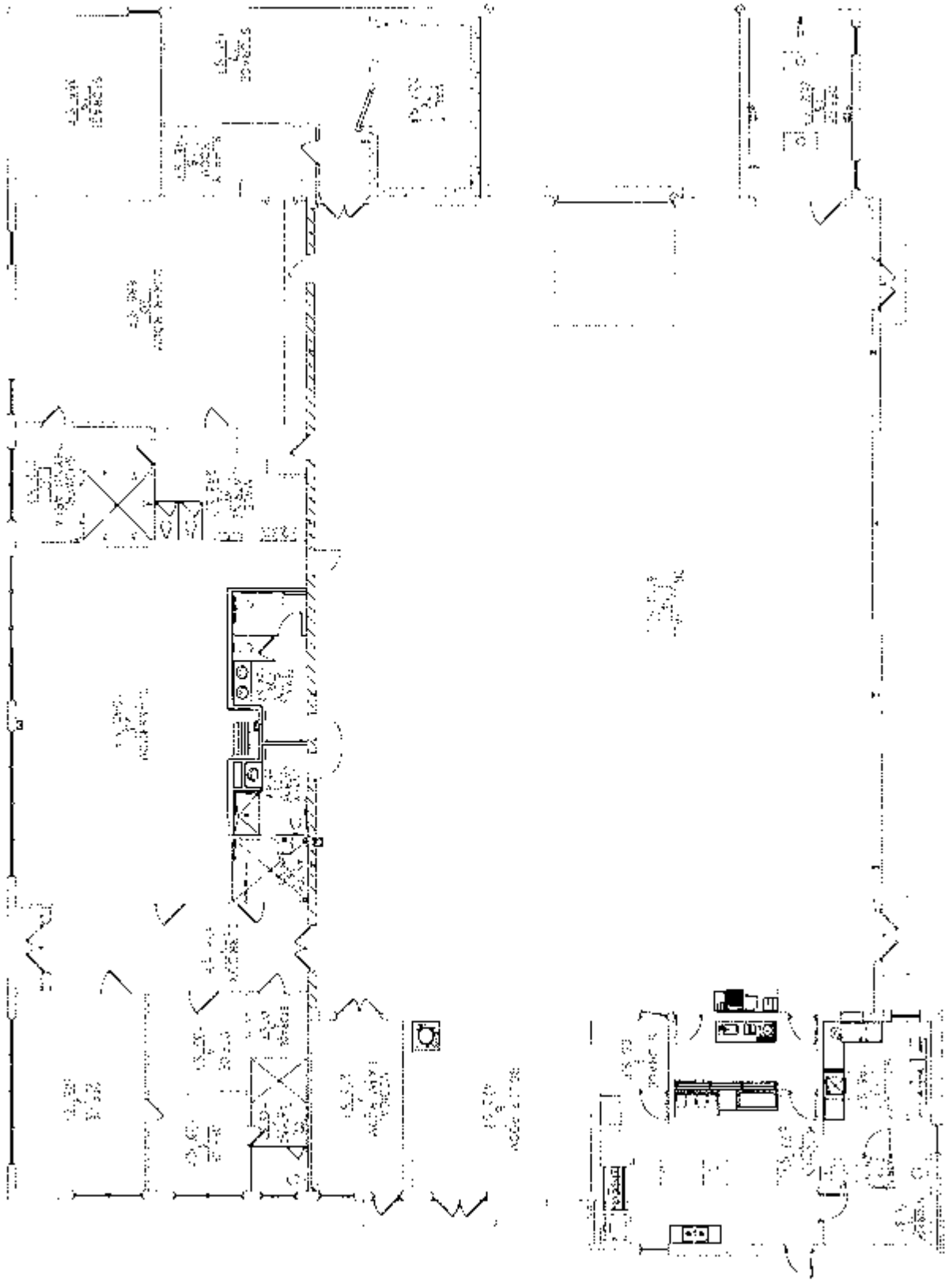
Exterior of the facility

Drill Hall

Converted firing range/office space

Suspect asbestos pipe insulation and mudded joint fittings

Appendix C. Floor Plan



PLYMOUTH R.C. FLOOR PLAN

NOT TO SCALE

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

INDUSTRIAL HYGIENE SURVEY REPORT
PORTSMOUTH READINESS CENTER
801 McGEE DRIVE
PORTSMOUTH, NEW HAMPSHIRE

Non-Responsive

Office Manager

Non-Responsive

Project Manager

October 2005
PN: 39741509

URS Corporation
5 Industrial Way
Salem, NH 03079-2830
Tel: 603.893.0616
Fax: 603.893.6240

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APPENDICES

Findings and Recommendations

Findings	Recommendation	Risk Assessment Code
Ergonomics		
Computer work stations were observed with fixed chairs, armrests, keyboards and monitors.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (DoD, OSHA General Duty)	RAC 3
Lighting		
On the day of the survey, the illuminance in the administrative area was inadequate in most offices.	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ACOE EM385-1-1)	RAC 4
Lead		
Lead was detected in wipe samples collected from the firing range and the drill hall in amounts greater then 200 $\mu g/ft^2$	Personnel trained in accordance with the OSHA Lead Standard should clean the former firing range and drill hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025)	RAC 4
Asbestos		
Damaged floor tile containing greater than 1% asbestos is present throughout the facility.	Remove and replace damaged asbestos-containing floor tile. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001)	RAC 3

Findings and Recommendations (Cont.)

Findings	Recommendation	Risk Assessment Code
Asbestos		
Exposed ends or damaged asbestos-containing pipe insulation were present in the drill hall.	Repair or remove exposed ends or damaged asbestos-containing pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001)	RAC 3
No site specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials (OSHA 29 CFR 1910.1001)	RAC 3
Electrical Safety		
Found an electrical power outlet with exposed wires	Any electrical openings shall be so sized and located that persons are not likely to come into accidental contact with the live parts or to bring conducting objects into contact with them (OSHA 29 CFR 1910.303)	RAC 2

1.0 SUMMARY

At the request of the National Guard Bureau Region North Industrial Hygiene Office (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Readiness Center located at 801 McGee Drive in Portsmouth, New Hampshire 03801. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On January 21, 2004, Mr Non-Responsive an industrial hygienist with URS, conducted a site visit to the Readiness Center in Portsmouth, New Hampshire. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements, and a review of site health and safety procedures. SFC Non-Responsive of the New Hampshire ARNG was Mr. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A. The risk assessment codes associated with this project are contained in Table 1.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This building area contains multiple offices located throughout the building with desks and computer workstations. Computer workstations were assessed during the walkthrough for ergonomic issues. Computer workstation chairs could not be adjusted for height, the armrests were in a fixed position and keyboards in offices #5 and #17 could not be adjusted (Photos # 3204 & 3208). Computer monitors could not be adjusted for different individuals working at the work stations. If more than one person is using that station, then proper adjustments need to be made to accommodate each person.

2.2 Chemical and Physical Agents Sampled

2.2.1 Relative Humidity

Relative humidity levels were measured using a TSI Q-Track (Model 8551). Relative humidity on the day of the survey ranged from 13.6 – 15.4 % with an average of 14.5%. The average reading was below the recommended comfort level of between 30.0% and 60.0% set by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ANSI / ASHRAE Standard 62.1-2004).

2.2.2 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made at various locations throughout the Readiness Center. Carbon dioxide concentrations ranged from 450 to 531 parts per million (ppm), with an average of 484 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

ASHRAE (62.1-2004) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Since the average interior carbon dioxide level was below 700 ppm an exterior reading was not collected.

2.2.3 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations remained at 0 parts per million (ppm) throughout the survey period. The measured levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausea, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.4 Lighting

Lighting in the administrative area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting – Table B-1).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux / foot candles)	Recommended Illuminance (lux / foot candles)
Office # 10	Administrative Duties	227 / 21.1	500 / 50
Office # 15	Administrative Duties	176 / 16.4	500 / 50
Office # 16	Administrative Duties	1190 / 110.6	500 / 50
Office # 18	Administrative Duties	689 / 64.0	500 / 50
Office # 19	Administrative Duties	882 / 81.9	500 / 50
Office # 20	Administrative Duties	290 / 26.9	500 / 50
Office # 21	Administrative Duties	301 / 28.0	500 / 50
Office # 22	Administrative Duties	477 / 44.3	500 / 50
Office # 23	Administrative Duties	567 / 52.7	500 / 50
Office # 25	Administrative Duties	328 / 30.5	500 / 50
Hallway # 11	Accessway	245 / 22.8	30 / 3
Hallway # 24	Accessway	142 / 13.2	30 / 3

On the day of the survey the illuminance in the administrative area was inadequate in most offices.

2.2.5 Lead

Paint chips were collected in two areas where paint was peeling and sent to AMA Analytical Services, Inc. (AMA) for analysis. One sample was found to contain lead in a concentration above the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 2-2 below shows the results of the lead paint testing.

Table 2-2
Levels of Lead in Paint Found in the Administrative Area

Sample Location	URS Sample ID Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Men's Shower Room # 29	0121-LPC02	0.1	0.13
Locker Room # 28	0121-LPC03	0.1	0.9

The analytical report from AMA is contained in Appendix D.

2.2.6 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020. EPA-600/R-93-116). Table 2-3 below presents the results of the sample analysis.

Table 2-3
Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample ID Number	Total Asbestos (%)
Hallway # 24	9"x9" Black Floor Tile	0121-AB02A	2.0 (chrysotile)
Hallway # 24	9"x9" Black Floor Tile	0121-AB02B	2.0 (chrysotile)
Room #5	9"x9" Black Floor Tile	0121-AB02C	2.0 (chrysotile)

Table 2-3 (Continued)
Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total % Asbestos
Office #16	9"x9" Brown Floor Tile	0121-AB03A	2.0 (chrysotile)
Kitchen # 4	9"x9" Brown Floor Tile	0121-AB03B	2.0 (chrysotile)
Room # 5	9"x9" Brown Floor Tile	0121-AB03C	2.0 (chrysotile)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix D. Mr. Hazzard's asbestos inspector training certificate is provided in Appendix E.

2.3 Ventilation System Evaluation

Not applicable to this operation

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

ERGONOMICS: The ergonomic issues with the desks, chairs and monitors need to be corrected by fitting the workplace to the workers.

LIGHTING: On the day of the survey the illuminance in the administrative area was inadequate in most offices. URS recommends increasing lighting in the administrative areas through use of task lighting. While work is in progress the administrative area must be lighted by at least the minimum light intensities.

LEAD: Two surfaces were tested in this building area for lead dust and one was found to contain lead. Currently, there are no federal or state regulations that require removal of these materials prior to building demolition or renovation. The U.S. Occupational Safety and Health Administration (OSHA) regulations, 29 CFR 1910.1025 and 29 CFR 1926.62 are designed to protect workers potentially exposed to elevated airborne levels of lead from lead-based paint.

ASBESTOS: Samples of the floor tile that was present throughout this building area were determined to contain asbestos in a concentration greater than one percent. It is recommended that the damaged tile (Photos # 3201, 3205 & 3209) be replaced with new, non-asbestos tile by an appropriately trained technician.

MOLD: There were water stains on the ceiling in room # 21 (Photo # 3199), room # 19 (Photo # 3200), room # 20 (Photo # 3202), room # 10 (Photo # 3206), room # 5 (Photo # 3207) and in the kitchen # 4 (Photo # 3210) that could lead to mold growth if not addressed.

3.0 FORMER FIRING RANGE

3.1 Operation Description

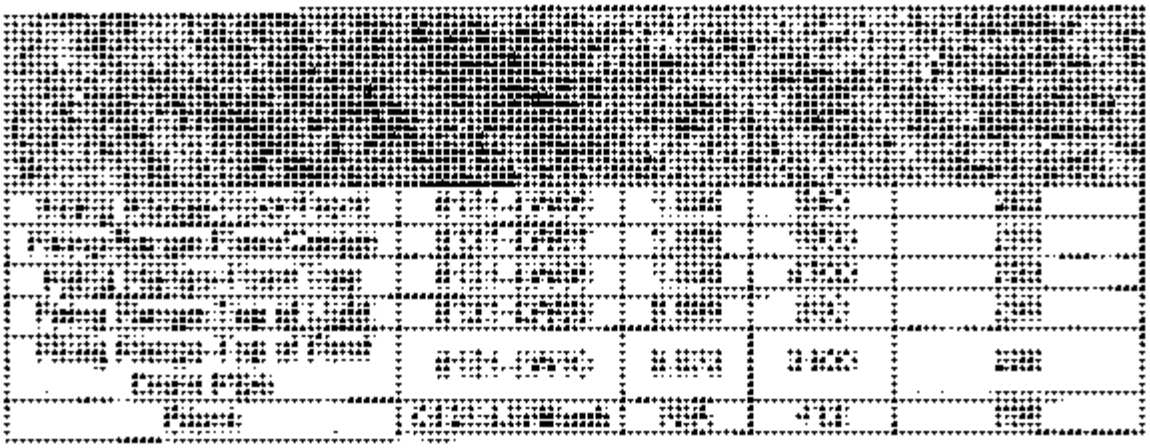
The firing range has been dismantled and this building area is now primarily used for storage.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 3-1 below shows the results of the lead sampling.

Table 3-1
Levels of Lead Dust Found in the Facility



One air sample for lead dust was also collected in the former firing range. Table 3-2 below shows the result of this air sample.

Table 3-2
Levels of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m³)	OSHA's PEL (µg/m³)
Former Firing Range	0121-LA01	1072	<2.8	50.0
Blank	0121-LA03	0	<3.0	50.0

On the dey of the survey, airborne lead dust levels in the former firing range were found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR

1910.1025(c)) of 50.0 µg/m^3 averaged over an 8-hour day. The analytical report from AMA is contained in Appendix D.

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: Surfaces within the former firing range were found to contain lead dust levels which exceeded the maximum limit set by the NGB (see Appendix F). URS recommends that an appropriately licensed lead contractor clean the former firing range. Appendix H provides guidelines for the clean-up and rehabilitation of indoor firing ranges.

ELECTRCAL SAFETY: An electrical power outlet in the former firing range had exposed wires coming from it (Photo # 3191). URS recommends cutting the power to the outlet and covering it. The fire extinguisher in the area has not been inspected since 1997 and was not marked indicating its location.

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a 7,140 square foot area with about a 30-foot high ceiling used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead dust was conducted in the drill hall using ghost wipes, which meet ASTM E 1792 standards. The analytical report from AMA is contained in Appendix D. Table 4-1 below shows the results of the lead sampling.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Sample Location	URS Sample Number	Area Wiped (ft²)	Result (µg/ft²)	Maximum Acceptable Surface Contamination Level (µg/ft²)
Drill Hall #1-Floor-Front	0121-LW01	1.000	33	200
Drill Hall #1-Floor-Rear	0121-LW02	1.000	50	200
Drill Hall #1-Top of Flammable Cabinet	0121-LW03	1.000	350	200
Drill Hall #1-Top of a Locker	0121-LW04	1.000	380	200
Drill Hall #1-Top of a Table	0121-LW05	1.000	110	200
Blank	0121-LWBlank1	N/A	<12	200

One air sample for lead dust was collected in the drill hall. Table 4-2 below shows the result of this air sample.

Table 4-2
Levels of Lead Found in the Air

Sample Location	URS Sample Number	Air Volume (L)	Result (µg/m³)	OSHA's PEL (µg/m³)
Drill Hall	0121-LA02	1068	<2.8	50.0
Blank	0121-LA03	N/A	<3.0	50.0

On the day of the survey, the airborne lead dust level in the drill hall was found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 µg/m^3 averaged over an 8-hour day.

A Paint chip was collected in the drill hall where paint was peeling and sent to AMA for analysis. The sample was found to contain lead in a concentration within the allowable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 4-3 below shows the results of the lead paint testing.

Table 4-3
Levels of Lead in Paint Found in the Drill Hall

Sample Location	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Drill Hall #1-Wall	0121-LPC01	0.01	0.031

The analytical report from AMA is contained in Appendix D.

4.2.2 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS)(EPA-600/M4-82-020, EPA-600/R-93-116). Table 4-4 below presents the results of the sample analysis.

Table 4-4
Sample Results of Suspect ACM

Sample Location	Material Sampled	URS Sample Number	Total Asbestos (%)
Drill Hall # 1	Pipe Insulation	0121-AB01A	70 (chrysotile)
Drill Hall # 1	Pipe Insulation	0121-AB01B	70 (chrysotile)
Drill Hall # 1	Pipe Insulation	0121-AB01C	70 (chrysotile)

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix D. Non-Responsive asbestos inspector training certificate is provided in Appendix E.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: Wipe samples collected in the drill hall for lead were found to be within allowable limits, except for samples 0121-LW03 and 0121-LW04 (Photo #'s 3212-13). The lead dust level in that sample exceeds the maximum limit set by the NGB (see Appendix F).

ASBESTOS: The asbestos pipe insulation was observed to have damaged fittings, splits where sections come together and puncture holes throughout the area, which need to be repaired (Photos # 3193-95). The repairs need to be performed by an appropriately trained technician.

5.0 BOILER ROOM

On the day of this survey, URS was unable to gain access to the boiler room. The State of New Hampshire had the keys.

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

6.1 Confined Spaces

No safety program was found regarding confined spaces. No training records were found on site. A confined spaces program is not required for this site.

6.2 Hearing Conservation

A written program for hearing conservation was found in the 1/172d FA Safety Binder, Table D, Chapter 5. No training records were found on site. A hearing conservation program is not required for this site.

6.3 Respiratory Protection

A written program for respiratory protection was found in the 1/172d FA Safety Binder, Tab D, Chapter 5. No training records were found on site. A respiratory protection program is not required for this site.

6.4 Hazard Communication

A written program for hazard communication was found in the 1/172d FA Safety Binder, Tab F. No training records were found on site. The Material Safety Data Sheets (MSDS) were found in a 3-ring binder on top of the flammable storage cabinet. It was not marked as to its location and not readily accessible.

6.5 Personal Protective Equipment

A written program for personal protective equipment was found in the 1/172d FA Safety Binder, Tab E, Chapter 6. No training records were found on site.
A personal protective equipment program is not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/IESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 55-2004: Thermal Environmental Conditions for Human Occupancy

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Army Corps of Engineers

Safety and Health Requirements Manual EM 385-1-1 November 2003

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

Standard for General Industry: 29 CFR 1910

APPENDIX A

SHOP DRAWING

PORTSMOUTH, NH

HHB 3D BATTALION 197TH FIELD ARTILLERY
STATE ARMORY, MCGEE DRIVE, PORTSMOUTH, NH 03801-3390

FIRE EVACUATION PLAN & ROOM NUMBER ASSIGNMENT

SPECIAL CHARACTERS
→+← = DIRECTION
S = THERMOSTAT
E = FIRE EXTINGUISHER

BFT = BROWN FLOOR TILE
GFP = GRAY FLOOR PAINT

(OVERHEAD DOOR) REAR EXIT

RANGE AREA ROOM 8 — 2
BOILER ROOM ROOM 9 — 3
KITCHEN AREA ROOM 10 — 4 — BFT
HHB TNG ROOM ROOM 11 — 5 — BFT
MEDICAL ROOM ROOM 12 — 6 — GRAY FLOOR PAINT
CUSTODIAN ROOM ROOM 13 — 7

DRILL HALL AREA (ZONE 1 HEATING) — 1

COMMO/MAINT AREA ROOM 7 — 31
VAULT 2
NCO CLUB/CLSRM ROOM 6 — 30 — RED CARPET
LATRINE/SHOWER ROOM 5 — 29
SURVEY & WIRE SECT ROOM 4 — 28 — GRAY FLOOR PAINT
VAULT 1
SUPPLY ROOM ROOM 3 — 27 — GRAY FLOOR PAINT

(ZONE 4 HEATING)

TOC ROOM ROOM 16 — 10
CLASSROOM ROOM 15 — 9
LATRINE/SHOWER ROOM 14 — 8
HALLWAY — 11

CSM OFC ROOM 17 — 12
OPN/TNG RM ROOM 19 — 14
SPEC STAFF ROOM 20 — 15
OFC MACH AREA ROOM 25 — 20
HHB TNG ROOM 26 — 21
HHB CLERK
LADIES RM ROOM 2 — 26

BN CDR ROOM 10 — 13
PSNCO ROOM 24 — 16
S1 AREA — 17
ION XO RM 23 — 18
BN S4 RM 24 — 19
HHB 1SG ROOM 27 — 22
HHB CDR ROOM 28 — 23
RCTG OFC ROOM 1 — 25

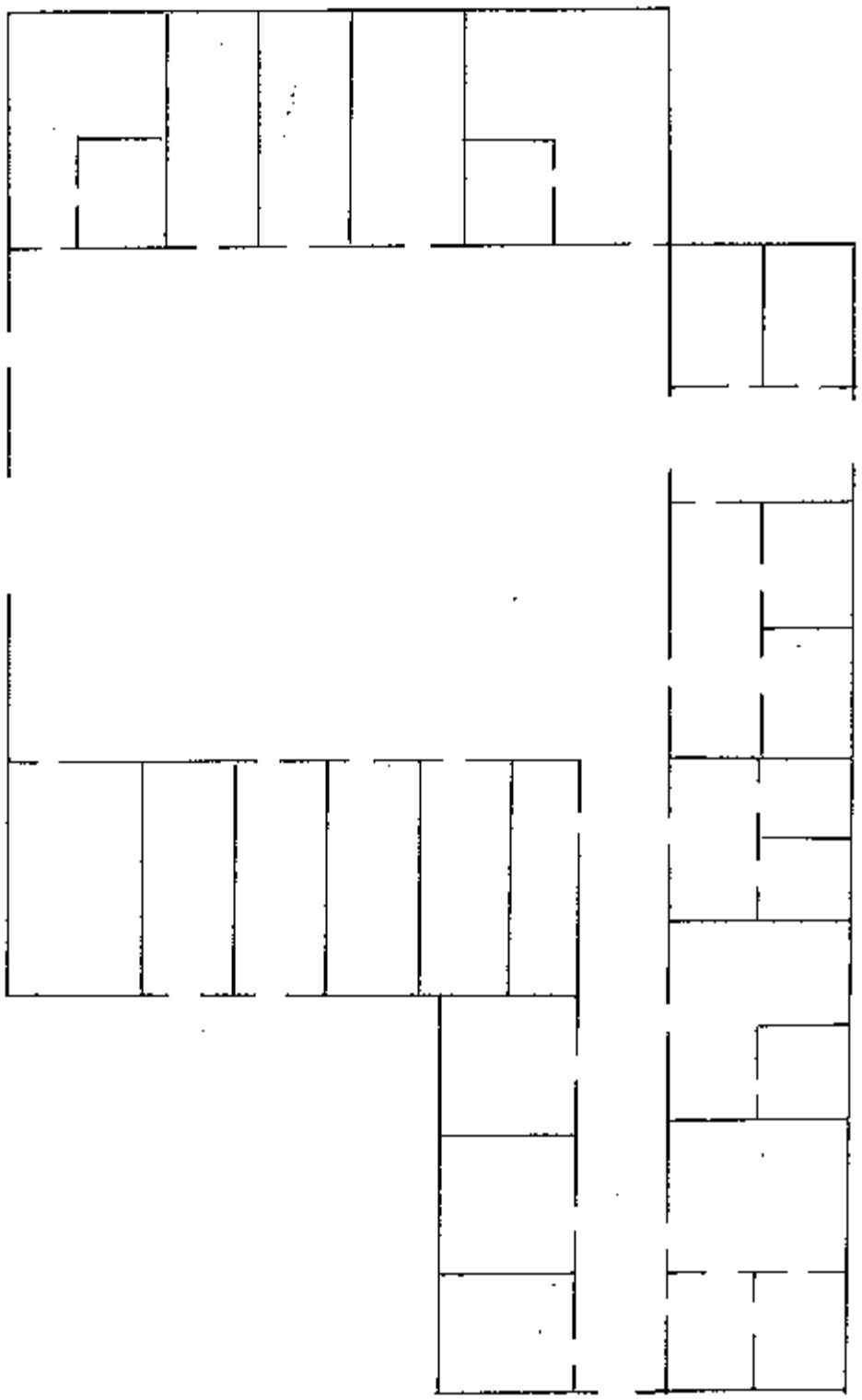
(ZONE 3 HEATING) (ZONE 3 HEATING)

IN THE EVENT OF FIRE, EVACUATE THE BUILDING AND CALL: 436-5000

A85ZA

UPDATED: [illegible]

PORTSMOUTH NH ARMY NATIONAL GUARD - ARMORY SITE PLAN



APPENDIX B

PERSONNEL LIST

BATTERY C 1ST BN 172D FA, STATE ARMORY, PORTSMOUTH, NH

Regular full time personnel (Deployed)
SFC Non-Responsive
SSG
SGT

Filling in for Deployed Personnel
SFC Non-Responsive

APPENDIX C

HAZARDOUS MATERIALS LIST

DEPARTMENT OF THE ARMY
BATTERY C 1st BATTALION (155mm) TOWED 172nd FIELD ARTILLERY
New Hampshire Army National Guard
State Armory, 803 McGee Drive
Portsmouth, New Hampshire 03801-3398

23 August 2001

SEMI-ANNUAL HAZARDOUS MATERIAL INVENTORY

NATIONAL STOCK NO.	NOMENCLATURE	LOCATION	U/I	QTY
	SNAP STARTING FLUID	CAB #1	11OZ	3
9150-01-055-5393	GEAR OIL 80W90	CAB #1	5GAL	1
9150-01-053-6688	CLEANER, LUBRICANT PROT	CAB #1	GAL	8
9150-00-145-0268	GREASE, AIRCRAFT, WTR	CAB #1	5LB	4
8030-00-546-8637	CORROSIVE PREVENT COMP	CAB #1	14OZ	1
9150-00-529-7518	PENETRATING OIL TYPE II	CAB #1	15OZ	1
	TONER, SOLID FILM	CAB #1	10OZ	1
6810-01-381-2904	ISOPROPYL ALCOHOL	CAB #1	30ML	16
6810-00-275-6010	METHANOL	CAB #1	5GAL	5
9150-00-458-0075	LUBRICANT, PROT GP PL-S	CAB #1	12OZ	8
8030-00-664-4944	PRESERV COATING, CANVAS	CAB #1	GAL	8
6850-00-598-9311	LEAK PREVENTATIVE COMP,	CAB #1	12OZ	3
6850-00-368-5233	INHIBITOR, CORROS VOLATILE	CAB #1	LB	1
7930-00-459-2247	CLEANING COMPOUND, OVEN AEROSOL	CAB #1	8OZ	7
6830-00-584-3041	PROPANE FUEL	CAB #1	14OZ	8
6850-00-664-1403	ANTI-FREEZE/COOLANT	CAB #1	GAL	1
8010-00-290-6984	SPRAY ENAMEL	CAB #1	10 OZ	11
7930-01-326-8110	GLASS CLEANER	CAB #1	PT	8
6850-00-621-1820	LEAK DETECTION COMPOUND	CAB #1	BTL	4
9150-01-177-3988	LUBRICATING OIL, ENG 10W	CAB #2	QT	97
9150-01-421-1427	LUBRICATING OIL, ENG 15W40	CAB #2	QT	75
9150-01-353-4799	AUTOMATIC TRANS FLUID DEXTRON II	CAB #2	QT	11
9150-00-935-9807	HYDRAULIC FLUID, OHT	CAB #2	QT	24
2910-00-646-9727	DEISEL STARTING FUEL	CAB #2	22OZ	7
6850-00-926-2275	CLEANING CMPD, WINDSHIELD	CAB #3	PT	50
8030-00-281-2348	PRESERV. COATING, CANVAS	CAB #3	5GAL	1
6850-00-281-1985	SOLVENT, DRY CLEANING	CAB #3	GAL	4
9150-00-935-5851	GREASE, AIRCRAFT, WTR	CAB #3	5GAL	3
8030-00-087-8630	ANTI-SEIZE COMPOUND	CAB #3	LB	1
9150-00-292-9689	LUBRICATING OIL, WPNS L/T	CAB #3	QT	5
9150-00-823-7860	LUBRICATING COMPOUND DIMETHYLSILICONE	CAB #3	PT	20
8010-01-160-1641	CHEMICAL AGENT RESISTANT COATING COMPONENT A	CAB #3	QT	2
8010-01-160-1641	CHEMICAL AGENT RESISTANT COATING COMPONENT B (CATAYST)	CAB #3	8OZ	2
	DEISEL FUEL ANTI-GEL	CAB #3	GAL	1
6830-00-584-3041	PROPANE FUEL	HAZMAT BLDG	14OZ	77
9150-01-421-1427	LUBRICATING OIL, 15W40	HAZMAT BLDG	QT	12

DEPARTMENT OF THE ARMY
BATTERY C 1ST BATTALION (155mm) TOWED 172ND FIELD ARTILLERY
New Hampshire Army National Guard
State Armory, 803 McGee Drive
Portsmouth, New Hampshire 03801-3398

23 August 2000

SEMI-ANNUAL HAZARDOUS MATERIAL INVENTORY

CABINET #1

NATIONAL STOCK NO.	NOMENCLATURE	MANUFACTURER	U/I	QTY
6850-00-264-9038	SOLVENT, DRY CLEANING	CSD INC.	5GAL	1
6850-00-281-1985	SOLVENT, DRY CLEANING	CSD INC	GAL	4
9150-01-055-5393	GEAR OIL 80W90	Amalie Refining	5GAL	2
9150-00-935-5851	GREASE, AIRCRAFT, WTR	Shell Oil Co.	5GAL	3
9150-01-053-6688	CLP	Royal Lubricants Co.	GAL	13
9150-00-054-6453	CLP	Royal Lubricants Co.	PT	2
9150-00-145-0268	GREASE, AIRCRAFT, WTR	Shell Oil Co.	5LB	10
9150-00-687-4241	LUBRICATING OIL, SEMI FLUID	Castrol Inc.	QT	6
9150-01-102-9445	BRAKE FLUID, SILICONE	San Juan Intl Co.	GAL	2
9150-231-2361	LUBRICATING OIL, GP PL-M	Bay Oil Co.	QT	2
9150-00-231-6689	LUBRICATING OIL, GP PL-S	Sowes Co. Calif.	QT	1
9150-252-6174	LUBRICATING OIL, GP L-O	Bay Oil Co.	QT	1
9150-01-260-2534	LUBRICANT, SOLID FILM	Crown North Amer.	PT	3
8030-00-546-8637	CORROSIVE PREVENT. COMP.	LHB Industries	14 OZ	1
6850-00-027-1887	OPTICAL CLEANER	Alfa Kleen	PT	1
9150-00-529-7518	PENETRATING OIL TYPE II	Malter International	15OZ	1

APPENDIX D

ANALYTICAL RESULTS

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	122303
Address:	5 Industrial Way	**Job Location:**	89 McGee Drive; Portsmouth, NH	**Date Analyzed:**	01/29/2004
	Salem, New Hampshire 03079-2830	**Job Number:**	42056-013-211	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	29-Jan-04
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit		Final Result		Comments
0421819	0121-LW 01	Flame	Wipe	****	1.000	12.00	ug/ft²	33	ug/ft²	
0421820	0121-LW 02	Flame	Wipe	****	1.000	12.00	ug/ft²	50	ug/ft²	
0421821	0121-LW 03	Flame	Wipe	****	1.000	12.00	ug/ft²	350	ug/ft²	
0421822	0121-LW 04	Flame	Wipe	****	1.000	12.00	ug/ft²	380	ug/ft²	
0421823	0121-LW 05	Flame	Wipe	****	1.000	12.00	ug/ft²	110	ug/ft²	
0421824	0121-LW 06	Flame	Wipe	****	1.000	12.00	ug/ft²	540	ug/ft²	
0421825	0121-LW 07	Flame	Wipe	****	1.000	12.00	ug/ft²	1000	ug/ft²	
0421826	0121-LW 08	Flame	Wipe	****	1.000	12.00	ug/ft²	4700	ug/ft²	
0421827	0121-LW 09	Flame	Wipe	****	0.889	13.50	ug/ft²	200	ug/ft²	
0421828	0121-LW 10	Flame	Wipe	****	0.972	12.34	ug/ft²	3100	ug/ft²	
0421829	0121-LW BLANK	Flame	Wipe Blank	****	N/A	12.00	ug	< 12	ug	
0421830	0121 LA 01	Flame	Air	1072	N/A	2.80	ug/m³	< 2.8	ug/m³	
0421831	0121 LA 02	Flame	Air	1068	N/A	2.81	ug/m³	< 2.8	ug/m³	
0421832	0121 LA 03	Flame	Air Blank	0	N/A	3.00	ug/m³	< 3	ug	
0421833	0121 LPC 01	Flame	Paint Chip	****	N/A	0.01	%Pb	0.031	%Pb	
0421834	0121 LPC 02	Flame	Paint Chip	****	N/A	0.01	%Pb	0.13	%Pb	
0421835	0121 LPC 03	Flame	Paint Chip	****	N/A	0.01	%Pb	0.9	%Pb	

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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	Job Name:	Army National Guard	Chain Of Custody:	122303
Address:	5 Industrial Way	Job Location:	89 McGee Drive; Portsmouth, NH	Date Analyzed:	01/29/2004
	Salem, New Hampshire 03079-2830	Job Number:	42056-013-211	Person Submitting:	[redacted]
		P.O. Number:	Not Provided	Report Date:	29-Jan-04

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analys[redacted] Technical Manager: [redacted]

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

Client:	URS Corporation	**Job Name:**	Army National Guard	**Chain Of Custody:**	122303
Address:	5 Industrial Way	**Job Location:**	89 McGee Drive; Portsmouth, NH	**Date Analyzed:**	1/29/2004
	Salem, New Hampshire 03079-2830	**Job Number:**	42056-013-211	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		
Attention:	[redacted]				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0421836	0121 AB 01 A	70	70	--	--	--	--	--	20	--	--	10	Gray	LB	
0421837	0121 AB 01 B	70	70	--	--	--	--	--	20	--	--	10	Gray	LB	
0421838	0121 AB 01 C	70	70	--	--	--	--	--	20	--	--	10	Gray	LB	
0421839	0121 AB 02 A-FT	2	2	--	--	--	--	--	--	--	--	98	Black	LB	
0421840	0121 AB 02 A-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed
0421841	0121 AB 02 B-FT	2	2	--	--	--	--	--	--	--	--	98	Black	LB	
0421842	0121 AB 02 B-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed
0421843	0121 AB 02C-FT	2	2	--	--	--	--	--	--	--	--	98	Black	LB	
0421844	0121 AB 02C-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed
0421845	0121 AB 03A-FT	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0421846	0121 AB 03A-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed
0421847	0121 AB 03B-FT	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0421848	0121 AB 03B-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed

This report applies only to the sample, or samples, investigated and is not necessarily indicative of the quality or condition of apparently identical or similar products. As a mutual protection to clients, the public and these Laboratories, this report is submitted and accepted for the exclusive use of the client to whom it is addressed and upon the condition that it is not to be used, in whole or in part, in any advertising or publicity matter without prior written authorization from us. Sample types, locations and collection protocols are based upon the information provided by the persons submitting them and, unless collected by personnel of these Laboratories, we expressly disclaim any knowledge and liability for the accuracy and completeness of this information. Residual sample material will be discarded in accordance with the appropriate regulatory guidelines, unless otherwise requested by the client. NVLAP Accreditation applies only to polarized light microscopy of bulk samples and transmission electron microscopy of AHERA air samples.

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AMA Analytical Services, Inc.
A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	Job Name:	Army National Guard	Chain Of Custody:	122303
Address:	5 Industrial Way	Job Location:	89 McGee Drive; Portsmouth, NH	Date Analyzed:	1/29/2004
	Salem, New Hampshire 03079-2830	Job Number:	42056-013-211	Person Submitting:	[redacted]
		P.O. Number:	Not Provided		

Attention: [redacted]

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0421849	0121 AB 03C-FT	2	2	--	--	--	--	--	--	--	--	98	Brown	LB	
0421850	0121 AB 03C-M	--	--	--	--	--	--	--	--	--	--	--		LB	Sample Not Analyzed

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

[redacted]

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory
4375 Forbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643

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Industrial Hygiene Surface Wipe Sample Sheet

Return Address: URS Corporation 5 Industrial Way Salem, NH 03079		**Point of Contact (name and phone #)** Non-Responsive 603-893-0616	
		Samples Collected By Non-Responsive	
Sampled Facility ARMORY	**City** PORTSMOUTH	**State** NH	**Location (bldg/area)**
Description of Operation READINESS CENTER		**Date Collected** 01/21/04	**Date Shipped** 01/26/04

Analysis Requested: LEAD

Lab Use Only	Sample Number	Area Wiped	Results	Remarks	
J	0121-LW01	12"x12"		DRILL HALL - FLOOR FRONT	PIC 3211
J	-LW02			- REAR	
J	-LW03			- Top of FLAM CAB	PIC 3212
J	-LW04			- Top of LOCKER	3213
J	-LW05			- Top of TABLE	3214
J	-LW06			FORMER FIRING RANGE - FLOOR - FRONT	3215
J	-LW07			- CENTER	
J	-LW08			- TRAP	3216
J	-LW09	8"x16"		- Top of LIGHT	3217
J	-LW10	28"x5"		- Top of Roof DRAIN	3218
	-LW-BLANK1	—		BLANK	

Samples Relinquished

Non-Responsive	Non-Responsive	01/26/04	1130
Name (printed)	**Signature**	**Date**	**Time**

Received By

Name (printed)	**Signature**	**Date**	**Time**

URS Air Sample Chain Of Custody

URS CORPORATION 5 Industrial Way Salem, NH 03079 Tel# 603 893-0616 Fax# 603 893-6240	Project Number: 42056-013-211 Client/ Project Name: Army National Guard Location: 801 McGEE DRIVE PORTSMOUTH, NH Project Manager: Non-Responsive Sampler: Non-Responsive Date Sampled: 01/21/04

Sample I.D. #	Sample Description	Pump	Flow Rate	Volume	Analysis Requested
0121-LA01	FORMER FIRING RANGE	On: 0816 Off: 1244 Total: 268	On: 4.0 Off: 4.0 Average: 4.0	1072	LEAD
0121-LA02	DRILL HALL	On: 0822 Off: 1249 Total: 267	On: 4.0 Off: 4.0 Average: 4.0	1068	LEAD
0121-LA03	BLANK	On: Off: Total:	On: Off: Average:	N/A	LEAD
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		
		On: Off: Total:	On: Off: Average:		

Relinquished By: Non-Responsive Non-Responsive Company: URS Corporation	Date: 1/26/04 Time: 1130	Received By: Company:	Date: Time:
Relinquished By: Company:	Date: Time:	Received By: Company:	Date: Time:

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URS Sample Chain Of Custody

URS CORPORATION
5 Industrial Way
Salem, NH 03079
Tel# 603 893-0816
Fax# 603 893-6240

Project Number: 42056-013-211
Client/ Project Name: ARMY NATIONAL GUARD
Location: 801 McGEE DRIVE, PORTSMOUTH, NH
Project Ma[redacted] Sampled: 01/21/04
Sampler: [redacted]

Sample I.D. #	Sample Description	Analysis Requested
0121-LPC01	WHITE PAINT CHIP / DRILL HALL	LEAD
0121-LPC02	LIGHT GRAY PAINT CHIP / MENS SHOWER ROOM # 29	LEAD
0121-LPC03	GRAY PAINT CHIP / LOCKER ROOM # 28	LEAD

Relinquished By:	Date:	Received By:	Date:
[redacted]	01/26/04		
Company: URS Corp.	Time: 1130	Company:	Time:

Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

URS Sample Chain Of Custody

URS CORPORATION
5 Industrial Way
Salem, NH 03079
Tel# 603 893-0616
Fax# 603 893-6240

Project Number: 42056-013-211
Client/ Project Name: ARMY NATIONAL GUARD
Location: 901 McGEE DRIVE PORTSMOUTH, NH
Project M [redacted]
Sampler [redacted] te Sampled: 01/21/04

Sample I.D. #	Sample Description		Analysis Requested
0121-AB01A	AIR CELL PIPE INSULATION	DRILL HALL #1	PLM
0121-AB01B	↓	↓	PLM
0121-AB01C	↓	↓	PLM
0121-AB02A	BLACK 9"x9" FLOOR TILE	HALL #24	PLM
0121-AB02B	↓	↓	PLM
0121-AB02C	↓	TRAINING ROOM #5	PLM
0121-AB03A	BROWN 9"x9" FLOOR TILE	PSNCO office #16	PLM
0121-AB03B	↓	KITCHEN #4	PLM
0121-AB03C	↓	TRAINING ROOM #5	PLM

Relinquished By:	Date:	Received By:	Date:
[redacted]	01/26/04		
Company: URS Corp.	Time: 1130	Company:	Time:

Relinquished By:	Date:	Received By:	Date:
Company:	Time:	Company:	Time:

Industrial Hygiene Surface Wipe Sample Sheet

Return Address: URS Corporation
5 Industrial Way
Salem, NH 03079

Point of Contact (name and phone #)
Non-Responsive 603-893-0616

Samples Collected By
Non-Responsive

Sampled Facility	City	State	Location (bldg/area)
ARMORY	PORTSMOUTH	NH	

Description of Operation: READINESS CENTER

Date Collected: 01/21/04

Date Shipped:

Analysis Requested: LEAD

Lab Use Only	Sample Number	Area Wiped	Results	Remarks	
	0121-LW11	12"x12"		HALL #11: Top of Pepsi Machine	Pic 3219
	-LW12			S1 AREA #17: Top of Locker	3220
	-LW13			FDC Room #10: Top of Locker	3221
	-LW14			OFC AREA #20: Top of File Cab	3222
	-LW15			HALL #24: Floor	
	-LW16			Locker Room #28: Top of Locker	3223
	-LW17			Clerk Room #21: Top of File Cab	3224
	0121-LW-BLANK	—		BLANK	

Samples Relinquished

Non-Responsive — Name (printed)

Non-Responsive — Signature

01/26/04 — Date

1130 — Time

Received By

Name (printed) — Signature — Date — Time

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APPENDIX E

TRAINING CERTIFICATES

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive, Wilmington, MA 01887
(978) 658-5272

IEE

IEE

This is to certify that

[redacted]

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

April 11, 2003
Course Dates

Course Location
Institute for Environmental Education
16 Upton Drive
Wilmington, MA 01887

April 10, 2004
Expiration Date

[redacted]
President/Director of Training

April 11, 2003
Examination Date

03518010625349
Certificate Number

APPENDIX F

RECOMMENDATIONS FOR SURFACE LEAD IN DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot ($\mu g/ft^2$). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, and feasibility of cleaning to a certain level.

a. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 $\mu g/ft^2$) and windowsills (250 $\mu g/ft^2$) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results are worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 $\mu g/ft^2$ in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 $\mu g/ft^2$ is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX G

PHOTOGRAPHS

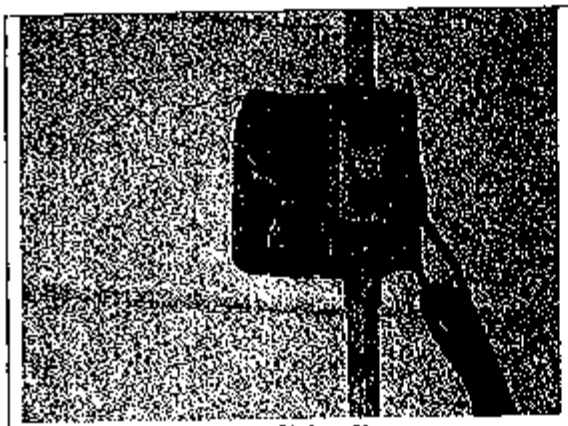

Photo 3191: Former Firing Range - Exposed wires in "live" power outlet

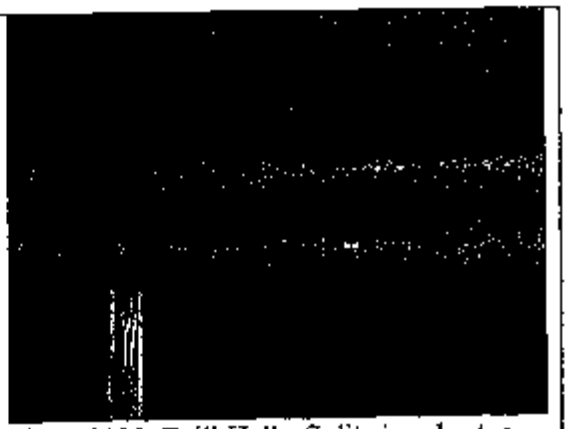

Photo 3193: Drill Hall - Splits in asbestos-containing pipe insulation

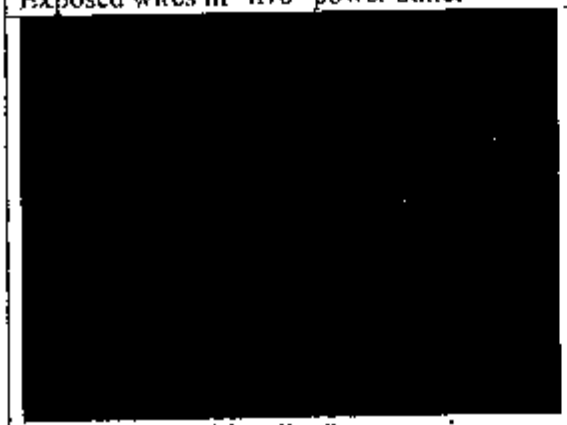

Photo 3194: Drill Hall – Punctures in asbestos-containing pipe insulation

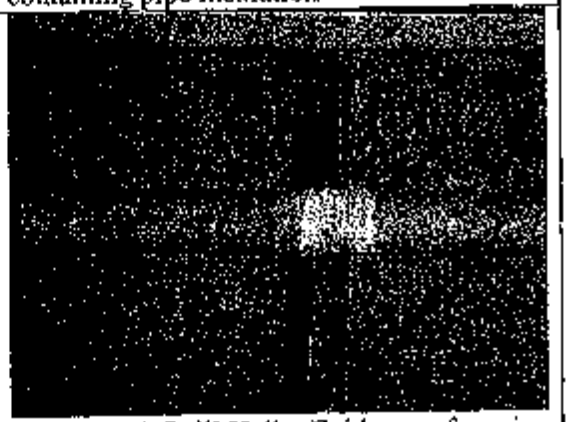

Photo 3195: Drill Hall – Evidence of repairs on asbestos-containing pipe insulation

Photo 3199: Clerk Room #21 – Water stains on ceiling

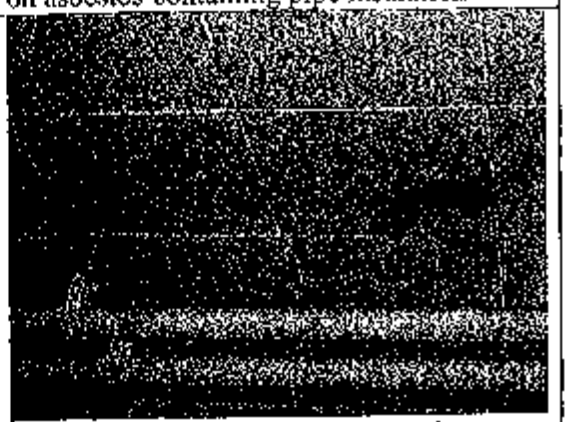

Photo 3200: BNS4 #19 – Water stains on ceiling

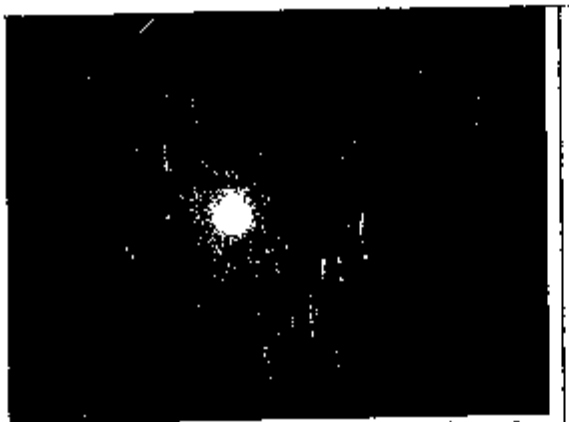

Photo 3201: BNS4 #19 - Discoloration of floor tile from water incursion

Photo 3202: OFC Room #20 – Water stains on ceiling

Photo 3204: SI Area #17 - Computer work station with fixed positions

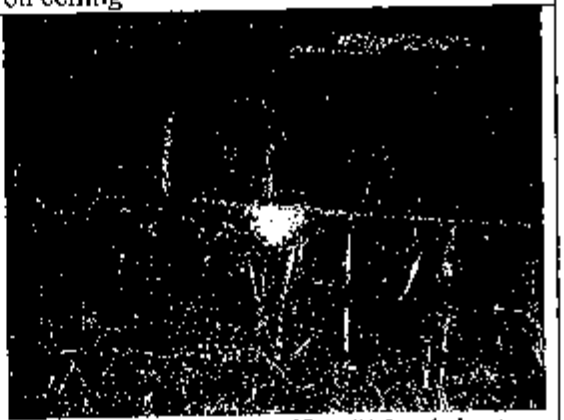

Photo 3205: PSNCO Office #16 – Asbestos-containing floor tile delaminating

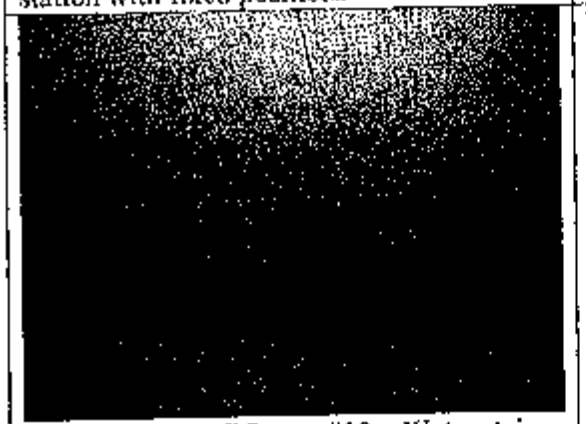

Photo 3206: FDC Room #10 – Water stains on ceiling

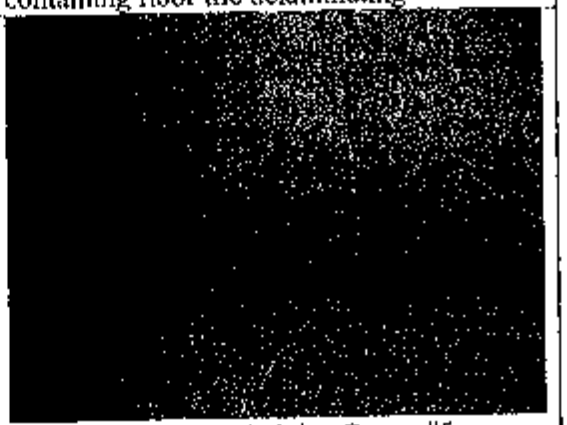

Photo 3207: HHB Training Room #5 – Water stains on ceiling

Photo 3209: HIIB Training Room #5 – Missing asbestos-containing floor tile

Photo 3210: Kitchen #4 – Water stains on ceiling

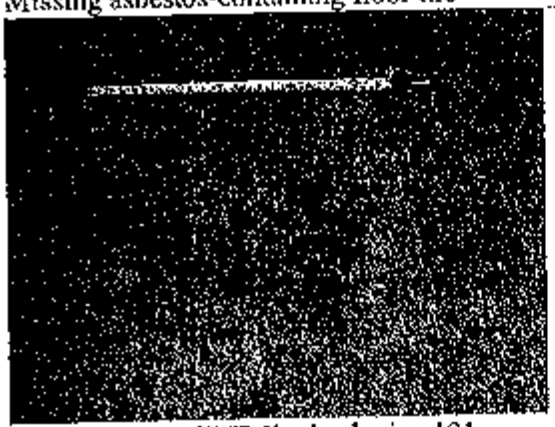

Photo 3211: Drill Hall – lead wipe 121-LW01

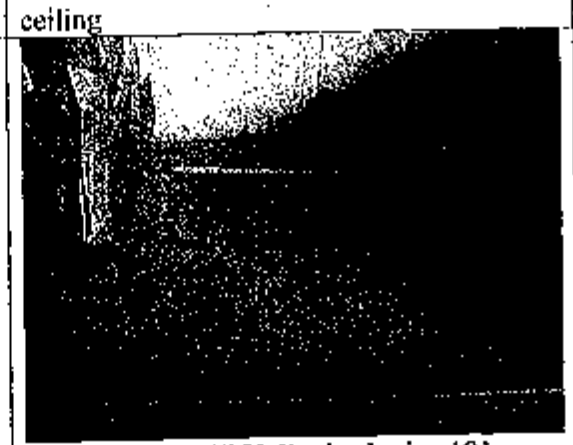

Photo 3212: Drill Hall – lead wipe 121-LW03

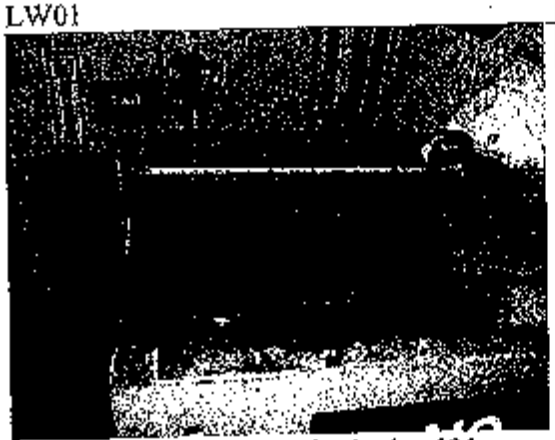

Photo 3213: Drill Hall – lead wipe 121-LW04

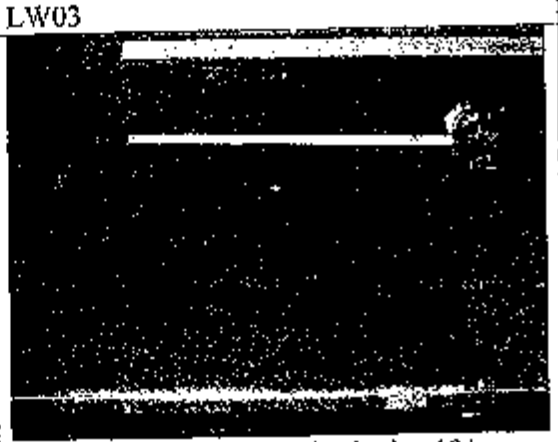

Photo 3214: Drill Hall – lead wipe 121-LW05

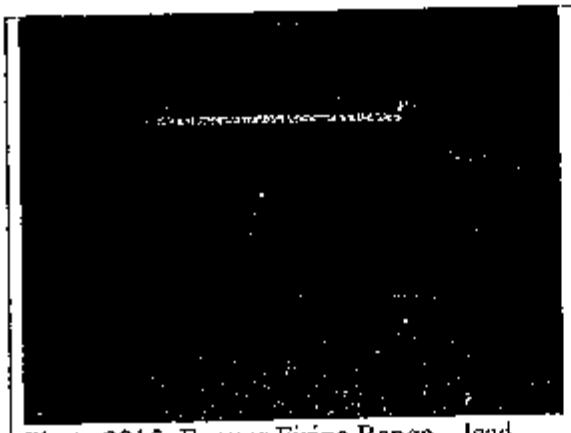

Photo 3215: Former Firing Range – lead wipe 121-LW06

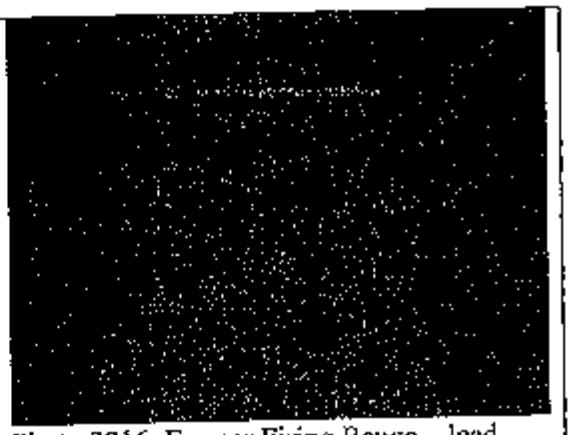

Photo 3216: Former Firing Range - lead wipe 121-LW07

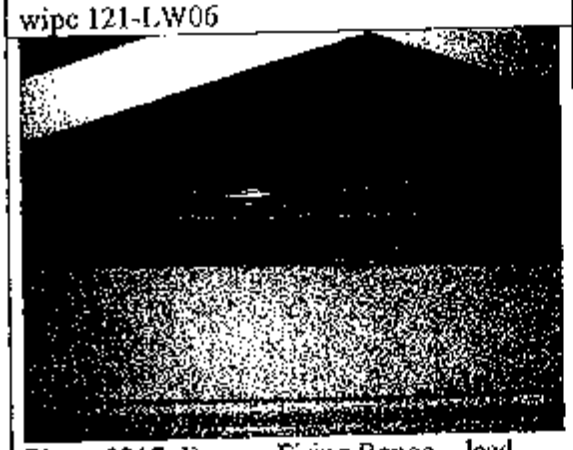

Photo 3217: Former Firing Range -- lead wipe 121-LW09

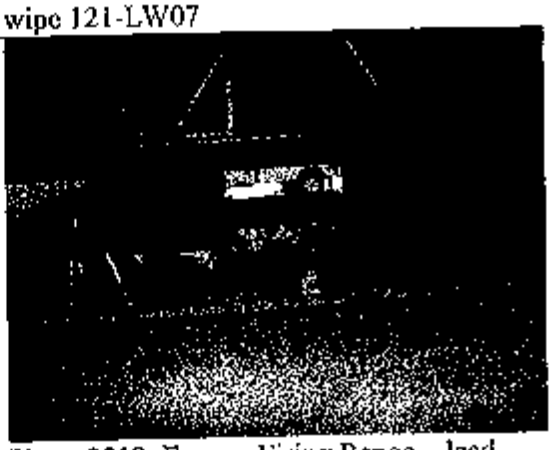

Photo 3218: Former Firing Range - - lead wipe 121-LW10

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION, AND OPERATION OF ARNG INDOOR FIRING RANGES (IFR) AND GUIDELINESFOR IFR REHABILITATION, CONVERSION AND CLEANING

DEPARTMENTS OF THE ARMY AND THE AIR FORCE
NATIONAL GUARD BUREAU
1411 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VA 22202-3231

5 December 2001

NGB-AVS

MEMORANDUM FOR THE ADJUTANTS GENERAL OF ALL STATES, PUERTO RICO, THE US VIRGIN ISLANDS, GUAM, AND THE COMMANDING GENERAL OF THE DISTRICT OF COLUMBIA

SUBJECT: (All States Log Number P01-0075) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges (IFR) and Guidelines for IFR Rehabilitation, Conversion and Cleaning

1. References:

a. AR 385-63, Policy and Procedures, 15 November 1983.

b. DODI 6055.9-STD, DOD Ammunition and Explosive Safety Standards, August 1997.

c. DODIG Report #98-170, subject: ARNG and U.S. Army Reserve Command Small Arms IFR, 30 June 1998.

d. AR 385-10, The Army Safety Program, 29 February 2000.

e. All States Memorandum, NGB-AVS, 18 September 2000, subject: (All States Log Number P00-0059) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges.

2. The policy and procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges are enclosed. Guidelines for Rehabilitation, Conversion, and Cleaning of IFRs are provided in the Addendum. These policies apply to all persons responsible for the operation, rehabilitation, conversion, and cleaning of ARNG IFR and satisfy the requirements of the references listed above.

3. The enclosed document contains sample formats of the forms necessary for the routine operation of IFRs. Additionally, an IFR Standing Operating Procedure is provided to assist each State/Territory in developing local guidance consistent with the needs of the individuals that use their range(s).

4. The contents of this memorandum will be incorporated into the revision of NGR 385-15, Policy and Responsibilities for Evaluation, and Operation of ARNG Indoor Firing Ranges, and National Guard Pamphlet 385-15, Guidance and Procedures for IFR Rehabilitation, Conversion, and Cleaning.

NGB-AVS
SUBJECT: (All States Log Number P01-0075) Army National Guard (ARNG) - Policy and Responsibilities for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges (IFR) and Guidelines for IFR Rehabilitation, Conversion and Cleaning Inspection

5. This memorandum expires 30 November 2002, unless sooner rescinded or superseded.

6. Point of contact is Colonel Non-Responsive Chief, Aviation and Safety Division, at DSN 327-7700 or 703-607-7700.

FOR THE CHIEF, NATIONAL GUARD BUREAU:

Non-Responsive

Encl
as

Lieutenant General, GS
Director, Army National Guard

CF:
NGB-IG
NGB-ART
NGB-ARO
NGB-ARE
NGB-ARI
NGB-ARS
NGB-PL
NGB-ARZ-PC
Each State IG
Each State Safety Office
Each State Occupational Health Nurse
Each State Training Site Commander
Each State USPFO
Each Regional Industrial Hygienist

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Safety

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Contents

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

Appendices
Appendix A - Abbreviations
Appendix B - References
Appendix C - Indoor Firing Range Accident Response Plan
Appendix D - Permission and Release of Liability Certificate
Addendum
Guidelines and Procedures for IFR Rehabilitation, Conversion, and Cleaning

1-1. General
This policy prescribes Army National Guard (ARNG) policy and responsibilities for inspection, evaluation and operation of ARNG indoor firing ranges. It applies to all training, maintenance, and firing activities conducted on indoor firing ranges. This policy supplements AR 385-10, AR 385-63, and AR 385-64.

1-2. Explanation of abbreviations and terms
Abbreviations used in this publication are listed in Appendix A. Terms that apply specifically to IFRs can be found in paragraph 1-37 of this regulation.

1-3. Policy
a. Ammunition shall only be fired in properly classified indoor firing ranges.
b. Detailed initial and periodic inspections of all indoor firing ranges shall be conducted as prescribed to ensure compliance with current safety and health standards.
c. ARNG or civilian personnel shall not use any indoor firing range, which has been classified as unsafe.
d. A DA Form 4753, Notice of Unsafe or Unhealthy Working Condition, shall be posted on the entrance to all ranges classified as unsafe.
e. Ranges classified as unsafe shall be secured, sufficiently to preclude entry.
f. New ranges shall be designed using the latest standards provided by NGB-ARI.
g. The use of indoor firing ranges for purposes other than small arms weapons training and target practice is strictly *prohibited*.

Responsibilities

1-4. Director, Army National Guard (DARNG)
The Director, Army National Guard establishes policy and provides resources necessary to implement the ARNG Range Safety program per AR 385-63.

1-5. Chief, Aviation and Safety (NGB-AVS)
The Chief, NGB-AVS, has staff responsibility for supervising the ARNG Range Safety Program and to:
a. Identify the resources necessary to effect policy and standards throughout the ARNG in accordance with (IAW) AR 385-63.
b. Coordinate with other HQDA staff agencies and the Adjutants General on matters pertaining to the ARNG Range Safety Program.

1-6. Chief, Safety and Occupational Health Branch (NGB-AVS-S)
The Chief, NGB-AVS-S shall- -
a. Develop, implement, and manage the ARNG Range Safety Program.
b. Review the design of all ranges to be constructed or remodeled for compliance with safety and occupational health standards and make recommendations to appropriate approval authority.
c. Determine the classification of indoor firing ranges based upon input from the state safety manager, the ventilation measurements, and the air monitoring results (breathing zone and general area).

d. Conduct an initial evaluation of new IFRs and reevaluate every two years thereafter. An IFR will be reevaluated if modifications to the range structure or ventilation system are made. *Approval from the State Safety Office and Regional Industrial Hygienist must be obtained before the range is returned to service.*

f. Determine and publish the training requirements for the persons who will conduct range evaluations.

1-7. Chief, Training Division (NGB-ART)
The Chief, NGB-ART shall provide weapons training strategies consistent with AR 350-41 and the Standard and Training Commission.

1-8. Chief, Installations Division (NGB-ARI)
The Chief, NGB-ARI shall- -

a. Provide the design standards for the construction of indoor firing ranges.

b. Ensure that the designs for new and remodeled indoor firing ranges meet approved standards and are reviewed and approved by the Safety and Occupational Health Branch.

1-9. The State Adjutant General
The State Adjutant General shall- -

a. Establish, supervise, and direct a safety and occupational health program for users of indoor firing ranges.

b. Ensure all ranges being used are classified as "safe" or "limited use", those ranges classified as "limited use" under the criteria of this regulation are used on a limited basis, and all ranges classified as "unsafe" under the criteria of this regulation are not used.

c. Determine and identify funding requirements to ensure development of a comprehensive safety and occupational health program for the users of indoor firing ranges.

1-10. State Safety Manager
State Safety Managers shall--

a. Perform or coordinate performance of all inspections and evaluations of indoor firing ranges.

b. Determine whether the range is "safe" or "unsafe" based on the physical safety inspection.

c. Review and approve all indoor firing range SOPs to ensure all requirements are met. An example SOP can be found at Figure 1-3 of this regulation.

d. Perform design review of IFRs to ensure current safety and occupational health related compliance requirements are met.

e. Make recommendations to the Adjutant General regarding the disposition of "unsafe" and "limited use" ranges.

f. Approve the use of the range by non-military organizations.

g. Maintain copies of all range inspections, ventilation measurements and visitors log.

1-11. State Occupational Health Nurse
The Occupational Health Nurse shall- -

a. Schedule medical surveillance examinations for individuals who are or may be exposed to Lead above the action level for more than 30 days per year.

b. Maintain exposure monitoring (air sampling results) and medical surveillance records for 40 years or the duration of employment plus 20 years, whichever is longer, as prescribed in 29 CFR 1910.1025, Appendix C, Section I.

c. Record the worker's exposure data on DA Form 4700 (Medical Record-Supplemental Medical Data) overprints, IAW TB MED 503 paragraph 3-2 f (1)(a), and DODI 6055.5-M Occupational Health Surveillance Manual.

d. Institute a training program that identifies the hazards and preventive measures for all personnel with a potential for exposure to Lead.

1-12. State Environmental Office
The State Environmental Office shall coordinate disposal of all hazardous waste generated from range operation, cleaning, and maintenance.

1-13. Facility Commanders
Commanders of facilities with indoor firing ranges shall maintain and be familiar with AR 385-63, and the provisions of this regulation, to ensure that--

a. A Safety and Occupational Health Compliance Program is developed as specified in this regulation.
b. Indoor firing ranges are secured when not in use.
c. A custodian is appointed for all indoor firing ranges under his/her area of command.
d. The custodians of the indoor firing ranges maintain the visitors log and follow procedures IAW paragraph 1-14 of this regulation.
e. All non-military organizations using indoor firing ranges under their area of command have signed a contract/agreement delineating the conditions of range use and liability. The contract/agreement should also include provisions for hazardous waste disposal expenses.
f. A SOP for each range is established, enforced and approved by the State Safety and Occupational Health Office.
g. All required signs are posted IAW Section 1-22 of this regulation.
h. All individuals using indoor firing ranges under the facility commander's area of command have been provided with a copy of the range SOP or been briefed on the requirements of the SOP, and that these individuals have signed an agreement to follow the rules stated therein. See paragraph 1-29 for record maintenance requirements.
i. Range custodians are enrolled in respiratory protection and medical surveillance programs as required by paragraph 1-37 of this regulation (if applicable).
j. Range custodians have documentation to show that they have been educated about the health effects of exposure to Lead dust IAW 29 CFR 1910.1200 and 29 CFR 1910.1025. This is an annual requirement IAW this standard.
k. No equipment or furniture, such as tables, chairs or storage cabinets, is stored or maintained in the range.
l. All range safety officers and maintenance personnel have a copy of this regulation, AR 385-63, and the range SOP and are familiar with and in compliance with all indoor firing range policies and procedures.
m. The range ventilation system is checked every 480 hours of operation IAW paragraph 1-27 of this regulation.
n. Personnel do not fire ammunition in excess of the allowable time as dictated by established exposure limits. (See Figure 1-1).
o. Exposure records shall be maintained IAW paragraph 1-34 when personnel are exposed to airborne Lead concentrations in excess of 0.03 milligrams per cubic meter (mg/m^3).
p. Lead fragments are not removed from the bullet trap or surrounding areas except as coordinated through the State Environmental Office.
q. The use of M16 rifles using 5.56 mm ammunition in the indoor firing range is *prohibited*, except on ranges where the bullet trap is rated for 5.56 mm ammunition. Otherwise, the M16 shall be used with .22 caliber adapter and ammunition.
r. The ventilation system is in operation at all times during firing or cleaning.

1-14. Range Custodians
Custodians shall--

a. Ensure that all individuals using the indoor firing range understand the range safety regulations, rules, and SOP.
b. Ensure that all cleaning procedures are performed IAW the requirements of this regulation and the procedures prescribed in the Addendum. This includes documentation of dates, names of personnel and time on the range for all cleaning procedures. See paragraph 1-29 for record maintenance requirements.

c. Maintain the visitor log IAW the range SOP. As a minimum the log should include the names of the shooters, the amount of time spent in the range by each individual, the date of firing, the type(s) of ammunition fired, and the number of rounds fired. See paragraph 1-29 for record maintenance requirements.

d. Forward a copy of the visitor log to the State Safety and Occupational Health Managers on a quarterly basis

1-15. Unit Commanders

Unit Commanders shall--

a. Enforce all range safety and occupational health procedures.

b. Maintain a record of time spent on the range for all personnel using "limited use" firing ranges as recorded by the range custodian.

c. Provide the State Occupational Health Nurse with a list of personnel firing in ranges classified as "limited use" ranges for more than the prescribed times listed in Figure 1-1. See paragraph 1-29 for record maintenance requirements.

d. Designate range safety officers in writing.

e. Provide the State Occupational Health Nurse with a list of range safety officers and custodians.

f. Ensure all range safety officers and range custodians are enrolled in the Medical Surveillance and Respiratory Protection Programs, as required.

1-16. Procedures, classification and use

Indoor firing ranges have been built in armories for many years. Each range design reflects the current emphasis and technology on protecting the health and safety of the shooter. Older ranges may not meet the current standards deemed necessary to accomplish this. However, under controlled conditions, many older ranges will not expose users to hazardous conditions.

1-17. Classification of ranges

Based on inspection data collected on the range inspection checklist (Figure 1-2), ranges shall be classified as "safe", "limited use" or "unsafe". Safe ranges permit authorized firing for military and civilian use. Limited use ranges permit use only under controlled conditions based on the personnel exposure limits for intermittent Lead exposure. (Figure 1-1). Unsafe ranges are not authorized for use under any conditions.

a. **Building envelope.** (Design standards may be found in DG 415-1, Appendix A or CEHND 1110-1-18).

(1) **Safe ranges.**

(a) Each firing lane is at least 4 feet wide.

(b) Pipes, conduits, lights, lighting fixtures and other projecting surfaces are baffled or covered by a material that will protect these items and prevent ricochets.

(c) Baffles do not disrupt the uniform airflow in the range.

(d) In older ranges, sidewall windows in front of the firing line have been removed and the openings sealed flush to the wall with materials compatible with the adjacent walls. New ranges are not built with windows in front of the firing line.

(2) **Unsafe ranges.**

(a) All firing lanes are less than 4 feet wide. If any one firing lane is less than 4 feet wide, that lane shall not be used for firing.

(b) Pipes, conduits or walls are not sealed to prevent migration of Lead dust to other areas of the range. (See the Addendum for wipe sample procedures used to determine if Lead dust is leaking from the range).

(c) There are open floor drains in the range.

(d) Carpet is located in any part of the range. (Contact the State Environmental Offices for hazardous waste disposal procedures.)

(e) Doors or windows located downrange of the firing line.

(f) Range buildings do not meet the other requirements of safe ranges as prescribed in the checklist in Figure 1-2 of this document.

b. **Ventilation**

(1) **Safe ranges.**

(a) The range has an operational mechanical ventilation system.

(b) The average airflow at the firing line in each firing lane is at least 50 feet per minute (fpm).

(c) Air is exhausted at or behind the bullet trap.

(d) Supplied air is introduced into the range behind the shooters.

(e) The ventilation system is so constructed that air exhausted from the indoor firing range does not enter into another part of the building or any other air supply system.

(f) The exhaust exceeds the make-up air by approximately 10% to form a negative air pressure in the range in relation to adjoining areas.

(g) Air is not recirculated in the firing range unless equipped with monitoring equipment as specified in section 1-26 of this regulation.

(h) The static pressure, as measured from 6 inches inside the range entrance to 6 inches outside the range, is at least -. 05 inches of water gauge (wg) but does not exceed -.20 wg.

(i) A smoke test of the range shows laminar airflow in the range and no turbulence at the firing line. (See the Addendum, for troubleshooting guidance)

(j) In passive make-up air systems, the supply air louvers and exhaust fan shall be electrically interlocked.

(k) In systems with active make-up air, the supply and exhaust fans shall be electrically interlocked. The make-up air fan should start after the exhaust fan to ensure the range maintains a negative pressure.

(l) Range air temperature should be between 65 degrees and 80 degrees Fahrenheit.

(2) **Unsafe ranges.**

(a) The airflow at the firing line on any lane is less than 50 fpm at any level and air sampling results suggest possible overexposure as determined by a competent person.

(b) The range has no mechanical ventilation.

(c) The ventilation system is constructed in a manner that allows exhaust air to enter into other parts of the building or another building air supply system.

(d) The make-up air exceeds the exhaust, which forms a positive air pressure in the range in relation to adjoining areas.

(e) Air is exhausted anywhere other than at the bullet trap.

(f) Make-up air is supplied only from adjacent areas of the building with no provision for inclusion of outside air.

(g) The static pressure, as measured from 6 inches inside the range entrance to 6 inches outside the range, is measured less than -. 05 wg or in excess of -. 2 wg.

(h) The range is under positive pressure.

(i) The supply and exhaust air systems are not electrically interlocked.

c. **Range lighting.**

(1) **Safe ranges.**

(a) Lighting is uniform, non-glaring and does not cause shadows.

(b) Illumination is at least 100 foot candles on the targets and 30 foot- candles in all other areas.

(c) All lighting is protected by baffles and placed so that the shooter has an unobstructed view down range.

(d) Downrange lighting begins approximately 18 feet from the firing line and ends approximately 8 feet from the target line.

(e) Emergency lights are provided behind the firing line and are in working condition.

(f) Exit lights are provided as required.

(g) Lighting of at least 30-foot candles is provided behind the bullet trap for maintenance.

(2) **Unsafe ranges.**

(a) Illumination is below 100 foot-candles on targets or 30 foot-candles in other areas.

(b) Portions of the lighting fixtures are not protected by baffles.

(c) Electrical hazard exists in the range.

d. **Bullet traps.**

(1) **Safe ranges.**

(a) A bullet trap is permanently installed in the range.

(b) Bullet traps are of a commercial design that complies with the requirements of CEHND 1110-1-18, DG 415-1 App. A, and this regulation.

(c) The thickness of inclined plate/sand trap type bullet trap shall be adequate to attenuate the maximum caliber of ammunition authorized to be fired on the range. See CEHND 1110-1-18, for thickness requirements for the bullet trap.

(d) All plate/sand trap type bullet traps shall be designed to prevent ricochets by directing the projectiles in the same direction they are traveling.

(e) Sandpits in plate/sand trap type backstops shall extend to a point directly below the leading edge of the sloped plate.

(f) Forward edges in a escalator or venetian blind type bullet trap are maintained in a knife edge condition to prevent ricochets.

(2) **Unsafe ranges.**

(a) Steel bullet traps are bowed, punctured or severely pitted.

(b) Plates in the bullet trap are flush with the other plates. Mold seams are ground smooth.

(c) Any type of portable bullet stop is used.

(d) Forward edges in a escalator or venetian blind type bullet trap are maintained in less than a knife edge condition

e. **Targets and target carriers.**

(1) **Safe ranges.**

(a) A target retrieval system is operable in all lanes and is constructed in such a manner as to minimize flat surfaces exposed to the firing line. (Firing lanes without a target retrieval system shall not be used).

(b) Only paper targets are used.

(2) **Unsafe ranges.** Target retrieval system is inoperable or not installed in the entire range, or target retrieval system exposes flat surfaces to the firing line.

f. **Lead levels.**

(1) **Safe ranges.**

(a) For personnel exposed less than 30 days per year, Lead levels do not exceed 0.05 mg/m^3.

(b) For personnel exposed more than 30 days per year and for all non-Department of Defense (DoD) personnel, Lead levels do not exceed 0.03 mg/m^3.

(c) For personnel under the age of 18, see Figure 1-1.

(2) **Limited use ranges.**

(a) For personnel exposed less than 30 days per year, Lead levels exceed 0.05 mg/m^3 but do not exceed 0.4 mg/m^3 in any breathing zone or general area sample. Personnel exposures shall be controlled by limiting the shooters to the times described in Figure 1-1.

(b) For personnel exposed more than 30 days per year and for all non-DoD personnel, Lead levels exceed 0.03 mg/m^3 but do not exceed 0.4 mg/m^3 in any breathing zone or general area sample.

(3) **Unsafe ranges.**

Lead levels in air sample results exceed 0.4 mg/m^3 in any breathing zone or general area sample.

1-18. Range use

a. Indoor firing ranges shall not be used for any purpose other than firing. (I.e., they shall not be used for classrooms, exercise rooms, storage, etc.).

b. Ranges classified as unsafe may be used for other purposes only after proper decontamination IAW the guidance provided in the Addendum, Guidelines and Procedures for IFR Rehabilitation, Conversion, and Cleaning.

c. The ventilation system is in operation at all times during firing or cleaning.

d. Equipment or furniture shall not be stored or maintained in the range, plenum area or behind the bullet trap. (For removal of equipment or furniture, use cleaning instructions provided in the Addendum).

e. A hand-held ABC-type fire extinguisher is located near the entrance door, inside the firing range.

1-19. Prohibitions

a. Personnel shall *not* be permitted in the plenum area during firing even if designed for observation.

b. Plenum area and area behind the bullet trap shall *not* be used for storage of any equipment.

c. An area directly in front of the plenum wall shall be kept clear at all times to preclude obstruction of airflow.

d. Variable speed fans are *not* permitted.

e. Dry sweeping of indoors firing ranges is *prohibited*. Brooms shall not be stored in the range.

f. Walking downrange is *prohibited* for individuals other than maintenance and inspection personnel.

g. Pellets, BBs, magnum and armor piercing rounds are *prohibited* in all indoor firing ranges.

h. To prevent contamination with Lead dust, clothing or equipment that is not required for firing shall *not* be permitted into the range.

i. Storage of ammunition and explosives in indoor firing ranges is *prohibited*, except in approved and licensed facilities.

j. There are no open floor drains in the range.

k. Carpet will not be located in any part of the range (Contact the State Environmental Office for hazardous waste disposal procedures).

1-20. Personal protective equipment

a. **Eye protection.** All personnel in an indoor firing range during firing shall wear eye protection that meets the requirements of ANSI Z87.1-1989, Practice for Occupational and Educational Eye and Face Protection.

b. **Hearing protection.** All personnel in an indoor firing range during firing shall wear Army approved hearing protection listed in DA Pam 40-501. When noise levels exceed 165 dBP, personnel must wear earplugs in combination with noise mufflers.

c. **Respiratory protection.** For respiratory protection requirements during indoor firing range conversion cleanup operations, see the Addendum.

1-21. Posting warning signs

a. The following signs shall be posted in or in the vicinity of indoor firing ranges IAW AR 385-63:

(1) Eating, Drinking and Smoking are *prohibited*
(2) Dry Sweeping is *prohibited*
(3) Wash Hands and Face Immediately Following Firing
(4) Only the Following Ammunition is *authorized* for use on this Range: _____
(5) Hearing Protection *shall be* properly worn during firing
(6) Proper Safety Glasses/Goggles *shall be* worn during firing
(7) Furniture or storage of other items of equipment is *not* permitted in the range

b. The following signs shall be posted on the entrance door to the range:

(1) Noise Hazardous Area
(2) Danger Lead Hazard Area
(3) Pregnant women are *not* permitted in this area.

c. An illuminated warning sign, which is interlocked with the range ventilation switch, shall be located outside of the firing range to alert individuals that the range is in use.

d. Each firing lane shall be numbered at the firing line and at the bullet trap visible to all shooters. This is to ensure shooters use the correct target.

e. A warning sign *shall be* posted outside of the access door to the bullet trap, which warns personnel not to enter during range operation.

Note: All signs shall meet the requirements of DA Pam 385-64.

1-22. Range Standing Operating Procedures.

a. Each indoor firing range shall have a written SOP, which is approved by the State Safety and Occupational Health Office, see figure 1-3.

b. Range SOPs shall include, as a minimum, the following:

(1) The requirement for establishment and maintenance of a log of visitors for the indoor firing range. The log shall include the following information for all visitors:
(a) Name and age of shooter.
(b) Organizations (if civilian, include address and phone number).
(c) Sign-in and sign-out times and date.
(d) Type of ammunition used and number of rounds fired.
(2) The requirement for and contents of a mandatory safety briefing for all individuals prior to entering the range to be given by a designated competent range safety officer.
(3) Work practices including permissible and banned practices as specified by this regulation.
(4) Instructive guidance for all range procedures.
(5) Personnel responsibilities for performing the procedures, for supervising them, and reviewing and updating the SOP.
(6) Authorized ammunition for the range.
(7) The requirement for posting of signs IAW section 1-21 of this regulation.
(8) Cleaning and maintenance requirements.
(9) Personal protective equipment requirements for maintenance, firing and cleaning.
c. Refer to TG 208 for more general guidance on SOPs.

1-23. Inspection requirements.
The first part of each inspection shall be the physical safety inspection conducted by the State Safety Manager. Once the firing range has passed this portion of the inspection, a competent person shall complete the ventilation survey and air sampling requirements.

1-24. Initial inspections
a. An initial inspection of all new and renovated indoor firing ranges shall be completed before the facility is accepted. The inspection report shall be kept on file with the State Safety and Occupational Health Office. The checklist in Figure 1-2 shall be used for this purpose. See paragraph 1-29 for record maintenance requirements.
b. Findings on the initial firing range inspection, ventilation measurements, and air sampling results shall determine the range classification.

1-25. Annual inspections
a. A safety inspection of each active range shall be made annually to ensure safety standards, procedures and records are maintained in the operation of the range. These inspections shall be completed by State Safety personnel IAW AR 385-10. The checklist in Figure 1-2 shall be used for this purpose.
b. In accordance with AR 385-63, the annual inspection shall be performed within 45 days of the anniversary date of the initial inspection or the last annual inspection.
c. Verify that ventilation measurements have been recorded ever 480 hours of operation.
d. Ensure that air sampling has been conducted after changes or additions have been made to the range.

1-26. Ventilation requirements
a. Procedures for evaluating supply and exhaust ventilation systems, firing line velocities and static pressure readings are identified in the Addendum.
b. If air from the indoor firing range exhaust ventilation system is recirculated into the supply system of the range, the system shall have a high efficiency particulate air (HEPA) filter with reliable back-up filter. In addition, controls to monitor the concentration of Lead and Carbon Monoxide in the return air *shall be* installed and programmed to bypass the recirculation system automatically if the filter system fails. This system shall be operating and maintained IAW 29 CFR 1910.1025(e)(4)(ii).

1-27. Air sampling requirements

a. Initial air sampling to determine airborne Lead dust levels during prescribed firing procedures shall be conducted for all IFRs prior to routine use. If initial determination reveals employee exposure to be at or above .003 ug/m^3 sampling shall be repeated IAW 29 CFR 1910.1025(d)(6)(ii).

b. Air sampling shall be accomplished for each type of ammunition to be used in the range. (For air sampling procedures, see the Addendum).

c. After the initial air sampling, air sampling is required only if changes or additions have been made to the range, there are changes in ammunition or weapons used in the range, or if changes have occurred in ventilation measurements. Once changes occur, air sampling shall be completed every two-years and prior to range use.

d. ARNG Regional Industrial Hygienists are responsible for air sampling of indoor firing ranges to determine airborne Lead concentrations. A competent person as designated by a Regional Industrial Hygienist may conduct the air sampling.

e. The State Occupational Health Nurse shall maintain copies of all air sampling results when required as part of personnel exposure records. See paragraph 1-11 for specific requirements.

1-28. Inspection reports

A completed inspection report shall be provided to the state Adjutent General for information or action as appropriate. An information copy shall also be provided to the Commander of the facility and to the state safety manager. A complete inspection report shall consist of the completed safety inspection checklist, ventilation data, and air sample results (initial inspection and as required by paragraph 1-24 above). Subsequent inspections shall be made as a follow-up check against results of previous inspections to assure required corrective actions have been accomplished, and there are no adverse changes to the buildings' integrity, safety equipment, environment or safe operating procedures.

1-29. Record maintenance

a. All exposure monitoring and medical surveillance records shall be maintained for 40 years or the duration of employment plus 20 years, whichever is longer, as prescribed in 29 CFR 1910.1025, Appendix C.

b. The State Safety Manager shall maintain a record of all inspections for each indoor firing range in the state. All inspections after the initial one shall be used as follow-up checks against previous inspection reports. This is to ensure that required corrective actions have been accomplished and that there have been no structural changes to the building, environmental conditions or safe operating procedures. These records shall be checked during program evaluations and industrial hygiene surveys.

1-30. Control of potential Lead intoxication

Occupational Safety and Health Administration (OSHA) Lead standard

a. The requirements of the OSHA Lead standard (29 CFR 1910.1025) shall be followed. The requirements include development of a written compliance program for the protection of workers from Lead exposures (29 CFR 1910.1026(e)(3)). The program shall include at a minimum the following:

(1) A description of each operation where Lead is emitted;
(2) Methods used to achieve compliance;
(3) Methods used to meet the permissible exposure level;
(4) Air monitoring data, which documents the source of air emissions;
(5) A detailed schedule for implementation of the program;
(6) Work practices including PPE (Personal Protective Clothing and Equipment), housekeeping, hygiene facilities and practices;
(7) Administrative control schedule;
(8) Personnel enrollment in medical surveillance;
(9) Other relevant information.

b. Refer to TG 206 for specific guidance on developing the compliance program.

1-31. Alternative ammunition

a. Reduced-Lead and Lead-free ammunition (non-Lead containing bullets) has become commercially available. These alternatives to conventional ammunition should be considered for training use if command policy allows.

b. Lead-free ammunition is being developed which shall have the same ballistic properties as the Lead counterparts. The potential exists for some Lead containing ammunition to be completely replaced by Lead-free ammunition for training and operational uses.

c. Until Lead-free ammunition is available, Lead exposure can be significantly reduced by the use of jacketed rounds. Most bullet traps are rated for the use of jacketed ammunition, but this should be verified with the bullet trap manufacturer.

1-32. Maintenance requirements

a. The following are minimum maintenance requirements, which shall be performed every three months by the range custodian or by a person designated by the facility commander:

(1) Inspect the ventilation system fan for condition of belts to ensure that the belts are not torn or frayed and that they are not slipping.

(2) Evaluate static pressure and compare to the baseline static pressure reading. Any changes shall be reported to the State Safety and Occupational Health Office for further evaluation.

(3) Inspect louvers, if applicable, to ensure they are opening fully.

(4) Lubricate the bullet trap (if applicable).

(5) Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

b. See the Addendum for a complete list of maintenance requirements for the bullet trap.

1-33. Housekeeping

a. The ventilation system shall be in operation during all cleanup operations.

b. An approved National Institute for Occupational Safety and Health (NIOSH) respirator (P-100) for Lead exposure *shall be* used during cleanup operations.

c. During range cleaning operations, workers shall wear coveralls or similar full-body clothing, gloves, hat and change of shoes or disposable booties, face shields and goggles, or other equipment to protect the workers skin and eyes.

d. Blowing, shaking or any other means, which disperses Lead into the air, *shall* not be used to remove Lead dust accumulated on worker's clothing or equipment. A designated area shall be used for changing clothes to prohibit the spread of contamination. Workers shall shower and change clothes before release from work.

e. Wet cleaning methods or vacuum cleaning with HEPA filtration shall be utilized during normal cleaning operations. Dry sweeping, dusting, wiping or blowing with compressed air *shall* not be permitted.

f. The range shall be cleaned at the end of each firing day with a HEPA vacuum or wet mop method.

g. When performing the cleaning, clean the floor and all horizontal surfaces fifteen feet in front of and behind the firing line, or when there is a visible accumulation of lead dust.

h. Wash water contaminated with Lead can be collected and allowed to slowly evaporate leaving Lead deposits/sludge that may be collected in plastic containers, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums *shall be* properly labeled to identify contents. Disposal of containerized waste *shall be* coordinated IAW state hazardous waste program requirements.

i. The State Environmental Office shall coordinate removal and disposal of all containerized hazardous waste derived from routine use, cleaning, and maintenance of IFRs. Contact your State Environmental Office for proper disposal instructions when bullet trap catch trays are ¾ full. Spent cartridge cases shall be collected and processed in accordance with local ammunition inventory and accountability procedures, AR 710-2, and DA PAM 710-2-1.

j. Prior to converting an indoor firing range to other uses, the entire range area shall be properly decontaminated of any Lead residue. For cleaning and decontamination instructions, see the Addendum.

1-34. Maximum exposure hours
Personnel exposure limits for intermittent atmospheric Lead contamination has been developed by the U.S. Army Medical Command (MEDCOM) in the form of a table of Lead exposure limits (Figure 1-1). This table was developed to control intermittent Lead exposure and to establish maximum allowable hours of exposure based on the airborne Lead concentration and the number of days firing per year. Intermittent exposures to Lead in indoor firing ranges shall be controlled according to the criteria provided in the table of Lead exposure limits as an interim control measure only. Maximum effort *shall be* made to introduce permanent control measures to reduce the airborne Lead levels to 0.03 mg/m^3 or less. Exposure records shall be maintained by the commander of the facility on all personnel who use the firing range when the airborne Lead levels exceed 0.03 mg/m^3. These records shall contain the airborne Lead concentrations and the amount of time spent on the range for each individual. Other potential Lead exposure, including off duty firing, may contribute to an individuals overall exposure and should be considered in establishing maximum allowable exposure time.

1-35. Extent of use
a. The extent of use for any indoor firing range *shall be* based on permissible exposure of all using personnel to concentrations of airborne Lead dust.
b. Under no circumstances shall pregnant women be permitted in an indoor firing range, IAW 29 CFR 1910.1025, Appendix C, Section II (5).
c. Personnel under 17 years of age are *prohibited* from entering any range area with a Lead concentration greater than 0.100 mg/m^3. For ranges with Lead concentrations less than 0.100 mg/m^3, follow the guidelines in Figure 1-1.
d. Use of the indoor firing range by non-military organizations shall be approved and documented in writing by the State Safety Manager.

1-36. Medical surveillance
a. Personnel who are or may be exposed to Lead above the action level (0.03 mg/m^3) for more than 30 days per year shall be enrolled in the Medical Surveillance Program.
b. Medical surveillance is not required for intermittent users of indoor firing ranges if the maximum allowable exposure hours shown in Figure 1-1 is not exceeded.

1-37. Terms
a. **Backsplatter**-This refers to the small particles, which break off of a bullet as it impacts the bullet trap. Variables such as the bullet composition, angle of the bullet trap, and the velocity of the impact dictate the amount and pattern of the backsplatter. A ricochet occurs when the main body of the bullet is deflected off the surface of the bullet trap.
b. **Competent person**-An individual who has been specifically trained to identify safety and occupational health hazards associated with Lead dust and indoor firing ranges. The individual is aware of current regulations governing indoor firing ranges and of ventilation principles and terminology, air sampling media and collection requirements and can interpret air sample results. He can provide appropriate guidance in the abatement of known hazards and has the authority to do so. He can correctly use diagnostic ventilation evaluation equipment and interpret results. He has received written authorization from the regional industrial hygiene office to properly evaluate indoor firing ranges.
c. **Plenum**-This term refers to a chamber used to build static pressure before the air enters the firing range. Air is introduced into the plenum from the side, top, or back and is forced through a perforated wall (called the plenum wall) behind the firing line.
d. **Smoke Testing**-To conduct a smoke test, a smoke candle is ignited behind the firing line. The smoke is used to check the airflow at and in front of the firing line. There should be laminar flow down the range to the bullet trap and no turbulence at the firing line. It is also important to ensure the smoke does not circle back behind the firing line.

FIGURE 1-1

0.000 - 0.029	8	8	4
0.030 - 0.039	8	6	3
0.040 - 0.049	8	4.5	2
	LIMITED USE RANGES	LIMITED USE RANGES	LIMITED USE RANGES
0.050 - 0.059	6	4	2
0.060 - 0.079	5	3	1
0.080 - 0.099	4	2.25	1
0.100 - 0.149	2.5	1.5	0
0.150 - 0.199	2	1	0
0.200 - 0.299	1.25	0.75	0
0.300 - 0.399	1	0.5	0
0.400 – 0.499	0.75	0.5	0
0.500 – 0.749	0.5	0.25	0
0.750 – 0.999	0.25	0.25	0
1.000 or above	0	0	0

- **These values are the actual concentrations measured over the sampling period and are not 8-hour time-weighted averages.**
- **Adherence to these guidelines shall prevent overexposure to Lead in indoor firing ranges.**

* Recommend that an Occupational Health Physician make the determination on length of firing time for individuals 17 years of age and younger.

FIGURE 1-2

INDOOR FIRING RANGE INSPECTION CHECKLIST

See paragraphs 1-23 through 1-26 of this regulation for inspection requirements. For the range to be considered safe each of the following statements shall be true and air-sampling results shall be below the standard for Lead. The information in parentheses after each statement denotes the location of the requirement in this or other regulations.

Location of the Range _____ Date _____

Range Custodian _____ Telephone _____

Part 1, Physical Safety Inspection

A. Building Envelope

_____ 1. Each firing lane is at least 4 feet wide. [1-17a(1)(a)]

_____ 2. Pipes, conduits, and other projecting surfaces are baffled or covered by a material that shall protect these items and prevent ricochets. [1-17a(1)(b)]

_____ 3. No windows or doors are located in front of the firing line. (Except access door to the back of the bullet trap) [1-17a(1)(d)]

_____ 4. There are no open floor drains in the range. [1-17a(2)(c)]

_____ 5. There is no carpet, drapes or other fiber-like material in the range. [1-17a(2)(d)]

_____ 6. Pipes, conduits and walls are sealed to prevent leakage of Lead dust from the range into other areas. [1-17a(2)(b)]

_____ 7. The interior surfaces of the range floor, walls, and ceiling have no protruding edges or devices. [DG 415-1, App.A, 3-1d]

_____ 8. The roof provides ballistic security. [DG 415-1, App. A, 3-1e(1)]

_____ 9. The walls provide ballistic security. (DG 415-1, App. A, 3-1f(1))

_____ 10. Interior mortar joints are flush with the interior surface. (DG 415-1, App. A, 3-1f(2))

_____ 11. The plenum wall is adequately supported and thick enough to avoid flexing. (DG 415-1, App. A, 3-1f(4))

_____ 12. The entrance door to the range is weather-stripped unless the door acts as passive make-up air intake. (DG 415-1, App. A, 3-1h)

B. Range Lighting

_____ 1. Lighting is uniform, non-glaring and does not cause shadows. [1-17c(1)(a)]

_____ 2. Illumination is at least 100 foot candles on the targets and 30 foot candles in all other areas. [1-17c(1)(b)]

_____ 3. All lighting is protected by baffles and placed so that the shooter has an unobstructed view down range. [1-17c(1)(c)]

_____ 4. Downrange lighting begins approximately 18 feet from the firing line and ends approximately 8 feet from the target line. [1-17c(1)(d)]

_____ 5. Emergency lights are provided behind the firing line and are in working condition. [1-17c(1)(e)]

_____ 6. Exit lights are provided and working as required. [1-17c(1)(f)]

_____ 7. Lighting of at least 30 foot-candles is provided behind the bullet trap for maintenance (if applicable). [1-17c(1)(g)]

_____ 8. No known electrical hazards exist in the range. [1-17c(2)(c)]

C. Bullet traps

_____ 1. A bullet trap is permanently installed in the range. [1-17d(1)(a)]

_____ 2. Bullet traps are of a commercial design, which is in compliance with the requirements of CEHND 1110-1-18, NGB-ARI, the Addendum, and this regulation. [1-17d(1)(b)]

_____ 3. The thickness of inclined plate/sand trap type bullet trap shall be adequate to attenuate the maximum caliber of ammunition authorized to be fired on the range. [1-17d(1)(c)]

_____ 4. All plate/sand trap type bullet traps are designed to prevent ricochets by directing the projectiles in the same direction they are traveling. [1-17d(1)(d)]

_____ 5. Sandpits in plate/sand trap type backstops extend to a point directly below the leading edge of the sloped plate. [1-17d(1)(e)]

_____ 6. Forward edges in a louver or venetian blind type bullet trap are maintained in a knife edge condition to prevent ricochets. [1-17d(1)(f)]

_____ 7. Steel bullet traps are not bowed, punctured or severely pitted. [1-17d(2)(a)]

_____ 8. Plates in the bullet trap are flush with the other plates. Mold seams are ground smooth. [1-17d(2)(b)]

D. Targets and target carriers

_____ 1. A target retrieval system is operable in all lanes. [1-17e(1)(a)]
(Any one firing lane without a retrieval system shall not be used for firing)

_____ 2. The target retrieval system is constructed in such a manner as to minimize flat surfaces exposed to the firing line. [1-17e(1)(a)]

_____ 3. Only paper targets are used in the range. [1-17e(1)(b)]

E. Range use

_____ 1. The range is not used for any purpose other than firing. [1-18a]

_____ 2. No equipment or furniture is stored or maintained in the range, plenum area or behind the bullet trap. [1-17d]

_____ 3. No additional clothing or equipment is brought into the range. [1-19h]

_____ 4. Personnel are *not* permitted in the plenum area during firing even if designed for observation. [1-19a]

_____ 5. Individuals other than maintenance and inspection personnel are not allowed to walk downrange. (Except in regularly cleaned area as needed to pick up brass) [1-19f]

_____ 6. All areas directly in front of the plenum walls are kept clear at all times. [1-19o]

_____ 7. Pellets, BBs, magnum and armor piercing rounds are not used in the range. [1-19g]

_____ 8. The ventilation system is in operation at all times during firing or cleaning. [1-18a]

_____ 9. A hand-held ABC-type fire extinguisher is located in a recessed cabinet near the entrance door, inside of the firing range. [DG 415-1, App. A, 4-5]

F. Range maintenance

_____ 1. Dry sweeping does not occur in the range. [1-19e]

_____ 2. No brooms are located in the range. [1-19e]

_____ 3. A range custodian is appointed for the range who is fully trained and aware of his/her responsibilities. [1-13c]

G. Personnel protective equipment

_____ 1. All personnel in the range during firing wear ANSI approved eye protection. [1-20a]

_____ 2. All personnel in the range during firing wear ANSI approved hearing protection. [1-20b]

H. Posting of signs

_____ 1. The following signs are posted in or in the vicinity of the range: [1-21a]
- _____ a. Eating, Drinking and Smoking are *Prohibited*
- _____ b. Dry Sweeping is *Prohibited*
- _____ c. Wash Hands and Face Immediately Following Firing
- _____ d. The Following Ammunition is authorized for use on this Range: _____
- _____ e. Hearing Protection *shall be* Properly worn during firing
- _____ f. Proper Safety Glasses/Goggles *shall be* worn during firing
- _____ g. No Furniture or Storage of Items Permitted in the Range

_____ 2. The following signs are posted on the entrance door to the range: [1-21b]
- _____ a. Noise Hazardous Area
- _____ b. Danger Lead Hazard Area
- _____ c. Pregnant women are *not* permitted in this Area

_____ 3. An illuminated warning sign, which is interlocked with the range ventilation switch, is located outside of the firing range to alert individuals that the range is in use. [1-21c]

_____ 4. Each firing lane is numbered at the firing line and at the bullet trap visible to all shooters. [1-21c]

_____ 5. A warning sign is posted outside of the access door to the bullet trap, which warns personnel not to enter. [1-21e]

I. Range SOP

_____ 1. The indoor firing range has a written SOP, which is approved by the State Safety and Occupational Health Office. [1-10e]

_____ 2. The range SOP includes as a minimum the following: [1-22b]

_____ a. The requirement for establishment and maintenance of a log of visitors for the indoor firing range.

_____ b. The requirement for and contents of a mandatory safety briefing for all individuals prior to entering the range to be given by a designated competent range safety officer.

_____ c. Work practices including required, recommended, permissible and banned practices as specified by this regulation.

_____ d. Instructive guidance for all range procedures.

_____ e. Personnel responsibilities for performing the procedures, for supervising them, and reviewing and updating the SOP.

_____ f. Authorized ammunition for the range.

_____ g. The requirement for posting of signs IAW section 1-21 of this regulation.

_____ h. Cleaning and maintenance requirements.

_____ i. Personal protective equipment requirements for maintenance, firing and cleaning.

J. Recordkeeping

_____ 1. A visitors log is maintained which includes the following information for all visitors/shooters: [1-14c]

_____ a. Name and age of shooter.

_____ b. Organization (if civilian, include address and phone number).

_____ c. Sign in and sign out times.

_____ d. Type of ammunition used and number of rounds fired.

_____ 2. Copies of initial and other previous inspections are available. [1-24a]

_____ 3. The initial inspection report includes air-sampling data. [1-24b]

_____ 4. An OSHA compliance program is in place, which covers the required aspects: [1-30a]

_____ 5. All individuals using the indoor firing range have been provided with a copy of the range SOP or been briefed on the requirements of the SOP, and have signed an agreement to follow the rules stated therein. [1-13h]

_____ 6. State maintenance officers/custodians have documentation to show that they have been educated to the health effects from exposure to Lead dust. [29 CFR 1910.1200 and 29 CFR 1910.1025]

_____ 7. Range safety officer(s) is/are designated. [1-13c]

K. New and Renovated Ranges

_____ 1. No doors are installed in the plenum wall.

_____ 2. Plenum area is at least 4 feet deep.

_____ 3. An access door is installed behind the bullet trap.

_____ 4. Only escalator or rubber bullet traps are installed.

INDOOR FIRING RANGE INSPECTION CHECKLIST

Part 2, Ventilation Inspection

A. Existing Ranges

_____ 1. The range has an operational mechanical ventilation system. [1-17b(1)(a)]

_____ 2. The minimum ventilation rate at the firing line in each firing lane is 50 fpm at all levels. [1-17b(1)(b)]

_____ 3. 100% of air is exhausted at or behind the bullet trap. [1-17b(1)(c)]

_____ 4. Make-up air is introduced into the range behind the shooters. [1-17b(1)(d)]

_____ 5. Air that is introduced through vents into the plenum does not exceed a velocity of 600 fpm. [1-17b(1)(e)]

_____ 6. Air exiting through holes in the plenum wall has a velocity between 400 and 600 fpm. [1-17b(1)(f)]

_____ 7. The ventilation system is so constructed that air exhausted from the indoor firing range does not enter into another part of the building or any other air supply system. [1-17b(1)(g)]

_____ 8. The exhaust exceeds the make-up air by approximately 10% to form a negative air pressure in the range in relation to adjoining areas. [1-17b(1)(h)]

_____ 9. If air is recirculated in the range, it is installed with a HEPA filter with a reliable back-up filter. [29 CFR 1910.1025(e)(4)(ii)]

_____ 10. If air is recirculated in the range, controls to monitor the concentration of Lead and Carbon Monoxide levels are installed and programmed to bypass the recirculation system automatically if the filter system fails.
[29 CFR 1910.1025(e)(4)(ii)]

_____ 11. The fan(s) in the ventilation system is a single speed fan only. [DG 415-1, App. A, 3-2a]

_____ 12. A smoke test of the range shows laminar air flow and no turbulence in the range. (See the Addendum for troubleshooting guidance) [1-18b(1)(k)]

_____ 13. In non-powered systems, the supply air louvers and exhaust fan are electrically interlocked. [1-17b(1)(l)]

_____ 14. In power systems, the supply and exhaust fans are electrically interlocked. The make-up air fan should start slightly after the exhaust fan. [1-17b(1)(m)]

_____ 15. Range air temperature is between 65 degrees and 80 degrees Fahrenheit. [1-17b(1)(n)]

B. New and Renovated Ranges

_____ 1. A manometer is installed leading into the exhaust fan, which is capable of measuring at least 20 inches of static pressure.

_____ 2. Supply and exhaust fans are electrically interlocked with the downrange lighting.

_____ 3. The face velocity on supplied make-up and exhaust ducts does not exceed 2000 cfm per square foot of duct space.

_____ 4. Passive supply systems have opposing blade louvers.

_____ 5. Turning vanes are installed in all duct elbows, which have between 60° and 90° angles.

INDOOR FIRING RANGE INSPECTION CHECKLIST

Part 3, Air Sampling

1. The physical safety inspection, Part 1 of the range inspection checklist, was completed and all requirements met on: _____

2. The ventilation inspection, Part 2 of the range inspection checklist, was completed and all requirements met on: _____

3. Air sampling has been scheduled for: _____

Print and sign: _____

Position: _____ Date: _____

4. Air sampling was completed on: _____ for the following types of ammunition: _____.

5. Air sample results do not exceed: _____ mg/m^3 (results are attached)

6. For military personnel exposed less than 30 days per year, this range is classified as: _____ (SAFE, LIMITED USE, UNSAFE)

7. For military personnel exposed more than 30 days per year and for all non-DoD personnel, this range is classified as: _____ (SAFE, LIMITED USE, UNSAFE)

Print and sign: _____

Position: _____ Date: _____

FIGURE 1-3
EXAMPLE OF INDOOR FIRING RANGE SOP

STATE OF _____, DEPARTMENT OF MILITARY AFFAIRS
XXXX SOUTH MAIN STREET
SOMEWHERE, _____ XXXXX-XXXXX
_____ ARMORY INDOOR FIRING RANGE
STANDING OPERATING PROCEDURE (SOP)

1. **References:**

a. AR 385-10
b. AR 385-63
c. NGR 385-10
d. NG PAM 385-XX
e. 29 CFR 1910.1025
f. 29 CFR 1920.1200
g. 29 CFR 1926
h. 29 CFR 1960
I. USACHPPM, TG 141

2. **Purpose.** The _____ Armory indoor firing range SOP is published to establish procedures to minimize the exposure of Lead (Pb) to personnel and provide uniform safe range operations and maintenance procedures. The provisions set forth herein shall govern all actions and personnel associated with range operations.

3. **Review and Update.** This SOP should be reviewed yearly by the Commander of the facility and the State Safety and Occupational Health Office. A cover sheet, which documents the signature and dates of personnel involved with the review of the SOP, should be attached.

4. **General.**

a. Each Officer or Non-Commissioned Officer In-Charge (OIC/NCOIC) of range operations shall maintain a current copy, and be familiar with the provisions of this SOP, and NGR 385-10.

b. These directive and military regulations are applicable to all active duty military, military technicians, federal and state civilian employees and civilian personnel, to include local or state police authorities.

5. **Range Control.**

a. The _____ Armory Commander shall appoint, in writing, a Commissioned Officer, Warrant Officer, or a Senior NCO to the position of Range Control Officer (RCO).

b. The RCO is responsible to perform the following:

(1) Enforce the facility range safety program and SOP.

(2) Notify Armory personnel of times when the range shall be in use.

(3) Coordinate and schedule all activity on the firing range.

(4) Ensure that the range is secured when not in use.

(5) Ensure that nothing is stored at the range.

(6) Investigate and report all accidents and incidents involving weapons and ammunition in accordance with NGR 385-10.

(7) Determine which weapons and ammunition are authorized for the range. This should be coordinated through the Safe Safety and Occupational Health Office and in accordance with manufacturers' specifications.

(8) Ensure that all OIC/NCIOCs are thoroughly familiar with the weapons in use, and that the appropriate operators' manuals for the weapons are on hand.

(9) Prepare a range OIC/NCOIC briefing packet for all using units. The packet should contain, as a minimum; a copy of this SOP, emergency telephone numbers of local rescue authorities, and a current copy of the Accident Prevention Plan (Appendix C of this SOP).

(10) Ensure that mandatory signs listed in NGR 385-10, paragraph 1-21 are posted as required.

6. Range OIC/NCIOC. The Commander or supervisor of all using units or groups shall designate an OIC/NCOIC in the grade of E-6 or above to be the responsible for the safe conduct of firing and proper use of the facilities. The commander/supervisor shall ensure that all appointed individuals are qualified to perform their assigned duties. The duties of the range OIC/NCOIC shall include but are not limited to the following:

a. Prior to firing.

(1) Receive a thorough briefing from the RCO, and conduct an inspection of the range with the RCO, or his/her designated representative. If the condition of the range is acceptable, assume control and request clearance from the RCO to fire.

(2) Ensure the overall safe conduct of training and the proper use of the facility.

(3) Ensure that all participants are familiar with the verbal commands, hand signals, range procedures and safety requirements.

(4) Be present when the range is in use and determine when it is safe to fire.

(5) Be knowledgeable of the weapons to be used and ensure that only authorized weapons and ammunition are used. Ensure that the proper operators' manuals are available for each individual using the range.

(6) Be familiar with the Accident Prevention Plan and have a current copy on hand prior to commencement of firing.

(7) Ensure that at least three individuals are present on the range when the range is in use.

(8) Ensure that all personnel wear the proper hearing and eye protection as required.

(9) Ensure that all individuals using the range have singed-in on the roster maintained by the facility Commander.

(10) Ensure that the range has a working telephone, or that other means of emergency communication is available.

(11) Ensure that appropriate emergency medical personnel have been notified that the range is in use, and that the projected hours of operation are from _____ to ____ hours.

b. During Firing.

(1) Ensure that personnel do not leave the firing line without the permission of the OIC/NCOIC.

(2) Ensure that the muzzle of each weapon is pointed downrange at all times. Personnel may holster their handguns after being cleared by the OIC/NCOIC to do so.

(3) When not in use, revolvers shall have cylinders open and automatic weapons shall have magazines removed and the slide/receiver locked to the rear. Rifles shall also have the magazine removed, if applicable, bolts and/or slides open or locked to the rear when not in use. Weapons shall be carried to and from the firing line in the configuration described above, with the muzzle pointed downrange.

(4) Ensure that weapons malfunctions/jams are cleared only at the direction of the OIC/NCOIC in accordance with the procedures established in the operators' manual for the weapon.

(5) Ensure that weapons are cleared and checked during temporary suspension of firing.

(6) Ensure that firing is stopped promptly when an unsafe act is observed or reported.

(7) Do not permit persons to walk in front of the firing line during firing. Lanes with inoperable target retrieval systems shall not be used.

(8) Limit firing time, if applicable. This limitation shall be based on air-sampling results for individuals using the range and ventilation measurements. Contact the State Safety Manager to determine if the range has time limitations placed upon it.

c. After Firing.

(1) Ensure that all weapons are cleared prior to being removed from the firing line.

(2) Ensure that all individuals on the range thoroughly wash their hands and face immediately after leaving the range.

(3) Ensure that all bullet casings are removed from in front of and behind the firing line and that the range is restored to a serviceable condition. **Dry sweeping of the range is prohibited.**

(4) Conduct a final inspection of the range. Secure the range, and turn the keys and shooters log into the RCO or his/her designated representative.

7. **Range Control Officer Qualifications.** His or her commander may appoint any individual in the rank of E-6 and above to the Rang Control Officer. Appointment orders for all RCOs shall be maintained on-file at the facility. Commanders of each facility shall ensure that all RCOs have been properly instructed and are competent in performance of their duties. Law enforcement and civilians requesting appointment to perform RCO duties, shall show evidence that they have completed an Army and/or National Rifle Association approved firearms instructor's course or equivalent prior to appointment.

8. **Range Restrictions.**

a. The _____ Armory is restricted to firing the following ammunition based upon manufacturer specifications:

EXAMPLE

(1) .22 caliber including the M-16 with adapter
(2) .38 caliber
(3) .45 caliber
(4) 9 mm pistols

Note: No other weapons can be fired without the approval of the State Safety Manager.

b. Pellets, BBs, magnum and armor piercing rounds are prohibited.

c. Dry sweeping of the range is prohibited.

d. Trick shooting including, quick draw and hip shooting is prohibited.

e. Storage of any item in the range is prohibited.

f. Smoking and consumption of food or beverages is prohibited.

g. Proper hearing and eye protection shall be worn during firing.

h. Civic groups with individuals under 18 years of age are required to have written permission from the ARNG State Safety Manager prior to firing.

i. Personnel shall not be allowed in the observation/plenum area during firing.

9. **Mandatory Signs.** As a minimum the following signs shall be posted on the door/entrance to the range or inside as appropriate:

a. Inside the Range.

(1) Eating, drinking and/or smoking are prohibited.

(2) Dry sweeping is prohibited.

(3) Wash hands and face immediately after firing.

(4) Hearing protection shall be worn during firing.

(5) Safety glasses/goggles shall be worn during firing.

(6) Storage of furniture and other items is prohibited.

(7) The following ammunition is authorized for this range: _____, _____, _____, and _____.

b. On the Door to the Range.

(1) Noise Hazardous Area.

(2) Danger Lead Hazard Area.

(3) Pregnant women are not permitted in this area.

10. **Authorized Use of the Range.** Utilization of the _____Armory range is authorized for organizations of the _____ Army National Guard conducting unit training and for the marksmanship team conducting competition or in preparation for competition. Non-Military personnel are subject to the same requirements and regulations as National Guard personnel and shall be in strict compliance with this SOP, Army Regulations, ARNG regulations and applicable subject letters and directives from the Adjutant General, State of _____.

11. **Release of Liability.**

a. The military Range Control Officer shall obtain a signed Release of Liability (**Appendix D** of this SOP) form from each civilian user of the range. Signed agreements shall be kept on file with the Commander of the facility.

b. Organizations with members who are minors shall obtain Permission and Release of Liability (**Appendix D** of this SOP) form signed by a parent or guardian. **The ARNG State Safety Manager shall be notified prior to minors firing on ARNG ranges.**

12. **Denial of Range Access.** The Commander of the facility may withdraw range privileges from any person or organization that willfully disobeys rules and regulations pertaining to range operations. In addition, range privileges may be denied to an individual whose knowledge of the principles of marksmanship is deficient to the degree of posing a safety hazard.

FOR THE COMMANDER:

Non-Responsive
CPT, IN, ___ARNG
OIC/Armory Commander

APPENDIX A
ABBREVIATIONS

ANSI
American National Standards Institute

AR
Army Regulation

ARNG
Army National Guard

CFM
Cubic feet per minute

CFR
Code of Federal Regulations

CNGB
Chief, National Guard Bureau

DA
Department of the Army

FPM
Feet Per Minute

HEPA
High Efficiency Particulate Air

IAW
In Accordance With

IFR
Indoor Firing Range

mg/m^3
Milligrams per cubic meter

NIOSH
National Institute for Occupational Safety and Health

NGB
National Guard Bureau

OSHA
Occupational Safety and Health Administration

SOP
Standing Operating Procedure

SP
Static pressure

USACHPPM
U.S. Army Center for Health Promotion and Preventive Medicine

wg
Inches of water gauge

APPENDIX B
REFERENCES

ACGIH 22nd Ed, Industrial Ventilation
A Manual of Recommended Practice

Army Regulation (AR) 11-34
The Army Respiratory Protection Program

AR 40-5
Preventive Medicine

AR 350-41
Army Forces Training

AR 385-63
Policies and Procedures for Firing Ammunition for Training, Target Practice, and Combat

AR 385-64
U.S. Army Explosives Safety Program

Army National Guard (ARNG) Design Guide (DG) 418-1
Design Guide for Armories

American National Standards Institute (ANSI) Z87.1-1989
Practice for Occupational and Educational Eye and Face Protection

CEHND 1110-1-18
USACE (U.S. Army Corp of Engineers) Design Manual for Indoor Firing Range

Department of the Army Pamphlet (DA PAM) 385-64
U.S. Army Explosives Safety Program

DA PAM 40-501
Hearing Conservation

DA PAM 710-2-1
Using Unit Supply System (Manual Procedures)

Department of Defense Instruction (DODI) 6055.1
Department of Defense Occupational Safety and Health (OSH) Program

DHEW NIOSH 78-138
Lead Exposure and Design Considerations for Indoor Firing Ranges

FM 25-7
Training Ranges

National Guard Regulation (NGR) 385-10
Army National Guard Safety and Occupational Health Program

NGR 415-5
Military Construction Army National Guard (MCARNG) Project Development

APPENDIX B (Continued)

GR 420-10
Operations/Maintenance and Minor Construction, Army National Guard

Technical Bulletin Medical (TB MED) 502
Occupational and Environmental Health, Respiratory Protection Program

TB MED 506
Occupational and Environmental Health, Occupational Vision

TG 208
USACHPPM Technical Guide for Indoor Firing Ranges

Title 29, Code of Federal Regulations (CFR) Revision, Part 1910
Occupational Safety and health Standards

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX C
INDOOR FIRING RANGE ACCIDENT RESPONSE PLAN

1. If a mishap or injury occurs at any time during the conduct of range operations, the following procedures shall be followed:

a. The OIC/NCOIC or person in charge of the range shall order a cease-fire immediately. All weapons shall be cleared and muzzles pointed downrange.

b. Render first aid to the injured as appropriate.

c. The OIC/NCOIC or person in charge of the range shall direct an individual to telephone and/or radio for medical assistance. The primary telephone to be used in case of an emergency is located _____. The emergency numbers are _____.

d. A person shall be stationed at the main entrance of the range to provide direction to emergency medical personnel.

e. After all injured personnel have been removed or attended to:

(1) The OIC/NCOIC shall notify the RCO of the mishap.

(2) The RCO shall in-turn notify the office of the Adjutant General at DSN _____, or the duty officer, and the State Safety and Occupational Health Office at DSN _____.

f. The RCO, with the assistance of the State Safety Manager, shall investigate the mishap and file a DA Form 285 "Accident Investigation" as appropriate.

2. All injuries or mishaps shall be reported to the RCO as soon as possible. The OIC/NCOIC shall be responsible to obtain witness statements and assist in making reports as may be required.

APPENDIX D
PERMISSION AND RELEASE OF LIABILITY CERTIFICATE

_____ ARNG
Somewhere, USA
Date: _____

BE IT KNOWN TO ALL: WHEREBY I, _____;
Have been granted permission to use firearms on the indoor firing range located at the _____ Army National Guard Armory; and whereas I am doing so entirely upon my own initiative, risk, and responsibility; now therefore, in consideration of the permission extended to me by the United States Government and/or State of ____ through their officers and agents do hereby for myself, heirs, executors and administrators, remiss, release and forever discharge the Government of the United States and the State of ____, the ____ Army National Guard, their officers, agents, employees expressly including the Adjutant General of the State of ____, acting officially or otherwise, from any and all claims, demands, action, or causes of action on account of my death, or account of injury to me or my property which may occur from any cause during the period of the above granted permission. I further acknowledge and certify by my signature below that I have read and understand the applicable range facility standing operating procedure (SOP) and shall comply with it and all applicable safety regulations.

Signature: _____

Witness to Signature: _____

In case of emergency, please contact:
Name _____
Address _____
_____
Telephone Number _____

TO BE SIGNED BY THE PARENT OR GUARDIAN OF INDIVIDUALS UNDER 18 YEARS OF AGE. NO MINOR SHALL BE ALLOWED TO UTILIZE AN ARNG FIRING RANGE WITHOUT PARENT OR GUARDIAN SIGNATURE.
I, said parent, and/or legal guardian of the above-named minor, hereby give my consent to said minor executing this release, and do hereby also release and agree to save harmless the parties above-named as to said minor and as to myself as an individual, and for our heirs, executors, administrators and assigns.

Signature of Parent or Guardian: _____

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0076) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose

1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References

Related publications are listed below.

a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbreviations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 5th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

6. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:
(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 460 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

16. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 8 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have overeprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-276-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 800 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3381M

APPENDIX E (Continued)

800-247-6628
800-359-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75\ ug}{100\ cm^2} \quad \frac{929\ cm^2}{1\ sq\ ft}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 ug/sq\ ft$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			

Sampling Data

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

NGB-AVS-SO
SUBJECT: All States (Log Number P01-0076) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/BZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer
Comments to Lab:		

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

COMPLIANCE MANAGEMENT INTERNATIONAL

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Mechanicsburg, PA 17055
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Industrial Hygiene Survey Report

National Guard Facility
Portsmouth Readiness Center

Prepared For:	**National Guard Bureau Region North IH** **301-IH Old Bay Lane** **Havre de Grace, MD 21078**
Survey Location:	**Portsmouth Readiness Center** **801 McGee Drive** **Portsmouth, NH, 03801**
Prepared By:	**Compliance Management International, Inc.** **1215 Manor Drive** **Suite 205** **Mechanicsburg, PA 17055**
Survey Date:	**May 16, 2013**
Report Date:	**June 24, 2013**

Non-Responsive

Non-Responsive, CIH
Senior Industrial Hygienist

Table of Contents

Section 1.0 Executive Summary

An industrial hygiene survey was conducted on May 16, 2013, at the Portsmouth Readiness Center located at 801 McGee Drive, Portsmouth, NH 03801. The survey was performed by Mr. Non-Responsive.

1. Lead surface and air samples were collected. Surface levels of lead exceeded 200 micrograms per square foot (ug/ft^2) in one location. See Section 3.0 for detailed sampling results.

2. Lighting levels did not meet the American National Standards Institute/Illuminating Engineering Society of North America (ANSI/IESNA) recommended guideline in one location measured. See Section 4.0 for detailed findings.

3. Indoor air quality (IAQ) parameters of temperature, relative humidity, carbon monoxide and carbon dioxide (ventilation) were evaluated during the assessment.

    a. Temperature levels did not meet the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE) 55-2010 recommended guideline of 68-79 °F in three areas sampled.

    b. The relative humidity levels met the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) TG 277 recommended guideline of 30-60% in each area sampled.

    c. Carbon monoxide (CO) levels were less than the National Ambient Air Quality Standard (NAAQS) recommended ceiling of 9 parts per million (ppm).

    d. Carbon dioxide (CO_2) levels met the ASHRAE 62.1-2010 recommended guidelines for mechanically ventilated office buildings and commercial settings.

    See Section 5.0 for detailed sampling results.

4. Housekeeping was good. See Section 5.0 for detailed findings. See Section 5.0 for detailed sampling results.

5. Water-stained ceiling tiles were observed in the facility. All sources of water infiltration should be identified and repaired. Water stained ceiling tile should be removed and replaced.

Section 2.0 Operation Description & Observations

The Portsmouth Readiness Center is mainly an administrative facility with offices, classrooms, and a converted firing range area (currently the Fitness Center). There were approximately 5 full-time employees stationed at this facility at the time of this survey.

The building is reported to have been built in the late 1950s. It is a one story structure. The exterior is brick. The interior walls are concrete block with drywall in some of the offices. The floors are concrete, and 12”x12” floor tiles.

The heating system consists of an oil-fired, forced hot water unit. There are window A/C units servicing the administrative areas.

There is no child-care facility in the building.

Housekeeping practices are good.

No ergonomic concerns were reported. Office areas have computer work stations. Work stations appeared to be properly designed. Personnel had supportive chairs.

This facility has a converted firing range that is now used as the Fitness Center.

At the time of this survey, the building is undergoing renovation.

Water stained ceiling tiles are visible throughout the facility.

Section 3.0 Lead Testing

Various surfaces within the facility were screened for lead using surface/wipe samples. Surface/wipe samples were collected in accordance with the American Society for Testing and Materials (ASTM) E 1792 protocols. Air samples were collected using 0.8 um mixed cellulose ester (MCE) filter cassettes attached to low volume air sampling pumps. Blank samples were submitted to the laboratory for quality control purposes. Samples were sent to AMA Analytical Services, Inc., in Lanham, Maryland, for lead analysis using Environmental Protection Agency (EPA) Method 600/R-93/200 (M)-7420. A copy of the laboratory analysis report can be found in Appendix A.

Lead Testing Results Summary

Sample #	Location	Air ug/m^3	Surface ug/ft^2
1	Drill Hall	<7.7	*
2	Converted Firing Range (CFR-now the Fitness Center)	<7.7	*
3	Drill Hall Floor	*	<110
4	Drill Hall Table	*	<110
5	Drill Hall Cabinet	*	<110
6	Kitchen Shelf	*	<110
7	Kitchen Table	*	<110
8	Drill Hall Floor at Range Entrance	*	110
9	**CFR Floor**	*	**260**
10	CFR Top of Light	*	140
11	CFR Exercise Equipment	*	<110
12	RC NCO Office Cabinet	*	<110
13	CO Office Desk	*	<110
14	Classroom 1 File cabinet	*	<110
15	Family Assistance Center File Cabinet	*	<110
16	Lounge TV	*	<110
17	Blank	*	<12
18	Blank	<3	*
-	**Criteria**	**50**	**200**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **ug/ft^2 =** micrograms per square foot
4. **ug/m^3** = micrograms per cubic meter
5. **ug =** micrograms

Sources:

1. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges
2. OSHA 29CFR1910.1025 Lead Standard

The National Guard Bureau currently utilizes 200 micrograms per square foot (ug/ft^2) as a benchmark for identifying lead-contaminated surfaces. This guideline is referenced in NG PAM 420-15 "Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges" as a satisfactory surface contamination level unless the facility is utilized as a childcare facility. In such cases, U.S. Department of Housing and Urban Development (HUD) limit of 40 ug/ft^2 on floors and 250 ug/ft^2 on windowsills should be observed. There is no child care provided at this facility.

Lead surface and air samples were collected. The following is a summary of the sample results from this survey.

- Surface levels of lead were above the recommended guideline of 200 ug/ft^2 in the following location:
    - Fitness Center – Floor

  Cleaning procedures should be improved to maintain lead levels on surfaces below the recommended guideline of 200 ug/ft^2.

- Air samples for lead were below the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit of 50 micrograms per cubic meter (ug/m^3).

Section 4.0 Lighting

A lighting assessment was conducted throughout the facility. Measurements were collected using a Cooke Cal-Light 400L Precision Light Meter (Serial No. 98082EL). The light meter was last calibrated in April 2013. Measurements collected were compared to ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

Light Survey Assessment Summary

Location	Foot Candles (FC)	Recommended Lighting (FC)	Sufficient Lighting
Drill Hall	30.1	10	Yes
Readiness NCO Office	47.5	30-50	Yes
Training NCO Office	59.0	30-50	Yes
CO Office	58.6	30-50	Yes
Classroom 1	64.7	30-50	Yes
Classroom 2	74.1	30-50	Yes
Bravo Battery Office	37.1	30-50	Yes
Family Readiness Office	36.5	30-50	Yes
Fitness Center	63.8	30	Yes
Lounge	**4.5**	**10**	**No**
Storage Bulk	73.1	10	Yes

Table Notes:

1. FC = Foot Candles
2. **Bolded** results did not meet listed criteria

Source: ANSI/IESNA RP-7-01 Lighting Industrial Facilities and RP-1-04 Office Lighting.

The lighting level did not meet the minimum recommended guidelines in the Lounge.

Section 5.0 Indoor Air Quality

Survey measurements were made for comfort parameters and ventilation (temperature, relative humidity, carbon dioxide, and carbon monoxide). The air quality measurements were collected using direct reading instrumentation for comfort parameters using a QTRAK IAQ Meter, Model 7565 (Serial #02041015). The IAQ Meter was last calibrated in August 2012.

The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) have developed indoor air quality guidelines for mechanically ventilated office buildings and commercial settings (ASHRAE standard 62.1-2010). ASHRAE specifies temperature ranges for human comfort (ASHRAE 55-2010). The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, recommends maintaining a relative humidity range between 30 to 60%.

The following table summarizes the measurements collected.

IAQ Assessment Summary

Location	Temperature (°F)	Relative Humidity (%)	Carbon Dioxide (ppm)	Carbon Monoxide (ppm)
Training NCO Office	**66.1**	52.3	362	0.0
CO Office	**66.1**	48.4	486	0.0
Drill Hall	**66.1**	50.2	359	0.0
Outdoors	68.5	48.9	323	0.0
Criteria	**68-79**	**30-60**	**<1,023**	**<9**

Table Notes:

1. **Bolded** results exceed listed criteria
2. **ppm =** parts per million
3. **(%) =** percent relative humidity
4. **°F =** degrees Fahrenheit

Sources: The American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. (ASHRAE) 55-2010, 62.1-2010, Environmental Protection Agency (EPA) National Ambient Air Quality Standard (NAAQS) & The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation.

Summary of findings and recommendations:

- Temperature measurements did not meet the recommended 68-79°F in three occupied areas.

- Relative humidity levels met the recommended guidelines in all areas measured.

- Carbon dioxide levels were measured to evaluate building ventilation or the introduction or outdoor air into the building. The recommended ceiling is obtained by adding 700 ppm to the measured outdoor carbon dioxide level (700 ppm + 323 ppm for this survey). Carbon dioxide levels did not exceed the recommended ceiling of 1,023 ppm. This is an indication that outdoor air ventilation is adequate.

- Carbon monoxide levels measured were less than the recommended ceiling of 9 ppm. The recommended ceiling of 9 ppm referenced in the above table is the National Ambient Air Quality Standard for carbon monoxide

- A visual inspection was conducted throughout accessible portions of the facility to assess sources or pathways of factors potentially deleterious to IAQ:

    - Water stained ceiling tiles were visible throughout the facility.

Section 6.0 Suspect Asbestos Containing Building Materials

Suspect asbestos containing material (ACM) was noted on pipe insulation and pipe fittings throughout the building. These components were intact and in good condition.

Inaccessible areas such as behind walls or crawlspaces were not inspected. ACM could potentially be present in these areas.

Section 7.0 Equipment

The following equipment was utilized during this survey. All sampling equipment was properly calibrated prior to use and verified for accuracy as applicable. See daily reports and calibrations logs for detailed information.

Equipment	Serial #	Calibration Date	Value
TSI QTrak IAQ Meter	02041015	8/2012	NA
Cal Light 400 Light Meter	98082EL	4/2013	NA
TSI 4199 Calibrator	41460827002	8/2012	NA
SKC Air Sampling Pump	647631	5/16/13	3.00 LPM
SKC Air Sampling Pump	647971	5/16/13	3.00 LPM

Section 8.0 Limitations

This report summarizes our evaluation of the conditions observed at the above referenced location. Our findings are based upon our observations and sampling results obtained at the facility at the time of our visit. The report, results, and subsequent recommendations reported herein are also limited to the information available at the time it was prepared and investigated. Conditions may have been in effect prior to the sampling events that have changed over time and which cannot be predicted within the scope of this limited investigation. Any conditions discovered which deviate from the data contained in this report should be presented to us for our evaluation.

This report is intended for the exclusive use of the client. This report and the findings herein shall not, in whole or in part, be relied upon by any other parties, disseminated or conveyed to any other party without prior written consent of the National Guard Bureau, and Compliance Management International, Inc. The findings are relative to the dates of our site visits and should not be relied upon for substantially later dates.

Appendix A. Laboratory Analysis Report

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

AIHA LAP, LLC
ACCREDITED LABORATORY
INDUSTRIAL HYGIENE, ENVIRONMENTAL LEAD & ENVIRONMENTAL MICROBIOLOGY
ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515947
Address:	301-IH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Portsmouth-NH RC	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/28/2013 **Report Date:** 5/28/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Total ug	Final Result		Comments
13064529	1	Flame	Air	390	N/A	7.7	ug/m^3	<3	<7.7	ug/m^3	
13064530	2	Flame	Air	390	N/A	7.7	ug/m^3	<3	<7.7	ug/m^3	
13064531	3	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064532	4	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064533	5	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064534	6	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064535	7	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064536	8	Flame	Wipe	****	0.108	110	ug/ft^2	12	110	ug/ft^2	
13064537	9	Flame	Wipe	****	0.108	110	ug/ft^2	28	260	ug/ft^2	
13064538	10	Flame	Wipe	****	0.108	110	ug/ft^2	15	140	ug/ft^2	
13064539	11	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064540	12	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064541	13	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064542	14	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064543	15	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064544	16	Flame	Wipe	****	0.108	110	ug/ft^2	<12	<110	ug/ft^2	
13064545	17	Flame	Wipe Blank	****	N/A	12	ug		<12	ug	
13064546	18	Flame	Air Blank	0	N/A	3	ug/m^3		<3	ug	

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ISO/IEC 17025:2005
www.aihaaccreditedlabs.org
LAB #100470

Client:	National Guard Bureau	**Job Name:**	ARNG 4h NH	**Chain Of Custody:**	515947
Address:	301-lH Old Bay Lane, Attn: ARNG-CJG-P, State Military Reservation	**Job Location:**	Portsmouth-NH RC	**Date Submitted:**	5/21/2013
	Havre de Grace, Maryland 21078	**Job Number:**	Not Provided	**Person Submitting:**	Non-Responsive
		P.O. Number:	W912K6-09-A-0003	**Date Analyzed:**	5/28/2013 **Report Date:** 5/28/2013

Attention: Non-Responsive

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit	Total ug	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7000B; Water: SM-3111B

Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7010; Water: SM-3113B

N/A = Not Applicable mg/Kg = parts per million (ppm) on a dry weight basis mg/L = parts per million (ppm)

%Pb = percent lead on a dry weight basis ug = micrograms ug/L = parts per billion (ppb)

Note: All samples were received in good condition unless otherwise noted.

Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Air and Wipe results are not corrected for any blank results

Final results for air and wipe samples are based on client supplied information nor verified by this laboratory.

All results are to be considered preliminary and subject to change unless signed by the Technical Director or Deputy.

See QC Summary for analytical results of quality control samples associated with these samples.

Analyst: Non-Responsive

Technical Manager: Non-Responsive

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
AIHA (#100470) NVLAP (#101143-0) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 515947

(page 1 of 2)

Mailing/Billing Information:
1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:
1. Job Name: ARNG 4th NH
2. Job Location: Portsmouth - NH RS
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Pers[redacted] Non-Responsive
5. Submitted by[redacted] gnature: Non-Responsive

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ☒ 5 Day + Date Due: 5/29/13
❑ 2 Day
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Include COC/Field Data Sheets with Report
☒ Email: Non-Responsive Compliancepoint.com
❑ Fax: [redacted] us.army.mil
❑ Verba us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)

☒ All samples received in good condition unless otherwise noted.
(TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type GHOST) 15 (QTY)
❑ Pb Air 3 (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB
1	Drill Hall	5-16	390					X		X						
2	Converted Range		390					X		X						
3	Drill Hall- floor			100cm2				X				X				
4	Drill Hall- Table															
5	Drill Hall Cabinet															
6	Kitchen - Shelf															
7	Kitchen - table															
8	Drill Hall floor by Range															
9	Range floor															
10	Range Top of light															
11	Range Exercise Equip.															
12	Readyness NCO Cabinet															

CLIENT CONTACT
(LABORATORY STAFF ONLY)
Date/Time: Contact: By:
Date/Time: Contact: By:
Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 5 / 21 / 13 @ Via: FedEx By (Print):
2. Date/Time Analyzed: / / @ By (Print):
3. Results Reported To: Date: / / Time: Initials:
4. Comments:

OWI (410) 247-2024 159202 210 REV. 6.08

AMA Analytical Services, Inc.
Focused on Results www.amalab.com
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CHAIN OF CUSTODY

(Please Refer To This Number For Inquires)

SIS947 (page 2 of 2)

Mailing/Billing Information:

1. Client Name: National Guard Bureau
2. Address 1: 301-IH Old Bay Lane
3. Address 2: Attn: NGB-ARS-IHNE
4. Address 3: Havre de Grace, Maryland 21078
5. Phone #: (410) 942-0273 Fax #: (410) 942-0254

Submittal Information:

1. Job Name: ARNG 4th NH
2. Job Location: Portsmouth - BS
3. Job #: P.O. #: W912K6-09-A-0003
4. Contact Person Non-Responsive @ phone # Non-Responsive
5. Submitted by: Signature:

Reporting Information (Results will be provided as soon as technically feasible):

AFTER HOURS (must be pre-scheduled)
❑ Immediate Date Due:
❑ 24 Hours Time Due:
Comments:

NORMAL BUSINESS HOURS
❑ Immediate ❑ 3 Day
❑ Next Day ❑ 5 Day +
❑ 2 Day Date Due:
❑ Results Required By Noon (EveryAttempt Will Be Made to Accomodate)

REPORT TO:
☒ Includ with Report
☒ Email: Non-Responsive @us.army.mil
❑ Fax:
❑ Verbal @us.army.mil

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
❑ NIOSH 7400 (QTY)
❑ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
❑ AHERA (QTY)
❑ NIOSH 7402 (QTY)
❑ Other (specify) (QTY)
PLM Bulk
❑ EPA 600 – Visual Estimate (QTY)
❑ EPA Point Count (QTY)
❑ NY State Friable 198.1 (QTY)
❑ Grav. Reduction ELAP 198.6 (QTY)
❑ Other (specify) (QTY)
MISC
❑ Vermiculite
❑ Asbestos Soil PLM (Qual) PLM (Quan) PLM/TEM (Qual) PLM/TEM (Quan)

TEM Bulk
❑ ELAP 198.4/Chatfield (QTY)
❑ NY State PLM/TEM (QTY)
❑ Residual Ash (QTY)
TEM Dust
❑ Qual. (pres/abs) Vacuum/Dust (QTY)
❑ Quan. (s/area) Vacuum D5755-95 (QTY)
❑ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
❑ Qual. (pres/abs) (QTY)
❑ ELAP 198.2/EPA 100.2 (QTY)
❑ EPA 100.1 (QTY)
❑ All samples received in good condition unless otherwise noted. (TEM Water samples °C)

Metals Analysis
❑ Pb Paint Chip (QTY)
❑ Pb Dust Wipe (wipe type) (QTY)
❑ Pb Air (QTY)
❑ Pb Soil/Solid (QTY)
❑ Pb TCLP (QTY)
❑ Drinking Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Waste Water ❑ Pb (QTY) ❑ Cu (QTY) ❑ As (QTY)
❑ Pb Furnace (Media) (QTY)
Fungal Analysis
Collection Apparatus for Spore Traps/Air Samples:
Collection Media
❑ Spore-Trap (QTY) ❑ Surface Vacuum Dust (QTY)
❑ Surface Swab (QTY) ❑ Culturable ID Genus (Media) (QTY)
❑ Surface Tape (QTY) ❑ Culturable ID Species (Media) (QTY)
❑ Other (Specify) (QTY)

CLIENT ID NUMBER	SAMPLE LOCATION/ IDENTIFICATION	DATE	VOLUME (LITERS)	WIPE AREA	ANALYSIS: TEM	PCM	PLM	LEAD	MOLD	MATRIX: AIR	BULK	DUST	WATER AND OTHER	SPORE TRAP	TAPE	SWAB	CLIENT CONTACT (LABORATORY STAFF ONLY)
13	C.O. office - Desk	5.16		100 sq cm				X				X					Date/Time: Contact: By:
14	Classroom 1 - Desk																
15	Family Asst. - File Cabinet																
16	Lounge - TV																
17	Blank - wipe																Date/Time: Contact: By:
18	Blank - Air		0							X							
																	Date/Time: Contact: By:

Non-Responsive

LABORATORY STAFF ONLY (CUSTODY)

1. Date/Time RCVD: / / @ Via: By (Print): Sign:
2. Date/Time Analyzed: / / @ By (Print): Sign:
3. Results Reported To: Via: Date: / / Time: Initials:
4. Comments:

Appendix B. Photographs

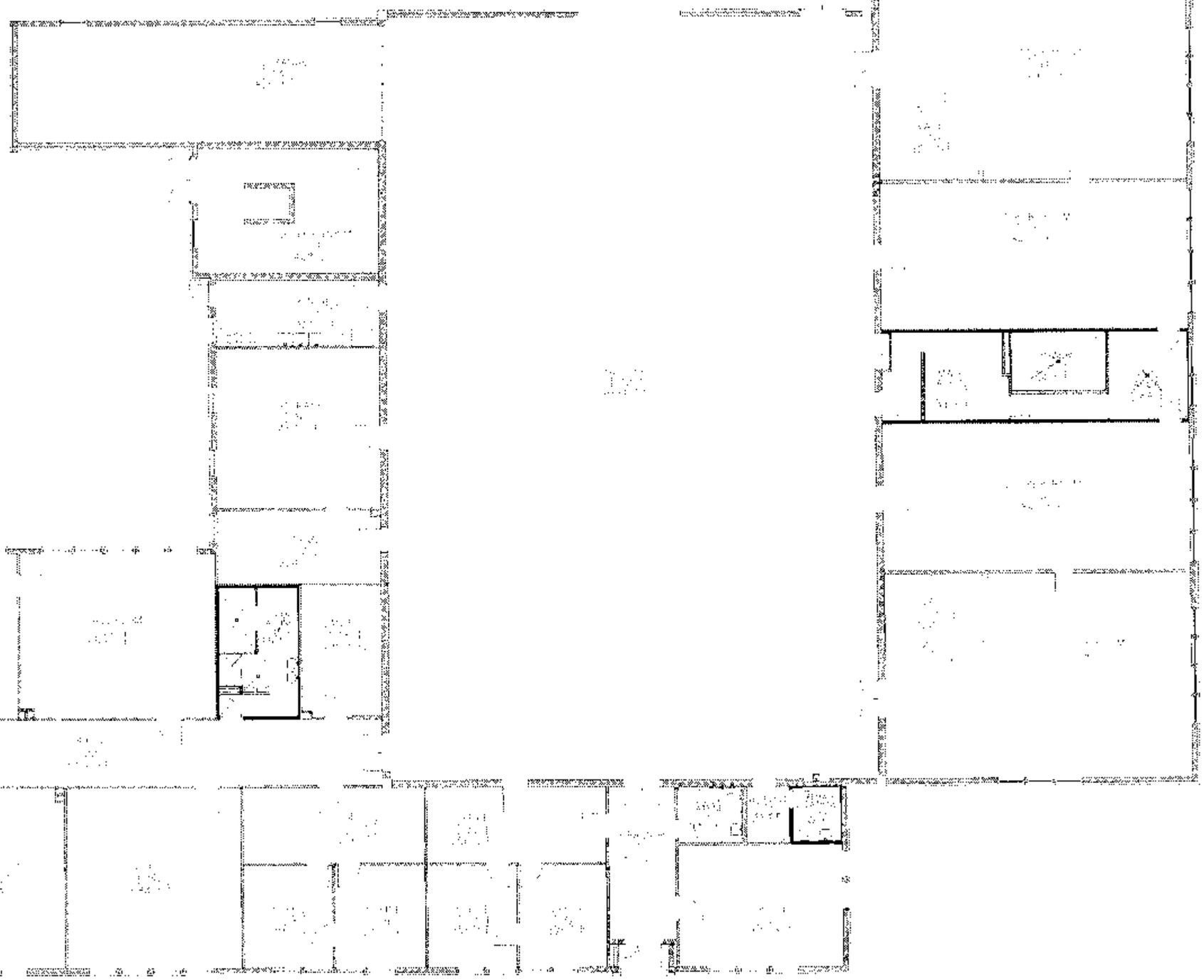
Exterior of the facility

Drill Hall

Converted firing range/gym area

Suspect asbestos pipe insulation and mudded joint fittings in the drill hall

Appendix C. Floor Plan



PORTSMOUTH READINESS CENTER FLOOR PLAN

NOT TO SCALE

DATE: 14 MAY 13

Appendix D. References

1. Title 29 Code of Federal Regulations (CFR), Part 1910.1025, Occupational Safety and Health Administration, Occupational Exposure to Lead.

2. American Conference of Governmental Industrial Hygienists (ACGIH) – Threshold Limit Values and Biological Exposure Indices, 2011 Edition.

3. Industrial Ventilation: A Manual of Recommended Practice for Design, 27th Edition.

4. American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ventilation for Acceptable Indoor Air Quality, 62.1-2010.

5. RP-1-2004, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

6. RP-7-2001, Industrial Lighting, Illuminating Engineering Society of North America/ANSI.

7. National Emission Standard Hazardous Air Pollutants (NESHAP) – The standards for asbestos are contained in 40 CFR 61.140 through 61.157.

8. National Ambient Air Quality Standards (NAAQS) - National primary ambient air quality standards for carbon monoxide 40 CFR 50.8.

9. Environmental Protection Agency (EPA) standards [40 Code of Federal Regulations (CFR) 745.227 (h) (3)].

10. Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM).

11. The US Army Technical Guide 277 Army Facilities Management Information Document on Mold Remediation, February 2002.

12. NG PAM 420-15 Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 Nov 06.

13. ANSI/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Thermal Environmental Conditions for Human Occupancy, 55-2010.

URS

Prepared For:

National Guard Bureau
Army National Guard
Region North Industrial Hygiene Office
301 – IH Old Bay Lane
Havre De Grace, Maryland 21078

Prepared By:

URS Corporation
5 Industrial Way
Salem, New Hampshire 03079

INDUSTRIAL HYGIENE SURVEY REPORT
WOODSVILLE READINESS CENTER
SOUTH MAIN STREET
WOODSVILLE, NEW HAMPSHIRE

April 2006
PN: 39741509

Non-Responsive
Office Manager

Non-Responsive
Project Manager

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

APPENDICES

FINDINGS AND RECOMMENDATIONS

Findings	Recommendation	Risk Assessment Code
Ergonomic		
Fixed computer work stations that cannot be adjusted for the individual present in the administrative areas.	Ergonomic issues with the desks and chairs should be corrected by fitting the workplace to the worker (Department of the Army Pamphlet 40-21, Chapter 4, Page 7, Section 4-3)	RAC 3
Lighting		
Lighting found to be inadequate throughout	Increase lighting in the administrative areas. While work is in progress, the administrative area shall be lighted by at least the minimum lighting intensities (ANSI/IESNA RP-1-04)	RAC 4
Asbestos		
Damaged floor tile containing greater than 1% asbestos is present throughout the facility.	Remove and replace damaged asbestos-containing floor tile. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(1))	RAC 3
Exposed ends or damaged asbestos-containing pipe insulation were present in the drill hall.	Repair or remove exposed ends or damaged asbestos-containing pipe insulation. Work should be completed by personnel trained in accordance with federal regulations (OSHA 29 CFR 1910.1001(k)(2))	RAC 3
No site-specific asbestos operations and maintenance plan available.	Develop a site specific asbestos operations and maintenance plan to manage asbestos-containing materials by labeling of asbestos (OSHA 29 CFR 1910.1001 (j)(4)); employee information and training (OSHA 29 CFR 1910.1001 (j)(7)); housekeeping (OSHA 29 CFR 1910.1001 (k)); medical surveillance (OSHA 29 CFR 1910.1001 (l)(1)); record keeping (OSHA 29 CFR 1910.1001 (m)(1))	RAC 3

FINDINGS AND RECOMMENDATIONS (Continued)

Findings	Recommendation	Risk Assessment Code
Fire Safety		
Unmarked fire extinguisher found in boiler room.	Clearly mark locations of all fire extinguishers (OSHA 29 CFR 1910.157(c)(1))	RAC 4
Lead-Based Paint		
Lead Wipe sample collected from the former firing range and on hazmat cabinet exceed 200 micrograms per square foot.	Personnel trained in accordance with the OSHA Lead Standard should clean the Drill Hall where lead was detected in quantities of greater than 200 micrograms per square foot (OSHA 29 CFR 1910.1025 (e)(1)(i))	RAC 3
Mold		
Water stains were found on the ceiling in classroom #19, classroom #20, training room #3 and in the kitchen #6. These water stains could potentially lead to mold growth.	Repair any water leaks within the building that are causing water damage to the ceilings. If left unattended to, mold could become a factor in the future (best management practice)	RAC 4
HAZCOM		
No site specific hazard communication program on site	Develop a site-specific hazard communication plan to manage the storage and use of hazardous materials at the site (OSHA 29 CFR 1910.1200 (e))	RAC 4
Unlabelled secondary container in janitor's closet	Label all secondary containers unless intended for immediate use (OSHA 1910.1200 (f)(4))	RAC 4

1.0 SUMMARY

At the request of the National Guard Bureau Region North Industrial Hygiene Office (NGB), URS Corporation (URS) conducted an industrial hygiene survey at the Readiness Center located on South Main Street in Woodsville, New Hampshire. This report includes an executive summary, a description of the survey protocol, a discussion of the survey evaluation and findings and a list of conclusions and recommendations.

On December 5, 2003, Mr. Non-Responsive an industrial hygienist with URS, conducted the site visit to the Woodsville Readiness Center. The purpose of this site visit was to conduct an industrial hygiene survey, which included the collection of air samples, bulk samples, lighting measurements and a review of site health and safety procedures. SGT Non-Responsive of the New Hampshire ARNG was Mr. Non-Responsive site contact for this survey.

A shop layout drawing of the facility, which shows the locations where measurements were made during this survey, is contained in Appendix A. The risk assessment codes associated with this project are contained in Table 1.

2.0 ADMINISTRATIVE AREA

2.1 Operation Description

This area has multiple offices located throughout the building with desks and computer workstations. This area also includes the kitchen, classroom, janitor's closet, locker room, shower room and supply area. There were a few ergonomic issues in this area (Photo # 2888). Chairs with adjustable arms should be used in the computer stations because they can be adjusted to fit the worker, making them comfortable. There are computer monitors that need to be adjusted for the person working at the station. If more than one person is using that station, then proper adjustments need to be made to accommodate each person. An unlabeled secondary container was observed in the janitor's closet.

2.2 Chemical and Physical Agents Sampled

2.2.1 Carbon Dioxide

On the day of the survey, carbon dioxide measurements were made in the Readiness Center. Carbon dioxide concentrations ranged from 400 to 555 parts per million (ppm), with an average of 425 ppm. Carbon dioxide levels were measured using a direct reading TSI Q-Track (Model 8551).

Carbon dioxide is a normal constituent of the atmosphere and ranges from about 250 to 450 ppm. The major source of excess carbon dioxide in the indoor environment is people. Other sources can include open-flame heaters, fermentation processes, and motor vehicles. Carbon dioxide itself is not normally a cause of indoor air quality problems because concentrations must exceed 5,000 to 10,000 ppm before health effects such as headache, drowsiness, and increased respiration are noted. Typically, carbon dioxide is used as an indicator of the adequacy of fresh air intake. As the concentration of carbon dioxide increases, so do the background levels of other air contaminants.

The American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE) recommends that levels of carbon dioxide be maintained below 700 ppm above background level. Given a background level of 350 ppm on the day of the survey, the ASHRAE limit would be 1050 ppm

2.2.2 Carbon Monoxide

Carbon monoxide was also measured in the Readiness Center. Carbon monoxide concentrations ranged from 0 to 3 parts per million (ppm), with an average of 0 ppm. Therefore interior levels were below the ASHRAE guideline for indoor environments. Carbon monoxide was measured using a TSI Q-Track (Model 8551).

Key sources of carbon monoxide within indoor environments include internal combustion engines, motor vehicle and forklift exhaust, tobacco smoke, space heaters, and improperly adjusted oil or gas burners. Health effects from exposure to elevated concentrations of carbon monoxide may include fatigue, impairment of visual acuity, irregular heartbeat, headache, nausaa, and confusion. ASHRAE recommends that average carbon monoxide concentrations not exceed 9 ppm. Typical average concentrations found in commercial buildings range from 0 to 6 ppm.

2.2.3 Lighting

Lighting in the administrativa area was measured using a Sper Scientific Ltd. Light Meter (Model 840020C). Table 2-1 below shows lighting measurements and the recommended lighting requirement ANSI / IESNA RP –1-04 American National Standard Practice for Office Lighting – Table 8-1).

Table 2-1
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
CDR's Office # 1 Desk 1	Administrative Duties	475	500
CDR's Office # 1 Desk 2	Administrative Duties	293	500
Recruiter Office # 2	Administrative Duties	163	500

Table 2-1 (Cont)
Lighting Measurements and Recommended Lighting Requirements

Location	Function	Measured Illuminance (lux)	Recommended Illuminance (lux)
Training Office # 3 Desk 1	Administrative Duties	213	500
Training Office # 3 Desk 2	Administrative Duties	249	500
Training Office # 3 Desk 3	Administrative Duties	207	500
Classroom2 #19 Desk 1	Administrative Duties	153	500
Supply Room # 15	Administrative Duties	309	500

On the day of the survey the illuminance in the administrative area was inadequate in all offices.

2.2.4 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS) (EPA-600/M4-82-020, EPA-600/R-93-116). Table 2-2 below presents the results of the sample analysis.

Table 2-2
Sample Results of Suspect ACM

Location Of ACM Sample	Material Sampled	AMA Sample Number	URS Sample Number	Total Asbestos (%)
Classroom2 # 19	9"x9" Floor Tile/Mastic	0412834	1205-02A	2
Classroom1 # 20	9"x9" Floor Tile/Mastic	0412835	1205-02B	2
Classroom1 # 20	9"x9" Floor Tile/Mastic	0412836	1205-02C	2

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c)(2)). The analytical report from AMA is contained in Appendix E. Mr. Non-Responsive asbestos inspector training certificate is provided in Appendix D.

2.3 Ventilation System Evaluation

Not applicable to this operation.

2.4 Noise Measurements

Not applicable to this operation.

2.5 Personal Protective Equipment

Not applicable to this operation.

2.6 Interpretation of Results

LIGHTING: The lighting in this area falls below the minimum lighting requirements indicated in Table 2-1. While work is in progress the administrative area should be lighted by at least the minimum light intensities. Recommend increasing the lighting in the administrative areas through use of task lighting.

ASBESTOS: The floor tile that was found throughout this area was determined to contain asbestos. The floor tile has multiple areas of water damage (Photo # 2878) and is lifting and cracking in some spots. Recommend replacing the damaged tile with new, non-asbestos tile, by an appropriately trained technician. The floor tile also needs to be protected by at least two coats of wax.

MOLD: Water stains were found on the ceiling in classroom #19 (Photo # 2883), classroom #20 (Photo #'s 2884-86), training room #3 (Photo # 2887) and in the kitchen #6 (Photo # 2892). These water stains could potentially lead to mold growth.

HAZARD COMMUNICATION: Unlabelled secondary container observed in janitor's closet

3.0 FORMER FIRING RANGE

3.1 Operation Description

The firing range has been dismantled and is now primarily used for storage. The FDC room, which looks to have once been part of the firing range, is included in this area. The area is approximately 1,680 square feet with cinder block walls and a concrete floor.

3.2 Chemical and Physical Agents Sampled

3.2.1 Lead

Wipe testing for lead was conducted in the former firing range. Results were found to be above the acceptable limits of the U.S. Army. Ghost wipes, which meets ASTM E 1792 standards, were used to test surfaces for lead. Table 3-1 below shows the results of the lead tests.

Table 3-1
Levels of Lead Dust Found In Firing Range

Location Of Wipe Taken	AMA Sample Number	URS Sample Number	Area Wiped (ft^2)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Firing Range-Floor/Front	0412818	1205-LW6	1.000	4500	200
Firing Range-Floor/Center	0412819	1205-LW7	1.000	7100	200
Firing Range-Floor/Rear	0412820	1205-LW8	1.000	2300	200
Firing Range-Desk	0412821	1205-LW9	1.000	61	200
Firing Range-Top of Roof Drain Pipe	0412822	1205LW10	0.833	14,000	200
Firing Range-Top of Heating Unit	0412823	1205-LW10	0.583	40,000	200
Blank	0412824	1205-LWBlank	N/A	<12	200

One air sample for lead was collected in the former firing range. Table 3-2 below shows the results of the lead air sample.

Table 3-2
Level of Lead Found In the Air

Location Of Air Sample Taken	AMA Sample Number	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL($\mu g/m^3$)
Former Firing Range	0412825	1205-AA01	892	<3.4	50.0
Air Blank	0412827	1205-AA03	0	<3.0	50.0

On the day of the survey, the airborne lead concentration in the former firing range was found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

Paint chips collected in two areas where paint was peeling were sent to AMA for analysis. One of the samples was found to be above the acceptable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X). Table 3-3 below shows the results of the lead tests.

Table 3-3
Levels of Lead Found in the Firing Range

Location Of Paint Chip Taken	AMA Sample Number	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
FDC Room #9 - Floor	0412829	1205-LPC02	0.01	0.53
FDC Room #9 – Exterior Side of Garage Door	0412830	1205-LPC03	0.01	0.016

3.3 Ventilation System Evaluation

Not applicable to this operation.

3.4 Noise Measurements

Not applicable to this operation.

3.5 Personal Protective Equipment

Not applicable to this operation.

3.6 Interpretation of Results

LEAD: The former firing range was found to contain lead in the dust, at levels which exceed the maximum limit of 200 $\mu g/ft^2$ set by the NGB Region North Industrial Hygiene Office (See Appendix G). Recommend cleaning up the leed dust by an appropriately licensed contractor. The lead air test performed in this area found an airborne lead concentration within acceptable limits. Guidelines for the cleanup and rehabilitation of indoor firing ranges is contained in Appendix H.

ASBESTOS: There is an insulating end cap that is loose and needs to be repaired by an appropriately licensed contractor (Photo # 2881).

4.0 DRILL HALL

4.1 Operation Description

The drill hall is a 6,000 square feet area with a 30-foot high ceiling, used for assembling personnel and storing vehicles. The walls are constructed of cinder blocks with a concrete floor.

4.2 Chemical and Physical Agents Sampled

4.2.1 Lead

Wipe testing for lead was conducted in the drill hall and found that 4 of the 5 samples were within acceptable limits of 200 $\mu g/ft^2$ set by the US Army Center for Health Promotion and Preventive Medicine. Ghost wipes, which meets ASTM E 1792 standards, were used to test surfaces for lead. Table 4-1 below shows the results of the lead tests.

Table 4-1
Levels of Lead Dust Found in the Drill Hall

Location Of Wipe Taken	AMA Sample Number	URS Sample Number	Area Wiped (ft²)	Result ($\mu g/ft^2$)	Maximum Safe Surface Contamination Level ($\mu g/ft^2$)
Drill Hall #10 – Floor	0412813	1205-LW1	1.000	<12	200
Drill Hall #10 – Floor	0412814	1205-LW2	1.000	<12	200
Drill Hall #10 – Top of Flammable Chemical Cabinet	0412815	1205-LW3	1.000	780	200
Drill Hall #10 – Table Top	0412816	1205-LW4	1.000	<12	200
Drill Hall #10 – Floor	0412817	1205-LW5	1.000	<12	200
Blank	0412824	1205-LWBlank	N/A	<12	200

One air sample for lead was collected in the drill hall. Table 4-2 below shows the result of the lead air sample.

Table 4-2
Level of Lead Found in the Air

Location Of Air Sample Taken	AMA Sample Number	URS Sample Number	Air Volume (L)	Result ($\mu g/m^3$)	OSHA's PEL ($\mu g/m^3$)
Drill Hall # 10	0412826	1205-AA02	848	<3.5	50.0
Blank	0412827	1205-AA03	0	<3.0	50.0

On the day of the survey, the airborne lead level in this area was found to be acceptable, below OSHA's permissible exposure limit (PEL) for lead (29 CFR 1910.1025(c)) of 50.0 $\mu g/m^3$ averaged over an 8-hour day.

4.3 Ventilation System Evaluation

Not applicable to this operation.

4.4 Noise Measurements

Not applicable to this operation.

4.5 Personal Protective Equipment

Not applicable to this operation.

4.6 Interpretation of Results

LEAD: The samples collected in the drill hall for lead dust were within acceptable limits, except for the sample collected on top of the flammable storage cabinet. Recommend having the flammable storage cabinet cleaned by an appropriately licensed technician.

ASBESTOS: The asbestos pipe insulation had some damaged fittings, splits where sections come together and puncture holes throughout the area which need to be repaired (Photos # 2882, 2893-5). The repairs need to be made by an appropriately trained technician.

5.0 BOILER ROOM

5.1 Operation Description

The boiler room is a mechanical room constructed of cinder block walls with a concrete floor which contains a furnace with associated piping.

5.2 Chemical and Physical Agents Sampled

5.2.1 Asbestos

Bulk samples were collected from damaged suspect asbestos-containing materials (ACM) in this area for a determination of asbestos content. Analytical procedures were performed in accordance with the U.S. Environmental Protection Agency (EPA) Recommended Method for the Determination of Asbestos in Bulk Samples by Polarized Light Microscopy and Dispersion Staining (PLM/DS) (EPA-600/M4-82-020. EPA-600/R-93-116)). Table 5-1 below presents the results of the sample analysis.

Table 5-1
Sample Results of Suspect ACM

Location Of ACM Sample Taken	Material Sampled	AMA Sample Number	URS Sample Number	Total Asbestos (%)
Boiler Room # 7	Air Cell Pipe Insulation	0412831	1205-01A	65
Boiler Room # 7	Air Cell Pipe Insulation	0412832	1205-01B	65
Boiler Room # 7	Air Cell Pipe Insulation	0412833	1205-01C	65

The U. S. Environmental Protection Agency (EPA) states that any material with greater than 1% asbestos must be treated as ACM (U.S. EPA, Title 40 CFR Part 763.87 (c) (2)). The analytical report from AMA is contained in Appendix E. Mr. Non-Responsive asbestos inspector training certificate is provided in Appendix D.

5.2.2 Lead

One paint chip was collected in an area where paint was peeling and sent to AMA for analysis. The sample result was found to be within the acceptable limits of the U.S. Housing and Urban Development (HUD) Lead-Based Paint Guidelines. Levels of lead greater than 0.5% by weight are referred to as "lead-containing" (Section 1017 of the Residential Lead-Based Paint Hazard Reduction Act of 1992 (also referred to as Title X)). Table 5-2 below shows the results of the lead tests.

Table 5-2
Levels of Lead Found in the Boiler Room

Location Of Paint Chip Taken	AMA Sample Number	URS Sample Number	Reporting Limit (% by Weight)	Final Result (% by Weight)
Boiler Room #7 - Floor	0412828	1205-LPC01	0.01	<0.01

5.3 Ventilation System Evaluation

Not applicable to this operation.

5.4 Noise Measurements

Not applicable to this operation.

5.5 Personal Protective Equipment

Not applicable to this operation.

5.6 Interpretation of Results

ASBESTOS: The condition of the pipe insulation (Photos # 2863-66) is a concern in this building area. There were numerous exposed ends that could cause asbestos fibers to be released into the air. The exposed ends and punctures need to be repaired by an appropriately trained technician.

FIRE SAFETY: The fire extinguisher is not marked (Photo # 2867).

6.0 SAFETY AND INDUSTRIAL HYGIENE PROGRAMS

The only safety book found at this site consisted primarily of accident investigations and the legal aspects of safety. A three ring binder was presented to URS at the time of the IH survey that contained a course manual that was written by Alamo Safety Organization for the Army National Guard 1st Line Supervisors. The problem with using this manual as the site's written safety program is that it is not site-specific. This manual is a good tool, which could be used to help develop the site's written safety program.

6.1 Confined Spaces

Not required for this site.

6.2 Hearing Conservation

Not required for this site.

6.3 Respiratory Protection

Not required for this site.

6.4 HAZCOM

No site-specific written safety program was found regarding hazard communications. No training records were found on site.

6.5 PERSONAL PROTECTIVE EQUIPMENT

Not required for this site.

7.0 REFERENCES

American National Standards Institute

ANSI/ESNA RP-1-04: American National Standard Practice for Office Lighting

American Society of Heating Refrigerating and Air-Conditioning Engineers

ANSI/ASHRAE Standard 62.1-2004: Ventilation for Acceptable Indoor Air Quality

Department of the Army

Ergonomics Program Pamphlet 40-21 (15 August 2003)

Policy and Responsibilities For Inspection, Evaluation and Operation of Army National Guard Indoor Firing Ranges (National Guard Regulation 385-15 30 December 2002)

Department of Defense

DoD Hearing Conservation Program Standard 6055.12 April 1996

Creating an Ideal Workstation: A Step-by-Step Guide

U. S. Environmental Protection Agency

Asbestos Hazard Emergency Response Act (40 CFR Part 763)

National Emissions Standards for Hazardous Pollutants (40 CFR Part 61)

U. S. Housing and Urban Development

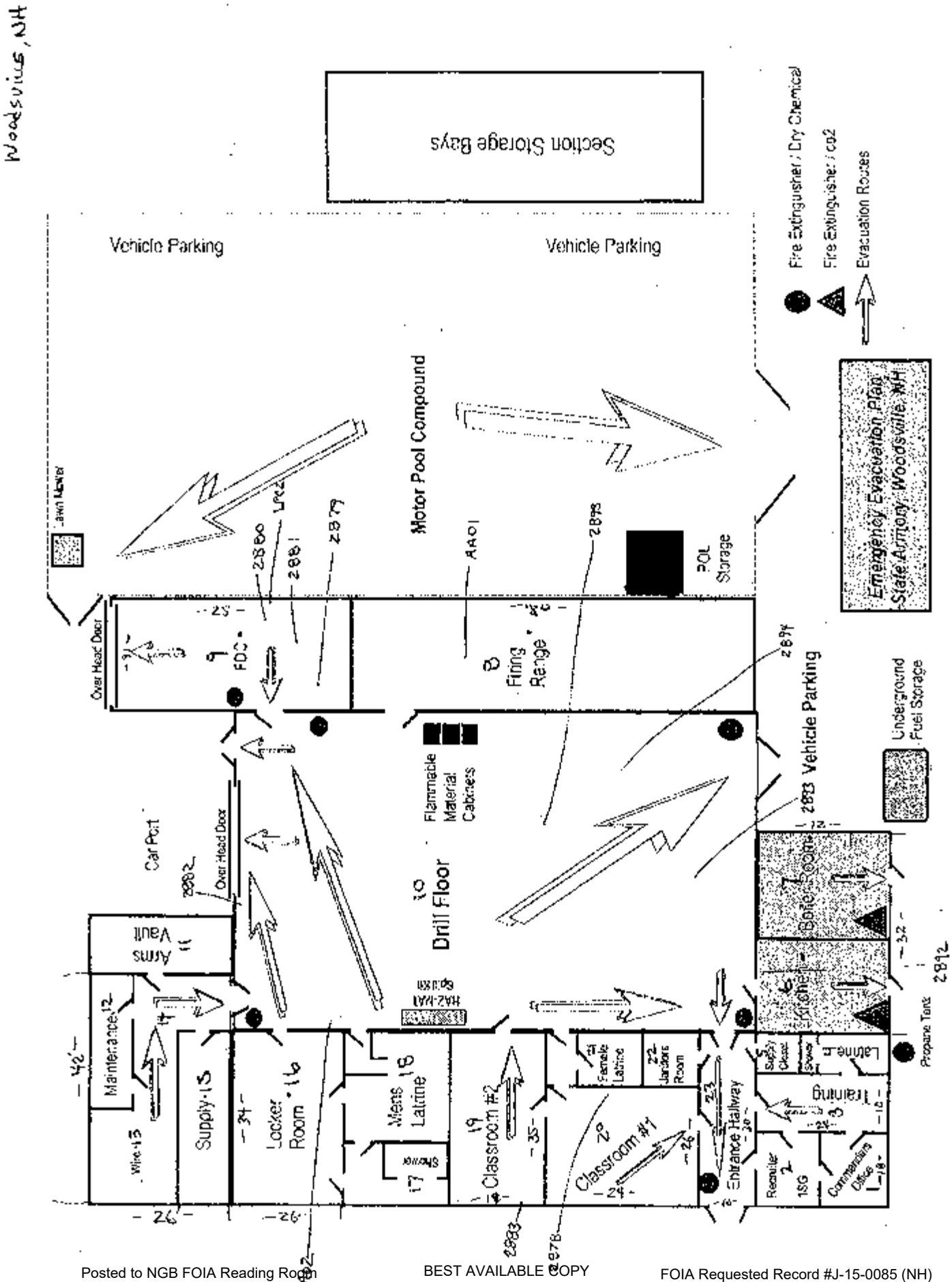
Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1995, 1997)

U. S. Occupational Safety and Health Administration

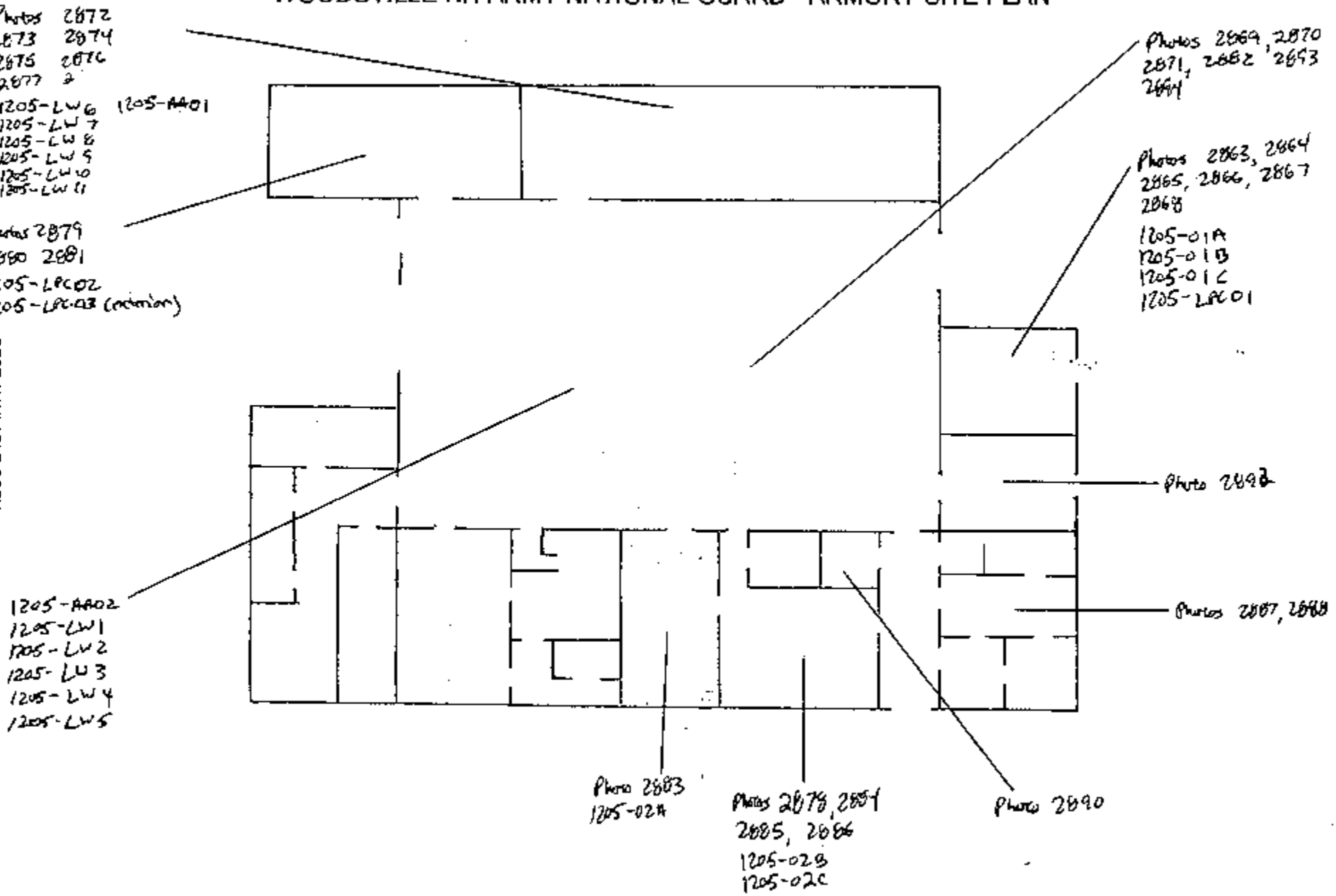
Standard for General Industry: 29 CFR 1910

APPENDIX A

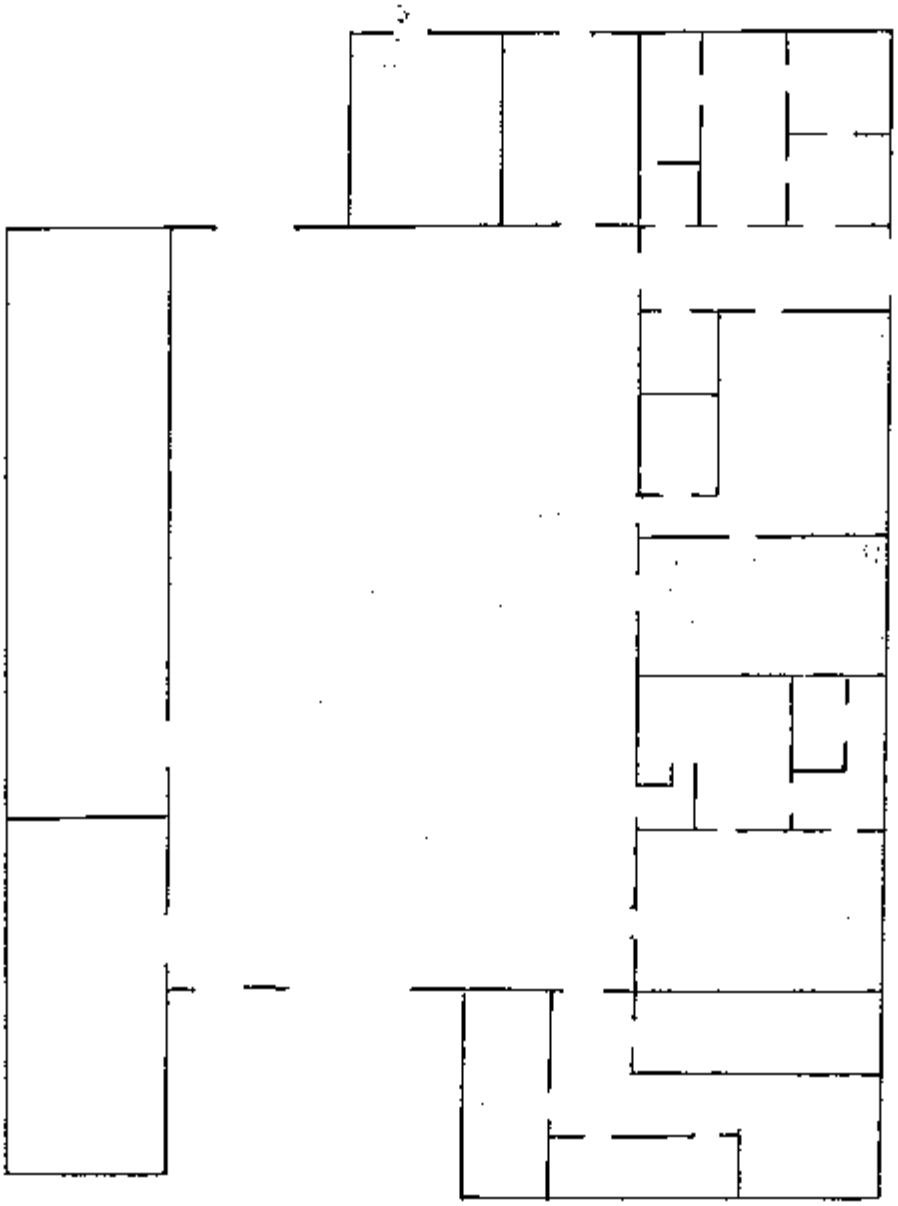
SHOP DRAWING



WOODSVILLE NH ARMY NATIONAL GUARD - ARMORY SITE PLAN



WOODSVILLE NH ARMY NATIONAL GUARD - ARMORY SITE PLAN



APPENDIX B

PERSONNEL LIST

PERSONNEL LIST

WOODSVILLE, NH

Name	Rank
Non-Responsive	SGT
	SGT

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APPENDIX C

HAZARDOUS MATERIALS LIST

The following hazardous / flammable materials are in or at the Woodsville Armory

UPDATED: 11 September 2003

NIIN	PRODUCT NAME	HAZARDOUS CHEMICAL / COMPOUND	LOCATION
AMOUNT/SIZE – ON HAND			
00-664-4944 3 / Gal.	Preservative, Canvas	Petroleum Based Product	CABINET#1
01-102-9455 2 / Gal.	Brake Fluid	Petroleum Based Product	CABINET#1
00-224-6663 1 / Qt.	Rifle Bore Cleaner	Petroleum Based Product	CABINET#1
00-935-9807 1 / Qt.	Hydraulic Fluid	Petroleum Based Product	CABINET#1
00-181-7929 1 / Gal.	Anti – Freeze	Ethylene Glycol	CABINET#1
00-145-0268 2 / 2Qt.	Grease, Aircraft	Polyalphaolefins – Bentonite	CABINET#1
01-197-7693 1 / 14 Oz.	Grease, Auto & Art.	Mineral Spirits	CABINET#1
00-754-2671 2 / 6 Oz.	Anti-Fog Compound	Non-Hazardous Materials	CABINET#1

The following hazardous / flammable materials are in or at the Woodsville Armory

UPDATED: 11 September 2003

NIIN	PRODUCT NAME	HAZARDOUS CHEMICAL / COMPOUND	LOCATION
AMOUNT/SIZE- ON HAND			
00-000-0000 2 / Gal.	Enamel,Gray	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-000-0000 3 / Gal.	Enamel,Green	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-297-0547 2 / Gal.	Enamel,Black	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-527-2884 2 / Gal.	Enamel,Black	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-221-2775 2 / Qt.	Enamel,Yellow	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-091-0291 1 / Qt.	Hydraulic Jack Oil	Petroleum Spirits	CABINET#2
00-141-2952 1 / 12 Oz.	Enamel,Acrsol Red	Naphtha (Petroleum Spirits or Benzin)	CABINET#2
00-000-0000 1 / 12 Oz.	Enamel, Acrsol Green	Naphtha (Petroleum Spirits or Benzin)	CABIBET#2
00-754-0064 1 / 12 Oz.	Lubricant, Solid Film	Molybdenum Disulfide	CABINET#2
00-180-7197 1 / Lb.	Graphite, Dry, Lube	Graphite	CABINET#2
00-000-0000 1 / 16 Oz.	Wasp & Hornet Killer	Cyclohexene	CABINET#2

The following hazardous / flammable materials are in or at the Woodsville Armory

UPDATED: 11 September 2003

NIIN PRODUCT NAME AMOUNT/SIZE- ON HAND		HAZARDOUS CHEMICAL / COMPOUND	LOCATION
01-053-6688 20/ Gal.	Break-Free (CLP)	Petroleum (Naphtha Solvent)	Haz-Mat Bldg
00-597-3608 2/ Gal.	Methanol,Technical	Methanol	Haz-Mat Bldg
01-102-9455 4/ Gal.	Brake Fluid(Silicone)	Petroleum Based	Haz-Mat Bldg
01-197-7693 43/ 14 oz.	Grease,Auto & Art.	Polyalphaolefins – Bentonite	Haz-Mat Bldg
01-421-1427 53/ 1 qt.	Lube, Oil Engine OE/HDO/15W40	Petroleum Oil	Haz-Mat Bldg
01-353-4799 44/ 1 qt.	Hydraulic Fluid Dextron III	Petroleum Based	Haz-Mat Bldg
01-178-4726 10/ 1 qt.	Lube,Oil Engine 15W30	Petroleum Oil	Haz-Mat Bldg
01-128-9537 24/ 22 oz.	Cylinder, Ether	Ether	Haz-Mat Bldg
01-441-3218 8/ Gal.	Anti-Freeze	Alcohol, Petroleum	Haz-Mat Bldg
00-935-9807 60/ 1 qt.	Hydraulic Fluid	Petroleum Based	Haz-Mat Bldg
00-145-0268 6/ 5 lb. Cn	Grease, Aircraft	Polyalphaolefins – Bentonite	Haz-Mat Bldg
00-823-7860 23/ 16 oz Cn	Lube Compound	Dimethylsilicone	Haz-Mat Bldg
00-145-0268 14/ 6.5 lb. Cn	Grease, Aircraft	Polyalphaolefins – Bentonite	Haz-Mat Bldg
00-935-5851 1/ 5 Gal. Cn	Grease, Aircraft	Polyalphaolefins – Bentonite	Haz-Mat Bldg

The following hazardous / flammable materials are in or at the Woodsville Armory

UPDATED: 11 September 2003

NIIN	PRODUCT NAME	HAZARDOUS CHEMICAL / COMPOUND	LOCATION
AMOUNT/SIZE- ON HAND			
00-141-5888 1/ 5 Gal. Cn	Wax, Floor Wtr, Emulsion	Petroleum Based	Haz-Mat Bldg
00-922-6917 1/ 10 oz. Cn.	Bonding Compound	Toluene & Naptha 107	Haz-Mat Bldg
00-242-3467 2/ 10 oz. Cn.	Fluid Vulcanizer	Petroleum Based	Haz-Mat Bldg
01-177-3988 11/ 1 qt.	Oil, Engine	Petroleum Based	Haz-Mat Bldg
01-054-6453 19/ 1 pt.	Break-Free (CLP)	Petroleum (Naphtha Solvent)	Haz-Mat Bldg
47 EA.	**** EMPTY 5 GAL FUEL CANS****		Haz-Mat Bldg

APPENDIX D

ASBESESTOS TRAINING CERTIFICATES

INSTITUTE FOR ENVIRONMENTAL EDUCATION, INC.

16 Upton Drive, Wilmington, MA 01887
(978) 658-5272

IEE IEE

This is to certify that

[redacted] Non-Responsive

has completed the requisite training, and has passed an examination for reaccreditation as:

Asbestos Inspector Refresher

pursuant to Title II of the Toxic Substance Control Act, 15 U.S.C. 2646

April 11, 2003
Course Dates

Course Location
Institute for Environmental Education
16 Upton Drive
Wilmington, MA 01887

April 11, 2003
Examination Date

03518010625349
Certificate Number

April 10, 2004
Expiration Date

[redacted] Non-Responsive
President/Director of Training

APPENDIX E

ANALYTICAL RESULTS

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AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121111
Address:	5 Industrial Way	**Job Location:**	Woodsville, NH	**Date Analyzed:**	12/15/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	15-Dec-03
Attention:	[redacted]				

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft^2)	Reporting Limit		Final Result		Comments
0412813	1205-LW1	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2
0412814	1205-LW2	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2
0412815	1205-LW3	Flame	Wipe	****	1.000	12.00	ug/ft^2		780	ug/ft^2
0412816	1205-LW4	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2
0412817	1205-LW5	Flame	Wipe	****	1.000	12.00	ug/ft^2	<	12	ug/ft^2
0412818	1205-LW6	Flame	Wipe	****	1.000	12.00	ug/ft^2		4500	ug/ft^2
0412819	1205-LW7	Flame	Wipe	****	1.000	12.00	ug/ft^2		7100	ug/ft^2
0412820	1205-LW8	Flame	Wipe	****	1.000	12.00	ug/ft^2		2300	ug/ft^2
0412821	1205-LW9	Flame	Wipe	****	1.000	12.00	ug/ft^2		61	ug/ft^2
0412822	1205-LW10	Flame	Wipe	****	0.833	14.40	ug/ft^2		14000	ug/ft^2
0412823	1205-LW11	Flame	Wipe	****	0.583	20.57	ug/ft^2		40000	ug/ft^2
0412824	1205-LWBLANK	Flame	Wipe Blank	****	N/A	12.00	ug	<	12	ug
0412825	1205-AA 01	Flame	Air	892	N/A	3.36	ug/m^3	<	3.4	ug/m^3
0412826	1205-AA 02	Flame	Air	848	N/A	3.54	ug/m^3	<	3.5	ug/m^3
0412827	1205-AA 03	Flame	Air Blank	0	N/A	3.00	ug/m^3	<	3	ug
0412828	1205-LPC 01	Flame	Paint Chip	****	N/A	0.01	%Pb	<	0.01	%Pb
0412829	1205-LPC 02	Flame	Paint Chip	****	N/A	0.01	%Pb		0.53	%Pb
0412830	1205-LPC 03	Flame	Paint Chip	****	N/A	0.01	%Pb		0.016	%Pb

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643

AMA Analytical Services, Inc.

A Specialized Environmental Laboratory

CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121111
Address:	5 Industrial Way	**Job Location:**	Woodsville, NH	**Date Analyzed:**	12/15/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided	**Report Date:**	15-Dec-03

Attention: [redacted]

Summary of Atomic Absorption Analysis for Lead

AMA Sample Number	Client Sample Number	Analysis Type	Sample Type	Air Volume (L)	Area Wiped (ft²)	Reporting Limit	Final Result	Comments

Analysis Method for Flame: Air, Wipes, Paints, and Soil/Solids: EPA 600/R-93/200(M)-7420; Water: SM-3111B
Analysis Method For Furnace: Air, Wipes, Paints, and Soil/Solids : EPA 600/R-93/200(M)-7421; Water: SM-3113B
N/A = Not Applicable mg/Kg = parts per million (ppm) by weight mg/L = parts per million (ppm)
%Pb = percent lead by weight ug = micrograms ug/L = parts per billion (ppb)
Note: All results have two significant digits. Any additional digits shown should not be considered when interpreting the result.

Analyst: [redacted] **Technical Manager:** [redacted]

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AMA Analytical Services, Inc.

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CERTIFICATE OF ANALYSIS

NVLAP
NY ELAP
AIHA

Client:	URS Corporation	**Job Name:**	Armory	**Chain Of Custody:**	121111
Address:	5 Industrial Way	**Job Location:**	Woodsville, NH	**Date Analyzed:**	12/16/2003
	Salem, New Hampshire 03079-2830	**Job Number:**	Not Provided	**Person Submitting:**	[redacted]
		P.O. Number:	Not Provided		
Attention:	[redacted]				

Summary of Polarized Light Microscopy

AMA Sample Number	Client Sample #	Total Asbestos	Chrysotile Percent	Amosite Percent	Crocidolite Percent	Other Asbestos Percent	Mineral Wool Percent	Fiberglass Percent	Organic Percent	Synthetic Percent	Other Percent	Particulate Percent	Sample Color	Analyst ID	Comments
0412831	1205-01 A	65	65	--	--	--	--	--	5	--	--	30	Gray	LB	
0412832	1205-01 B	65	65	--	--	--	--	--	5	--	--	30	Gray	LB	
0412833	1205-01 C	65	65	--	--	--	--	--	5	--	--	30	Gray	LB	
0412834	1205-02 A	2	2	--	--	--	--	--	--	--	TR	98	Black	LB	
0412835	1205-02 B	2	2	--	--	--	--	--	TR	--	--	98	Green	LB	
0412836	1205-02 C	2	2	--	--	--	--	--	--	--	--	98	Green	LB	

The following footnotes only apply to those samples which the total asbestos result is flagged with a note number.

1 TEM RECOMMENDATION - Please note, due to resolution limitations with optical microscopy and/or interference from matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos. It is recommended that the additional analytical technique of TEM be used to check for asbestos fibers below the resolution limits of optical microscopy.

2 MATRIX REDUCTION RECOMMENDATION - Please note, due to interference from the matrix components of this sample, results which are reported via PLM as negative or trace (<1%) for asbestos may contain a significant quantity of asbestos which is obscured from view. It is recommended that the additional preparation technique of gravimetric reduction be performed on this sample to minimize the obscuring effects of matrix components, followed by reanalysis by PLM and/or TEM.

Analysis Method - EPA/600/R-93/116 dated July 1993

NAD = "No Asbestos Detected" TR = "Trace equals less than 1% of this component"

[redacted]

An AIHA (#8863), NVLAP (# 101143), & New York ELAP (#10920) Accredited Laboratory
4475 Forbes Blvd. • Lanham, MD 20706 • (301) 459-2640 • Toll Free (800) 346-0961 • Fax (301) 459-2643

AMA Analytical Services, Inc.
AIHA (#8863) NVLAP (#1143) NY ELAP (10920)
4475 Forbes Blvd. • Lanham, MD 20706
(301) 459-2640 • (800) 346-0961 • Fax (301) 459-2643
www.amalab.com

CHAIN OF CUSTODY

(Please Refer To This Number For Inquires) 121111

Mailing/Billing Information:
1. Client Name: USNH
2. Address 1:
3. Address 2:
4. Address 3:
5. Phone #: Fax #:

Submittal Information:
1. Job Name: Armory
2. Job Location: Woodsville, NH
3. Job #: P.O. #:
4. Contact Perso [redacted] @ phone #
5. Submitted by: Signature:

Reporting Information (Results will be provided as soon as technically feasible):
Date & Time Results Required 12/16/03 @ 0930 ☐Immd. ☐24hr ☐48hr ☐72hr ☒5 Day + ☐Immd. After-Hours* ☐24hr After-Hours* ☐Late-Night* (*must be pre-scheduled)
☐ Verbals: @ cell # ☐ Fax Copy: @ fax # ☐ Email Copy: @

Asbestos Analysis
PCM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ NIOSH 7400 (QTY)
☐ Fiberglass (QTY)
TEM Air – Please Indicate Filter Type:
PC MCE Porosity in a 25mm 37mm
☐ AHERA (QTY)
☐ NIOSH 7402 (QTY)
☐ Other (specify) (QTY)
PLM Bulk
☒ EPA 600 – Visual Estimate 6 (QTY)
☐ EPA Point Count (QTY)
☐ NY State Friable (QTY)
☐ Grav. Reduction ELAP 198.1 (QTY)
☐ Other (specify) (QTY)

TEM Bulk
☐ ELAP 198.4/Chatfield (QTY)
☐ NY State PLM/TEM (QTY)
☐ Residual Ash (QTY)
TEM Dust
☐ Qual. (pres/abs) Vacuum/Dust (QTY)
☐ Quan. (s/area) Vacuum D5755-95 (QTY)
☐ Quan. (s/area)Dust D6480-99 (QTY)
TEM Water
☐ Qual. (pres/abs) (QTY)
☐ ELAP 198.2/EPA 100.2 (QTY)
☐ EPA 100.1 (QTY)

Lead Analysis
☒ Paint Chip 3 (QTY)
☒ Dust Wipe (wipe type) 12 (QTY)
☒ Air 3 (QTY)
☐ Soil/Solid (QTY)
☐ TCLP (QTY)
☐ Drinking Water (QTY)
☐ Waste Water (QTY)
☐ Dust Wipe Furnace (wipe type) (QTY)

Miscellaneous Analysis
☐ Radon (QTY)
☐ Other (specify) (QTY)

SAMPLE ANALYSIS INFORMATION / ANALYSIS / MATRIX / CLIENT CONTACT

CLIENT ID NUMBER	SAMPLE LOCATION	DATE	VOLUME (LITERS)	WIPE AREA	TEM	PCM	PLM	LEAD	OTHER	AIR	BULK	WIPE	WATER AND OTHER	CLIENT CONTACT (LABORATORY STAFF ONLY)
														Date/Time: Contact: By:
														Date/Time: Contact: By:
														Date/Time: Contact: By:

LABORATORY STAFF ONLY: (CUSTODY)
1. Date/Time RCVD: 12/9/03 @ 0930 Via: fedex By (Print): E Ramos Sign:
2. Date/Time Analyzed: 12/16/03 @ By (Print): Sign:
3. Results Reported To: T Via: FAX Date: 12/16/03 Time: Initials:
4. Comments:

APPENDIX F

PHOTOGRAPHS

Photo 2863: Boiler Room #7 – exposed pipe insulation end

Photo 2864: : Boiler Room #7 – punctured asbestos-containing pipe insulation

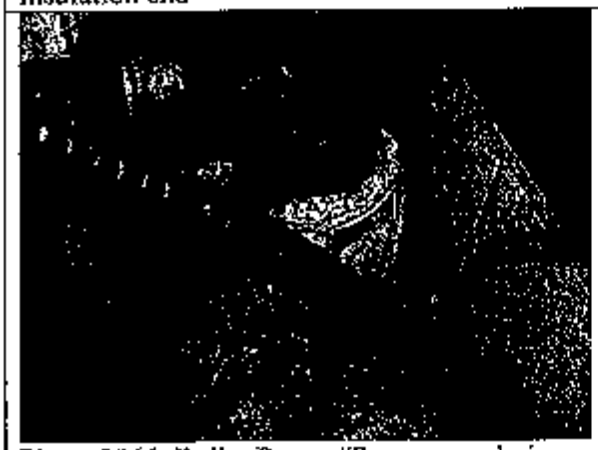

Photo 2865: Boiler Room #7 – exposed pipe insulation end

Photo 2866: Boiler Room #7 – exposed pipe insulation end

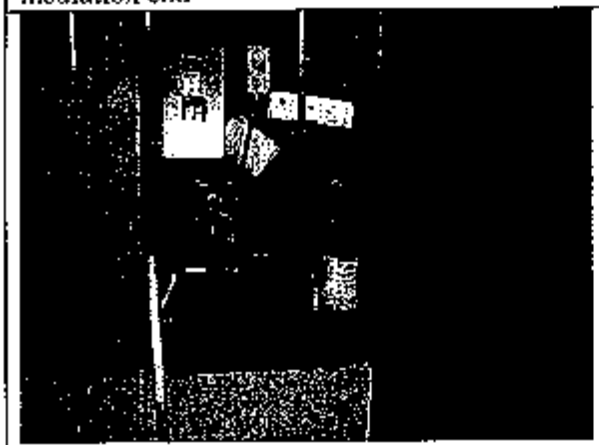

Photo 2867: Boiler Room #7 – unlabelled fire extinguisher

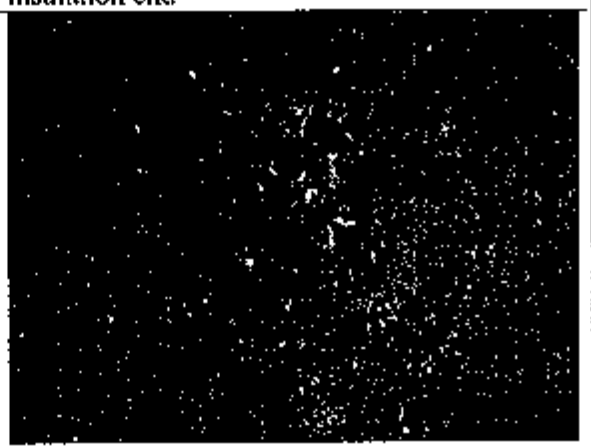

Photo 2868: Boiler Room #7 – paint chip from floor

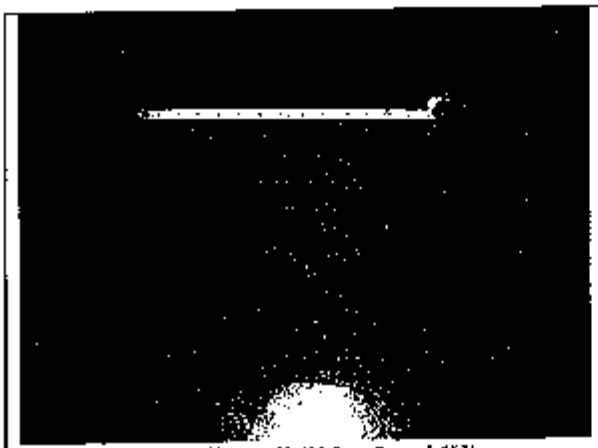

Photo 2869: Drill Hall #10 - Lead Wipe (1205-LW1)

Photo 2870: Drill Hall #10 - Lead Wipe (1205-LW3)

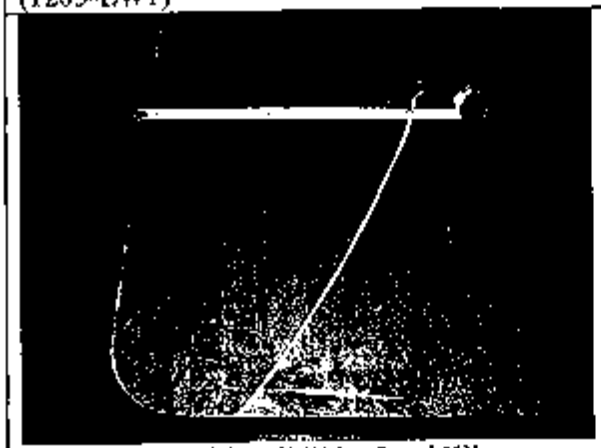

Photo 2871: Drill Hall #10 – Lead Wipe (1205-LW4)

Photo 2872: Former Firing Range – Lead Wipe (1205-LW8)

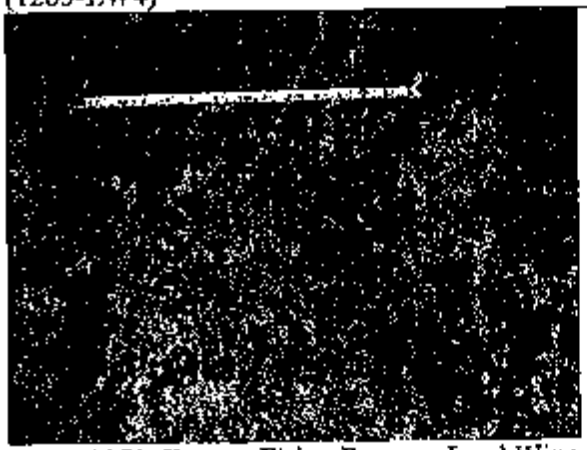

Photo 2873: Former Firing Range – Lead Wipe (1205-LW7)

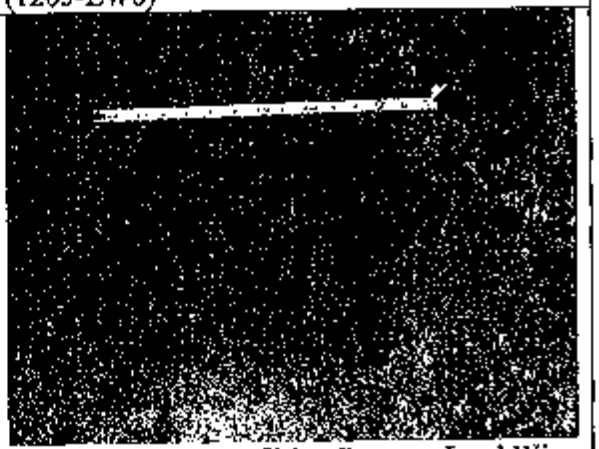

Photo 2874: Former Firing Range - Lead Wipe (1205-LW6)

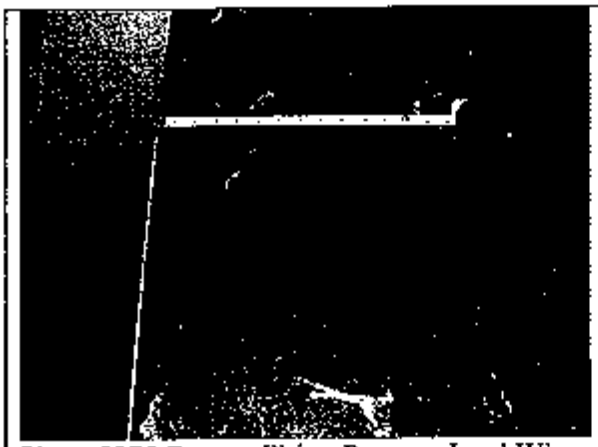

Photo 2875:Former Firing Range – Lead Wipe (1205-LW9)

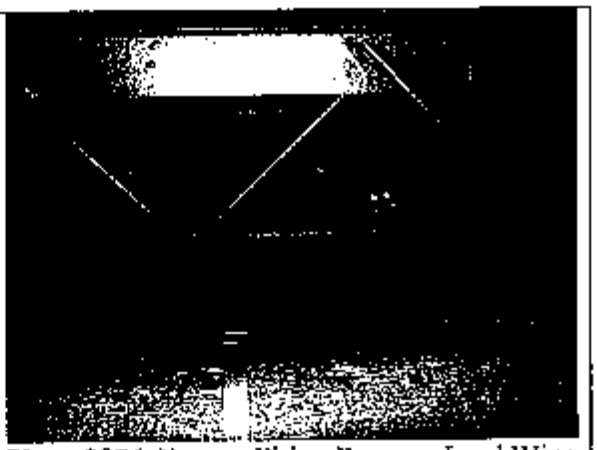

Photo 2876: Former Firing Range – Lead Wipe (1205-LW10)

Photo 2877: Former Firing Range – Lead Wipe (1205-LW11)

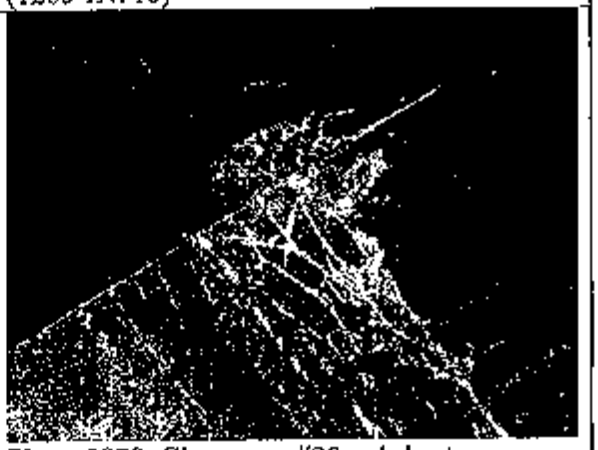

Photo 2878: Classroom #20 - - Asbestos-containing 9" x 9" floor tile

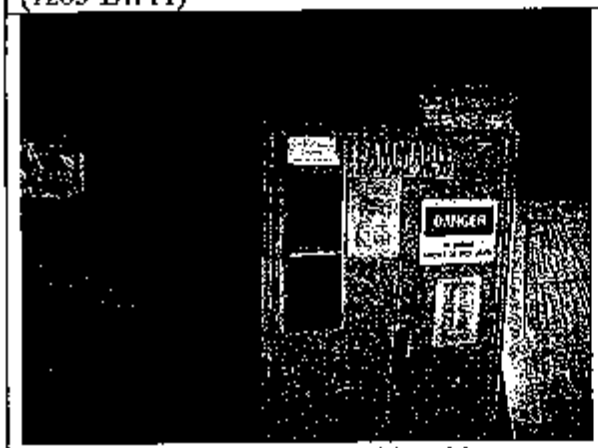

Photo 2879: FDC #9 Flammable cabinet unlocked and fire extinguisher not labeled

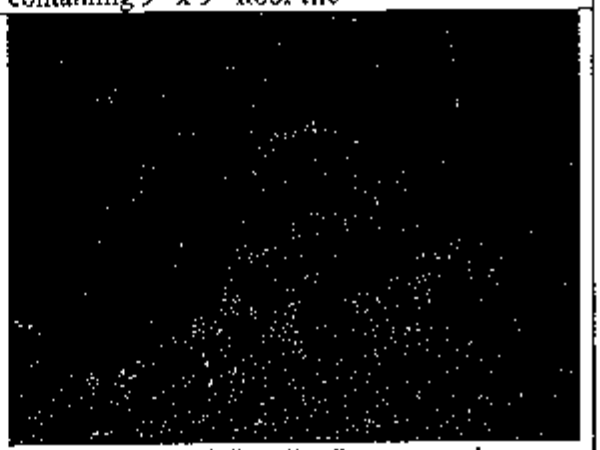

Photo 2880: FDC #9 - - Peeling gray paint on floor (LPC2)

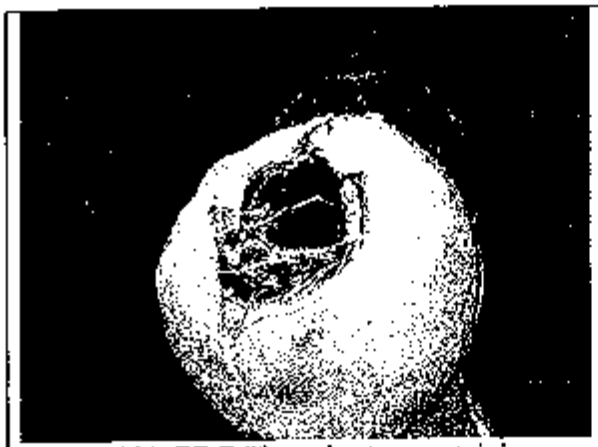

Photo 2881: FDC #9 – asbestos-containing pipe insulation ends becoming loose

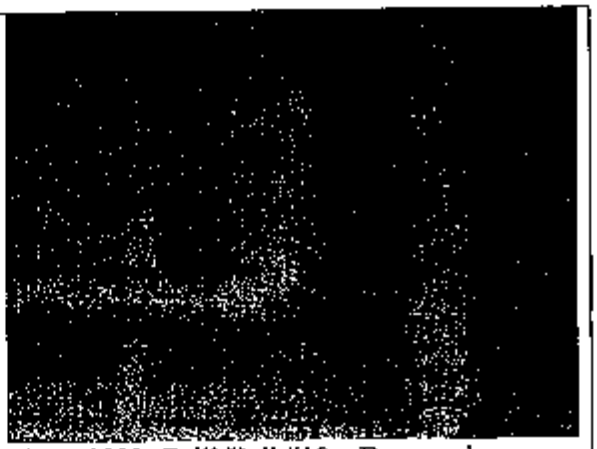

Photo 2882: Drill Hall #10 – Damaged asbestos-containing pipe insulation

Photo 2883: Classroom #19 – Water stains on ceiling tiles

Photo 2884: Classroom #20 – Water stains on ceiling tiles

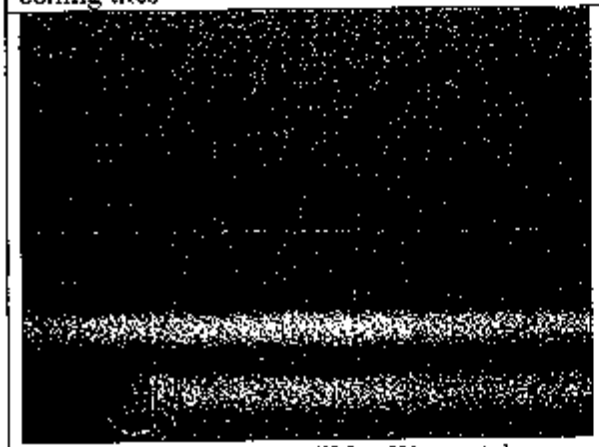

Photo 2885: Classroom #20 – Water stains on ceiling tiles

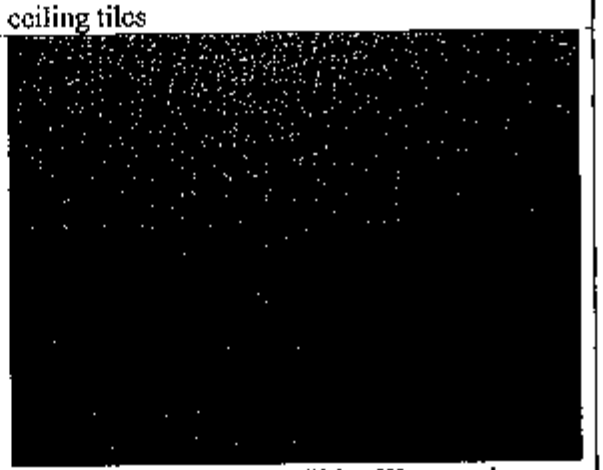

Photo 2886: Classroom #20 – Water stains on ceiling tiles

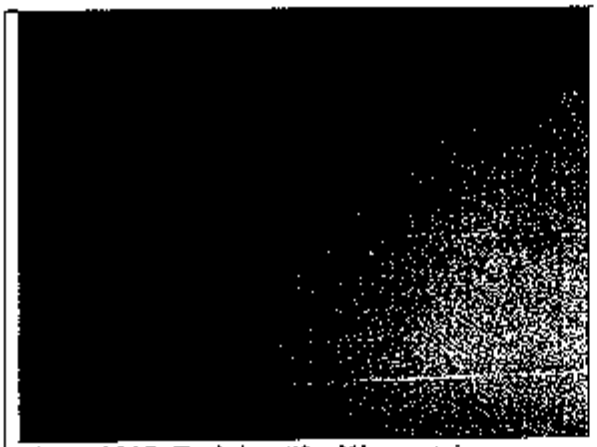

Photo 2887: Training #3 - Water stains on ceiling tiles

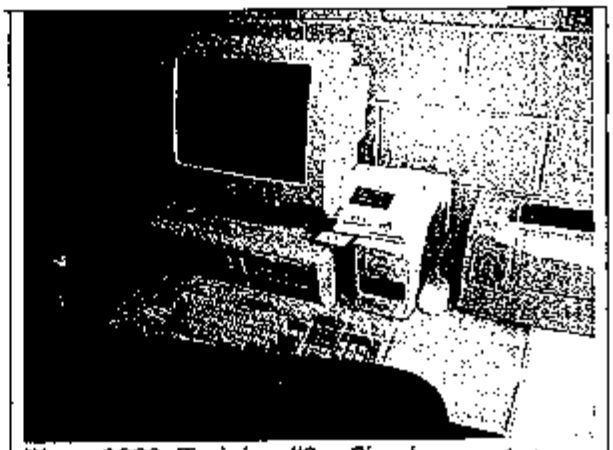

Photo 2888: Training #3 - - Fixed computer work station

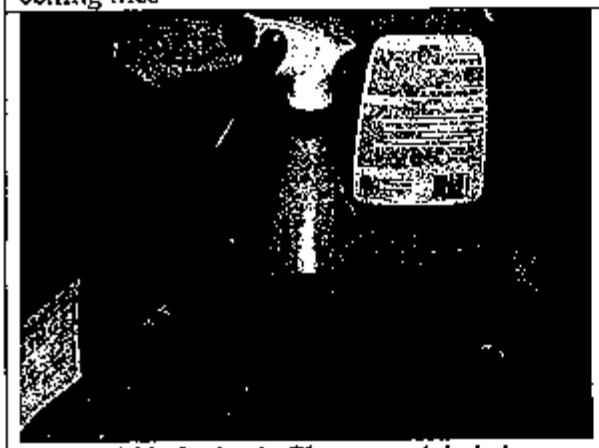

Photo 2890: Janitor's Closet – unlabeled secondary container

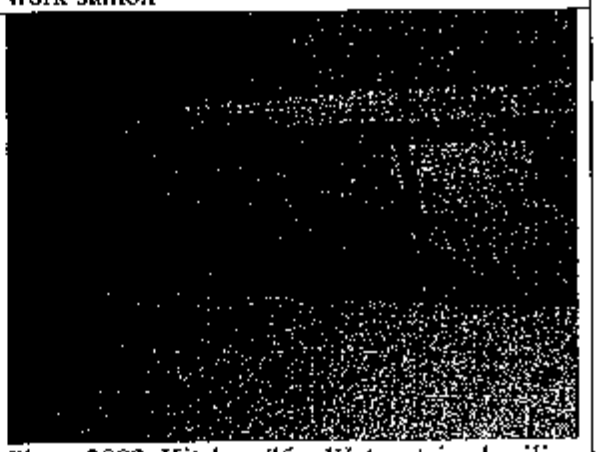

Photo 2892: Kitchen #6 – Water stained ceiling tile

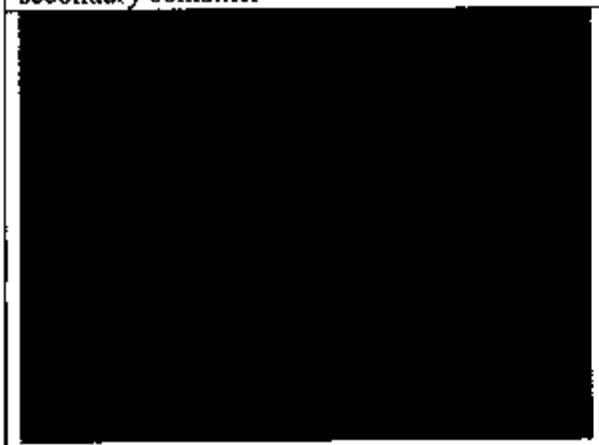

Photo 2893: Drill Floor #10 – asbestos-containing pipe insulation with exposed ends

Photo 2894: asbestos-containing pipe insulation with puncture marks

APPENDIX G

RECOMMENDATIONS FOR SURFACE LEAD DUST IN ARMORIES

Subject: Recommendations for Surface Lead Dust in Armories

1. In armories that do not contain childcare facilities, the National Guard Bureau (NGB) Region North Industrial Hygiene Office recommends cleaning the areas in which sample results are greater than 200 micrograms per square foot (□g/ft^2). If a special function will be held in which children will be present in this facility, consider thoroughly cleaning the areas that will be accessible to children prior to the function. This guidance is based on professional judgment, risk assessments, adaptation of Occupational Safety and Health Administration (OSHA) guidance, end feasibility of cleaning to a certain level.

e. Environmental Protection Agency (EPA) standards (40 Code of Federal Regulations (CFR) 745.227(h)(3)) are not directly applicable because they are criteria for dust-lead hazards developed for floors (40 µg/ft^2) and windowsills (250 µg/ft^2) in residential dwellings and child occupied facilities. A child occupied facility is defined as a building, or portion of a building, constructed prior to 1978, visited regularly by the same child, 6 years of age or under, on at least two different days within any week (Sunday through Saturday period), provided that each day's visit lasts at least 3 hours and the combined weekly visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Most of the wipe samples in armories were collected in undisturbed areas and therefore, results ere worst case scenarios and do not correlate to these standards.

b. OSHA has no specific requirement for work area surfaces. The lead standard (29 CFR 1910.1025(h)) states that all surfaces shall be maintained as free as practicable of accumulations of lead dust. In workplaces where lead dust is generated, surface levels may be much higher, but personnel exposures can be controlled by limiting airborne lead levels and following good cleanup and hygienic practices.

c. OSHA used to cite a level of 200 □g/ft^2 in their Technical Manual and 29 CFR 1926.62 as guidance to its own inspectors for evaluating the cleanliness of lunchroom and locker room surfaces that are supposed to be kept as clean as possible.

d. In a report titled Derivation of Wipe Surface Screening Levels for Environmental Chemicals, the US Army Center for Health Promotion and Preventive Medicine (USACHPPM) has determined that 200 □g/ft^2 is a safe surface contamination level. They have also applied these standards as the decontamination levels for surfaces in administrative offices.

e. It should be noted that levels above these recommendations do not necessarily mean there is a significant hazard to workers who are following good cleaning and hygienic practices since there is no correlation between wipe and air samples. Rather, we recommend these levels as a precautionary measure.

2. The NGB Occupational Health Branch is developing guidance for armories that are used as childcare facilities. All states will receive this guidance when it is completed. In the interim, we recommend the following actions:

a. Clean all areas that will be accessible to children to the EPA dust-lead standard for children 6 years of age or under (40 $\mu g/ft^2$ on floors and 250 $\mu g/ft^2$ on windowsills).

b. Refer to the local authorities' regulations since they can be more stringent than federal regulations.

c. Post signs in the area to inform people of the presence of lead dust and its effects.

d. If soldiers clean weapons in the facility change the policy so that they cannot clean their weapons in the facility, or if they are allowed to clean their weapons indoors, they must clean the area by wet wiping and mopping the area when they are done.

e. If the paint is peeling, contact the state Environmental Office to test for lead content and provide recommendations.

3. Air samples collected on individuals in the armory were well below OSHA's permissible exposure limit for lead (29 CFR 1910.1025(c)) of 0.05 mg/m^3 averaged over an 8-hour day. Therefore, based on these conditions there is currently no overexposure to personnel from lead dust in this building.

APPENDIX H

POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES (NATIONAL GUARD REGULATION 385-15 30 DECEMBER 2002)

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

ADDENDUM

GUIDELINES FOR IFR REHABILITATION, CONVERSION, AND CLEANING

CONTENTS (Listed by paragraph number)

Purpose
1. This addendum establishes policy and procedures for rehabilitation, conversion, and cleaning of ARNG indoor firing ranges.

2. References
Related publications are listed below.
a. DODI 6055.1 (Department of Defense Instruction, Occupational Safety and Health (OSH) Program).
b. AR 11-34 (The Army Respiratory Protection Program).
c. AR 40-5 (Preventive Medicine).
d. NGR 385-15 Policy, Responsibilities, and Procedures for Inspection, Evaluation, and Operation of ARNG Indoor Firing Ranges).
e. 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health Standards
f. OSHA Technical Manual, Edition VII.
g. DHEW NIOSH 76-130 (Lead Exposure and Design Considerations for Indoor Firing Ranges).

3. Explanation of Abbrevtations and Terms
Abbreviations and special terms used in this publication are listed in the glossary.

4. Policy and Procedures
Conversion of Ranges. Indoor firing ranges can be safely rehabilitated or converted for other uses, such as a storage area, kitchen, or office space, provided the following –

a. Previously active ranges must be thoroughly decontaminated and cleaned to acceptable levels.

b. The level of cleanliness is to be determined by sampling. The Occupational Safety and Health Administration's (OSHA) Technical Manual, 6th Edition, provides guidance on the methods and techniques needed to collect wipe samples (Appendix A).

(1) Wipe samples must be collected and analyzed prior to and after cleaning.

(2) Post-cleaning surface wipe sample results must be less than or equal to 200 micrograms per square feet (ug/sq ft). The sampling strategy, which is the amount and location of wipe samples to be collected, is provided in Appendix B. Methods for interpreting the sample results are contained in Appendix C and D.

c. Equipment/items previously stored in the range must be decontaminated and cleaned to acceptable levels.

(1) Samples must be collected from equipment/items stored in the range. Sample selection is critical, because the number of items stored and length of storage differs from range to range. The amount and location of the samples, should be representative of the areas where lead dust is most likely to accumulate. The more samples collected, the better the statistical comparison of the results.

(2) Samples must be collected from the smooth surfaces of the equipment/items, in so much as possible. Results of samples collected from a rough surface will be inaccurate due to the minimal surface contact of the media. Further, the likelihood of tearing the media filter is greater on rough surfaces.

(3) Samples should also be collected on items stored the longest period of time, and which have not been disturbed. Items stored closest to the bullet trap and firing line are likely to have higher concentrations of lead dust. Methods for interpreting the sample results are contained in Appendix C and D.

5. Goal
To ensure every indoor firing range is free of lead dust, and to reduce the number of unsafe ARNG indoor firing ranges.

6. Background
The Environmental Protection Agency (EPA) identifies lead as a highly toxic metal. Elemental lead is indestructible, and common in the environment. Lead can enter the body by inhalation (breathing) or ingestion (eating). In addition, lead is a cumulative poison. It accumulates in the blood, bones, and organs, including the kidneys, brain and liver. Effects include nervous and reproductive system disorders, delays in neurological and physical development, cognitive and behavioral changes, and hypertension. Symptoms include loss of appetite, difficulty sleeping, irritability, fatigue, headache, and inability to concentrate. It can stay in the bones for decades. Worker awareness and training are important to ensure that employees can recognize the symptoms of exposure and get prompt medical attention.

7. Wipe Sample Media

a. OSHA Technical Manual provides the necessary guidance on the technique needed to collect wipe samples (Appendix A). Only distilled or deionized water will be used to saturate dry sample media. At least one field blank filter must be submitted with each sample sheet. The field blank must be from the same lot, and labeled as a blank on the sample sheet. Appendix E identifies how and where to obtain sample media. Use the following guidance for determining media acceptability.

(1) Acceptable Media consists of –

(a) Ghost Wipes™ (PREFERRED METHOD)- Pre moistened

(b) Thirty-seven (37) millimeters (mm) mixed cellulose ester (MCE) filters, with or without the cassettes.

[redacted]

(2) Unacceptable Media consists of but is not limited to—
(a) Cotton balls
(b) Baby wipes or wet wipes

b. Documentation of Sample Collection. A Surface Wipe Sample Sheet must be completed and submitted with samples to your supporting laboratory. A copy of this form is located in Appendix G. Refer to Appendix A on how to collect wipe samples.

8. Wipe Sampling Protocol
See Appendix A.

9. Ranges Cleaning Instructions

a. Written procedures, such as a scope of work, or Standing Operating Procedure (SOP) that complies with all federal, state and local regulations must be established prior to decontamination operations. The range ventilation system will be in operation during range cleaning to ensure that a negative pressure environment is maintained. In the absence of mechanical ventilation system, all doors and windows will be sealed to eliminate fugitive emissions. A High Efficiency Particulate Air (HEPA) filtered vacuum system is the preferred method of cleanup followed by wet wiping of the range. The HEPA vacuum is designed to collect loose surface lead dust particles.

b. Any general purpose cleaning solution can be used. However, Spic and Span™ has been found to be an effective cleaning solution by other Army organizations. Mix new solutions of cleaning solution frequency. Wet wiping will require dual containers of water; one container for wetting the applicator (mops, rags, sponge, etc.) and the other container for rinsing the applicator after the dust has been wiped from the surfaces. When placed in containers, wastewater should be left to evaporate.

c. PROPERLY DISPOSE OF ALL HAZARDOUS WASTE. DO NOT PLACE LEAD CONTAMINATED WASTE INTO THE SEWER SYSTEM OR ONTO THE GROUND.

d. Mop-heads, sponges and rags will be discarded as hazardous waste following cleanup.

e. Wet cleaning by a high-pressure system is prohibited, as this method may embed the lead into the substratum and generate large quantities of unwanted hazardous waste.

f. Dry sweeping is not permitted.

g. All surface areas of the range must be cleaned. Do not remove the coating on smooth painted surfaces that are properly sealed.

h. Wood floors should receive a coat of deck enamel or urethane; concrete floors should be sealed with deck enamel and linoleum or tile floors should be waxed.

i. A progression of cleaning from top to bottom and from behind the steel backstop to the firing line should be used. After removing the sand, if applicable, and the steel backstop, areas in front of and behind the bullet trap along with the steel backstop plate(s) should be cleaned. Next, clean the ceiling, lights, baffles, retrieval system, heating system(s), and ventilation duct(s). Acoustical material should be vacuumed and removed rather than painted over.

j. A Toxic Characteristic Leaching Procedures (TCLP) test for lead only may need to be performed on the acoustical material. A TCLP test will determine if the material is classified as "hazardous" and can be disposed of in a sanitary landfill. Contact your State Environmental Office for assistance before arranging for this laboratory testing. The floor should be the last surface cleaned, starting at the bullet trap and ending behind the firing line.

k. After wet wiping all surfaces, permit the area to dry. Vacuum all surface areas until no dust or residue can be seen using the HEPA.

l. A thorough visual inspection to detect dust should be made following cleanup and prior to collecting post surface wipe samples.

m. As a variety of conditions exist in ranges, unique situation may arise and specific written guidance from your Regional Industrial Hygiene Office may be required.

10. Cleaning Stored Contaminated Equipment

a. Equipment contaminated (sample result is higher than 200 micrograms/sq ft) with lead dust must be decontaminated before it is removed from the range.

b. Equipment located near the bullet trap and firing line should be cleaned first and then removed. The cleaning method depends on the size of the equipment and the material it is comprised of, i.e. metal, wood, concrete, porus, non-porus, smooth or rough finish etc. However, either HEPA vacuum or the wet wipe method will be used. Refer to paragraph 9 for additional guidance.

c. Every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful. Only as a last resort will the item be discarded as hazardous waste. Porous items, such as office partitions and carpet that were present during firing should be considered grossly contaminated and be discarded unless analysis proves otherwise. Consult your State Environmental Office for the proper hazardous waste disposal methods.

11. Contaminated Sand and Lead Waste
Consult your State Environmental Office for specific disposal guidance to ensure compliance with local laws and regulations.

12. Medical Surveillance

a. A pre-placement medical examination is required for all individuals involved with range cleanup operations. Consult 29 CFR 1910.1025 for additional information on medical surveillance requirements. A medical examination must include—

(1) A detailed work and medical history
(2) A thorough physical examination
(3) A respirator use evaluation
(4) A blood pressure measurement
(5) Blood sample analysis to include:
  (a) A baseline blood lead level
  (b) A complete blood count (CBC)
  (c) Blood urea nitrogen (BUN)
(6) Serum creatinine
(7) Zinc protoporphyrin
(8) A routine urine analysis
(9) Recordkeeping

b. Air Monitoring. Worker breathing zone (BZ) air samples must be collected to ensure personnel are not overexposed to airborne lead during the cleanup phase. Representative air samples will be collected on all personnel involved in the cleanup operation. These exposure levels will be used to evaluate work practices and personal protective equipment. Within five (5) working days after receipt of monitoring results, each employee will be notified in writing of the air sampling results. Contact your Regional Industrial Hygiene Office for additional information pertaining to air sampling.

13. Worker Education
OSHA 29 CFR 1910.1025 requires that workers who are potentially exposed to any lead level shall be informed of the content of Appendix A and B of this standard. A training program must be instituted for all individuals who are subject to exposure to lead at or above the action level or for whom the possibility of skin or eye irritations exists. The training program shall be repeated for personnel currently involved in range cleanup operations, at least annually, this training must be documented on DD Form 1556 or DD Form 1556-1 and filed permanently in the employee's Official Personnel File (OPF) or the soldier's Official Military Personnel File (OMPF). As a minimum, complete blocks 1, 2, 3, 7, 8, 11, 12, 13, 17, 18, 24, 33 and 36 of DD Form 1556. Place the following statement in block 18, "Do not destroy, retain this record for the duration of employment/service plus 30 years." The employer will assure that each employee is informed of the following:

a. The content of the standard and its appendices.
b. The specific nature of operations that could result in exposure to lead above the action level.
c. The purpose, proper selection, fitting, use and limitations of respirators.
d. The purpose and a description of medical surveillance program.
e. Eating and drinking are prohibited in lead contaminated areas.
f. Smoking and smoking materials will not be permitted in contaminated areas.

g. Employees must wash their hands and other exposed skin whenever they leave the work area.
h. The engineering controls and work practices associated with the individual's job assignment.
i. The contents of any compliance plan in effect.

14. Personal Protective Equipment
For housekeeping and rehabilitation the employer shall select respirators from among those approved for protection against lead dust, fume, and mist by the National Institute for Occupational Safety and Health (NIOSH). The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134. As a minimum, personnel conducting the decontamination of the range will be provided with the following personal protective equipment.

a. Employees engaged in range rehabilitation and/or range conversion, the employer shall provide at no cost to the employee, and assure that the employee uses appropriate protective work clothing and equipment such as, but not limited to:
(1) Protective coveralls with hood and shoe covers or disposable Tyvek ™ full body suit.
(2) Disposable rubber gloves; and disposable shoe coverlets (if necessary).
(3) Full-face air purifying respirator with P-100 cartridges.

b. The employer shall provide the clothing required in a clean and dry condition at least daily to employees engaged in the conversion of indoor firing ranges.

c. The employer shall provide for the cleaning, laundering, or disposal of used or contaminated protective clothing and equipment.

d. The employer shall assure that all protective clothing is removed at the completion of a work shift only in areas designated for that purpose (Change Areas or Change Rooms).

e. The employer will ensure that contaminated protective clothing that is to be cleaned, laundered, or disposed of, is placed in a closed container in the change area that seals sufficiently enough to prevent dispersion of lead dust.

f. The employer will further inform in writing any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

15. Housekeeping
This chapter applies to all active indoor ranges classified as "safe" for use. To keep the range operating properly and to keep possible hazards to a minimum, a routine housekeeping/ maintenance program is essential.

a. The employer must establish a housekeeping program sufficient to maintain all surfaces as free as practicable of accumulations of lead dust. To this end the range will be clean at the conclusion of each firing day.

b. The range ventilation system will be in operation during all cleaning operations, to ensure a negative pressure environment is maintained.

c. Ranges will be cleaned by using the wet method or vacuuming. A HEPA (High Efficiency Particulate Air) filtered vacuum system is the preferred method of meeting this requirement. The use of compressed air to clean floors is absolutely prohibited. If the wet method is utilized the floor should be equipped with a floor drain, and collection system. When there is no collection system, the water can be allowed to slowly evaporate leaving lead deposits/sludge. The deposits/sludge can then be collected, placed in metal drums, and stored for future delivery to an authorized hazardous waste disposal site. Drums must be labeled to identify contents, in accordance with the hazardous waste program.

d. A NIOSH approved respirator (P-100) for protection against lead dust, fume, and mist will be worn at all times while cleaning.

e. When cleaning start behind the firing line forward, cleaning the floor and horizontal surfaces.

16. Maintenance
The following are the minimum maintenance requirements, which must be performed quarterly by the range custodian, or by a person designated by the facility commander.

a. Inspect the ventilation system fan for condition of belts to ensure that they are not frayed or slipping.

b. Evaluate static pressure and compare to the baseline static pressure reading. Any changes will be reported through the safety manager to the Regional Industrial Hygienist.

c. Inspect Louvers, if applicable, to ensure they are opening fully.

d. Inspect the bullet trap for pitting or other damage and for sharp edges on venetian blind type bullet traps.

e. Bullet Trap. The bullet trap will be cleaned every 480 hours of operation at a minimum, or when the trap is three quarters full.

f. The range ventilation system will be operational during all bullet trap cleaning procedures.

g. All personnel involved in cleaning of the bullet trap will wear a NIOSH approved respirator, and proper personal protective equipment.

h. All debris from the bullet trap will be collected, package and turned in, in accordance with guidance from the environmental office.

17. Range Rehabilitation.

This chapter applies to all indoor firing ranges that have been identified as candidates for rehabilitation. This chapter further provides guidance for cleaning and/or sampling that might be required prior to the start of rehabilitation.

a. The portion(s) of the range to under go rehabilitation must be sampled to determine the level of lead contamination. Wipe samples will be taken per the established sampling protocol. See Appendix A.

b. All personnel involved in range rehabilitation will wear a NIOSH approved respirator (P-100), and proper personal protective equipment as prescribed in paragraph 14 above.

c. Prior to start of rehabilitation the environmental office must be notified to determine the disposition of lead containing debris.

18. Conversion of Indoor Ranges

Prior to the start of decontamination, employers must ensure that all procedures to be used comply with Federal, State, and local regulations. To ensure that all lead contamination is removed the following procedure is established.

a. All ranges slated for conversion will be inspected and evaluated.

b. All equipment stored in the range, if applicable, prior to the start of decontamination must be sampled, decontaminated, re-sampled and removed or turned in as lead contaminated material. See paragraph 10 above.

c. All acoustical tiles and/or sound proofing material (if applicable) must be removed and turned in as lead contaminated material through the environmental office.

d. The backstop, bullet trap, target retrieval system and firing line stations must be removed and turned in as lead containing material through the environmental office.

e. Light fixtures and ventilation system grills must be removed and decontaminated.

f. Ventilation system ducts need to be decontaminated or removed and replaced.

g. The exhaust fans and/or the complete ventilation air-handling unit (if applicable) must be decontaminated or removed.

h. Cover all openings of any component previously decontaminated prior to start of interior decontamination of the firing range.

19. Deviation

Deviations from this guidance will require a written exception to policy from your Regional Industrial Hygiene Office. Questions and/or comments regarding this subject should be directed to your Regional Industrial Hygiene Office or Chief, National Guard Bureau, Attn: NGB-AVS-S, 111 South George Mason Drive, Arlington, VA 22204-1382.

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program – POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX A
GENERAL PROCEDURES FOR COLLECTING WIPE SAMPLES

A-1 If multiple samples are to be collected at the work site, prepare a rough sketch of the area(s) or room(s), which are to be wipe sampled.

A-2 A new set of clean, impervious gloves should be used for each sample to avoid contamination of the media by previous samples and to prevent contact with the substance.

A-3 (1) If using Ghost Wipes™, tear open the individually sealed package. Remove the moistened wipe. Unfold the wipe.

(2) If using a dry media such as MCE or Whatman™ filter, moisten the filter with distilled or deionized water prior to sampling.

A-4 Place a 10 cm by 10 cm template on the area to be wiped.

A-5 Apply uniform firm pressure while wiping the area inside the template.

A-6 To insure that all portions of the partitioned area are wiped, start at the outside edge and progress toward the center making progress toward the center making concentric squares decreasing in size.

A-7 After collecting a sample, fold the filter or wipe inward and place into a container and number it. Note the number at the sample location on the sketch.

A-8 At least one blank filter treated in the same fashion but without wiping, should be submitted to the laboratory.

APPENDIX B
SAMPLING STRATEGY FOR COLLECTION OF WIPE SAMPLES

B-1 Prior to cleaning the ranges, the three samples must be collected and analyzed for total lead dust on each surface, i.e., floor, ceiling, backstop, and wall to include the plenum wall, if applicable. In addition, a total of 3 samples should be collected from areas which have been least disturbed by airflow. Established walkways should be avoided.

B-2 Samples should be staggered to different areas of the range. A grid system should be utilized. Each range surface areas should be divided evenly into 3 by 3 sections. Samples should not be collected on all one section of a wall or end of the building.

APPENDIX C
INTERPRETATION OF SAMPLE RESULTS (PRIOR TO CLEANING)

C-1 200 micrograms/sq ft or LESS
If all sample results are 200-micrograms/sq ft or less, the range can be converted and/or used for any purpose.

C-2 BETWEEN 201 and 200,000 micrograms/sq ft
Range must be decontaminated. Continued with cleaning instructions listed in paragraph 9 Sample results will be used to establish a baseline.

C-3 Over 200,000 micrograms/sq ft
Your sample media may not be capable of collecting additional lead dust and results that are above 200,000 micrograms/sq ft, and should be considered suspect.

APPENDIX C (Continued)

C-4 High sample results may exist due to personnel walking or moving equipment/vehicles over the range surface causing the lead dust to be "ground" into the substratum. For examples, a maintenance activity may have oversprayed paint or spilled solvents onto the surface Regional Industrial Hygiene Office for specific guidance.

APPENDIX D

INTERPRETATION OF SAMPLE RESULTS (AFTER CLEANING)

D-1 200 micrograms/sq. ft or less
If all sample results are less than 200 micrograms/sq ft, the range can be converted and/or used for any purpose after a coat of lead-free latex paint is applied.

APPENDIX E

RECOMMENDED SAMPLE MEDIA AND CONTAINERS

E-1 The following is a list of vendors, which supply the media and containers necessary to collect air and lead surface wipe samples. The information is provided to assist in obtaining the proper media and containers. Alternative vendors are available and may be utilized, if known. Contact your Regional Industrial Hygiene Office for additional assistance or clarification.

E-2 Pre-loaded 3 piece cassette with mixed cellulose ester (MCE) filter and pad, 37 millimeter (mm), pore size 0.8 microns, breathing zone (BZ) and general area (GA) air samples.

Order From	Catalog Number
a. Millipore Corp. Ashdy Road Bedford, MA 01730 617-275-9200 800-225-1380	MAWP-037-A0
b. Gelman Sciences 600 South Wagner Rd Ann Arbor, MI 48106 313-665-0651 800-521-1520	64678 (GN-4)
c. Supelco, Inc. Supelco Park Bellefonte, PA 16823 800-247-6628 800-359-3041	2-3368M

E-3 37 mm MCE Filter with pad, no cassette included, for lead surface wipe samples.

Order From	Catalog Number
a. Supelco Inc. Supelco Park Bellefonte, PA 16823	2-3361M

APPENDIX E (Continued)

800-247-6628
800-368-3041

b. Millipore Corp. AAWP-037-00
Ashdy Road
Bedford, MA 01730
617-275-9200
800-225-1380

c. SKC, Inc. 225-5
334 Valley View Rd.
Eighty Four, PA 15330
412-941-9701
800-752-8472

[redacted]

E-5. Glass container (25 milliliter) for collection and shipment of media.

Order From	Catalog Number

a. Pierce Chemical Co. 13219 (screw cap)
P.O. Box 117
Rockford, IL 61105
815-968-0747
800-874-3723

b. Alltech Associates, Inc. 95321 (screw cap)
Applied Science Labs
2051 Waukegan Rd.
Deerfield, IL 60015
312-948-8600

APPENDIX E (Continued)

800-255-8324

E-6. Ghost Wipes™.

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC4200

E-7. Ghost Wipe™ Containers

Order From	Catalog Number
Environmental Express 490 Wando Park Blvd. Mt. Pleasant, SC 29464 1-800-343-5319	SC499

E-8. Plastic ziplock bags can be obtained through the Army logistics system. Many sizes are available. Contact your supporting logistics branch for assistance.

E-9. Distilled water can be purchased at larger grocery stores, usually by the gallon, at a cost of approximately $1.25. Deionized water can be obtained at local and state water labs or a hospital.

APPENDIX F
EXAMPLES OF COMPUTATION OF LEAD LEVELS FROM WIPE SAMPLE RESULTS

Sample results will be returned in the form of micrograms. The results must be converted to micrograms per square foot. This can be accomplished by following the examples listed below:

$$\frac{75 \text{ ug}}{100 \text{ cm}^2} \quad \frac{929 \text{ cm}^2}{1 \text{ sq ft}}$$

$$\frac{75 \times 929}{100} = \frac{69675}{100} = 696.75 \text{ug/sq ft}$$

ug – Microgram

Cm2 – Centimeters squared

Sq ft – Square foot

NGB-AVS-SG
SUBJECT: All States (Log Number P01-0075) Army National Guard (ARNG) Safety and Occupational Health Program -- POLICY AND RESPONSIBILITIES FOR INSPECTION, EVALUATION AND OPERATION OF ARMY NATIONAL GUARD INDOOR FIRING RANGES

APPENDIX G
SURFACE WIPE SAMPLING SHEET

Industrial Hygiene Surface Wipe Sample Sheet

Return Address		Point of Contact *(name & phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation		Date Collected	Date Shipped
Analysis Desired			
Sampling Data			

Lab Use Only	Sample #	Results	Remarks

Comments to Lab:

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APPENDIX H
AIR SAMPLING SHEET

Industrial Hygiene Air Sample Sheet

Return Address		Point of Contact *(name/phone #)*	
		Samples Collected By	
Sampled Facility	City	State	Location *(bldg/area)*
Description of Operation	___ Persons Exposed	___ Hrs/Day	Method of Collection
Analysis Desired			
Sampling Data			

Sample No.								
Pump No.								B
Time On								L
Time Off								A
Total Time (min)								N
Flow Rate (LPM)								K
Volume (liters)								
GA/GZ								
Employee Name/ID								
Laboratory No.								

Calibration Information

Pump No.	Calibration (LPM)		Rotameter Setting	Date
	Pre-Use	Post-Use		

Name of Calibrator	Calibration Date	Pump Manufacturer

Comments to Lab:

APPENDIX I
ABBREVIATIONS AND TERMS

Section I
Abbreviations

ARNG
Army National Guard

BUN
Blood urea nitrogen

BZ
Breathing zone

CBC
Complete blood count

CFR
Code of Federal Regulations

cm
Centimeter

DHEW
Department of Health, Education and Welfare

EPA
Environmental Protection Agency

GA
General area

OMPF
Official Military Personnel File

OPF
Official Personnel File

OSHA
Occupational Safety and Health Administration

TCLP
Toxic Characteristic Leaching Procedures

ug/sq ft
Micrograms per square foot

APPENDIX I (Continued)

Section II
Terms

HEPA
Refers to high efficiency particulate air filter systems capable of capturing up to 99.97 percent of particles 0.3 microns in size or larger.

Lead-Contaminated Range
It is assumed that all indoor ranges, which have been fired in, are lead-contaminated.

Wipe Sample
The terms wipe, swipe, or smear samples are use synonymously to describe the techniques utilized for assessing lead surface contamination.

NATIONAL GUARD BUREAU
ARMY NATIONAL GUARD
REGION NORTH INDUSTRIAL HYGIENE OFFICE
ATTN: NGB-ARS-IHNE
301-IH OLD BAY LANE
HAVRE DE GRACE, MD 21078

NGB-ARS-IHNE (40-5f) 16 April 2008

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
FLEMINGTON, NJ
20 MARCH 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Flemington IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Flemington IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

3. FINDINGS AND RECOMMENDATIONS.

a. Decontamination Requirements. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, four were over the recommended 200 $\mu g/ft^2$ standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2. **(RAC 3)**

b. Stored Materials. Multiple items were stored in both the IFR and Plenum Area (Appendix C, Figures C-1 thru C-11). **(RAC 3)**

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). **(RAC 4)**

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements. **(RAC 4)**

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
FLEMINGTON, NJ
20 MARCH 2008

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Pamphlet (NG Pam) 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

2. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Flemington IFR.

3. GENERAL.

a. Survey Personnel. This survey was conducted 20 March 2008 by 1LT Non-Responsive and 1LT Non-Responsive both Environmental Engineers from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. CW2 Non-Responsive NJARNG State Occupational Health Manager (SOHM) G-3, requested an evaluation, through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, of the equipment stored at the inactive Flemington IFR to assess any possible inhalation hazards as a result of lead dust contamination.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).

b. Methodology. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

5. FINDINGS AND DISCUSSION.

a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot ($\mu g/ft^2$). While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, four were over the recommended 200 $\mu g/ft^2$ standard.

b. Stored Materials. Multiple items were stored in both the IFR itself and the Plenum Area behind it (Appendix C, Figures C-1 thru C-11). IAW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). Excluded from this are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

6. RECOMMENDATIONS.

a. Decontamination Requirements. Clean and decontaminate the IFR in accordance with (IAW) NG Pam 420-15, Section 3-2 (reference 1b). **(RAC 3)**

b. Stored Materials.

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). **(RAC 4)**

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). **(RAC 4)**

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Flemington IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.

Non-Responsive

1LT, MS
Environmental Engineer

APPROVED BY:

Non-Responsive

NGB Regional Industrial Hygienist

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

c. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*HHSC*
13-16	I
9-12	II
5-8	III
0-4	IV

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of *Exposure*	*Exposure Duration*		
	1-8 hr/wk	>8hr/wk, not continuous	Continuous
Irregular, intermittent	1-2	4-6	-
Regular, periodic	2-3	5-7	8

b. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	*Points*
<5	1-2
5 to 9	3-4
10 to 49	5-6
>49	7-8

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

APPENDIX B
WIPE SAMPLE RESULTS

Table B-1. Lead Wipe Sample Results for Flemington IFR 20 March 2008

Sample Number	Location	Results $\mu g/ft^2$ [a]	Std. $\mu g/ ft^2$	Met Std.
1B	IFR Floor near table next to drain	<110	200	Yes
2B	Top of Left Side Filing Cabinet	<110	200	Yes
3B	IFR Floor near left wall	760	200	**No**
4B	IFR Bullet Trap	14000	200	**No**
5B	IFR Floor near right wall halfway down range	<110	200	Yes
6B	IFR Plenum on Floor	<110	200	Yes
7B	Table Top near Fire line	490	200	**No**
8B	Top of Pepsi Machine	150	200	Yes
9B	IFR Floor against right wall	810	200	**No**
10B	IFR Floor drain	<110	200	Yes

a: Results are in micrograms per square foot.
< indicates the value is below the detectable limit

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

APPENDIX C
Photographs

Figure C-1. Flemington IFR being used as a storage area for a book sale.

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

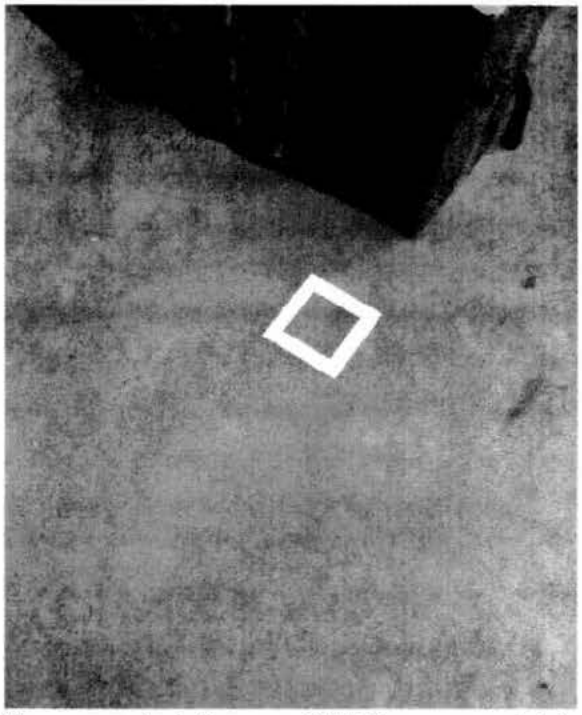

Figure C-2. Wipe sample taken on IFR Floor near table next to drain

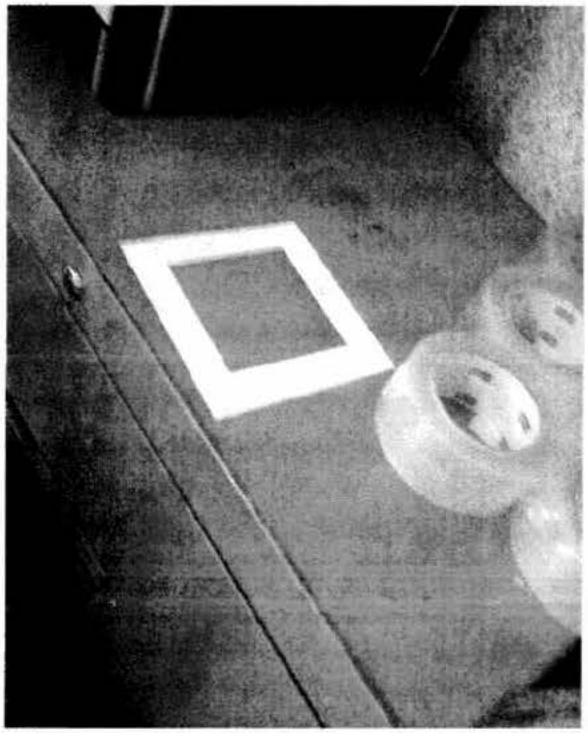

Figure C-3. Wipe sample taken on Top of Left Side Filing Cabinet

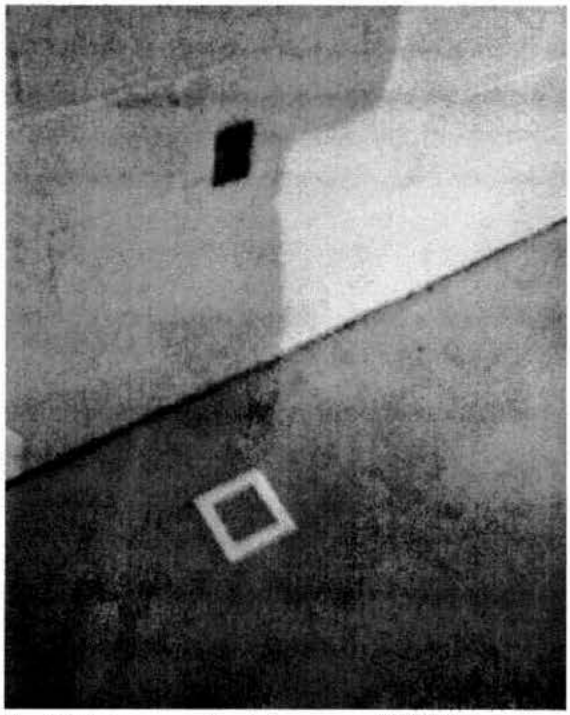

Figure C-4. Wipe sample taken on IFR Floor near left wall

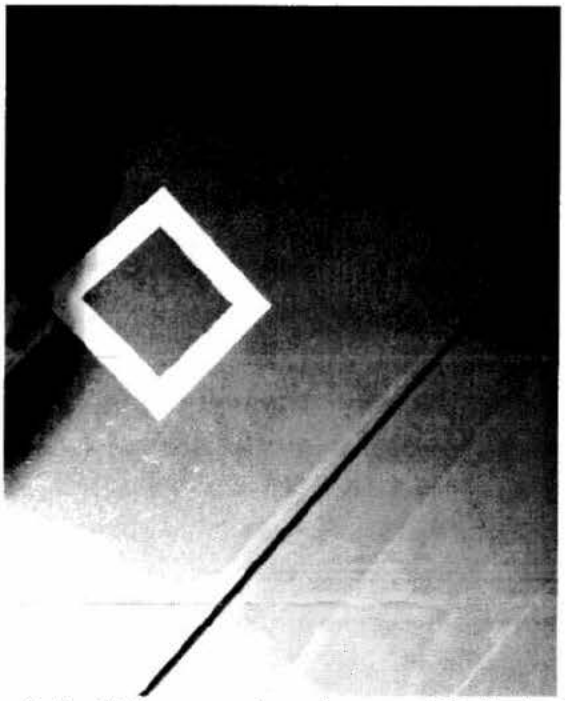

Figure C-5. Wipe sample taken on IFR Bullet Trap

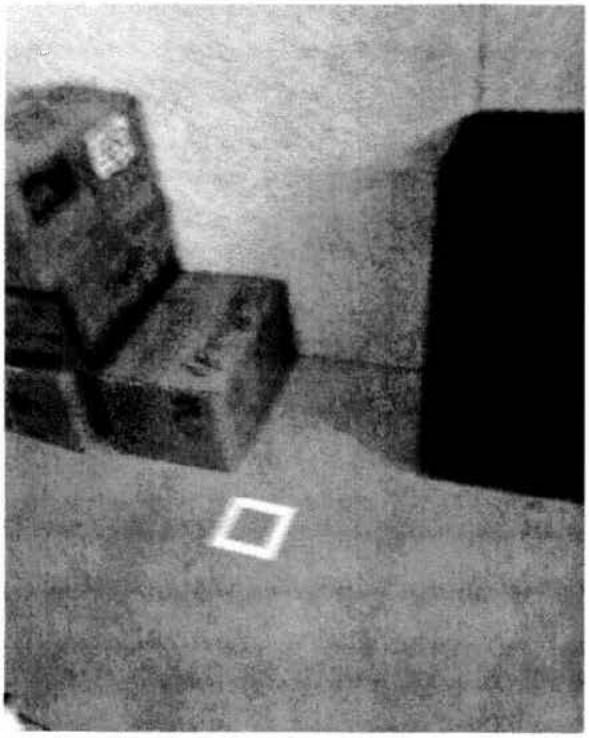

Figure C-6. Wipe sample taken on IFR Floor near right wall, halfway down range

Figure C-7. Wipe sample taken in IFR Plenum Area on Floor

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Flemington, New Jersey Army National Guard, 20 March 2008.

Figure C-8. Wipe sample taken on Table Top near Fire line

Figure C-9. Wipe sample taken on top of Pepsi Machine located inside range.

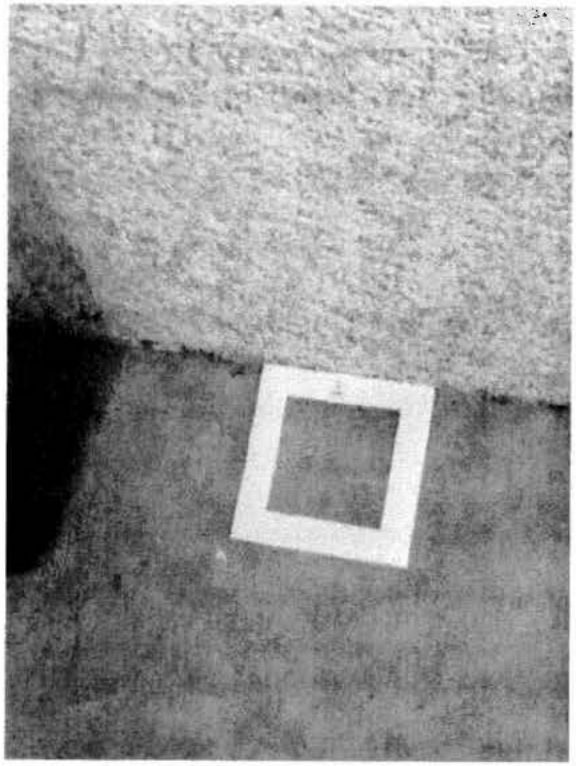


Figure C-10. Wipe sample taken on IFR Floor against right wall

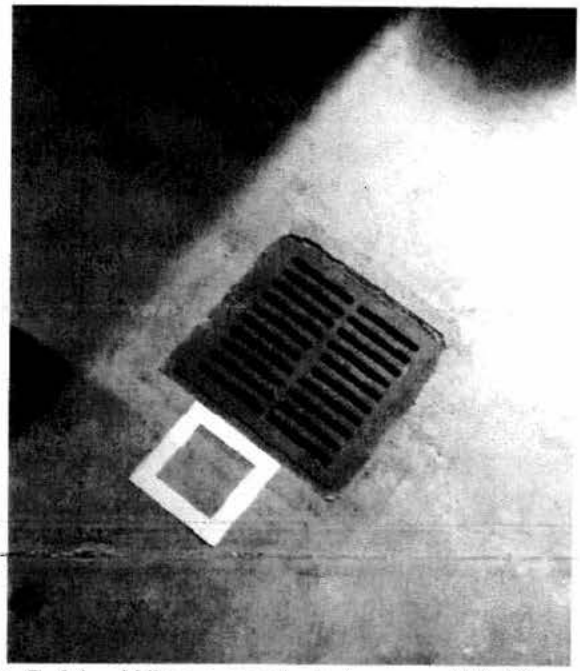
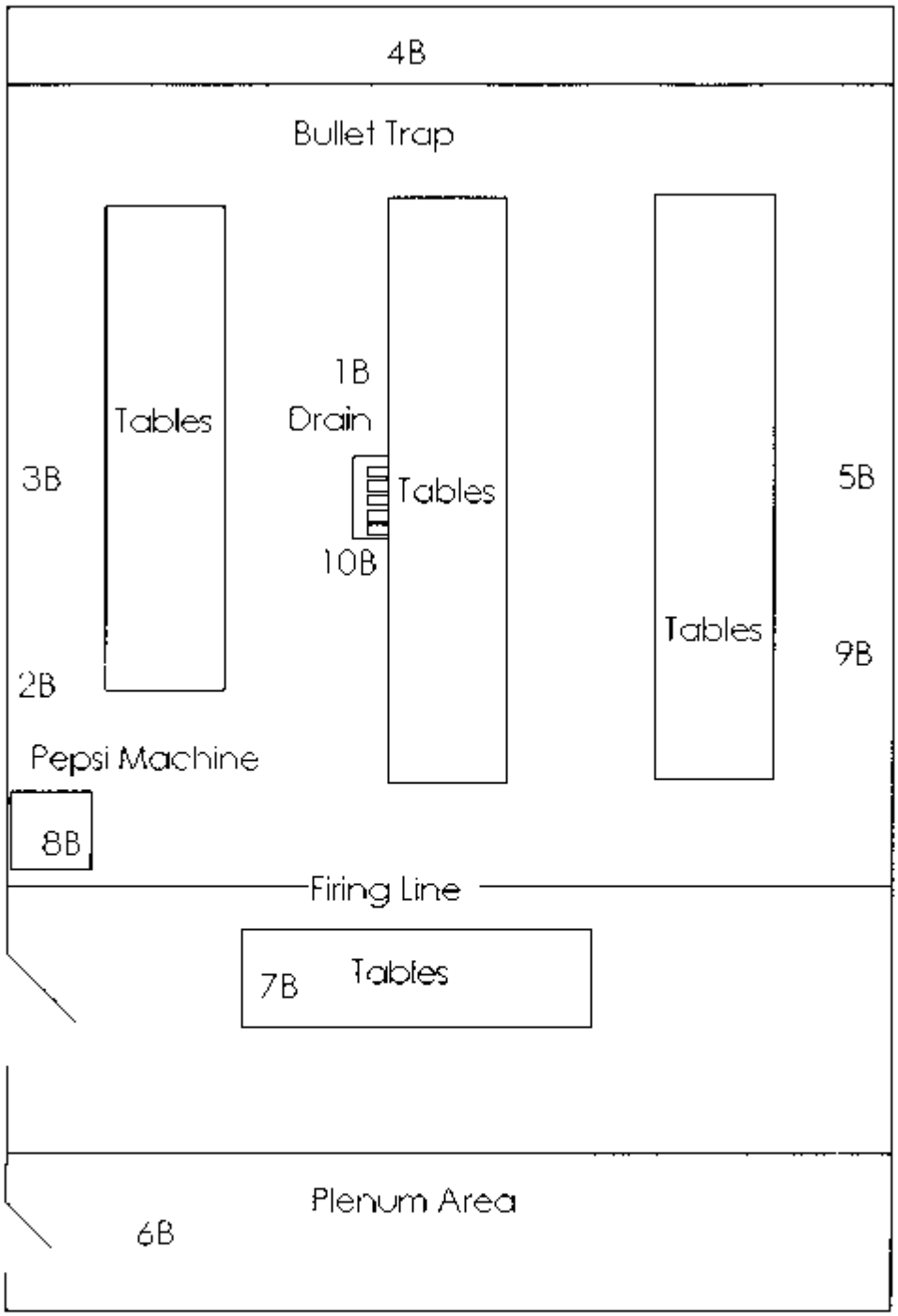


Figure C-11. Wipe sample taken on IFR Floor drain

Figure 1. Diagram of Wipe Samples for Flemington IFR 20 March 2008



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NGB-ARS-IHNE (40-5f) 16 April 2008

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
HACKETTSTOWN, NJ
20 MARCH 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Hackettstown IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Hackettstown IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

3. FINDINGS AND RECOMMENDATIONS.

a. Decontamination Requirements. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, six were over the recommended 200 $\mu g/ft^2$ standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2. **(RAC 3)**

b. Stored Materials. Multiple items were stored in both the IFR and Plenum Area (Appendix C, Figures C-1 thru C-11). **(RAC 3)**

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). **(RAC 4)**

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements. **(RAC 4)**

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
HACKETTSTOWN, NJ
20 MARCH 2008

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

b. National Guard Pamphlet (NG Pam) 420-15, Guidelines and Procedures for Rehabilitation and Conversion of Indoor Firing Ranges, 3 November 2006.

2. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Hackettstown IFR.

3. GENERAL.

a. Survey Personnel. This survey was conducted 20 March 2008 by 1LT Non-Responsive and 1LT Non-Responsive both Environmental Engineers from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. CW2 Non-Responsive NJARNG State Occupational Health Manager (SOHM) G-3, requested an evaluation, through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, of the equipment stored at the inactive Hackettstown IFR to assess any possible inhalation hazards as a result of lead dust contamination.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).

b. Methodology. The survey consisted of a visual inspection and a collection of wipe samples. All measurements were collected in accordance with applicable standards.

5. FINDINGS AND DISCUSSION.

a. Wipe Sampling.

(1) General. In a compliance instruction letter for lead in the construction industry, OSHA has provided a level of acceptable lead loading on surfaces for non-lead work areas of 200 micrograms per square foot ($\mu g/ft^2$). While not legally applicable, this serves as a useful guideline (Reference 1b).

(2) Wipe Sample Results. A total of 10 wipe samples were collected near and inside the IFR. Table B-1, located in an Appendix B, shows the location of each wipe sample and the corresponding results. Any values found to be below the detectable limit were assumed to be absent of lead contamination. Of the 10 wipe samples taken, six were over the recommended 200 $\mu g/ft^2$ standard.

b. Stored Materials. Multiple items were stored in both the IFR itself and Plenum Area behind it (Appendix C, Figures C-1 thru C-11). IAW NGR 420-15, Section 3-3 (c), every attempt should be made to clean and reclaim items since disposing of equipment, as hazardous waste is costly and wasteful (reference 1b). It is recommended that items be cleaned with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, 3-2 (h). Excluded from cleaning are, any types of porous items, such as office partitions and carpet that were present during firing. These items should be considered grossly contaminated and be discarded as hazardous waste IAW the local, state, and federal requirements.

6. RECOMMENDATIONS.

a. Decontamination Requirements. Clean and decontaminate the IFR IAW NG Pam 420-15, Section 3-2 (reference 1b). **(RAC 3)**

b. Stored Materials.

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h) (reference 1b). **(RAC 4)**

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements (reference 1b). **(RAC 4)**

7. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Hackettstown IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

8. ADDITIONAL ASSISTANCE. Point of contact for this action and other industrial hygiene related topics is Ms. Non-Responsive Regional Industrial Hygienist, (410) 942-0273 ext 3.

Non-Responsive

1LT, MS
Environmental Engineer

APPROVED BY:

Non-Responsive

NGB Regional Industrial Hygienist

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NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

APPENDIX A
DERIVING RISK ASSESSMENT CODES (RACs) FOR HEALTH HAZARDS

1. HEALTH HAZARD SEVERITY CODE (HHSC). Using the following procedures to assess points, determine the health hazard severity category (HHSC). The HHSC reflects the magnitude of exposure to a physical, chemical, or biological agent and the medical effects of exposure.

a. Exposure Points Assessed

AER POSSIBLE?	***Exposure Conditions***			
	< AL	**Occasionally > AL Always < OEL**	**> AL < = OEL**	**> OEL**
NO	0	3	5	7
YES	1-2	4	6	8

AER = Alternate exposure route, such as skin absorption, ingestion.
AL = Action level, DoD component threshold that triggers surveillance actions, such as microWatts/cm^2, dB, parts per million.
OEL = Occupational Exposure Limit, DoD exposure limit, such as Threshold Limit Value and Permissible Exposure Limit.

b. Medical Effects Points Assessed.

Condition	***Points***
No medical effect, such as nuisance noise and nuisance odor	0
Temporary reversible illness requiring supportive treatment, such as eye irritation and sore throat	1-2
Temporary reversible illness with a variable but limited period of disability, such as metal fume fever	3-4
Permanent, non-severe illness or loss of capacity, such as permanent hearing loss	5-6
Permanent, severe, disabling irreversible illness or death, such as asbestosis and lung cancer	7-8

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c. Determine the HHSC by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*HHSC*
13-16	I
9-12	II
5-8	III
0-4	IV

2. ILLNESS PROBABILITY CODE (IPC). Using the following guides to assess points, determine the IPC for health hazards. The IPC is a function of the duration of exposure and the number of exposed personnel.

a. Duration of Exposure Points Assessed

Type of *Exposure*	*Exposure Duration*		
	1-8 hr/wk	>8hr/wk, not continuous	Continuous
Irregular, intermittent	1-2	4-6	-
Regular, periodic	2-3	5-7	8

b. Number of Exposed Personnel Points Assessed

Number of Exposed Personnel	*Points*
<5	1-2
5 to 9	3-4
10 to 49	5-6
>49	7-8

c. Determine the IPC for health hazards by totaling the points assessed and using the following guide:

Total Points (sum of A and B, above)	*IPC*
14-16	A
10-13	B
5-9	C
<5	D

3. Determine the RAC for health hazards by using the following matrix to measure health hazard severity and mishap probability factors.

HEALTH HAZARD SEVERITY CODE	*ILLNESS PROBABILITY CODE*			
	A	B	C	D
I	1	1	2	3
II	1	2	3	4
III	2	3	4	5
IV	3	4	5	5

From Table 2 of Department of Defense Instruction 6055.1, Department of Defense Occupational Safety and Health Program, 19 August 1998 (reference 1).

4. RAC DESCRIPTOR

RAC	DESCRIPTOR
1	CRITICAL
2	SERIOUS
3	MODERATE
4	MINOR
5	NEGLIGIBLE

NGB-ARS-IHNE
SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

APPENDIX B
WIPE SAMPLE RESULTS

Table B-1. Lead Wipe Sample Results for Hackettstown IFR 20 March 2008

Sample Number	Location	Results $\mu g/ft^2$ [a]	Std. $\mu g/ ft^2$	Met Std.
1D	IFR Bullet Trap	4800	200	**No**
2D	IFR Floor drain	2700	200	**No**
3D	IFR Top of yellow filing cabinet along right wall	<110	200	Yes
4D	IFR Top of M16 rack	<110	200	Yes
5D	IFR Plenum on Floor	230	200	**No**
6D	Floor in front of entrance door to IFR	330	200	**No**
7D	Folding Table at firing line	4300	200	**No**
8D	Top of CPU along left wall of IFR	<110	200	Yes
9D	Top of black storage box along left wall	<110	200	Yes
10D	IFR Floor near Bullet Trap along left wall	6600	200	**No**

a: Results are in micrograms per square foot.
< indicates the value is below the detectable limit

APPENDIX C
Photographs

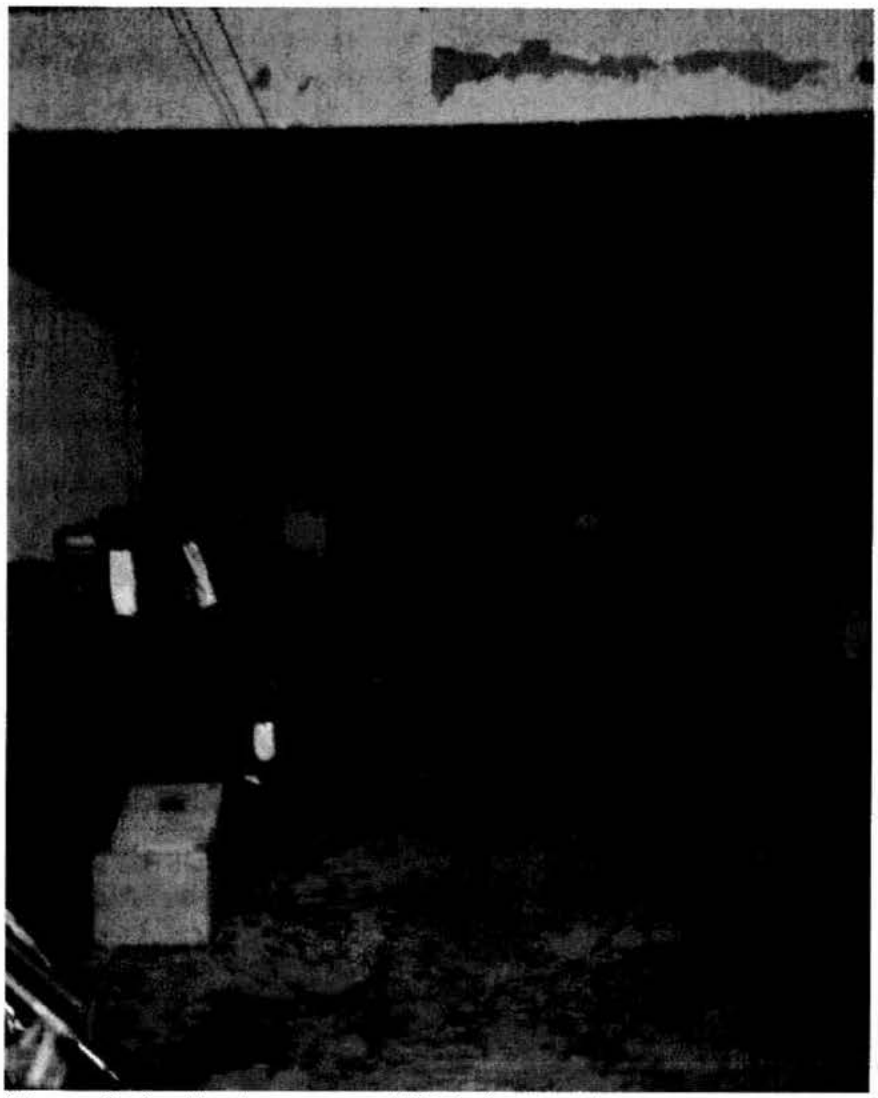

Figure C-1. Hackettstown IFR being used as a storage area.

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

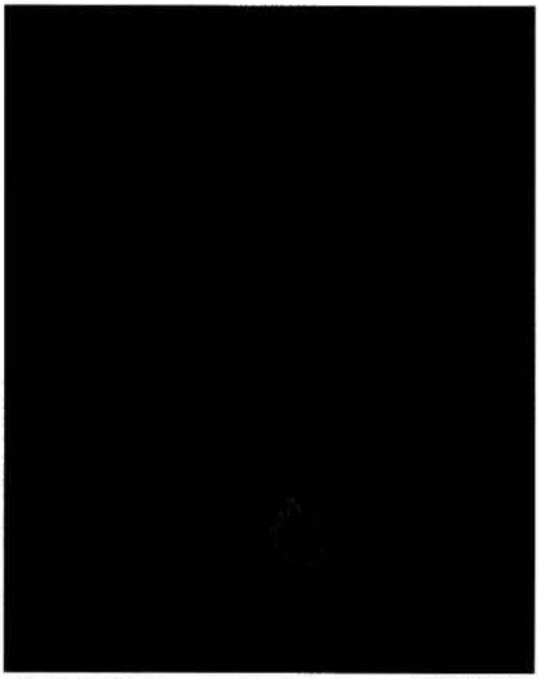

Figure C-2. Wipe sample taken on IFR Bullet Trap

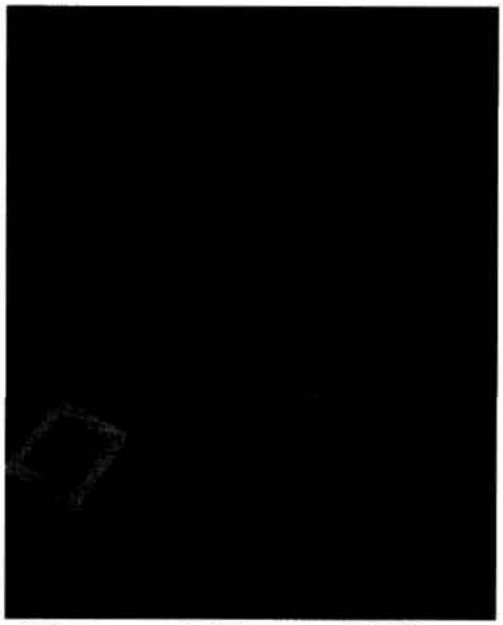

Figure C-3. Wipe sample taken on IFR Floor next to drain

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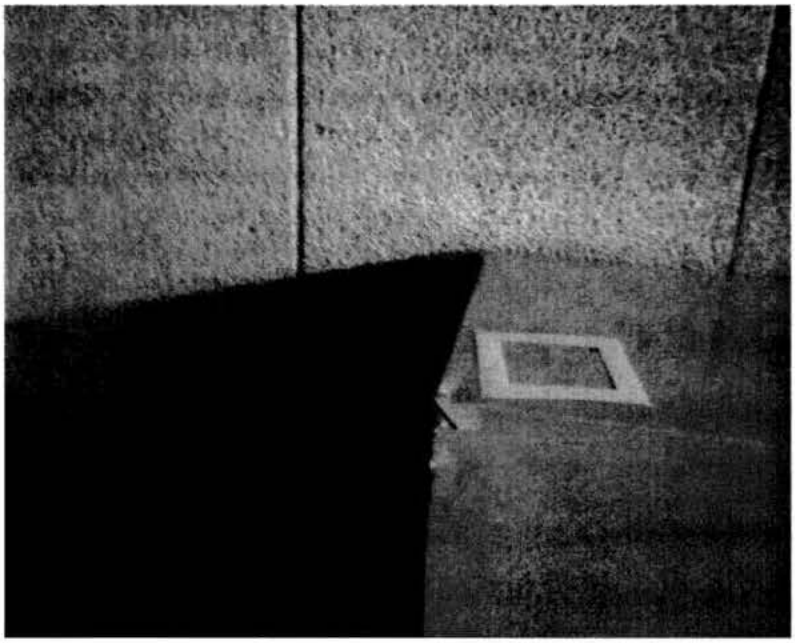

Figure C-4. Wipe sample taken on Top of Yellow Filing Cabinet along right wall

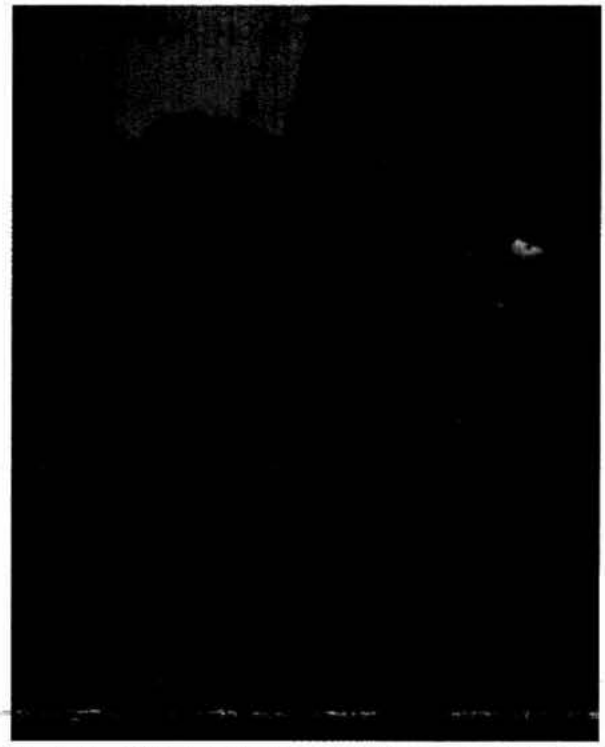

Figure C-5. Wipe sample taken on IFR M-16 Rack

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

Figure C-6. Wipe sample taken in IFR Plenum Area on Floor

Figure C-7. Wipe sample taken on Floor in front of entrance door to IFR

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

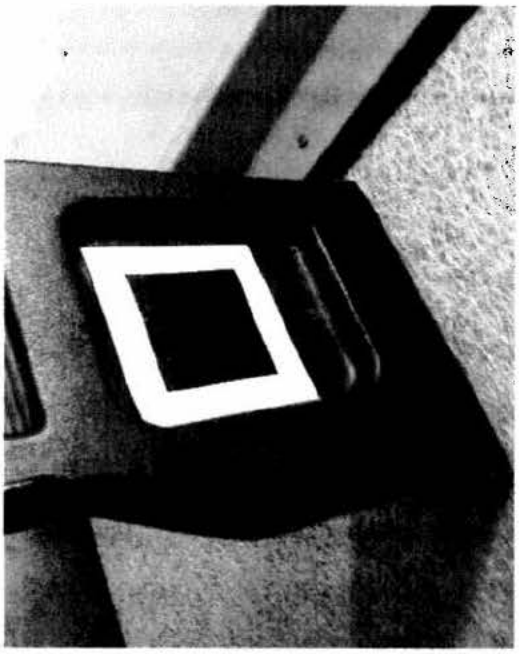

Figure C-8. Wipe sample taken on the folding table at the firing line

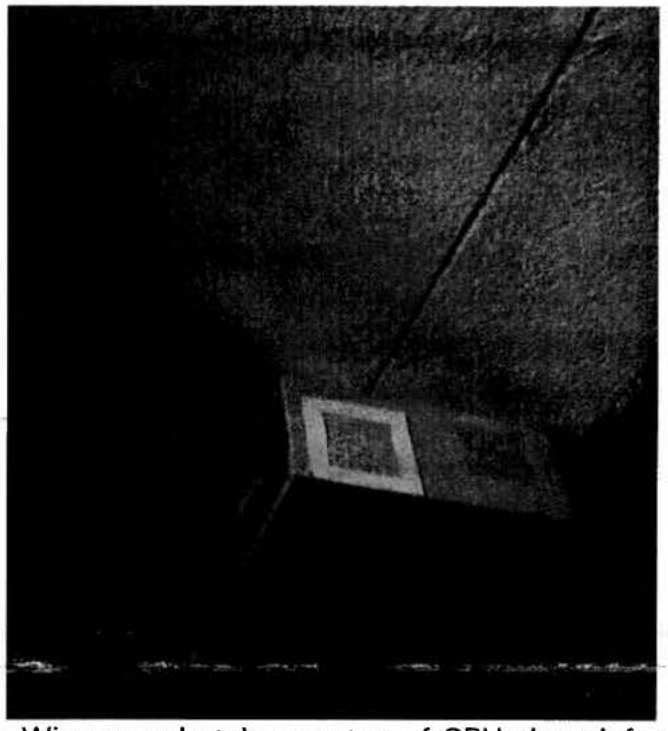

Figure C-9. Wipe sample taken on top of CPU along left wall of IFR.

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SUBJECT: Industrial Hygiene Survey of the Indoor Firing Range Hackettstown, New Jersey Army National Guard, 20 March 2008.

Figure C-10. Wipe sample taken on top of black storage box along left wall

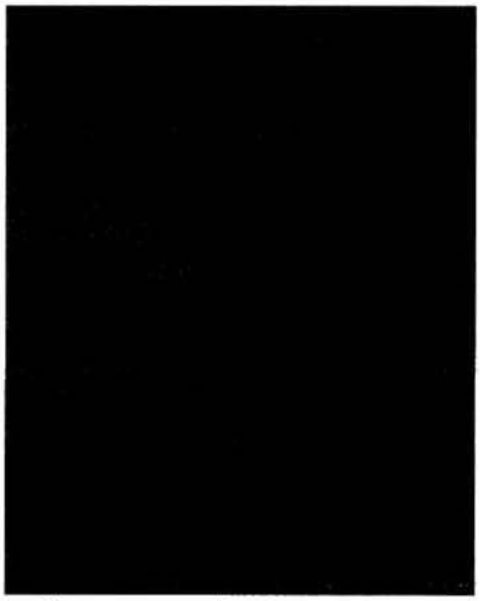
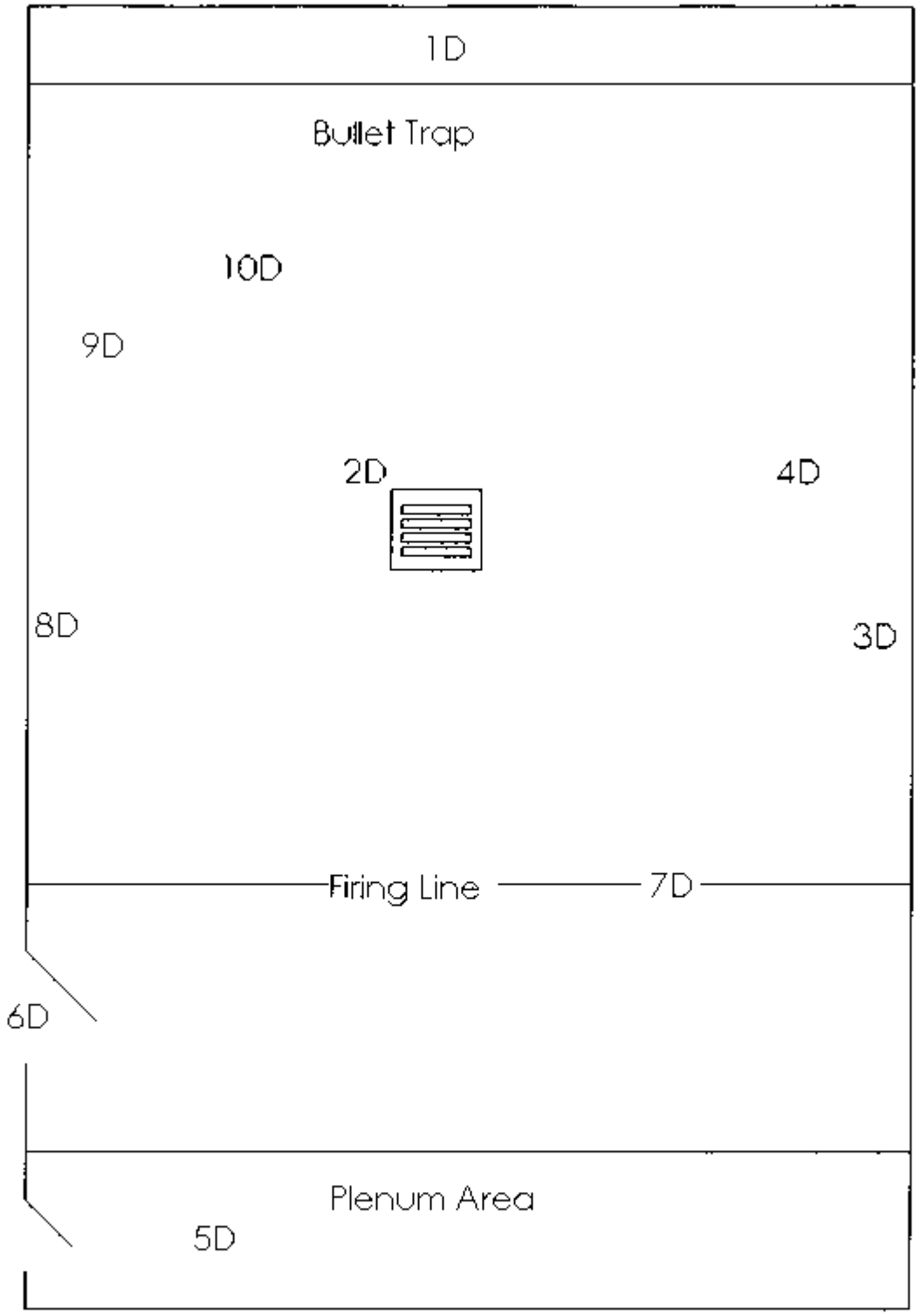


Figure C-11. Wipe sample taken on IFR Floor near Bullet Trap along left wall

Figure 1. Diagram of Wipe Samples for Hackettstown IFR 20 March 2008



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NGB-ARS-IHNE (40-5f) 16 April 2008

EXECUTIVE SUMMARY
INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
PORT MURRAY, NJ
20 MARCH 2008

1. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Port Murray IFR.

2. CONCLUSIONS. Potential lead hazard risks associated with the equipment stored in the inactive Port Murray IFR appeared to be moderately controlled. Implementation of the recommendations in this report will contribute to the healthfulness of the work environment of this facility.

3. FINDINGS AND RECOMMENDATIONS.

a. Decontamination Requirements. A total of 10 wipe samples were collected near and inside the IFR. Of the 10 wipe samples collected, seven were over the recommended 200 $\mu g/ft^2$ standard. Clean and decontaminate the IFR in accordance with (IAW) National Guard Pamphlet (NG Pam) 420-15, Section 3-2. **(RAC 3)**

b. Stored Materials. Multiple items were stored in both the IFR and Plenum (Appendix C, Figures C-1 thru C-11). **(RAC 3)**

(1) Cleaning Requirements. Clean all non-porous stored items with either a high efficiency particulate air (HEPA) filter vacuum or using the wet wipe method presented in NGR 420-15, Section 3-2 (h). **(RAC 4)**

(2) Porous Materials. Remove all porous materials and discard them as hazardous waste IAW the local, state, and federal requirements. **(RAC 4)**

INDUSTRIAL HYGIENE EVALUATION
INDOOR FIRING RANGE (IFR)
PORT MURRAY, NJ
20 MARCH 2008

1. REFERENCES.

a. Department of Defense Instruction (DODI) 6055.1, Department of Defense (DOD) Safety and Occupational Health (SOH) Program, 19 August 1998.

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2. PURPOSE. The purpose of the survey was to evaluate occupational health and safety hazards associated with lead dust contamination of equipment stored at the inactive Port Murray IFR.

3. GENERAL.

a. Survey Personnel. This survey was conducted 20 March 2008 by 1LT Non-Responsive and 1LT Non-Responsive, both Environmental Engineers from the United States Army Center for Health Promotion and Preventive Medicine-North (USACHPPM–North), Fort George G. Meade, Maryland.

b. Risk Assessment Codes (RACs). RACs are assigned to recommendations to help quantify risks to personnel and to aid in the establishment of funding priorities for corrective actions. Health RACs are determined using the RAC table from the Department of Defense Instruction (DODI) 6055.1. This table is provided in Appendix A of this report.

c. Background. CW2 Non-Responsive NJARNG State Occupational Health Manager (SOHM) G-3, requested an evaluation, through the National Guard Bureau (NGB) Region North Industrial Hygiene (IH) Office, of the equipment stored at the inactive Port Murray IFR to assess any possible inhalation hazards as a result of lead dust contamination.

4. METHODOLOGY.

a. Assessment Criteria. The United States Army, through the Department of Defense Instruction 6055.1, Section E3.4.1.2, directs that facilities provide healthful work environments in accordance with the most stringent standards applicable (reference 1a).